Preliminary Final Environmental Impact Report / Environmental Impact Statement

San Clemente Dam Seismic Safety Project

APPENDICES

December 2007

Prepared for

California Department of Water Resources
U.S. Army Corps of Engineers

Prepared by

ENTRIX
ENVIRONMENTAL CONSULTANTS

California American Water

California American Water, Coastal Division
Monterey, California

PRELIMINARY FINAL

Environmental Impact Report
Environmental Impact Statement

for the

San Clemente Dam Seismic Safety Project

APPENDICES

Prepared for

California Department of Water Resources U.S.

U.S. Army Corps of Engineers

Prepared by

ENTRIX INC.
590 Ygnacio Valley Road, Suite 200
Walnut Creek, CA 94596

December 2007

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NOTICE OF PREPARATION

SEP 28 2005

FILE COPY

Scott Morgan, Senior Planner
Governor's Office of Planning and Research
State Clearing House
1400 Tenth Street
Sacramento, California 95814

Notice of Preparation of a Draft Environmental Impact Report
Project Title: San Clemente Dam Seismic Safety Project
Project Sponsor: Coastal Division of California-American Water
Project Location: Monterey County

NOTICE OF PREPARATION

The Division of Safety of Dams, Department of Water Resources (DWR) is the State Lead Agency for the preparation of the San Clemente Dam Seismic Safety Project Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS). The document will be prepared in cooperation with the United States Army Corps of Engineers (USCOE).

DWR issued a Notice of Preparation (NOP) for the Seismic Retrofit of San Clemente Dam EIR (State Clearinghouse No. 1997042007) in March 1997. A draft EIR was circulated for public review. Based on comments, a further evaluation and expanded range of alternatives for dam and sediment removal was deemed necessary. This NOP incorporates features of the 1997 NOP and identifies a broadened range of alternatives under consideration. It supplements the Notice in the Federal Register, which identified the USCOE as the federal Lead Agency, and announced a federal scoping meeting which was held on November 4, 2004. (Federal Register Vol. 69, No. 189, September 30, 2004).

Enclosed is the project description, the five alternatives under study, and their environmental impacts. The five alternatives are: No Action Alternative, Dam Strengthening, Dam Notching, Dam Removal, and Carmel River Reroute and Dam Removal.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date and not later than 45 days from receipt of this notice.

If you have any questions, you may contact Richard Olebe at (916) 227-0533 or Project Engineer Y-Nhi Enzler at (916) 227-4624.

Original Signed By
John Vrymoed For
David A Gutierrez, Chief
Division of Safety of Dams
(916) 227-9800

Enclosure
Certified Mail

(Same letter sent to attached list.)

RAOlebe:TinaGlorioso
Notice of Preparation.doc
Spell check 9/24/05

SURNAME DWR 540 (Rev. 1/86)	Richard Olebe 9/27/05 R A Olebe for/SE 9/27/05	9/27/05		

PROJECT DESCRIPTION

Project Location: The project area is within the upper reaches of the Carmel River, in an unincorporated portion of Monterey County. San Clemente Dam sits at the confluence of the Carmel River and San Clemente Creek (River Mile [RM] 18.5), approximately 15 miles southeast of the City of Carmel-by-the-Sea and 3.7 miles southeast of Carmel Valley Village. The project area includes the features associated with the proposed alternatives (see Local Vicinity Map). The alternatives are described below.

No Action Alternative: No modifications to the dam or its facilities would be completed. The dam would remain in an unsafe condition and be a continued threat to downstream life and property. The existing sediment would be left in place behind the dam. The reservoir would continue to accumulate sediment at an average rate of about 15 acre-feet per year. Minor sediment removal may occur in the future to allow continued diversion of water from the reservoir to supply Carmel Valley Village area. The existing drawdown ports in the dam and the existing fish bypass facility would both likely remain operational until the reservoir fills with sediment. Once the reservoir is filled with sediment, any further sediment carried by the river would flow over the dam and into the river downstream of the dam.

Dam Strengthening: The project sponsor proposes to construct a concrete buttress on the downstream face of the existing San Clemente Dam. Thickening the dam section, armoring the abutments, and modifying the spillway would address the seismic safety and overtopping concerns. The proposed modifications would meet requirements of the DWR, Division of Safety of Dams. A concrete batch plant would be installed onsite to manufacture the required concrete. The electrical system at the dam would be improved. Sediment accumulated behind the dam would be left in place, although minor sediment removal may be needed to maintain the existing surface water supply intake that serves the upper Carmel Valley Village area. Once the reservoir is filled with sediment, any further sediment carried by the river would flow over the dam and into the river downstream of the dam. Both the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered each year during construction. The plunge pool downstream of the dam would be completely drained prior to dam notching to allow access for construction workers and machinery for notching operations and new fish ladder construction.

The existing fish ladder would be replaced by a new fish ladder compliant with existing criteria for fish passage promulgated by NOAA Fisheries and the California Department of Fish and Game (DFG). Two high-level outlets, equipped with sluice gates, would be installed to enable controlled and limited sediment releases to maintain both upstream passage to the fish ladder exit and maintain water flow into the CAW diversion pipeline during the wet season.

A new access route to Carmel Valley Road (the "Tularcitos route") would be constructed to bypass the Sleepy Hollow community by crossing Tularcitos Creek and connecting Carmel Valley Road to the Carmel Valley Filter Plant. In addition, the Old Carmel River Dam Bridge (OCRB) and the access road from the filter plant to the dam would be improved. The existing access road along the east side of the Carmel River, between OCRD and the base of San Clemente, would be rebuilt.

A tower crane would be staged at the base of the dam to move construction materials from the batch plant to the dam face and fish ladder.

Dam Notching: The central portion of the dam would be cut down approximately 19 feet to elevation 506 feet in the area of the existing spillway bays. The proposed modifications would address the seismic safety and overtopping concerns and meet requirements of the DWR, Division of Safety of Dams. A new facility to divert water would be constructed upstream of the dam to replace the existing surface water diversion at San Clemente Dam. The electrical system at the dam would be upgraded to support a conveyor sediment transport system.

Both the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered each year during construction. The plunge pool downstream of the dam would be completely drained prior to dam notching to allow access for construction workers and machinery for notching operations and new fish ladder construction.

Sediment in the reservoir would be removed down to the level of the notch. The historic Carmel River channel exposed by sediment excavation in the reservoir's inundation zone would be restored as needed. Approximately 1.5 million cubic yards (930 acre-feet) of accumulated sediment would be removed over two seasons by excavation with heavy equipment. Sediment would be transported from the reservoir via a conveyor belt system and deposited in a disposal area east of San Clemente Reservoir. Further, sediment would no longer be accumulated by the reservoir, and would instead be carried by the river, and flow over the dam into the river downstream of the dam.

The existing fish ladder would be redesigned and rebuilt to accommodate the lowered dam elevation and to comply with existing criteria for fish passage promulgated by NOAA Fisheries and CDFG. A high-level outlet, equipped with a sluice gate, would be installed to enable controlled and limited sediment releases to maintain fish passage.

A new access route to Carmel Valley Road (the "Tularcitos route") would be constructed to reduce construction traffic impacts through the Sleepy Hollow community by crossing Tularcitos Creek and connecting Carmel Valley Road to the Carmel Valley Filter Plant. The Old Carmel River Dam Bridge (OCRB) and the access road from the filter plant to the dam would be improved. The existing access road along the east side of the Carmel River, between OCRD and the base of San Clemente Dam, and the High Road Access would be rebuilt. An existing 4WD road would be improved to connect Cachagua Road with the sediment disposal site. This route would be used only to move construction equipment and materials necessary to construct the road, prepare the sediment disposal site, and to connect the sediment disposal site to the dam by conveyor belt. All sediment transport would occur via conveyor belt from the dam to the disposal site. No sediment would be hauled by truck over any roads.

Dam Removal: The dam would be demolished and removed from the site, thus eliminating dam safety concerns. The fish ladder may be left in place. A new facility to divert water will be constructed in the vicinity of the dam to replace the existing surface water diversion at San Clemente Reservoir. The electrical system at the dam would be upgraded to support a conveyor sediment transport system.

Both the Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered each year during construction. The plunge pool downstream of the dam would be completely drained prior to dam removal to allow access for demolition.

Approximately 2.5 million cubic yards (1,555 acre-feet) of accumulated sediment would be removed over three seasons by excavation with heavy equipment. Sediment would be transported from the reservoir, via a conveyor belt system, to a disposal area east of San Clemente Reservoir. The historic Carmel River channel, exposed by sediment excavation in the reservoir's inundation zone, would be restored as needed. The reservoir would no longer trap sediment; therefore, the river downstream of the dam site would accumulate sediment as if no dam were constructed.

Any impacts to the river channel upstream of the dam, through the historic inundation zone, would be mitigated. A trap and truck facility would be built and operated at the OCRD to allow fish passage.

Existing access roads with minor improvements would be used to reach the base of the dam. The Old Carmel River Dam Bridge (OCRB) and the access road from the filter plant to the dam would be improved. The existing access road along the east side of the Carmel River, between OCRD and the base of San Clemente, would be rebuilt. In addition, an existing 4WD road would be improved to connect Cachagua Road with the sediment disposal site. This route would be used only to move construction equipment and materials necessary to construct the road, prepare the sediment disposal site, and to connect the sediment disposal site to the dam by conveyor belt. All sediment transport would occur via conveyor belt from the dam to the disposal site. No sediment would be hauled by truck over any roads.

Carmel River Reroute and Dam Removal: The dam and fish ladder would be demolished and removed from the site; thus eliminating the dam safety concerns. A new facility to divert water will be constructed in the vicinity of the dam to replace the existing surface water diversion at San Clemente.

Approximately 380,000 cubic yards (235 acre-feet) of accumulated sediment behind the dam, on the San Clemente Creek arm of the reservoir, would be relocated to the

Carmel River arm by excavation with heavy earthmoving equipment. A portion of the Carmel River would be permanently bypassed by cutting a 450-foot-long channel between the Carmel River and San Clemente Creek, approximately 2,500 feet upstream of the dam. The bypassed portion of the Carmel River would be used as a sediment disposal site for the accumulated sediment. The spoils from channel construction (235,000 cubic yards or 145 acre-feet) would be used for construction of a diversion dike at the upstream end of the bypassed reservoir arm. The sediments at the downstream end of the bypassed reservoir arm would be stabilized and protected from erosion.

The Carmel River and San Clemente Creek would be diverted around the reservoir and dam site, and the reservoir would be dewatered each year during construction. The plunge pool downstream of the dam would be completely drained prior to removal of the dam to allow access for demolition.

The San Clemente Creek channel would be reconstructed through its historic inundation zone, from the exit of the diversion channel to the dam site. A trap and truck facility would be built and operated at the OCRD to allow fish passage during construction. A notch would be cut into Old Carmel River Dam (OCRD), which is about 1,800-feet downstream of San Clemente Dam, in order to provide adequate fish passage.

Existing access roads, with minor improvements, would be used to reach the base of the dam. The Old Carmel River Dam Bridge (OCRB) and the access road from the filter plant to the dam would be improved. The existing access road along the east side of the Carmel River, between OCRD and the base of San Clemente Dam and the High Road Access would be rebuilt. In addition, an existing 4WD road would be improved to connect Cachagua Road with the reservoir.

Environmental Effects: Potential environmental effects, depending on which alternative is selected, include: Impacts to aquatic environments; impacts to listed species, including but not limited to, the federally threatened California red-legged frog (Rana aurora draytoni) and the federally listed Central California Coast steelhead (Oncorhynchus mykiss); water quality; cultural resources; traffic; fish and wildlife resources; and public health and safety, including sedimentation and increased downstream flooding.

Appendix B

NOTICE OF INTENT

Notice of Intent To Prepare a Draft Environmental Impact Statement for the Proposed San Clemente Dam Seismic Hazard Remediation Project--Carmel Valley, Monterey County, CA

[Federal Register: September 30, 2004 (Volume 69, Number 189)]
[Notices]
[Page 58414-58415]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr30se04-55]

DEPARTMENT OF DEFENSE
Department of the Army; Corps of Engineers

Notice of Intent To Prepare a Draft Environmental Impact Statement for the Proposed San Clemente Dam Seismic Hazard Remediation Project--Carmel Valley, Monterey County, CA

AGENCY: U.S. Army Corps of Engineers, DoD.
ACTION: Notice of Intent (NOI).

SUMMARY: The U.S. Army Corps of Engineers (USACE) has received an application for Department of the Army authorization from California-American Water Company (CAW) to deposit approximately 3,200 cubic yards of fill material into wetlands and other waters of the U.S. in association with remediating the safety hazards of an existing Dam on the Carmel River. This application is being processed pursuant to the provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344) and in accordance with the National Environment Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.). In accordance with NEPA, USACE has determined that the proposed action may have a significant impact on the quality of the human environment and, therefore, requires the preparation of an Environmental Impact Statement (EIS). A combined Environmental Impact Report (EIR)/EIS will be prepared with the USACE as Federal lead agency and the California Department of Water Resources, San Joaquin District (DWR) as the State lead agency under the California Environment Quality Act (CEQA). The basic purpose of the proposed actions is to provide Dam safety. The overall project purpose is to have San Clemente Dam meet current standards for withstanding a Maximum Credible Earthquake (MCE) and the Probable Maximum Flood (PMF) while providing fish passage at the Dam; maintaining a point of diversion to support existing water supply facilities, water rights and services; and minimizing impacts on CAW rate payers.

DATES: A public scoping meeting for this project will be held on November 4, 2004, from 6:30 to 8:30 p.m. at the Rancho Canada Golf Club, 4860 Carmel Valley Road, Carmel Valley, California. A public agency scoping meeting for this project will be held on November 9, 2004, 10 a.m. to 12 p.m. at the same location. You may mail comments to: Phelicia Thompson, U.S. Army Corps of Engineers, Regulatory Branch, 333 Market Street, 8th Floor, San Francisco, California 94105-2197.

FOR FURTHER INFORMATION CONTACT: Phelicia Thompson, 415-977-8452, or

SUPPLEMENTARY INFORMATION:

1. Background: Approximately 2.4 million cubic yards of sediment have accumulated behind San Clemente Dam since it was constructed in the early 1920s. Engineering studies of San Clemente Dam were conducted in the 1990s to evaluate seismic safety at the request of the California Department of Water Resources Division of Safety of Dams (DSOD). These studies concluded that at the maximum water surface elevation of 537 feet (the height of the Dam's crest), the Dam might not be stable under the MCE. The Dam could suffer severe structural damage leading to the potential loss of the reservoir during a MCE. In addition, under the PMF the Dam could overtop and the downstream abutment area would be susceptible to excessive erosion, leading to a risk of Dam failure. Based on these findings, DSOD has required that the San Clemente Dam be brought into safety compliance to withstand seismic loading from a MCE on nearby faults and safely pass the PMF.

2. Description of the Proposed Action: Dam Strengthening. CAW has proposed to meet seismic safety needs for the Dam and protect against the effects of a PMF by thickening the downstream face of the Dam with concrete. A concrete batch plant would be installed on-site to manufacture the concrete needed. Sediment accumulated behind the Dam would be left in place. However, minor sediment removal may occur to ensure proper functioning of the existing water supply intake serving the upper Carmel Valley Village area. Water in the reservoir may need to be lowered to reduce loading behind the Dam (depending on sediment levels). Inflowing streams would be diverted around the work area and the plunge pool at the base of the Dam would be dewatered during the Dam thickening. This proposed action also includes replacing the existing ladder with a new fish ladder compliant with existing

National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG) criteria to provide fish passage. A tower crane would be staged at the base of the Dam to move construction materials from the batch plant to the Dam face and fish ladder. Access to the Dam would be improved by building a new road along the east side of the Carmel River, between the Old Carmel River Dam and the base of San Clemente Dam. The Dam thickening project would take an estimated four years to complete.

3. Reasonable Alternatives: In accordance with the requirements of Section 15124 of the State CEQA Guidelines and 40 CFR 1502.14, reasonable alternatives to the proposed action will be evaluated in the Draft EIR/EIS as listed below:

a. Dam Notching Alternative. This alternative would meet the need to reduce seismic safety risks by notching the Dam. The action would reduce the mass sufficiently to avoid catastrophic failure of the Dam during a MCE event. Notching would also be of sufficient size to prevent overtopping of the Dam during the PMF. The gates, piers and walkway at the top of the Dam would be removed and the Dam would be notched to an elevation of about 505 feet in the area of the present spillway bays. Sediment in the reservoir would to be removed down to the level of the notch. A new intake structure would be constructed to allow the Dam to continue serving the upper Carmel Valley Village area. A new access road would be constructed to connect Carmel Valley Road to the Carmel Valley Filter Plant, to bypass the Sleepy Hollow community and to improve safety for large construction equipment. In addition, road access from the filter plant to the Dam would be improved. The existing primitive road from the Old Carmel River Dam to the base of San Clemente Dam would be rebuilt to an elevation above winter flood levels. Both the Carmel River and San Clemente Creek would be diverted around the reservoir and Dam site and the reservoir would be dewatered each year during construction. Accumulated sediment would be removed from behind the Dam over two seasons by excavation with heavy equipment and transported from the reservoir by truck or via a conveyor belt system to a disposal area near the Carmel Valley Filter Plant. The existing fish ladder would be rebuilt compliant with existing NMFS and CDFG criteria to accommodate the lowered Dam elevation. The Carmel River channel in the inundation zone would be restored. The Dam notching project would take an estimated six years to complete, depending on the effects of annual precipitation upon the construction schedule.

b. Dam Removal Alternative. This alternative would eliminate seismic safety and flooding risks through the removal of the Dam and the accumulated sediment behind the Dam. A new access road would be constructed to connect Carmel Valley Road to the Carmel Valley Filter Plant, to bypass the Sleepy Hollow community and to improve safety for large construction equipment. In addition, road access from the filter plant to the Dam would be improved. The existing primitive road from the Old Carmel River Dam to the base of San Clemente Dam would be rebuilt to an elevation above winter flood levels. Both the Carmel River and San Clemente Creek would be diverted around the reservoir and Dam site and the reservoir would be dewatered each year during construction. Accumulated sediment would be removed from behind the Dam over three seasons by excavation with heavy equipment and transport from the reservoir by truck or via a conveyor belt system to a disposal area near the Carmel Valley Filter Plant. The existing Dam and fish ladder would be demolished and removed from the site. A new intake structure would be constructed to allow CAW to continue serving the upper Carmel Valley Village area. The river channel would be restored through the historic inundation zone. If the Dam and sediment were removed in stages, a trap and truck facility would need to be built and operated at the Old Carmel River Dam for at least three years. The Dam removal project would take an estimated seven years to complete, depending on the effects of annual precipitation upon the construction schedule.

c. No Action Alternative. Under this alternative, no changes to the existing Dam would be made. The Dam would be left in place with all its existing facilities, although the fish ladder would be replaced with a new ladder compliant with existing NMFS and CDFG criteria to provide fish passage. Most of the sediment would be left in place behind the Dam. The reservoir would continue to accumulate sediment at an average rate of about 15 acre-feet per year. Minor sediment removal may occur to maintain the existing water supply intake serving the upper Carmel Valley Village acre. The existing draw down ports in the Dam and the existing fish bypass facility would both likely remain operational until the reservoir fills with sediment. The existing road between the Carmel Valley Filter Plant and the Dam would be improved to provide access to the Dam site for fish ladder construction equipment and supplies.

4. Scoping Process: Pursuant to NEPA, the USACE must include a scoping process for the Draft EIS/EIR. Scoping preliminarily involves determining the scope of the issues to be addresses in the Draft EIR/ EIS and identifying the anticipated significant issues for in-depth analysis. The scoping process includes public participation to integrate public needs and concerns regarding the proposed action.

a. Public Involvement Program: Venues for public comment on the proposed action will include: Scoping meetings to be held on November 4, 2004 in Carmel Valley; preparation of a Draft EIR/EIS; and receipt of public comment in response to the Draft EIR/EIS.

b. Significant Issues to be Analyzed in Depth in the Draft EIR/EIS include: Impacts to the aquatic environments; impacts to endangered species, including but not limited to the California red-legged frog and the California Central Coast steelhead; water quality; cultural resources; traffic, fish and wildlife resources; public safety, including downstream flooding; and other issues identified through the public involvement process and interagency coordination.

c. Environmental Review/Consultation Requirements: NEPA; Section 404 of the Clean Water Act; Section 401 of the Clean Water Act; Endangered Species Act; Magnusun-Stevens Act Provision--Essential Fish Habitat; Clean Air Act; National Historic Preservation Act.

d. Scoping Meeting/Availability of Draft EIR/EIS: The USACE will hold a public scoping meeting to provide information on the project and receive oral or written comments on the scope of the document. This scoping meeting for the project will be held at 6:30 p.m. to Thursday, November 4, 2004, at the Rancho Canada Gold Club, 4860 Carmel Valley Road, Carmel Valley, California. The Draft EIR/EIS is expected to be available for public review in winter of 2006.

Dated: September 21, 2004.

Calvin C. Fong,
Regulatory Branch Chief.

[FR Doc. 04-21994 Filed 9-29-04; 8:45 am]
BILLING CODE 3710-19-M

Appendix C

WRITTEN COMMENTS RECEIVED ON DRAFT EIR/EIS

June 14, 2006

Paula J Landis, Chief
California Dept of Water Resources
San Joaquin District
3374 East Shields Ave, Rm A7
Fresno CA 93726

RE: **San Clemente Dam Seismic Safety Project.**

As a homeowner living in the floodplain below this unsafe dam, I am delighted that the Dept of Water Resources is taking steps to find a permanent solution.

AL-9

I opt for **Alternative 3**: Carmel River reroute, dam removal, and sediment stabilization, because it's a cost-effective, permanent, environmentally beneficial solution:--.
* It permanently removes the risk of dam failure.
* By restoring the San Clemente Creek bed, it restores the river channel to a geologically stable pattern.
* It allows the fish free-flowing passage upstream and downstream.
* It limits the release of sediment downstream through the use of 2650 feet of the Carmel River bed to store the accumulated sediment.
* No need for massive movement of sediment by truck or conveyor belt.
* It limits short-term turbidity.
* It avoids the concrete batch plant operation.

CONCERNS

TR-12

TRAFFIC: For ALL alternatives, I am however concerned about the 3 or 4 year increase in traffic on Carmel Valley Road and in Carmel Valley Village, with attendant danger of accidents, plus wear and tear to roads and pavements. Money must be budgeted to restore the roads once the project is completed. And before construction begins, a traffic light must be installed at the dangerous intersection of Laureles Grade and Carmel Valley Road, assuming that traffic will increase there.

GEO-20

EROSION, POLLUTION, FIRE: Serious and ongoing steps must be taken to monitor and minimize run-off and erosion caused by construction activities. Steps must also be taken to minimize the increased risk of forest fire.

Linda Agerbak
25 Paso Hondo
Carmel Valley CA93924
(831) 659-5229

Ali Nolte
07/18/2006 02:47 PM CDT

To: Jeremy Pratt/Entrix
cc: Ali Nolte/Entrix@Entrix
Subject: Re: FW: San Clemente Dam - Carmel River - Steelhead

Jeremy Pratt

From: Bob Baiocchi
Sent: Wednesday, July 12, 2006 7:43 AM
To: Mike Aceituno; Steve Edmondson; Kevan Urquhart
Cc: Hatler, Charyce; Roy Thomas; Hank Smith
Subject: San Clemente Dam - Carmel River - Steelhead

AL-34 **Mr. Aceituno, NOAA Fisheries; Mr. Steve Edmondson, NOAA Fisheries; and Mr. Kevon Urquhart, DFG et al................Please find enclosed the position of the Carmel River Steelhead Association regarding the Clemente Dam and the Carmel River. The best solution and most reasonable alternative is to have the dam removed because it is useless, the fish ladder does not work, the reservoir is filled with sediment and the dam is an obstruction to navigation and steelhead migration in the river. You don't abandon a defective authomobile in the middle of a public freeway to satisfy local politicial reasons. See attachment. Have it removed. Thank you.**

Bob Baiocchi for

Carmel River Steelhead Association

cc: Dr. Roy Thomas, CRSA

Mr. Hank Smith, CRSA

Interested Parties (bcc)

STATE OF CALIFORNIA—THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885

June 20, 2006

Robert Smith
U.S. Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

RE: **Comments on the April 21, 2006 Draft Environmental Impact Report/Environmental Impact Statement for San Clemente Dam Seismic Retrofit Project, California American Water Company**

Dear Mr. Smith:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Report/Environmental Impact Statement for the San Clemente Dam Seismic Retrofit Project dated April 21, 2006. California American Water Company (CAW) proposes to retrofit the existing San Clemente Dam (SCD), inland of the coastal zone, by using the design option known as "downstream thickening." CAW would substantially thicken the dam at its downstream base, re-design the existing fish ladder and create a system of sluicing to relieve sediment build-up in the dam. The dam is owned and operated by the Coastal Division of CAW, a subsidiary of American Water, whose parent-company is RWE AG of Essen, Germany. The proposed improvements are intended to comply with California Department of Water Resources, Division of Safety of Dams (DSOD) requirements to address safety deficiencies, and guard against failure from a Maximum Credible Earthquake (MCE), and a Probable Maximum Flood (PMF) event, which could erode the existing dam abutments. Should the proposed project go forward, the Coastal Commission will require that a consistency certification be submitted to the California Coastal Commission for this federally-permitted project, based on its impacts in the coastal zone.[1] This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act.[2] The consistency certification should include a finding as to whether the activities are consistent with the California Coastal Management Program and the necessary information to support that conclusion, including an analysis of the project's consistency with Chapter 3 of the Coastal Act. (See CFR Section 930.58 for a full listing of the information required for a complete consistency certification.)

NEPA/
CEQA-9

1 Unless the Corps itself assumes responsibility for the project (see following paragraph).

2 16 U.S.C. Section 1456, with implementing regulations at 15CFR Part 930.

In addition to the proponent's proposed strengthening of the SCD, three viable alternatives to the project were submitted: dam notching, dam removal and dam re-routing and removal. It appears likely that, should one of these alternatives be proposed, the U.S. Army Corps of Engineers will become the project proponent. Should this happen, rather than the procedure described in the previous paragraph, the Corps will need to submit a consistency determination to the Coastal Commission. This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act. The consistency determination must describe how the project is consistent to the maximum extent practicable with the policies of Chapter 3 of the Coastal Act. (See CFR Section 930.39 for a full listing of the information required for a complete consistency determination).

Because no alternative has yet been chosen for this project, Coastal Commission staff has focused its review of the Draft EIR/EIS on certain key issue areas central to effects of this project in the coastal zone.

Beneficial Sediment Management and Beach Health

Section 30233 (b) of the California Coastal Act states that:

> *Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.*

Section 30233 (d) states:

> *Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients which would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for such purposes are the method of placement, time of year of placement, and sensitivity of the placement area.*

As discussed below, SCD has prevented the natural transport to the coast of a large volume of beach-quality material, and there has been erosion at several of the beach areas that would have been supplied sand from the Carmel River had SCD and reservoir not trapped this sand over the past 80 years. The Draft EIR/EIS should provide information on the quantity and quality of sediment trapped by SCD, identify environmentally advantageous options for delivering to the beach and littoral zone appropriate sediment, and identify environmentally advantageous options for placing sand on the beach or in the nearshore zone.

NEPA/
CEQA-10

At this time, 59% of the sediment budget of the Carmel River is diverted and stored behind SCD.[3] Over 2.5 million cubic yards of sediment are currently trapped behind the SCD. Under natural circumstances, much of that sediment would have been deposited at the mouth of the Carmel River, replenishing the beach, contributing to a healthy littoral cell and enhancing the lagoon behind the beach and surrounding wetlands. Barry Hecht[4] reported that 95% of the sediment trapped behind the SCD is sand,[5] which could be an important component of the Carmel River State Beach. A subsequent sample of the sediment analyzed by CAW indicated at least 50% of the sediment is of a size suitable for beach sand. There is reason to believe that much of the reservoir sediments would be compatible with the littoral cell sediments. Further testing of the sediments in the reservoir is needed to determine the volume of reservoir sediment that could be considered acceptable for beach or nearshore nourishment.

NEPA/ CEQA-11

The Carmel River Advisory Committee of the Monterey Peninsula Water Management District, and its technical advisory committee have expressed concern over beach erosion at Carmel River State Beach[6] as part of an overall study of the entire Carmel Valley Watershed. Draft Findings of the Monterey County LCP Periodic Review, December 2003, indicate severe beach erosion at the mouth of the Carmel River, and the SCD has been designated a "potential priority site for sediment supply intervention."[7]

There is broad consensus that the beach is subject to long term erosion and sand depletion, and there is clear flooding danger to nearby homes and State Park resources as a result of sand erosion. "The Beach area below Scenic Road – between the State Beach parking lot and Stewart's Cove has experienced degradation (loss of sand) to the point of being increasingly subject to the impact of wave run up, high surf, and high swell action."[8] This north end of the beach has historically been a graded ramp up to Scenic Road, which is at an elevation of about 35 feet. That ramp has lost so much sand that the beach has become a bluff at the edge of Scenic Road, and part of the road is being undermined by wave activity. The nearby houses are also in danger of being undermined, as is the State Beach parking lot located adjacent to this part of the beach. NOAA members of the Carmel River Watershed technical advisory team have suggested that anywhere from 40,000 to 250,000 cubic yards of sand could be strategically placed on the beach in order to minimize the adverse effects that are taking place there now. NOAA estimates this placement would have to take place infrequently, perhaps every 10 years.

The barrier beach at the mouth of the river requires repeated mechanical breaching each winter to avoid the lagoon behind it flooding the nearby houses. The necessity, frequency and characteristics of mechanical breaching are believed to be greatly influenced by the complex and degraded state of the river. "Hungry" or sediment-starved water, in conjunction with increased incision and erosion at certain points of the river appear to have created much more deeply

3 California Beach Restoration Study, January 2002, pg. 7-14.

4 Barry Hecht, Principal, Balance Hydrologics, Berkeley, CA. balancehydro.com.

5 "Sediment Yield Variations in the Northern Santa Lucia Mountains." Barry Hecht. Double Cone Quarterly. Originally published in the Spring 2000 guidebook of the Peninsula Geological Society.

6 Monterey Peninsula Water Management District. Draft Agenda, Regular meeting of the Carmel River Advisory Committee, February 2, 2006.

7 CA Beach restoration Study January 2002 pg. 7-36.

8 Monterey County Carmel River Lagoon Draft Proposed Short Term Management. November 9, 2005. Measures proposed for Winter of 2005-2006 only.

incised river and breaching channels. NOAA has documented a steep decline in channel area since 1929, using aerial photos.[9] It is likely that mechanical breaching in conjunction with the shrinking river channel results in such forceful breaching that sand is carried and pushed off the beach into the near-by deep canyon. The force has other adverse effects, such as flushing juvenile steelhead (indeed, all biota) out of the lagoon before smoltification is complete.[10]

NEPA/ CEQA 12 NEPA/ CEQA-13

The proposed action and alternative 1, dam thickening and dam notching, include sluicing some of the existing and future sediment past the dam into the river flow in an effort to "maintain the existing surface water supply intake in the reservoir, and to ensure fish passage through the accumulated sediment." These plans will not return a substantial portion of the trapped sand to the beach, and what sand there is in these sluiced waters will almost certainly take many years to get to the beach. Alternatives 2 and 3, dam removal and dam re-route and removal, both entail locking up the accumulated sediment permanently using two different disposal methods. In either case, the accumulated sand that would have naturally made its way to the beach would be permanently inaccessible to the beach. Sediments in the waters from upstream of the removed dam would take many years to get to the beach, as well.

NEPA/ CEQA-14 SED-18

Neither the proposed action, nor any of the alternatives, includes a plan for delivering any amount of the sand and gravel currently trapped behind the dam to the beach. The Draft EIR/EIS should include information on changes to downstream morphology from the proposed plan and alternatives, a plan for allowing delivery of some of the accumulated sand to the beach, in a manner that would best benefit the entire riverine system, and in particular, the portion of the river located in the coastal zone. In addition, the Draft EIR/EIS should propose options for environmentally advantageous placement or use of beach compatible sediments for beach nourishment. Several groups are studying the changes to the Carmel River and Carmel River Beach, including the Carmel River Watershed technical advisory committee and Monterey County. Examination of options for riverine morphology and beach and nearshore nourishment can and should be coordinated with these on-going efforts. The Commission staff will need information on the effects of this project on down stream morphology and coastal processes in order to complete our review and determine whether the proposed action, or alternatives, are consistent with Section 30233 (b) and (d) of the California Coastal Act.

TR-10

The proposed construction and improvement of roads for the project and for the alternatives does not include road design that results in the least storm run-off for the life of the road. We would like to see a plan for road design that incorporates those elements that will most effectively allow for the least run-off, and the least concentrated run-off. Access road improvements are assumed to be in service for the life of the dam or the sediment storage areas, and the mitigation should include plans for the same time period, not just for construction.

GEO-1

Page 4-10 of the Draft EIR/EIS describes mitigation for issue GS-4, Soil Erosion, but includes mitigation only "with implementation of standard erosion control methods and BMPs

9 Brian Cluer, NMFS, who carried out the photo survey. Conversation 6/8/06.

10 Larry Hampsen, MPWMD. Conversation 6/8/06.

GEO-1 *on the down slope side* of all construction zones. (Italics added). The Draft EIR/EIS should include soil erosion mitigation and BMPs upslope as well as down slope of construction zones.

SED-19 FI-21 Introducing sediment into the river by sluicing, as in the proposed project and alternative 1, could adversely affect steelhead and their habitat by causing abrasion of the fish, decreased dissolved oxygen, disturbance of streambeds and filling of the interstitial spaces between spawning gravel. Where the sluicing operations are described in the Draft EIR/EIS as mitigation for "short-term, significant and unavoidable" effects, it would appear that the mitigation itself could possibly cause long-term changes in the amount and type of sediment transported from the upper watershed to the lower Carmel River, changes in the sediment composition in the river and changes in the amount of sediment stored in the river below SCD. The sluicing operations proposed require further study to determine their efficiency and long-term effects, particularly with regard to the part of the river that is in the coastal zone.

NEPA/CEQA-15 The Draft EIR/EIS shows that any method of slowly releasing the accumulated sediment into the river in an effort to mimic natural processes would greatly decrease water quality, to the point of endangering the steelhead fishery. It would appear that this option has not been fully explored.

Sediment Disposal

AA-20 Alternatives 2 and 3, dam removal and dam removal and re-route, would excavate and dispose of the more than 2.5 million cubic yards of sediment that are now stored behind the dam. Notwithstanding the beneficial re-use of river sediment, these sediment piles should be held to the same standards regarding "Maximum Credible Earthquake" and "Probable Maximum Flood" as the dam itself. If the debris pile in either alternative should fail during an earthquake or a flood, it would effectively dam off the river again. The project description should account for these standards, their implementation, monitoring and maintenance with regard to the sediment storage piles.

AA-21 In Alternative 3, the sediment storage plan appears to include the possibility of voids in the sediment pile, such as decomposing tree trunks, because not all of the sediment would be excavated to the original streambed, and sediment close to the dam would be piled on top of existing sediment. Large organic items that were originally covered when the dam filled, and later buried when the sediment began to collect, could have had some contact with air, continue to decompose and leave a void. The Draft EIR/EIS should include a plan to eliminate the possibility of voids. It is possible that the stabilizing plan for this pile, i.e., the soil-cement grid, would obviate this danger. If this is the case, the Draft EIR/EIS should explain how the soil-cement grid would accomplish this.

WQ-1 Regarding issue WQ16, Sediment Disposal, on page 4-94, mitigation includes annual monitoring of the sediment pile by CAW *at the end of the rainy season* in order to observe erosion problems. (Italics added). The sediment piles should be monitored occasionally throughout the rainy season so that erosion problems can be mitigated before the maximum impact.

Fisheries

It is well established that dams change the magnitude and timing of river flows, trap sediment, alter river temperatures, and impede or completely obstruct the movement of fish upstream of the dam, contributing to the decline of Pacific salmon and steelhead trout populations in California.[11] In particular, the San Clemente Dam and water diversions on the Carmel River have caused severely adverse effects on the steelhead population, leading to the decline of that population. California Department of Fish and Game (CDFG) points out that "maintaining healthy watersheds and sufficient flows must be our highest priority," when dealing with adverse effects to instream habitat.[12]

The California Coastal Act provides for the protection of marine resources and fisheries in the case of species of biological significance, such as Steelhead, and when the uses of a marine environment have effects on the coastal zone. Section 30230 of the California Coastal Act requires:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 requires:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Section 30234 states:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be*

11 California Beach Restoration Study, January 2002. pg. 7 – 10.

12 "Steelhead Restoration and Management Plan for California" by Dennis McEwan Associate Fishery Biologist Inland Fisheries Division, Sacramento, and Terry A. Jackson Associate Fishery Biologist Inland Fisheries Division, Sacramento Under the Supervision of Forrest Reynolds Tim Curtis Assistant Chief and Senior Fishery Biologist Inland Fisheries Division Inland Fisheries Division. http://www.dfg.ca.gov/nafwb/pubs/swshplan.pdf. Pg. 73.

reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.

Section 30234.5 states:

The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.

The steelhead in the Carmel River (subsequently migrating to coastal waters) are currently under a level of stress that threatens their survival as a healthy, genetically diverse population, due primarily to the adverse effects of water diversion and the interruption of the natural sediment transport in the river by the Los Padres and San Clemente dams. These factors have resulted in a degraded river with insufficient areas suitable for spawning and rearing of juveniles. Extraordinary measures are currently employed on the river to accommodate steelhead, such as a rearing facility, fish ladders and trap and truck operations. These artificial management methods all cause very high mortality rates that threaten the long-term health of the steelhead population. The construction activities of each of the project alternatives would put additional stress on the steelhead population that may reduce the population to a size that threatens loss of genetic diversity and fitness, and could reduce it to a remnant. Genetic diversity is directly correlated with population size, and the maintenance of genetic diversity of this steelhead population is essential for the fitness of the population and its preservation. The CDFG finds:

FI-22

Loss of rare alleles due to reduction in the size and number of populations is another mechanism that can cause a decrease in genetic diversity and fitness...Genetic drift is the change in allele frequencies of a population due to random chance. Genetic drift has its greatest effect on small populations: the smaller the number of breeders, the greater the chance that some alleles will not be represented in the breeding population. A small number of breeders is unlikely to represent the full range of genetic diversity of the population from which they came. This can result in the loss of genetic variability in populations (Futuyma 1986).[13]

The proposed project, as well as the proposed alternatives, will interrupt and reduce flow levels of the Carmel River, particularly during Summer and Fall months when most of the construction will take place, and the river is naturally at its lowest. Among the proposed alternatives, the shortest estimated duration of construction is two years, while the longest is five years. Each alternative would disrupt spawning, rearing and migration, putting great additional stress on an already stressed population. A significant additional reduction in numbers would substantially reduce the viability of the population. The Draft EIR/EIS either should acknowledge that this accumulation of stress will likely cause a reduction in the steelhead population's size, genetic diversity and fitness, or should demonstrate convincingly why such

13 Steelhead Restoration and Management Plan for California, Dept. of Fish and Game, February 1996, pg. 83 and 84.

FI-22

adverse effects will not take place. Further, the Draft EIR/EIS should include an alternative that shows the feasibility of off-stream water storage, in order to maximize flows during the low-flow periods that are most detrimental to the steelhead, as described by NMFS.[14]

Introducing sediment into the river by sluicing, as in the proposed project and alternative 1, could adversely affect steelhead and their habitat by causing abrasion of the fish, decreased dissolved oxygen, disturbance of streambeds and filling the interstitial spaces between spawning gravel. Where the sluicing operations are described in the Draft EIR/EIS as mitigation for "short-term, significant and unavoidable" effects, it would appear that the sluicing itself could possibly cause long-term changes in the amount and type of sediment transported from the upper watershed to the lower Carmel River, changes in the sediment composition in the river and changes in the amount of sediment stored in the river below SCD. The sluicing operations proposed require further study to determine their efficiency and long-term effects, particularly with regard to the part of the river that is in the coastal zone. The Draft EIR/EIS shows that any method of slowly releasing the accumulated sediment into the river in an effort to mimic natural processes would greatly decrease water quality, to the point of endangering the steelhead fishery. It would appear that long-term sluicing of the entire accumulation of sediment has not been adequately explored.

FI-23

In neither section 4.4 Fisheries or Appendix G Carmel Reach Descriptions, does the Draft EIR/EIS adequately describe the fisheries potential in each of the reaches of the Carmel River. Because each reach is quite unique in terms of human impact and habitat conditions, the Draft EIR/EIS should include more detailed fisheries information in narrative form for each reach of the river, including a description of spawning and rearing habitat, current artificial management efforts and estimates of steelhead mortality rates from all causes. The current descriptions of reaches 0 through 3 include good information regarding spawning and rearing potential for steelhead, but descriptions of reaches 5 through 7 include no fisheries information. Descriptions of reaches 8 and 9 include only the barest information regarding fisheries. The Draft EIR/EIS should include a more detailed map of each river reach with current fisheries conditions and short and long term changes expected as a result of the proposed project.

FI-24

FI-25

Mitigation for FI-4 effects—Reservoir Drawdown, and FI-5 effects—Diversion of Carmel River and San Clemente Creek for Construction Purposes, consists of trapping fish above the reservoir and relocating them to "other suitable habitat downstream of the SCD." The Draft EIR/EIS should include a detailed plan for this relocation and an assessment of the risks, given the high mortality rate currently experienced at the Sleepy Hollow Rearing Facility and the existing trap and truck operations, and the low rates of successful rearing on the river as a whole. This plan should be subject to review by NMFS, DFG and USFWS.

NEPA/
CEQA-17

The Commission staff would like to see in the Draft EIR/EIS an alternative that includes and explores the following NMFS recommendations:

14 "Instream Flow Needs for the Carmel River," pg. 29, June 3, 2002, National Marine Fisheries Service, Southwest Region.

NEPA/ CEQA-17

> *Probably the greatest single opportunity for substantially mitigating these impacts would be for Cal-Am to: 1) increase its diversions during seasonal (winter) high flows, 2) adhere to the minimum bypass flows and cumulative diversion rate recommendations, 3) store the diverted winter waters off stream (either Aquifer storage or ponds) for use during periods of low flow, and 4) make concomitant reductions in its unlawful diversions from the Carmel River. With these actions, Cal-Am would greatly reduce its diversions during low flow periods, while offsetting those reductions with additional diversions during the high flows of winter.* [15]

Pagination of Draft EIR/EIS

GEN-10

The pagination of the Draft EIR/EIS makes navigation of the report very difficult. We would appreciate it if the pagination included more than the main section number plus the page number, e.g., 1-x, 2-x, 3-x or 4-x, and included the subsection number as well, e.g., 1.2-x or 2.5-x, etc. In the CD Rom version, it would be helpful if references to other sections, including the table of contents, were hyper linked for easy navigation.

Errata

GEN-11

The Draft EIR/EIS variously refers to Old Carmel River Dam (OCRD) as 1,500 feet (pg. 2-5), 1,700 feet (pg. 3-30), 1,800 feet (pg. 3-40) and 0.5 miles (pg. 4-102) downstream of SCD.

Thank you for the opportunity to comment on the Draft EIR/EIS for the San Clemente Dam Seismic Retrofit Project. We look forward to working closely with you and your staff throughout the consistency certification/consistency determination process for this project. If you have questions, please contact Diane Livia at 415-904-5250, dlivia@coastal.ca.gov. If you have questions about the federal consistency process, please contact Larry Simon, the Commission's federal consistency coordinator, at 415-904-5288.

Sincerely,

Mark Delaplaine
Federal Consistency Supervisor

CC: California American Water, Inc.
Rick Hyman, Santa Cruz District Office, CA Coastal Commission
Mark Johnsson, Headquarters, CA Coastal Commission
Lesley Ewing, Headquarters, CA Coastal Commission
John Dixon, Headquarters, CA Coastal Commission

15 "Instream Flow Needs for the Carmel River," pg. 29, June 3, 2002, National Marine Fisheries Service, Southwest Region.

June 30, 2006

Paula J. Landis, Chief
California Department of Water Resources
San Joaquin District
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Robert Smith, Project Manager
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RE: Comments on San Clemente Dam Seismic Safety Project Draft EIR/EIS

Dear Ms. Landis and Mr. Smith:

Thank you for the opportunity to review and comment on the San Clemente Dam Seismic Safety Project Draft EIR/EIS. The Coastal Conservancy has been working in the Carmel River watershed for many years to preserve and restore the resources of the river and lagoon. Through the Conservancy and other agencies, the State has invested considerable funding in the watershed, and the Conservancy wants to ensure the Seismic Safety Project is undertaken in such a way as to be compatible with existing investment by the State of California. The Conservancy's comments are as follows:

CR-3

1. **Section 1.4 Project Purpose, Need & Objectives.** The fourth stated objective of the project is to "minimize financial impacts to CAW rate payers". The EIR/EIS should provide cost estimates for each of the alternatives, including the costs of ongoing maintenance. Without this information, the alternatives can not be assessed in regards to this objective.

SED-12

2. **Carmel River Lagoon.** The EIR/EIS should examine the current effects of dam sediment retention on the dynamics of the Carmel River lagoon, and then examine the impacts of sediment releases under the different alternatives.

FI-11

3. **Old Carmel River Dam** (OCRD). The proposed project and all alternatives propose notching the OCRD to improve fish passage. This will not provide complete and unimpaired passage for fish at this location. Complete removal of the OCRD should be included as

FI-11, con't

mitigation for ongoing fish impacts under the proponent's proposed project and Alternative 1.

AA-19 NEPA/ CEQA-4

4. **Alternatives considered**. The EIR/EIS analyzes two alternatives for dam removal – one which involves complete removal of all of the accumulated sediment from the area and one which would re-route the Carmel River to isolate the accumulated sediment. The EIR/EIS should also evaluate the potential for stabilizing the sediment along the banks of the Carmel River and allowing a new conveyance channel to be cut along the original stream thalweg, or some other alignment, through the reservoir. The approach being used for sediment stabilization on the Elwha Dam Removal project could serve as a model.

GEN-6

5. **Learn from experience**. The EIR/EIS does not refer to any of the literature on dam removal. If the dam removal literature was reviewed in developing the alternatives, it should be cited. If it was not reviewed, then it should be and the alternatives should be revised based on the experience of earlier work and research.

GEN-7

6. **Alternative 3, Issues GS-5: Diversion Bypass Blasting**. As stated in the EIR under Alternative 3, blasting to create the diversion bypass channel will "irretrievably alter the landscape by removing approximately 145 acre-feet of rock…" (p. 4-14). Irretrievably altering the topography in such a substantial way should be a significant impact.

7. **Alternative 3 Impact Analysis**. The impact analysis for Alternative 3 does not adequately describe or evaluate the hydrology and water resources impacts. A list of additional issues that should be evaluated include:

HY-2

   a. Capacity of San Clemente Creek to transport the water, sediment, and woody debris diverted from the Carmel River into the creek. Analysis should evaluate things such as volume and velocity at peak flows, potential for bank or channel scour as a result of changed hydrology, potential for log jams, etc.

HY-3

   b. Changes to channel bed geometry in San Clemente Creek – aggrade or degrade the creek bed. If the creek bed degrades, how far upstream would this degradation be expected to migrate?

HY-4

   c. Changes in groundwater elevation along the abandoned portion of the Carmel River channel.

FI-12

   d. In the Fisheries section, the amount of spawning and/or rearing habitat that would be permanently lost in the abandoned portion of the Carmel River should also be analyzed.

Depending on the findings of the hydrology and water resources impact analysis, additional impacts may need to be analyzed including:

FI-13

   e. Long-term impacts to spawning and/or rearing habitat as a result of changes in San Clemente Creek hydrology and channel morphology.

TE-8

   f. Impacts to riparian habitat along San Clemente Creek as a result of channel bed or bank erosion caused by changes in hydrology.

TE-9

g. Impacts to the wetland and riparian habitats if the groundwater elevation drops along the reach of the Carmel River that is to be abandoned.

GEN-7

8. **Alternative 2, Water Quality Impact Analysis**. Where does this section start? Page 4.93 appears to be in the middle of the discussion, but there is no heading to mark the beginning.

9. **Issue FI-8 Upstream Fish Passage.** The impacts of the proponent's proposed project and Alternative 1 on upstream fish passage are not adequately described in the document. Both alternatives are described as beneficial to upstream fish passage. However, there will be permanent long-term impacts to upstream fish passage under these alternatives. Specifically:

NEPA/ CEQA-5

a. Upstream adults:
   i. No matter how well a fish ladder is designed, there is always a subset of the population that will be blocked and almost all of the population will experience some delay.

FI-14

   ii. The proposed fish ladder will have delay by design for sluicing operations. The significance of the delay has been mischaracterized by a) comparing it to natural delays with which any stock has co-evolved and b) citing studies for long-run salmonids in the more constant flows of the Columbia river system. Delay is unlikely to be as significant to long-run fish in steady flows as it is to Carmel steelhead. In the reservoir, upstream movement is likely to be impacted despite sluicing operations (see SOMP comments below)

SED-13
FI-15

   iii. The potential delay on fish passage may be significantly underestimated. Page 3-35 of the document acknowledges that "significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone." For this reason, the EIR/EIS anticipates the need for dredging the channel every 3 years. Based on this, it seems that passage could be blocked for significantly longer periods of time than are analyzed in the EIR/EIS if dredging is needed to clear the channel.

NEPA/ CEQA-6

b. Downstream juveniles:
   i. The proponent's proposed project should improve downstream passage at the dam over current conditions, but passage through the sluice or over the dam in spillway will still have an impact.

FI-16

   ii. Passage through the reservoir is likely to be poorer (higher water temperature, decreased cover, increased predation) in perpetuity under sluicing operations than it was with a deep reservoir just a few years ago and certainly poorer than a renatuaralized stream reach.

SED-14
FI-17

10. **Issue FI-9 Sediment Impacts to Downstream Channels from Sluicing, Dredging o Sediment Transport Downstream.** The impacts to steelhead from sediment caused by sluicing operations would be significant and permanent. The mitigation discussion states that "sluicing operations would begin with short duration sluices and impacts would be thoroughly evaluated to determine effects on downstream channels, habitats, and fishes." More information needs to be provided about regarding this intended course of action. What will be done to keep the upstream channel clear if short duration sluices are not sufficient to

SED-14 FI-17, con't

do so? What level or type of downstream impact would trigger a change in the SOMP, given that the impact is already identified as significant? If downstream impacts are such that different course of action is warranted, what would the alternative approach be to dealing with sediment in the reservoir?

NEPA/ CEQA-7

11. **Alternative 1, Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration.** The determination states that the impact is significant, unavoidable, and long-term; however, the impact discussion states that the impact is temporary. These two statements are inconsistent.

TE-10

12. **Section 4.5 Vegetation and Wildlife, All impact discussions**. The determination of impact significance should include a temporal element as it does in the other impact discussions. That is, impacts that are temporary, lasting through part or all of the construction period, should be differentiated from those that will extend beyond the construction period.

TE-11

13. **Issue VE-4: Indirect Effects on Native Vegetation**. The fifth paragraph of the mitigation section on page 4-194 addresses revegetation of cut slopes, fill areas, etc. It states that, "If non-natives are included in the seed mix, these would be species known not to be invasive or persistent." Non-natives should not be included in the seed mix under any conditions.

GEN-8

14. **Vegetation and Wildlife Impacts**. The impact of sediment released by sluicing operations on downstream aquatic habitat and aquatic fauna are not analyzed and should be. This would be a ongoing, permanent impact and could be significant.

WET-1

15. **Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S**. The mitigation for this impact states that lost acreage would be replaced through either or both of two options: 1) restoration of other wetlands at a 3:1 ratio; and/or 2) conservation of existing wetlands at a 1:1 ratio. If only option 2 is used, it would result in a net loss of wetlands which would not be sufficient mitigation to make the impact less than significant. The mitigation should be structured so there is no net loss of wetland acreage. It is unlikely that created or restored wetlands will function at as high a level as the existing wetlands that will be permanently lost. Therefore, conservation of existing wetlands may be suitable as a way to augment wetlands loss that is also mitigated through creation or restoration of wetlands in order to make up for the functional loss. But it is not sufficient as mitigation on its own.

WET-2

16. **Alternatives 1 and 3, Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S**. It is not clear how loss of Other Waters of the U.S. would be mitigated.

NEPA/ CEQA-8

17. **Section 5.5 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity**. One of the project purposes stated in Section 1.4 is to "provide fish passage at the dam." Any option that leaves the dam in place will have impacts on passage of adults, juveniles and kelts that cannot be fully mitigated. As such, the last paragraph of Section 5.5 is understated and incomplete. See comment on Impact FI-9 Upstream Fish Passage for more details.

GEN-9

18. **Appendix D**. The figures referred to in the memo should be included.

19. **Appendix J, Sluicing Operations and Maintenance Plan.**

FI-18
SED-15

a. Based on the information provided in Appendix I, the Sluicing Operations and Maintenance Plan (SOMP) outlined in Appendix J does not seem sufficient to maintain a viable channel from the exit of the fish ladder to the reaches above the reservoir. The impact discussion for Issue FI-9 states that sluicing operations would occur over a 1 to 4 hour event when flow is over 300 cfs and increasing. According to Section 3.3 of Appendix I, the incised channel created by each sluicing event could be filled back-in within a few days. Given the unpredictability of stream flows in the river, sluicing will not provide a sufficient guarantee that there will be an adequate channel for fish passage from the exit of the fish ladder to the reaches above the river. The proponent's proposed project and Alternative 1 must develop a more reliable way to insure fish passage past the ladder.

FI-19
SED-16

b. The sluicing operations presented for the proponent's proposed project and the Alternative 1 are untested and lack specificity. In addition, the plan is based on migration records of an already residual run and an idealized world of average hydrology, single storm events and steady state conditions. Real operations, with the vagaries of real-time hydrology, sediment movement, debris and difficulty in access/operation during storm are likely to overwhelm the flexibility of the chosen system. The proponent's project and Alternative 1 need to define an alternate approach that would be used if sluicing operations are not adequate maintain fish passage without significant impacts on fish or downstream reaches.

FI-20
SED-17

20. **Operations and Maintenance, Proposed Project and Alternative 1.** Both the proponent's proposed project and Alternative 1 will require permanent ongoing maintenance of the fish ladder and the sediment behind the dam (through sluicing or other methods) to mitigate for impacts of leaving the dam in place. How will this maintenance be guaranteed? Will there be a maintenance endowment?

Again, thank you for opportunity to comment. If you have questions regarding any of these comments or the Conservancy's involvement in the Carmel River watershed, please contact me at tchapman@scc.ca.gov or 510-286-0749.

Sincerely,

Trish Chapman
Project Manager

California Sportfishing Protection Alliance

June 28, 2006

Ms. Charyce Hatler
Department of Water Resources, San Joaquin District
[illegible] East Shields Avenue
Fresno, CA 93726-6913

Mr. Bob Smith
U.S. Army Corps of Engineers, San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Re: San Clemente Dam Seismic Safety Project draft Environmental Impact Report/Statement

Dear Ms. Hatler and Mr. Smith,

The California Sportfishing Protection Alliance submits the following comments on the California Department of Water Resources' and the U.S. Army Corps of Engineers' *San Clemente Dam Seismic Safety Project Draft Environmental Impact Report/Statement* (DEIR/S) of April 2006. We appreciate this opportunity to comment on this project and request careful consideration of these comments as well as those submitted by other organizations and individuals.

It has been 26 years since the DWR's Department of Safety of Dams (DSOD) first began to look into the long-term safety of the San Clemente Dam and 16 years since an engineer hired by Cal-Am determined that the dam could fail in both MCE (Maximum Credible Earthquake) and PMF (Probable Maximum Flood) conditions.

SA-5 Meanwhile, human life, especially the Camp Stephanie community directly downriver, remains in danger from dam failure resulting from an earthquake with a magnitude as low as 5.5. In addition, the dam continues to adversely affect environmental values of the Carmel River watershed.

AS/O-28 We urge you to select Alternative 3, river reroute and dam removal, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead and California red-legged frog.

AS/O-29 We also find that leaving the dam structure in place (Proponent's Proposed Project, dam thickening, and Alternative 1, dam notching) will result in significant and ongoing impacts to the environment and will not resolve the safety issue, but only prolong the burden on the ratepayers of maintaining and ultimately removing the structure at some point in the future.

SED-50 Furthermore, the technical design for "sluice gates" required for both the Proponent's Proposed Project (PPP) and Alternative 1, is inherently flawed for several reasons. First, SED-50 relying on the sluice gates as the primary method of sediment management will lead to significant unintended consequences caused by ongoing release of the sediments to prevent future build-up of sediment above the dam structure. The continuous release of sediment will result in impacts to water quality, will continue to cause degradation of habitat downstream of the dam site, and will assure that present trends in scouring just below the dam structure will also continue to occur.

FI-9 Both the PPP and Alternative 1 also require a fish ladder to allow fish passage above the dam structure. Unfortunately that will also threaten survival of migrating steelhead unable to navigate safely through the area directly above the sluice gate, causing fish to become caught up in the downstream flow, and back downstream through the sluice gate.

AS/O-30 The fish ladder design and the flawed sluice gate design would most probably result in a Jeopardy Opinion under the Endangered Species Act. This will delay the start of a project indefinitely. For these reasons, it is clear that Alternative 3 is the most viable and expedient alternative that will assure the long-term safety of the residents of the Carmel River Valley.

AS/O-31 We find that this DEIR/S is adequate if and only if the Lead Agencies select Alternative 3 as the preferred alternative for the following reasons:

First, Alternative 3 should be the preferred alternative in the Final EIR/S because it is the best technical design and most expedient solution that assures the safety issues are resolved permanently.

Second, the Proponent's Proposed Project, dam thickening, runs the risk of drastic unintended consequences and will continue to compromise safety in the future as the dam structure continues to degrade over time, and will also result in cumulative impacts to the environment under the Endangered Species Act, the Clean Water Act, the Porter Cologne Water Quality Act, NEPA and CEQA. It would also most probably result in a Jeopardy Opinion by NOAA Fisheries and USFWS (Section 7 Consultation) delaying the project.

Third, the river reroute and dam removal alternative provides a technically superior and viable solution in a shorter time frame than either notching or dam thickening, assuring that the risk to human life and impacts to federally designated "threatened" species are reduced or completely eliminated as soon as possible.

Fourth, the public has clearly voiced its support for the river rerouting and dam removal alternative as demonstrated by public comments at the DWR/USACOE public hearing for the Draft EIR/EIS held in Carmel Valley on May 23rd and reported in the media (see attachment, front page article "Carmel River reroute gets solid backing", Monterey Herald, May 24, 2006).

CSPA supports selection of Alternative 3, river reroute and dam removal, as the preferred alternative because it is the only one that *guarantees* a final solution for long-term safety and also protects the environment and reduces adverse impacts to water quality, and "threatened" steelhead and California red-legged frog.

GEN-39

Furthermore, we find that the Draft EIR/S fails to fully assess the impacts of the Proponent's Proposed Project (dam thickening), Alternative 1 (dam notching) or Alternative 2 (dam removal and transport of sediment to a nearby canyon), and therefore the Draft EIR/S is inadequate for selecting any of the other alternatives.

NEPA/ CEQA-34

The Final EIR/EIS should also identify Alternative 3 as the Least Damaging Project Alternative. Alternative 3 removes the barrier to fish passage, maintains red legged frog habitat, and prevents uncontrolled release of accumulated sediment downstream.

Both the Proponent's Proposed Project and the notching alternative would continue to have adverse impacts on fish passage. In addition the sluicing required for both of those alternatives would interfere with use of the fish ladder. Furthermore, both the PPP and the notching alternatives would lead to uncontrolled releases of accumulated sediments in high flow events. Therefore neither of these qualifies as the Least Environmentally Damaging Project Alternative.

AS/O-32

CSPA will actively support the selection and implementation of Alternative 3, and will also continue to advocate for support by interested groups in the community and throughout the state for implementation of Alternative 3.

Thank you,

Jim Crenshaw, President

CARMEL RIVER STEELHEAD ASSOCIATION

CARMEL RIVER STEELHEAD ASSOCIATION
P.O. BOX 1183 • MONTEREY, CALIFORNIA 93940

SAN CLEMENTE DAM SEISMIC RETROFIT PROJECT

Comments on San Clemente Environmental Impact Report:

There are many dams in California that will soon be as worthless as San Clemente. The division of safety of dams, as well as the rest of responsible agencies of government, need to learn how to safely and cheaply remove dams and restore the function of their streams and rivers, including rapid restoring of historic bed-load throughout the riverine system.

San Clemente Dam should be removed. It is on a navigable stream. It is unsafe and virtually useless. The public has a legal right to boat and otherwise recreate on this part of the Carmel River and any attempt to buttress or maintain San Clemente or the old Carmel Dam needs to consider the interference of recreational values on this part of the river.

REC-5

It is obvious from review of the EIR that a 10ft. diameter sluice gate operated as described in the operational plan will not protect threatened steelhead from "take" (death of a critical part of the population hindering recovery and leading to further decline toward extinction).

FI-111

The 10ft. gate is too small to have the desired sediment management effect and allow safe passage. It has a narrow window of effectiveness. It would not operate well at flows above 600 cfs. because of backwater effects. Timing of operation is critical and costs of keeping a gate operator and a fish ladder operator present doesn't seem realistic knowing how dams have been operated in this state. Many times the debris and sediment flows will clog and jam this small sluice gate as well as the fish ladder. The expense and disruption of shutting down and shoveling out the 60 plus bays of the fish ladder multiple times during wet years, has not been evaluated.

FI-111

The fact that steelhead frequently restart their migration on the rising limb of the hydrograph makes any operation of a sluice gate likely to wash back and probably kill migrating Steelhead resting in the reservoir or pooling below the dam. A "take" (the death of a critical part of the population hindering recovery and leading to further decline toward extinction) of threatened species would be expected.

I have contacted fish passage experts in Alaska, Washington, Oregon and California and could find no one who knew of a fish ladder functioning successfully on a reservoir that is 90% full of sediment. Even light sediment will tend to settle in the calm resting areas designed into a fish ladder, disrupting or blocking passage.

SED-66 The EIR mentioned that there might be a temptation to reduce the flow to the fish ladder thereby reducing the need for more frequent sluicing. This would have a negative effect on fish passage. Large sediment sluiced to the plunge pool may pile up and block access to the fish ladder. This possibility was not examined.

GEN-40 The fish ladder on the old Carmel River Dam is located on the south end not the north.

SED-67 Sediment removed from San Clemente should be available for sorting and reintroduction into the Carmel River for river habitat, bank stabilization, and beach nourishment. Sediment storage that allows for mitigation of the long term damage caused by the dam should be considered in all options.

FI-112 Any new diversion point, or old one for that matter, needs to have a properly sized, durable and functioning fish screen.

AA-80 Any sediment storage should be done in as natural a way as possible with the least amount of Geo-grid and concrete, while appreciating the possibility of earthquakes.

HY-17 The hydraulics of putting a river into a creek channel needs analysis, not only channel width and depth needs consideration but the number and sharpness of bends are a concern. The Carmel River carries heavy loads of wood at times. We don't need a log jam dam.

TE-37 The frogs that inhabit the San Clemente flood plain have taken advantage of a man made situation. One can build new depressions in the stored sediment and line them with Hypolon, thus maintaining some of this flood plain frog habitat.

CONCLUSION:

FI-113

It is very important to understand that there are no areas of the Carmel River or its tributaries below San Clemente Dam that have spawning habitat and perennial flow. This means that if San Clemente fish ladder does not function, the offspring of steelhead forced to spawn on the suitable habitat will be dried up and lost. To put it simply a failed retrofit will cause the extinction of steelhead on the Carmel River.

NEPA/
CEQA-35

The impact report determined that all options had the same basic impact. We believe that this is not so and that leaving the dam in place has multiple impacts that would hinder recovery and lead to extinction over time.

AS/O-33

San Clemente Dam must be completely removed. Any options involving sluice gates and fish ladders will "take" (death of a critical part of the population hindering recovery leading to further decline and toward extinction) of steelhead. The long term costs, i.e. forever of operation, maintenance, management and liability of a semi-abandoned dam are huge. The risk of earthquakes and flood liability still remain. The only civilized and sane option is complete removal.

Roy Thomas Pres
CRSA.

United State of America
Before the US Army Corps of Engineers
State of California
Before the California Department of Water Resources

San Clemente Dam Seismic Retrofit Project

Carmel River Watershed, California

In the Matter of Draft Environmental Impact Report and Environmental Impact Statement by the California Department of Water Resources and the United States Army Corps of Engineers

Comments by the Carmel River Steelhead Association

The California Department of Water Resources and the United States Army Corps of Engineers have prepared a draft Environmental Impact Report and Environmental Impact Statement for the proposed San Clemente Dam Seismic Retrofit Project. The deadline date for submitting comments is July 3, 2006.

The Carmel River Steelhead Association have been involved in conducting on-site rescue activities in the protecting federally listed steelhead trout in the Carmel River Watershed for the past 20 years or more. The Carmel River Steelhead Association has also been heavily involved with state and federal agencies for many years attempting to secure mitigation and protection measures to protect the people's public trust steelhead trout resources of the Carmel River and its tributaries. Consequently the Carmel River Steelhead Association has significant standing in the protection of the people's steelhead trout resources of the Carmel River Watershed.

The Carmel River Steelhead Association has reviewed the draft EIR/EIS for the proposed project. The following are the comments of the Carmel River Steelhead Association:

Alternatives – Remove the San Clemente Dam

AL-35 One of the most reasonable alternatives that should have been included in the draft EIR/EIS under CEQA is the removal of San Clemente Dam because the dam is an obstruction to the navigable waters of the Carmel River. GEN-41 Secondly, when a dam owner builds a dam on a public waterway, it should be understood that the dam would be removed from the public waterway when the dam becomes obsolete. In the case of the San Clemente Dam, it was built in 1921 and the reservoir has become filled with sediment. The San Clemente Dam and Reservoir is obsolete. It is unreasonable and not in the public interest for any dam owner or water diverter in California to built a dam and not be responsible for it when the dam's life has ended. The duty and responsibility of the removal of the San Clemente Dam is that of Cal-American Water Company, and not that of the public or public agencies.

NEPA/ CEQA-36

Consequently, the EIR/EIS is deficient because the document failed to disclose, evaluate, and include the removal of the San Clemente Dam as a reasonable alternative that would be in the public interest and reopen the navigability of the river for fish and boating.

Removal of Sediment From San Clemente Reservoir and Dam

SED-68

Slucing sediment downstream in the Carmel River adversely affects water quality, steelhead habitat, macro invertebrate habitat, other aquatic resources, et al. California-American Water Company must comply with state water quality statutes in California like every other citizen and party. The sluicing of sediment from San Clemente Reservoir and Dam into the Carmel River must be prohibited at all times by the US Army Corps of Engineers, State Regional Water Quality Control Board, State Water Resources Control Board, Department of Fish and Game, NOAA Fisheries et al. Cal-American Water Company must remove all sediment by mechanical methodologies to protect the federally protected steelhead trout and their habitat, aquatic environment and water quality of the Carmel River below the San Clemente Dam to the Pacific Ocean, including the Carmel River Lagoon.

Fish Ladder

FI-114

San Clemente Dam has a fish ladder. However, the draft EIR/EIS did not include data and information that the fish ladder allows for steelhead trout species to effectively use the fish ladder and migrate upstream safety at all times when the reservoir is choked with sediment.

FI-115

Discovery work conducted by the Carmel River Steelhead Association shows that fish ladder on reservoirs that are filled with sediment do not work effectively because the fish ladder becomes choked with sediment and becomes non-operational for fish passage.

The draft EIR/EIS must include data and information that shows the fish ladder was effectively working and allowed all steelhead trout species to migrate safety upstream to spawning and rearing habitat in the upper Carmel River. Consequently, there must be evidence in the draft EIR/EIS that provides proof to the public that the fish ladder provided passage at all times and allowed for safe passage of all federal protected steelhead trout to the upper river when the reservoir is filled with sediment.

Case law provides for monitoring under CEQA. The draft EIR/EIS must include a Steelhead Ladder Monitoring Plan for the fish ladder during the post project period for the life of the project so that the public can be assured the fish ladder is working at all times and that the fish ladder is allowing safe passage for steelhead to migrate upstream above the dam. However, if the most reasonable alternative was selected and the dam was removed, the defective fish ladder would not be necessary.

Downstream Recruitment of Spawning Gravel

FI-116
SED-9

It is well known that dams prevent the downstream recruitment of spawning gravels for downstream spawning of resident and anadromous fisheries. In this case the San Clemente Dam is preventing the downstream recruitment of spawning gravel in a significant large portion of the streambed of the Carmel River that has adverse impacts to spawning habitat of federally protected steelhead trout species in the lower Carmel River.

NEPA/
CEQA-37

CEQA requires mitigation measures that would prevent the dam from obstructing the downstream recruitment of spawning habitat. CEQA does not allow for trade offs.

NEPA/
CEQA-38

Removal of the San Clemente Dam would prevent the obstruction of the downstream recruitment of spawning gravel for federally protected steelhead trout that would allow steelhead trout to spawn in the lower Carmel River. However that reasonable alternative was not disclosed and included in the draft EIR/EIS as an alternative because the draft EIR/EIS placed Cal-American Water Company finances above the protection of the people's public trust steelhead resources. That solution may be applicable with NEPA, but CEQA requires the protection of the steelhead with no tradeoffs. We reference the provisions of the California Environmental Quality Act and its Guidelines.

FI-117
SED-70

The draft EIR/EIS must include a Steelhead Trout Gravel Recruitment Plan for the lower Carmel River below San Clemente Dam in the event the removal of the dam is not ordered by any regulatory state and federal agency.

Water Rights

WAT-14

The water right permit(s) that allows Cal-American to store and divert water from San Clemente Dam and Reservoir must be cancelled or amended by the State Water Resources Control Board because San Clemente Dam is not being operated as it has in the past because of the failure of the dam to store the state's water. The California State Water Resources Control Board is the authority in water rights matters and not the Department of Water Resources, the Army Corp of Engineers, or Cal –American Water Company. This water rights matter must be disclosed, discussed, and mitigated in the final EIR/EIS.

Cumulative Impacts

NEPA/
CEQA-39

The draft EIR/EIS under CEQA must include a Cumulative Impacts Analysis that discloses, evaluates, and mitigates all of the cumulative effects to federally protected Steelhead Trout and their habitat in the Carmel River resulting from the San Clemente Dam and all other diversions by Cal-American Water Company.

The draft EIR/EIS does not include a cumulative impacts analysis of the cumulative effects to federally protected steelhead trout and their habitat in the Carmel River Watershed resulting from Cal-American's diversions of the state's waters of the Carmel River Watershed (Surface diversions and underflow diversions).

"A draft EIR must discuss "cumulative impacts" when they are significant. And even when they are not deemed significant, document should explain the basis for that conclusion. (Citizens to Preserve the Ojai v. County of Ventura (2d Dist. 1985) 176 Cal.App.3d 421, 432 [222 cal.Rptr. 247].)"

""Cumulative Impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." "Individual effects may be changes resulting from a single project or a number of separate project." "The cumulative impacts from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period if time." See CEQA Guidelines. NEPA sometimes equate "cumulative effects" with "synergistic effects." (City of Tenakee Springs v. Clough (9th Cir. 1990) 915 F.2d 1308, 1312; Sierra Club v. Penfold (9th Cir. 1988) 857 F.2d 1307, 1320-1321; and Natural Resources Defense Council v. Administrator (D.D.C. 1978) 451 F.Supp. 1245, 1258.)"

NEPA/ CEQA-39

"A legally adequate "cumulative impact analysis" thus is an analysis of a particular project viewed over time and in conjunction with other related past, present, and reasonably foreseeable probable future projects whose impacts might compound or interrelate with those of the project at hand. Such an analysis "assesses cumulative damage as a whole greater than the sum of its parts." (Environmental Protection Information Center v. Johnson (1st Dist. 1985) 170 Cal.App.3d 604, 625 {216 Cal.Rptr. 502].) "Such an analysis is necessary because "' [t]he full environmental impact of a proposed.......action cannot be gauged in a vacuum."' (Whitman v. Board of Supervisors (2d Dist. 1979) 88 Cal.App.3d 397, 408 [15] Cal. Rptr. 866], quoting Akers v. Resor (W.D. Tenn. 1978) 443 F.Supp. 1355, 1360.) "' [A]n agency may not..........[treat] a project as an isolated 'single shot' venture in the face of persuasive evidence that it is but one of several substantially similar operations.........To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster."' (Whitman, supra, 88 Cal.App.3d at 408 [15] Cal. Rptr. 866], quoting Natural Resources Defense Council v. Callaway (2d Cir. 1975) 524 F.2d 79, 88.)"

" Unless cumulative impacts are analyzed, agencies tend to commit resources to a course of action before understanding its long-term impacts. Thus, a proper cumulative analysis must be prepared "before a project gains irreversible momentum." (City of Antioch v. City Council (1st Dist 1986) 187 Cal.App.3d 1325, 1333 [232 Cal. Rptr. 507], citing Bozung v. Local Agency Formation Commission (1975) 13 Cal.3d 263, 282 [118 Cal. Rptr. 249].)"

"One court has described as follows the danger of approving projects without first preparing adequate cumulative impact analyses:"

" The purpose of this requirement is obvious: consideration of the effects of a project or projects as if no others existed would encourage the piecemeal approval of several projects that, taken together, could overwhelm infrastructure and viral community services. This would effectively defeat CEQA's mandate to review the actual effects of the projects upon the environment. (Las Virgenes Homeowners Federation, Inc. v. County of Los Angeles (2d Dist. 1986) 177 Cal.App.3d 300, 306 [233 Cal Rptr. 7611].)."

NEPA/
CEQA-39

"[I]t is vitally important that an EIR avoid minimizing the cumulative impacts. Rather, it must reflect a conscientious effect to provide public agencies and the general public with adequate and relevant detailed information about them. A cumulative impact analysis, which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decision maker's perspective concerning the environmental consequences of a project, the necessity for mitigation measures, and the appropriateness of project approval. An inadequate cumulative impact analysis does not demonstrate to an apprehensive citizenry that the governmental consequences of its action. (176 Cal.App.3d at 431 [222 Cal. Rptr. 2471, quoting San Franciscans for Reasonable Growth v. City and County of San Francisco ("SFRG 1") (1st Dist. 1984) 151 Cal.App.3d 61, 79 [198 Cal Rptr. 634].)"

The Carmel River Steelhead Association requests the Department of Water Resources to follow the law under CEQA and prepare a Cumulative Impacy Analysis and include that cumulative impact analysis in the final EIR/EIS.

Carmel River Steelhead Management Plan

FI-118

The San Clemente Dam obstructs the navigable waters of the Carmel River for fish and public boating. Clearly Cal-American has a public duty to protect federally listed steelhead trout in the Carmel River from it's water diversions from the Carmel River Watershed. Consequently it would be reasonable, in the public interest, and in the best interest of the federally protected Steelhead Trout to require Cal-American Water Company to prepare a Carmel River Steelhead Plan that would significantly improve the steelhead resources in the Carmel River Watershed to the Pacific Ocean, including the Carmel River Lagoon. Said Management Plan must be included in the final EIR/EIS.

Thank you for the opportunity to submit comments. A hard copy of the final EIR/EIS would be appreciated Please forward to Dr. Roy Thomas and Bob Baiocchi at the addresses shown below.

Respectfully Submitted

Bob Baiocchi
For: Carmel River Steelhead Association
P.O. Box 1790
Graeagle, CA 96103
E-Mail Address: baiocchi@psln.com

Dated: June 28, 2006

cc: Ms. Charyce Hatler
California Department of Water Resources
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726

Mr. Robert Smith
Project Manager
US Army Corps of Engineers
333 Market Street
San Francisco, CA 94105

Dr. Roy Thomas
Carmel River Steelhead Association
26535 Carmel Rancho Blvd.
Carmel, CA 93923

Mr. Steve Edmondson, Supervisor
NOAA Fisheries
Via E-Mail

Mr. Michael Aceituno, Supervisor
NOAA Fisheries
Via E-Mail

Interested Parties (Via E-Mail bcc)

2)

Carmel Valley Association P.O.
Box 157 Carmel CA 93924

June 21, *2006*

US Army Corps of Engineers
San Francisco District
Attn: Robert Smith
333 Market St., 8th floor
San Francisco CA, 94105-2197

Dear Mr. Smith:

<u>*San Clemente Dam - Draft EIS*</u>

The Carmel Valley Association, with over 800 members resident in Carmel Valley, has the following comments on the DEIS:

AA-11

1) The major reason for this study is the potential damage to the dam by an earthquake. However, under Alternative #3, *with the dam removed and the Carmel River diverted into San Clemente Creek, the mass of sediment now behind the dam would be left as a free-standing block. A major earthquake could surely destabilize and set in motion this mass of sediment, more easily than under the No Action alternative. The EIS needs to address this contingency.*

SED-5

3) The mass of sediment behind the dam, accumulated over many years, may contain toxic materials. When this sediment is moved or disturbed during the project, such toxics could contaminate Cal-Am's municipal water supplies.

We recommend a program to drill and sample the sediment pile to evaluate the possibility of such contamination.

Thankyouforyourattenilon,
'irector, CV A

Robert Greenwood, D

Paula

A.G. DAVI
REAL ESTATE

May 25, 2006

Ms. Paula Landis
California Department of Water Resources
San Joaquin District
3374 E. Shield Ave. Room A-7
Fresno, California 93976

Subject:
San Clemente Dam
Carmel Valley
Monterey Peninsula Water Management District
California American Water Company

Dear Ms Landis:

I am writing to you regarding the proposal relating to the San Clemente Dam in Carmel Valley, California. As you know' the Monterey Peninsula and surrounding areas has inadequate water storage facilities, that the State of California has mandated this problem be resolved and that California American Water Company reduce its pumping from the Carmel River, which is and has been our primary source of water for hundreds of years.

The San Clemente Dams original water capacity was 2,000 acre-feet and now is only 100 acre-feet. The Dams retrofitting and refilling to 2,000 acre-feet would go a very long way to solving the excess pumping and our water dilemma. Our problem, as I understand it, is not the availability of water it is the ability to store excess water, which now flows to the sea.

WAT-8 Although the cost may be high, the need is even higher. The Monterey Water Management District was formed several decades ago for the purpose of developing a solution to the water problem. They have spent hundreds of millions of dollars on programs, studies, and water conservation policies; however, they have been unsuccessful in developing a serious storage source.

Environmentalists have successfully blocked every plan for long-term storage that has been proposed. While I support protecting the environment, I also believe that the needs of the public should be equally protected. The Monterey Peninsula Water District probably has one of the highest water rates in the country and I understand substantial increases will be forthcoming.

The San Clemente Dam is an opportunity to create a major water storage facility. This is an existing facility the community has accepted and to retrofit the dam, I believe, should be given very serious consideration.

While rerouting the river for the fish and preserving the frogs habitat is important, it is equally important and the responsibility of the State of California to provide leadership to help resolve this storage problem. Remember it was the State of California that mandated the reduction in pumping from the Carmel River that resulted in a water problem for the community being served.

1180 Washington Street
P.O. Box 2350
Monterey, CA 93942
Phone 831.373.2222
Fax 831.373.3536
Email agdavi@agdavi.com
www.agdavi.com

For example, currently there are numerous owners of lots of record in the district that are unable to obtain water for their properties. So lot owners continue to pay property taxes without the use of their property. Also changes of use in the commercial properties that result in increased water use are prohibited. Commercial property owners experience longer vacancy periods and businesses have limited expansion opportunities.

CR-2 I recognize that the cost of retrofitting will be high. However, if the river is diverted, silt removed, fishes and frogs protected and ultimately the dam is removed, we the rate payers will foot the bill by increased rates to pay for the aforesaid without the benefit of any improvement in our water supply.

The primary issue here is the need for an adequate water supply to service the needs of the people living in the communities. So who is in front, the cart or the horse?

Once again I urge you to give this very serious consideration. Once the dam is gone this potential storage facility will be lost forever.

Cordially,

Anthony G. Davi, Sr.
Citizen and Tax Payer

CC: Robert Smith, U.S. Army Corps of Engineers, San Francisco District

June 6, 2006

Ms. Charyce Hatler
California Department of Water Resources, San Joaquin Office
3374 East Shields Avenue
Fresno CA 93726-3323

Subject: San Clemente Dam

Dear Ms. Hatler,

SED-4 David Zaches raised the question about possible toxins in the sediment proposed for use in the old river channel. The bottom layers of sediment have been there for many years; who knows what was used on the land during the 1920's and 30s? Have core samples been taken to better understand what may be there?

TE-6 To make red legged frog habitat, will it be similar to wetlands, even with the grouting? What are the chances that, even if the sediment is thoroughly mixed before spreading, toxin levels will not affect any frogs which takes up residence there?

John W. Fischer

John W. Fischer
230 Grove Acre Ave., #313
Pacific Grove, CA 93950-2356

June 6, 2006

Ms. Charyce Hatler
California Department of Water Resources, San Joaquin Office
3374 East Shields Avenue
Fresno CA 93726-3323

Subject: San Clemente Dam

Dear Ms. Hatler,

SED-4 David Zaches raised the question about possible toxins in the sediment proposed for use in the old river channel. The bottom layers of sediment have been there for many years; who knows what was used on the land during the 1920's and 30s? Have core samples been taken to better understand what may be there? TE-6 To make red legged frog habitat, will it be similar to wetlands, even with the grouting? What are the chances that, even if the sediment is thoroughly mixed before spreading, toxin levels will not affect any frogs which takes up residence there?

John W. Fischer

John W. Fischer
230 Grove Acre Ave., #313
Pacific Grove, CA 93950-2356

Steven A. Hillyard
PO Box 6475
Carmel, California 93921

June 27, 2006

Paula J. Landis, Chief
California Department of
Water Resources
San Joaquin District
3374 East Shields Ave., Room A7
Fresno, CA 93726

Robert Smith, Project Manager
United States Army Corps
of Engineers
San Francisco District
3333 Market Street
San Francisco, CA 94105

Re: San Clemente Dam Seismic Safety Project (EIR/EIS)

Dear Ms. Landis and Mr. Smith:

WAT-13

The EIR/EIS considers five alternatives including two that interest me. First, it considers removing slit in preparation for removing the dam. Second, it considers strengthening the dam. Since both are feasible, this means that the dam continues to be a technically viable water storage facility with a current status of being burdened by extensive deferred maintenance.[1] Because the EIS/EIR fails to consider this alternative, it is deficient.[2]

AA-64

Your agencies can take notice of the fact that the Monterey Peninsula has a very urgent water storage need. Further, you can assume that additional water storage or desalinization facilities will be built to meet this need. The current debate over the desalinations plants planned for Moss Landing is credible evidence of the validity of these assumptions.

There are very significant environmental impacts associated with the alternatives to using San Clemente Dam for meeting at least a portion of the Peninsula's water needs. Those associated with the desalination project, including operational impacts such as the discharge of green house gasses associated with powering the process, are the most glaring.

Because San Clemente Dam is a viable storage facility, the alternative "uses" that call for it to be taken out of service are burdened with the external environmental impacts

[1] It is viable well into the future as ongoing maintenance dredging with discharging the spoils downstream appears acceptable under Corps rules as long as the amount dredged does not exceed the flow of slit entering the dam from upstream.

[2] CAL-AM may argue that they have no right to extract additional water from the Carmel River. Maybe, but someone—perhaps the community at large—enjoys that right and could sell it to CAL-AM or contract to store water in the dam.

AA 64 associated with replacing its storage capacity. To make an informed decision in the permitting process, decision makers should be informed of these impacts. To facilitate that, the EIS/EIR should consider the rehabilitation alternative.

Sincerely,

Jeremy Pratt
05/26/2006 11:36 AM CDT

To: Kimberly Demuth/Entrix, Brad Boyes/Entrix,
cc:
Subject: Larry Horan and the Stone Cabin

Hi Kimberly and Brad

Larry Horan is an attorney practicing in Monterey who is part of an investment group that owns the Stone Cabin - listed as HR-8 in the San Clemente EIR/EIS cultural resources section (described p. 4-335). He spoke with me after the Public Hearing and I believe he may have already called Kimberly and left a message.

REC-1 Larry apparently originally owned the Stone Cabin and the surrounding 1600 acres of land. He donated 1000 acres of the land to the Park District (including I believe what is our proposed sediment disposal Site 4R), and now owns the cabin as a remote recreational refuge with an investment group of 10 attorneys. (He says his area of practice, by the way, is land use and CEQA.) The so-called "jeep trail" or "4WD road" that is proposed to be improved for the alternatives that need access above the dam from Cachagua Road was developed to serve (and still serves) the Stone Cabin. The Stone Cabin remains in current use by the investment group. Obviously, the current use - as a serene, remote wilderness getaway - is incompatible with the improvement of the road and its use to transport heavy equipment and materials for Alternatives 1, 2, and 3. In other words, there will be unavoidable significant impacts that cannot be mitigated and are not really brought out in our current draft. We need to document those impacts.

Larry is a very personable, reasonable individual. He was concerned that the use of the road as proposed is tantamount to a "taking" of the Stone Cabin property and has significant adverse impacts to the purposes for which land was donated to the Park District. We will need to address this as a comment and revision to the impact analysis. We need a more detailed characterization from **MWH (Vik and Dan)** as to the projected use of the road for each alternative - during what seasons of the year, for how many years, for how many trips, with what daily frequency, of what size of vehicle. We need **Brad** to revisit the noise impacts. We need **Kimberly**'s team to revisit the recreational/land use impacts - not the impact on the Stone Cabin itself as a historical resource, but on the use of it. As part of that, we need to consult with the Monterey Park District (I am sure Larry will contact - or has contacted - them to ask about their participation in our process and what comments they will submit. I know that Jan Driscoll or John Klein called them about the use of Site 4R for sediment disposal, and I understand that they did not respond to that overture. They are not on our list of California Responsible Agencies, and probably should be added.

Jeremy Pratt
ENTRIX, Inc.

LAW OFFICES OF
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Our File No.

June 27, 2006

Ms. Paula J. Landis, Chief
California Department of Water Resources
San Joaquin District
3374 East Shields Avenue, Room A-7
Fresno, CA 93726

Robert Smith, Project Manager
United States Army Corps of Engineers
San Francisco District
3333 Market Street
San Francisco, CA 94106

Re: San Clemente Dam Draft EIS/EIR for Safety Retrofit or Dam Removal

Dear Ms. Landis and Mr. Smith:

I am a co-owner in joint tenancy with others of real property located between Cachagua Road and the San Clemente Dam site in Carmel Valley, California. Our co-tenants purchased the property which then consisted of 1584 acres from the Pebble Beach Corporation in 1978. Shortly following the purchase our co-tenants entered into a scenic conservation easement deed to the County of Monterey. The purpose of the scenic conservation easement deed was to keep the property as permanent scenic open space. Among the restrictions were that no structures could be placed or erected on the property, no advertising located thereon, no vegetation except that indigenous to the area could be planted, and that the general topography of the landscape would be maintained in its then present condition. The owners reserved the rights to prune, trim, and maintain plant and tree life on the property, to enjoy the land in a manner not inconsistent with the restrictions imposed, and the right to use, repair, and maintain the existing scenic historic stone cabin on the property.

The scenic conservation easement deed further provided: "If all or any portion of the land described in Exhibit A is sought to be condemned for public use this easement shall terminate as of the time of the filing of any complaint in condemnation as to the land or any portion thereof or any right therein sought to be taken for public use and the owners shall be entitled to such compensation for the taking as the owners would have been entitled to had the land not be burdened by this easement."

Subsequent to the imposition of the aforesaid scenic conservation easement the co-tenant owners of the property have made two conveyances, both of which naturally remain subject to said scenic conservation easement: (1) Conveyance of 600 acres on the south side of the Carmel River to Rancho San Clemente for their use for grazing purposes; and (2) conveyance of approximately 960 acres to the Monterey Regional Park District for park purposes subject to the terms and conditions of such conveyance, including the aforesaid scenic conservation easement.

REC-2
LAND-2

Any of the alternatives explored in the draft EIS/EIR which would utilize the access road to the property from Cachagua Road to the area of the San Clemente Dam, any rerouting of the Carmel River in that area, or any deposition of any of the silt accumulated behind San Clemente Dam would create a situation in which the use of our remaining property and the historic Murphy stone cabin, the use of the Park District's property for scenic and park purposes, or the maintenance of the terms of the scenic conservation easement imposed by us some 36 years ago would be vitiated.

GEN-35

The use of our access road by trucks and other vehicles for the purposes outlined in the Draft EIS/EIR would create significant unmitigated impacts with respect to: (1) geologic stability; (2) vegetation; (3) different species of birds, including wild pigeons, mourning doves, California quail, and great blue heron; (4) red-legged frog; (5) California steelhead/salmon; (6) our river frontage and the despoliation and elimination of a significant number of acres of sensitive wetlands; (7) impaired air quality; (8) significant traffic safety impacts at the intersection of Cachagua Road and elsewhere on the property; (9) destruction of the pastoral rural quality of life which both the owners and their donee Park District have strived assiduously to maintain; and (10) destruction of a valuable historic resource: one of the first settler cabins in the Carmel Valley, which the owners have restored and which can never be duplicated.

It is almost unthinkable that the voluminous documents comprising the draft EIS/EIR pay virtually no heed whatever to the foregoing impacts, nor does it mention in any significant manner the fact of 960 acres of park land and the historic Murphy's cabin. For the edification of the lead agencies and their consultants as well as the project proponent I enclose with this correspondence (1) a copy of a letter dated February 8, 2001 outlining the proposed gifting of the property from the tenants in common to the Monterey Peninsula Regional Park District; (2) a copy of a letter dated April 5, 2004 expressing that thanks and gratitude of the Park District to the donors; and (3) a photocopy of an editorial of the Monterey County Herald dated February 1, 2004 expressing gratitude for the donation and describing some of the purposes for which the donation was made. An earlier quote from the Herald in 1979 noted:

Ms. Paula J. Landis, Chief
California Department of Water Resources
Robert Smith, Project Manager
United States Army Corps of Engineers
June 27, 2006
Page 3

> This is rugged country, on the edge of the Los Padres National Forest and the Ventana Wilderness, and looks as unspoiled as it must have 100 years ago. And that is the way it is to remain. The 10 families who own the property plan to use it just for hiking, camping, and picnicking, plus a little trout fishing, and other than rebuilding Murphy's cabin, no other construction is to be allowed. The property is believed to contain a number of ancient Indian Burial grounds.

I will be leaving for Atlanta tomorrow and will not return until July 3, hence this rather abbreviated comment on some of the problems with your current Draft EIS/EIR. Upon my return I will be most happy to both augment and amplify the comments herein.

Very truly yours,

Laurence P. Horan

LAURENCE P. HORAN

LPH:mfr
Enclosures
cc: Monterey Peninsula Regional Park District
Fellow property owners

2-1-2004

THE HERALD'S VIEW

A good deed for Monterey County parks

Black oaks dot the high meadows overlooking the spectacular Santa Lucia mountain range. Six hundred feet below, coastal oaks, sycamores, willows and maples congregate along the Carmel River. The land is said to look much as it did 100 years ago, and the beauty is it will remain that way, thanks to the generosity and foresight of its owners.

The group of longtime friends purchased the 970 acres in 1978 to ensure that it wouldn't be developed. It's located near the San Clemente Reservoir in the upper Carmel Valley, and they have used it for hiking, camping, picnicking and trout fishing. Over time the owners found themselves using it less and recently gave it to the Monterey Peninsula Regional Park District. The property's perpetual conservation easement kept the appraised value low — $200,000. Giving a deed to the park district ensures that the land will be preserved and protected in perpetuity.

The land provides needed open watershed, preserves native habitat and offers new opportunities for trails.

The donors are Laurence and Jean Horan of Carmel Valley, Ted and Sue Hooker of Monterey, Roberta Chappell of Cachagua, Jay and Kip Hudson of Monterey, Charles and Carol Keller of Carmel, Sharon Law Tucker of Salinas, Rebecca Dee Law of Seaside, Fred and Susan Pownall of Berkeley, Bruce Hyman of San Francisco, and Charles Page, a Jacks Peak resident.

The gift, the largest ever made to the park district, furthers several of its long-term goals. The land provides needed open watershed, preserves native habitat and offers new opportunities for trails. (It's not yet open to the public, but the staff is working on that.) Along with an adjacent 80 acres purchased last year from an estate, it provides new passive recreational space along the Carmel River.

The district's long-term goal is to create a continuous green belt on the south side of the Carmel River that extends from Garland Park to Los Padres National Forest. This acquisition brings the park district a bit closer to that goal and begins to shape the green corridor.

Developing parkland piece by piece is the district's hallmark. Created by a local voter initiative in 1972, the district acquired its first land — 500 acres — in 1973. Today it has 4,500 acres, about half of which has been donated. Good for the park district and good for all th[illegible]

monterey peninsula regional park district
60 Garden Court, Suite 325 • Monterey, California 93940-5341

April 5, 2004

Mr. and Mrs. Laurence P. Horan
9568 Oak Court
Carmel, Ca. 93923

Dear Mr. and Mrs. Horan,

On behalf of the Board of Directors of the Monterey Peninsula Regional Park District, I would like to thank you for your donation of 900+ acres of Lost Compadres property in Carmel Valley. It is truly a special place and the District is honored that you have entrusted us with its oversight, care and management for generations to come.

I would also like to invite you and the other Lost Compadres partners to the MPRPD Board meeting scheduled for Monday, May 3, 2004 at 7:00 pm. The meeting will be held at the Seaside City Council Chambers located at 440 Harcourt Avenue in Seaside. We would like to take the opportunity to present the Lost Compadres partners with a token of appreciation from MPRPD for their gift of land to the District.

Thanks again, and I look forward to seeing you at the meeting. Please RSVP to our Office Manager at 831.372.3196 ext. 1.

Sincerely,

Ben Post

Ben Post, President
Monterey Peninsula Regional Park District

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CERTIFIED SPECIALIST ESTATE PLANNING, TRUST AND PROBATE LAW THE STATE BAR OF CALIFORNIA BOARD OF LEGAL SPECIALIZATION
E-MAIL: ngreen1897@aol.com

February 28, 2001

Charles H. Page
5 La Pradera
Carmel, CA 93923

Re: Proposed gift of Lost Compadres property to Monterey Peninsula Regional Park District

Dear Mr. Page:

This letter is to acknowledge your meetings with the Park District to discuss a proposed gift to the District of the Cachagua property known as Lost Compadres.

The District is pleased that you and your colleagues are considering this gift. The property is unique and would provide a special opportunity for the District to continue preservation of the property as open space while affording carefully monitored access to the public for appropriate passive recreational opportunities, such as hiking, horse back riding and mountain bicycling. The District will obtain at its cost an appraisal of the property to be gifted.

The potential for occasional District use of the cabin on the approximately 20 acres to be retained out of the approximately 900 acres you wish to give the Park District is also an welcome opportunity. We understand you will be obtaining a lot line adjustment to effect this separation of the parcels, and that although you will not be building a fence, the area of the enclave will be posted.

The District, in its meetings with you, Mr. Keller and Dr. Hooker to fashion an agreement for use of the property upon transfer, appreciates your understandable concerns about security and fire hazards. As you know, the District has been in the business of purchasing, owning and operating open space, and developing and maintaining public trails on such property for almost 30 years. The District has an excellent safety record and its staff is well trained, authorized to issue citations, and is state certified in the construction and maintenance of trails.

Should you gift this property to the District, the District will not open the property for use by the public until it has fashioned a management plan (with input from the public) and then received Monterey County Use Permit approval. Initially, the District plans to limit public access by permit reservation only. The area will be periodically patrolled by District rangers, who can cite any trespassers. The limited availability of space to park vehicles at the top of the property will further restrict public use because no one issued a permit will be allowed to drive down the road.

The District sincerely hopes that the transfer can be negotiated soon, and looks forward to this generous gift of open space.

Yours truly,

Anne D. McGowan

Anne D. McGowan,
District Counsel

MONTEREY BAY
Unified Air Pollution Control District
serving Monterey, San Benito, and Santa Cruz counties

AIR POLLUTION CONTROL OFFICER
Douglas Quetin

24580 Silver Cloud Court • Monterey, California 93940 • 831/647-9411 • FAX 831/647-8501

June 20, 2006

Ms. Charyce Hatler
Dept. of Water Resources
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Transmitted Electronically To:
chatler@water.ca.gov

Mr. Robert Smith
U. S. Army Corps of Engineers
San Francisco District
333 Market Street, 8th floor
San Francisco, CA 94105-2197

Transmitted Electronically To:
robert.f.smith@usace.army.mil

SUBJECT: SAN CLEMENTE DAM SEISMIC SAFETY PROJECT DEIR AND DEIS

Dear Ms. Hatler and Mr. Smith:

Staff reviewed the document and submits the following comments regarding the San Clemente Dam project:

AQ-3

Current Federal and State Ambient Air Quality Standards. Page 4-233.
The Federal 1-hour standard for ozone was revoked on June 15, 2005.

AQ-4

Table 4.7-8: NCCAB Attainment Status. Page 4-238.
With the revocation of the Federal 1-hour standard for ozone, the North Central Coast Air Basin (NCCAB) is no longer classified as Maintenance for the standard.
The NCCAB is classified as Non-Attainment Transitional for the State 1-hour standard for ozone.

AQ-5

Adoption of SB 656 Plan for Particulate Matter in the NCCAB. Page 4-238.
The Plan was adopted by the District Board in December 2005.

AQ-6

General Conformity. Page 4-239.
With revocation of the Federal 1-hour standard for ozone, the NCCAB is classified as attainment for all the federal air standards.

AQ-7 Impact Assessment Methodology. Page 4-240.

Please contact the District to discuss the calculations for the on-road diesel-powered trucks and suggested mitigation measures to reduce emissions to below District daily thresholds of significance. One suggestion is to mitigate the NO_x emissions by using a product like Viscon, which would achieve an approximate 25% reduction in NO_x. Information concerning this product and CARB- and EPA-recognized lab test results is attached for your reference.

AQ-8 Emissions of NO_x and Significance of Distance to Receptors

As a precursor to the formation of ozone in an air basin that is non-attainment for the State ozone standard, NO_x is a criteria pollutant of regional (not only local) significance. The distance of the nearest residential receptors does not eliminate the impact of emissions of 443 lbs/day, when the threshold of significance is 137 lbs/day.

Impacts and Mitigations. Pages 4-242-257.

AQ-9 Dam Site Activities: Construction Equipment and Road Dust.

Given the distance that particulate matter can travel and the duration of time that it may remain suspended in the atmosphere, as well as the non-attainment status of the NCCAB for the State PM_{10} standard, the distance to the nearest receptors does not eliminate its significance. For road dust, the District suggests that in addition to the mitigation measures listed on pages 4-247 and 4-248, the Project Applicant consider paving any unpaved roads or placing larger-sized crushed rock. Given the duration of the project, this could substantially decrease the formation of fugitive dust. For emissions from diesel construction equipment, the District suggests use of an additive such as Viscon to reduce NO_x emissions and use of a diesel oxidation catalyst to reduce emissions of ROG and PM_{10}. Please contact the District to discuss strategies that have been proven to reduce emissions.

AQ-10 Access Road Upgrades

The mitigation measures should reduce fugitive dust to within thresholds.

TR-11 Project-Generated Traffic

There is no information concerning the number and type of vehicles to be used in the project, or the daily traffic schedule.

AQ-11 This should be provided and URBEMIS 2002 v 8.7.0 should be run to calculate vehicular emissions. Please provide the District with a copy of the URBEMIS output.

AQ-12 Concrete Batch Plant Operation.

Please contact Lance Ericksen, Manager of the District's Engineering Division, to discuss permitting requirements.

Thank you for the opportunity to review the document.

Yours truly,

Jean Getchell
Supervising Planner
Planning and Air Monitoring Division

Attachment

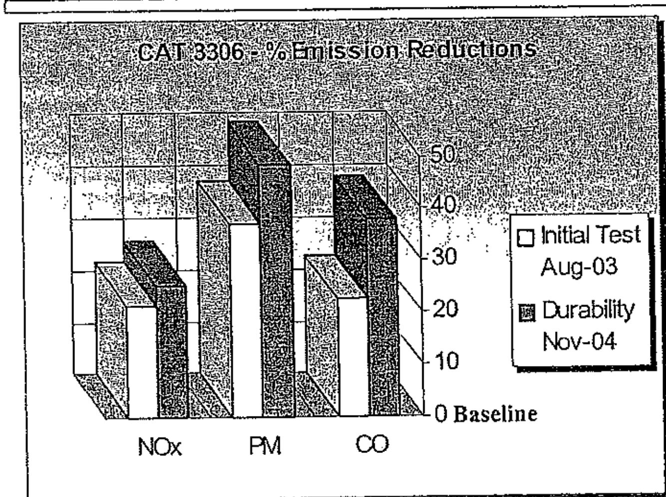
cc: Lance Ericksen, Engineering Division
David Craft, Engineering Division

GTAT
California

Viscon

Bakersfield, CA
(661) 327-7451

GTAT Awarded A Grant From The Texas Commission On Environmental Quality
NEW! (TCEQ Press Release April 20, 2005) *NEW!*



Exhaust Emissions

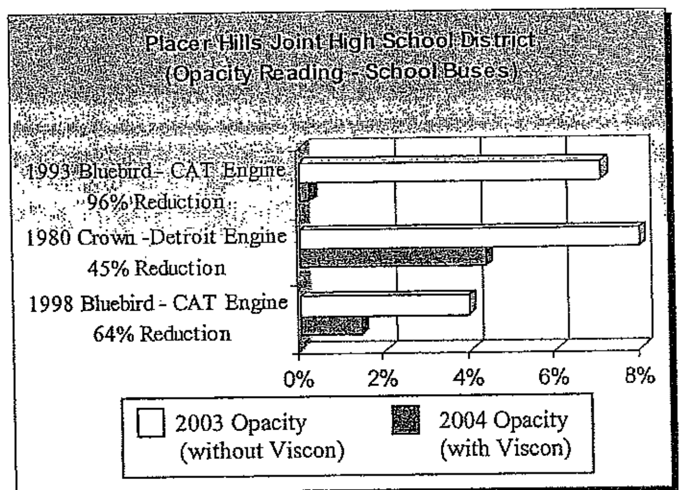
On November 26, 2004 GTAT completed its Exhaust Emissions testing for the Durability Phase of CARB Verification. EcoLogic Engine Testing Laboratory, an ISO 9001-2000 Registered facility and a CARB & EPA recognized lab performed the tests. The reduction results from baseline through the initial & durability exhaust emission tests are:

	Viscon Only	Viscon & 5% Biodiesel
❑ PM -	48.4%	45.4%
❑ NOx -	25.4%	24.3%
❑ CO -	37.9%	42.0%

Compliance & Smoke/Opacity Readings

From June to December, 2004 Placer Hills JHDS participated in a grant (received from the Placer County Air District – CA) awarded to GTAT. Opacity readings were conducted by Evenson's Smoke Testing using Red Mountain Engineering computerized equipment. All engines passed compliancy. Results from 2003 to 2004 comparison are:

- ❑ 96% reduction - 1993 Bluebird – CAT
- ❑ 45% reduction - 1980 Crown – Detroit
- ❑ 64% reduction - 1998 Bluebird – CAT

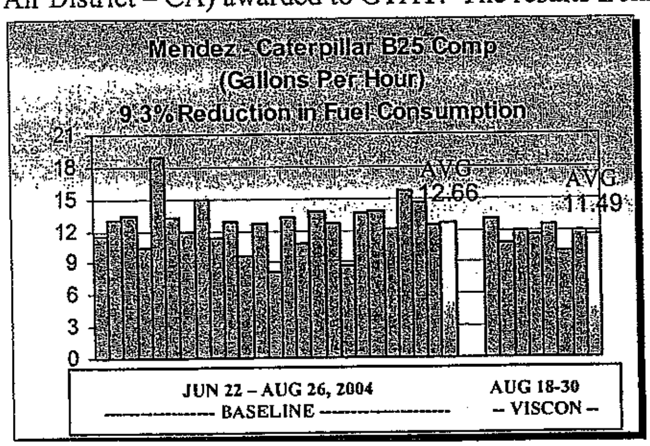


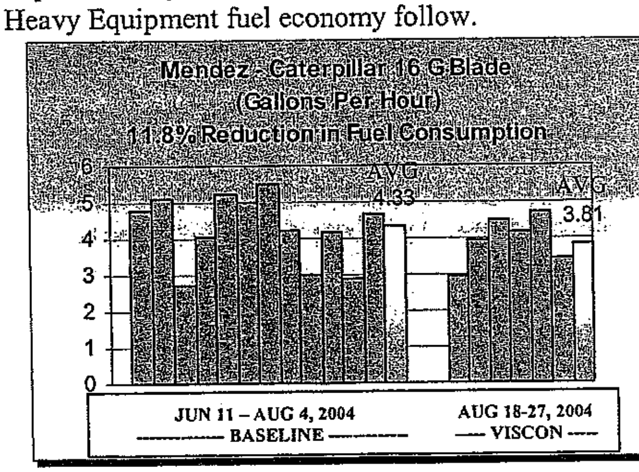
Permit to Operate/Authority to Construct

In April 2004, Nordic Industries was issued an Authority to Construct pursuant to operating more hours on a 1,072 HP CAT engine. Advanced Air Testing performed emissions testing (after Viscon treatment) in July 2004. Nordic Industries was issued a Permit to Operate on October 1, 2004. The PTO stipulates Viscon use.

Fuel Economy

During the summer of 2004, Mendez Construction participated in a grant (received from the Placer County Air District – CA) awarded to GTAT. The results from Heavy Equipment fuel economy follow.





Potential Emission Benefits of Biodiesel and a 20-Percent Biodiesel Blend		
Pollutant	**B100 (%)**	**B20 (%)**
NOx	+13	+2
Carbon Monoxide	-50	-20
Hydrocarbons	-93	-30
Particulate Matter	-30	-22
Sulfates	-100	-20*
Polycyclic Aromatic Hydrocarbons**	-80	-13
Nitro-PAH's**	-90	-50***

* Estimated from B100 result
** Average reduction across all compounds measured
*** 2-nitroflourine results were within test method variability
Source: Biodiesel Emissions, Fact Sheet, National Biodiesel Board

Biodiesel reduces the health risks associated with conventional diesel fuel. Biodiesel emissions showed decreased levels of PAH and nitrited-PAH (nPAH) compounds, which have been identified as potential cancer causing compounds. In recent tests, PAH compounds were reduced by 75 to 85 percent, with the exception of benzo(a)anthracene, which was reduced by roughly 50 percent. Also nPAH compounds were reduced significantly. The 2-nitrofluorene and 1-nitropyrene emissions were reduced by 90 percent, and the rest of the nPAH compounds were reduced to only trace levels. These toxic emission differences are likely to be smaller when compared to CARB Diesel fuel, but may still be significant. More data comparing CARB Diesel to biodiesel are needed.

C. Diesel Fuel Additives

There are thousands of additives that have been registered with the U.S. EPA as injector cleaners, corrosion inhibitors, or lubricity enhancers; however, the focus of this section is to investigate existing additives and their effectiveness in reducing diesel PM emissions from diesel engines. Additive manufacturers have used different additives to improve combustion efficiency or to facilitate the post combustion reactions in a catalyst or particulate filter. However, in many cases very limited data is available regarding the use of these additives in California diesel fuels. The following is a description of information provided to the ARB staff with regard to additives and their potential ability to reduce diesel PM. Any additives with unsupported claims of emissions reductions were not included; however, the discussion of the following additives does not constitute an endorsement or confirmation of the results by the ARB staff.

From: DAVID CRAFT
To: Getchell, Jean
Date: 6/20/2006 11:34:23 AM
Subject: Viscom's potential emission reductions

Here is Viscom's website showing emission reductions due to the additive.
http://www.gtatcalifornia.com/Viscon/HomePage.html

Perhaps a 25% NOx reduction is achievable using Viscom.

monterey peninsula regional park district
60 Garden Court, Suite 325 • Monterey, California 93940-5341

July 3, 2006

Ms. Paula Landis, Chief
California Department of Water Resources
3374 East Shields Ave, Rm A-7
Fresno, California 93726

Robert Smith, Project Manager
US Army Corps of Engineers
3333 Market Street
San Francisco, California 94106

RE: Draft San Clemente Dam Seismic Safety Project EIR/EIS

Dear Ms. Landis & Mr. Smith:

The Monterey Peninsula Regional Park District (Park District) is a special district sub-division of the State of California organized under Public Resources Code 5500 et seq. The residents of the Greater Monterey Peninsula created the Park District in 1972 for the express purpose of acquiring and protecting open space for public use and enjoyment. The Park District has protected approximately 20,000-acres for the 150,000± residents in its 400-square mile district.

The subject project lies within the district and is adjacent to, and includes, property owned by The Park District.

A The Park District has reviewed the draft EIR/EIS and has the following comments:

B **Overall:** The document is lacking in graphic support of textual project impacts. In order to make an informed decision on alternatives and potential impacts, The Park District requests more sophisticated visual exhibits:

GEN-38

1. GIS ortho-photo quads for use as base-maps for comparison between all projects, which show project locations, specific project component sites, property boundaries, landmarks, geographic features, and include meta data in electronic format. This data is readily available;

AA-65

2. Cross-sections, cut-material, and images of road improvements and construction and Site 4R are necessary for adequate environmental review;

LAND-3

3. As examples: Both 3.2 Proposed Project and 3.3 Alternative 1 do not have adequate project area descriptions, land ownership, or map depicting land

LAND-3 ownership and boundaries;

AA-66

4. Another example: Figures 3.3.3 and 3.3.4: These figures show the Cachagua/4R Access Route (jeep trail) and Conveyor Route through The Park District's San Clemente Open Space and a large Sediment Disposal site within the property but there is no written description of either in Section 3.2 Proposed Project;

VIS-3

B. **Viewshed:** The Draft EIR/EIS states "None of the alternatives will have a significant impact on the environment." However, there is no evidence in the document to make such a finding. And there is no information in the document for public review and comment. The entire treatment of public viewshed and aesthetics is inadequate.

1. The Proposed Project and Alternatives 1, 2, and 3 include property owned by The Park District that will be environmentally altered but there is no adequate description of the visual impact or any visual exhibits of pre-project and enhanced post-project images of the impact sites;

(a) Necessary images to adequately assess pre-project and post-project viewshed/visual impacts from within the open space park by park visitors include, but are not necessarily limited to:

- River front views;
- Standing water locations and conditions;
- Road-cuts and corridors;
- Sediment disposal site;
- River front access;

C. **Project Access Roads and Sediment Disposal:**

AA-67

1. Figure 3.2.2: This figure shows the Cachagua/4R Access Route (jeep trail) and Conveyor Route through The Park District's San Clemente Open Space and a large Sediment Disposal site within the property but there is no written description of either in Section 3.2 Proposed Project;

AA-68

2. 3.3 Sediment Transport: The document does not adequately describe the "gravity feed reclaim tunnel system" for conveying the sediment to Site 4R in the park;

AA-69

3. 3.3 Sediment Transport: The document does not adequately describe how the road will be used or impacted by expected project use;

AA-70

4. Exhibit 3.3.5: This exhibit provides little to no value in evaluating the impact of heavy equipment on a narrow, un-surfaced, steep road or any information on necessary road improvements and their impacts to accommodate the expected project uses;

AA-71

5. 3.3 Sediment Disposal: The document states that the maximum capacity for sediment disposal at Site 4R is "undetermined" but there is no evidence in the document to support the finding that Site 4R can adequately accept the

AA-71

estimated 1.5M CY of sediment material;

LAND-4

(a) The document states that The Park District has previously expressed "tentative support for sediment disposal at Garland Ranch...", provides a citation, but does not list The Park District as an agency consulted in Section 6.0 Lists and References. The Park District requests that the document cited be made available to The Park District for review;

AA-72
TE-35

(b) The document provides a cursory description of Site 4R preparation but is inadequate for proper review as there are no details as to how vegetation "clearing and grubbing" will take place, and how and where the "stripping and stockpiling of organic soils" will occur;

AA-73

(c) The document also states "a culvert pipe would likely be placed along the ravine bottom the full length of the site ...". For review purposes, this vague language is inadequate. Will or will not a pipe of the scale and scope described be installed? What are the possible environmental impacts if a pipe is or isn't installed? This type of information is not to be found in the document;

REC-3

(d) Figure 3.3.4: This map exhibit does not show property boundaries nor does it adequately describe the impact of 1.5M CY of sediment disposal into a public open space park;

LAND-5

(e) An aerial photograph and on-the-ground images of pre-project condition and post-project impact are needed to adequately evaluate this project;

AA-74
TE-36

(f) The document states that the site will be "winterized" at the end of each construction season but fails to adequately describe the impacts of introducing non-native stabilizing material into the park and any mitigation measures to remove the weeds proposed for introduction. Non-native vegetation is also proposed for introduction to the site for the final topsoil re-placement;

AA-75

(g) The, document states that there will be 6-inches of Class 2 base-rock imported for the road surface but does not explain what will be done with this material after the project is completed;

VIS-4

(h) The document presumes to leave the road improvements behind but does not describe any environmental impacts associated with doing so, which would be aesthetic and visual and significant compared to what is there now. Given that the property is an open space park, the cursory information provided is inadequate for effective environmental review;

6. <u>3.3.5 Project Access and Improvements</u>: The document gives a minimal description of the road improvements that does not adequately allow an effective review of potential impacts;

AA-76

(a) This description needs graphic support in the form of pre-project conditions and post-project enhanced conditions. The simple statement that the road will be widened to 20-feet does not adequately describe the scope and scale of the necessary road-cut, where the cut material will be deposited, AA-76 what the road will look like after the project, or what new maintenance requirements The Park District will inherit if the road improvements are left in or restored upon completion of the project;

AA-77 (b) The new ½-mile long access road to Site 4R is similarly described in cursory terms and provides no graphic imagery of pre-project conditions and post-project impacts/conditions. There is also no description of what will become of this road upon project completion;

AA-78 **7.** 3.4 Alternative 2: The comments above apply to this alternative as well. The descriptions and graphic support need improvement if an adequate environmental review is to be undertaken. This alternative impacts The Park District to a greater magnitude in that the volume of sediment to be deposited in the park is 2.5M CY;

AA-79 **8.** 3.5 Alternative 3: Though this alternative does not propose Site 4R, it does affect The Park District's road into and through its San Clemente Open Space. The comments above that apply to the road are applicable for this alternative as well;

VIS-5 **D. Wetlands**: All the proposed projects include environmental impacts to existing wetlands. The Park District is concerned about potential short and long-term impacts to existing wetlands from the perspective of public access and viewshed. The document does not adequately address the impact of changing wetland conditions on public perception, view, and access and therefore the document cannot be adequately review for environmental impacts associated with changed public aesthetics and viewshed.

1. Textual descriptions of pre and post project conditions are needed for adequate review and comment on the aesthetic perspective to changing wetland conditions;

2. Pre-project and post-project enhanced photographic imagery depicting what the current and future park boundaries will look like are essential for adequate environmental assessment;

REC-4 VIS-6 (a) Currently, the park has an extended and publicly accessible riverfront to perennial pools and flowing water. What will any new boundary along the park's riverfront look like and how accessible will the new riverfront be to the public?

TE-37 (b) What will replace the current riparian vegetation along the park's riverfront boundary if the river course or water levels are changed?

(c) How will public access be affected and/or maintained if river-frontage is changed?

The Park District has no position on the proposed project or any alternative at this time because it cannot adequately evaluate the potential impacts presented by each project regarding viewshed, aesthetics, public access, and project developments until the information outlined above is made available.

The Park District appreciates the opportunity to comment on this project and looks forward to the requested information in a revised draft EIR/EIS. If California Department of Water Resources or US Army Corps of Engineers has any questions, or would like to discuss the proposed project, the alternatives, or the Draft EIR/EIS with The Park District, please do not hesitate to contact Joseph Donofrio, The Park District's General Manager, or myself by phone or e-mail.

Sincerely,

Tim Jensen

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June 29, 2006

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Attn: Charyce Hatler

Attn: Robert F. Smith

Subject: MPWMD Comments on Draft Environmental Impact Report/Statement for the San Clemente Dam Seismic Safety Project, Corps PN 277446S

Thank you for the opportunity to comment on the Draft Environmental Impact Report/Statement (EIR/EIS) for the San Clemente Dam Seismic Safety Project dated April 2006. This document was prepared by Entrix Environmental Consultants (Entrix) for California American Water (Cal-Am or CAW). The Monterey Peninsula Water Management District (MPWMD or District) has participated for several years in the interagency groups formed to study alternatives for retrofitting San Clemente Dam, which is located on the Carmel River in Monterey County, California. The District submitted comments on the alternatives and potential environmental impacts described in the December 1998 Draft EIR and September 2000 Recirculated Draft EIR for the seismic retrofit project. In November 2004, the District submitted comments on the scoping for the Draft EIR/EIS and, in November 2005, the District submitted additional comments on the Notice of Preparation (NOP) for the Draft EIR/EIS for the seismic safety project. MPWMD also submitted comments on the December 2005 Revised Preliminary Draft EIR/EIS for the San Clemente Dam Seismic Safety Project.

Following are the District's comments on the April 2006 Draft EIR/EIS that you requested in your May 23, 2006 Notice of Public Hearing. Statements from the Draft EIR/EIS are shown in italics.

General Comments

GEN-12 For project impacts and components that are common to all alternatives, the Final EIR/EIS (or FEIR/S) should fully describe level of impact and measures to mitigate for impacts. For example, the reconstruction and retrofitting of the bridge at Old Carmel Dam (OCD) is a component of all alternatives, so a full description of impacts and mitigation measures to make
The alders that established a well vegetated canopy around the existing San Clemente Reservoir

NEPA/ CEQA-18 were killed as a result of the Interim Drawdown Project, beginning 2003. The FEIR/S should include mitigation measures to revegetate the margin of the remaining reservoir area as part of Proposed Project, Notching Project, and Rerouting Alternative.

Specific Comments

Chapter 2.0 Summary

SED-22 Table 2.1, WR-2 through WR-5. This table does not describe ongoing stream degradation (incision into alluvial deposits) downstream of San Clemente Dam due to retention of sediment load within the reservoir. MPWMD notes that the Mussetter studies of sediment transport in the river under various alternatives set an artificial barrier (for modeling purposes) that did not reflect the potential for incision.

MPWMD research in the early 1980's showed that the river had incised into floodplain deposits by up to 13 feet along much of the river since the reservoir was built. Recent surveys along the river indicate that this trend has not halted and the rate of degradation is estimated to be about one foot per decade, which has contributed to bank destabilization and undermining of infrastructure across and adjacent to the river. The dam thickening and dam notching alternatives are not likely to significantly slow or reverse this process, as most of the sediment load will be retained upstream of the existing dam location for several decades. The re-route and removal alternatives are likely to slow or halt the degradation process as the sediment load to the lower river would be increased substantially. The differences to downstream bank stability and infrastructure stability from each alternative should be described.

FI-26 Page 2-2, Para 1: The statement, "*…and a trap and truck facility would be operated for one construction year…*", appears to conflict with other descriptions of proposed mitigations for trapping and handling steelhead in the Fish Chapter. The Final EIR/EIS should fully describe how fish will be trapped and trucked for each alternative during the entire scheduled project period, not only during actual construction activities. If fish are not trapped and trucked during the entire scheduled period, the FEIR/S should fully describe how fish movements will be impacted during the off-construction period and whether additional mitigations are needed.

SED-23 Page 2-2, Para 2: The statement, "*Two high-level outlets equipped with sluice gates would be installed to control and limit sediment releases…*", appears to conflict with the description of one mid- <u>and</u> one high-level outlet on page 3-26 and does not match the proposed limited operation of sluice gates during the winter period (see also comment on Page 3-18). The FEIR/EIS should fully evaluate how operation of proposed gates would control and limit sediment releases and include an evaluation of the timing of sediment releases based on MPWMD's record of reconstructed unimpaired streamflow at San Clemente Dam.

Page 2-5, Para 2: Description of Reroute and Dam Removal, the statement, "*The San Clemente*

HY-5 *Creek channel would be reconstructed through its historic inundation zone from the exit of the diversion channel to the damsite...* ", conflicts with the description provided on page 3-81, where the reconstruction is defined as the same as described in section 3.3 for the notching alternative. The notching alternative references reconstruction only in the uppermost 900-foot long section of the inundation zone. Also note the comments on Page 3-81 concerning routing the combined flows from the mainstem and San Clemente Creek through the historic San Clemente Creek channel.

SED-24 Page 2.-5, Para 4: Under Description of No Project: Conclusion. "*The existing drawdown ports in the dam and the existing fish bypass facility would both likely remain operational until the reservoir fills with sediment.*" At the beginning of the winter of 2005-06, sediment in the mainstem was within about 20 feet of the easterly port opening. It is likely that use of the ports will be in jeopardy well before the entire reservoir fills with sediment because the bulk of the remaining reservoir storage is on the San Clemente Creek side of the reservoir and is filling much more slowly than the mainstem side. The FEIR/S should evaluate whether the existing ports will be used and how in the No Project setting.

WET-3 Page 2-36, Table 2.4: The tabulation of acreages under *Other Waters of the U.S.* appears to underestimate the extent of waters affected by alternatives. For example, under Alternative 2 the total area of waters listed for the Carmel River, San Clemente Creek, and Reservoir Pool is 10.9 acres, including 6.8 acres for the reservoir pool, leaving 4.1 acres for the Carmel River and San Clemente Creek. The length of stream affected by existing San Clemente Reservoir is ~7,250 feet in the mainstem and ~ 2,500 feet in San Clemente Creek. Based on the combined lengths, the average stream width of Other Waters is purportedly ~18 feet, yet this seems well under actual measurements of stream widths in the affected waters. For example, measurements of average stream width at two sites in the inundation zone show that stream width varies from 18 to 34 feet, and these measurements were made during the lowest flow periods in 2004 and 2005. The source of possible error(s) is beyond the scope of this review, but the FEIR/S should reevaluate methods, standards and analysis used to develop areas of both Other Waters and Jurisdictional types and validate estimates with measurements in the field.

WET-4 Page 2-36, Table 2.4: The characterization of impacts for Alternative 4 (No Project), *No direct impacts*, ignores continuing impacts of the interim drawdown project on Jurisdictional and Other Waters of the U.S. In this regard, the Final EIR/S should fully address potential impacts of the Drawdown Project.

WQ-2 Page 2-38, Para 3: Summary statement under Water Quality. "*Sluicing under the PPP and Alternative 1 would lead to significant increases in turbidity in Carmel River below the dam and would not be mitigable.*" This statement should be modified to describe which flow components increase turbidity (suspended and bedload sediment?). It's unclear from the qualifier used ("*mitigable*") what impacts cannot be mitigated. This determination is necessary to realistically

WQ-2 evaluate potential impacts to rearing and spawning habitat in the river downstream of San Clemente Dam.

FI-27 Page 2-39, Para 1: Under Fisheries: "*The PPP and all alternatives would entail short-term losses of fish habitat.*" With at least one alternative - the Dam Removal Alternative – there would be long-term beneficial changes to habitats. The FEIR/S should fully evaluate short-term, mid-term and long term changes for spawning and rearing habitats from the upper end of San Clemente Reservoir to the Carmel River Lagoon.

FI-28 Page 2-39, Para 1: Under Fisheries: In the Summary Statement, the operation and impacts to Sleepy Hollow Steelhead Rearing Facility and its vulnerability to increased sediment and turbidity is not mentioned. The FEIR/S should fully evaluate impacts of the alternatives and describe the mitigation measures that Cal-Am will implement to reduce impacts to SHSRF. If the impacts, especially during construction, cannot be avoided, the FEIR/S should disclose impacts and potential take associated with not rearing steelhead at SHSRF during the construction period. It should be noted that the MPWMD operates and maintains the SHSRF as a mitigation for impacts to steelhead from water extraction in Carmel Valley.

Chapter 3.0 Description of Alternatives

AA-22 Page 3-2, Para 5: Under Removal of Dam Superstructure. Given that most alternatives would likely take several years before construction could start, is the possibility of implementing this measure being discussed as part of an Interim Retrofit Project? If so, this should be described.

SED-25 Page 3-5, Para 1: Under Sediment Management Alternatives, the FEIR/S should fully evaluate the long-term impacts associated with trapping gravel and cobble with each alternative. The FEIR/S should fully evaluate options for stockpiling and releasing gravel and cobble into the river channel below the project area as mitigation for trapping of coarse bedload.

GEN-13 Page 3-8, Para 4: "*Approximately four miles upstream ...*", should be corrected. Los Padres Dam is five miles upstream of San Clemente Dam (23.5 -18.5).

WAT-1 Page 3-12, Para 1: "*The reservoir and Carmel Valley [Filter Plant] CVFP are also the primary water source for unincorporated Carmel Valley Village during the winter. Currently, the reservoir serves as a point of diversion to serve the Peninsula...*" The FEIR/S text should be corrected to reflect operations as regulated by NOAA Fisheries and the State Water Resources Control Board. These agencies have limited the diversions at San Clemente Dam to zero and allow only limited diversions from the river from Russell Well field during low-flow season.

AA-23 Page 3-15, Para 3: Under Fish Ladder, the description for FEIR/S should be revised to reflect installation and operation of the fish bypass for downstream migration during Interim Retrofit

Operations.

WAT-2 Page 3-15, Para 4: Under Carmel Valley [Filter Plant], the description for FEIR/S should be revised to reflect comment 3-12, Para 1 above.

AA-24 Page 3-17, Figures 3.2-5, 3.2-6 and 3.2-7: These figures appear out-of-date (Woodward-Clyde 1998) and do not match the features described in the text for fish passage and sediment sluicing. The FEIR/S should provide new updated versions.

AA-25 Page 3-18, Figure 3.2-6: The profile of the thickened dam shows a seven-foot diameter sluiceway at an invert elevation of 514, a two-foot diameter sluiceway at an invert elevation of 517, and an eight-foot diameter sluiceway at an invert elevation of 491. The discussion on p. 3-25 starting with "High-Level Outlets" describes operations that apparently would include sluicing of sediment through all three of these pipes, whereas the analysis of proposed sluicing presented in Appendix I describes placement of a new 10-foot diameter pipe through the thickened dam at an invert elevation of about 515. Please resolve the discrepancies between the main text and Appendix I.

AA-26 Page 3-21, 1st bullet under Para 3: What keeps sediment and water from upwelling in the area between sheet pile barrier and dam intake during the drawdown? How would this area be dewatered without a seal capable of withstanding the differential pressure between the drawn down water surface elevation (510) and the gate at elevation 494? The FEIR/S should fully evaluate this aspect and recommend mitigation measures to match results of the evaluation.

WQ-3 Page 3-21, 2nd bullet under Para 3: No standards are provided for turbidity levels that may be too high to release. The FEIR/S should provide standards and a specific, detailed description of how the project construction and operations schedule would be modified to mitigate for increased turbidities. Has the possibility of filtering turbid water through the Carmel Valley filter plant and then injecting clear water into the river been considered?

WQ-4 Page 3-23, Para 2: A turbidity standard needs to be presented that will protect downstream areas from impacts. Because construction is proposed during low flow periods, the effect of turbid water being released to downstream areas can persist for several miles downstream from a release point.

Page 3-24, Spillway and Crest Modifications

The discussion includes the following statement: "*...the increased spacing between piers would reduce the buildup of downed trees and other debris at the existing closely spaced piers.*"

AA-27 What effect could the modification of the spillway to allow passage of large trees have on downstream bridges and other infrastructure? Are there methods to reduce the impacts of large trees on downstream structures?

Since the dam was constructed in 1921, most of the large trees passing into the reservoir have been cut into small sections in order to pass through the spillway bays. Nineteen bridges currently span the river downstream of the dam. Seven are publicly maintained (one by CALTRANS, five by Monterey County Public Works Department, one by the Monterey Peninsula Regional Parks District). The remainder are privately owned and maintained. All the bridges have supports within the 100-year floodway. Ten bridges have center piers in the active channel. At bridges with supports in the active channel, the minimum open length between abutments and center piers ranges from a low of about 15 feet at the south abutment of Boronda
AA-27 Road Bridge to as large as 80 feet at the Rancho San Carlos Road bridge. Cranes or other equipment capable of picking up trees and logs are frequently stationed at five of the 19 bridges during high flows. Equipment operators generally pick up debris caught on the upstream side of piers and abutments and transfer it downstream. Because of the difficulty associated with this (forceful flows, difficult access), and the type of equipment used (small cranes or backhoes), the largest pieces that can be moved are in the 20 to 25-foot range (2-4 tons). Larger pieces require specialized equipment, such as a boomcrane and hook assembly. The remaining 14 bridges either don't have center piers and are usually debris-free, or are not accessible to cranes.

A large amount of debris passes from the upper watershed through the river system and includes large trees, as shown in the photo below taken during the March 10, 1995 flood. The entire watershed of approximately 125 square miles above the dam contributes debris, although a small amount of debris becomes waterlogged and sinks near the Los Padres Dam spillway (note that the Los Padres Dam spillway is designed to be self-cleaning and passes a significant fraction of the debris from upstream).

AA-28

Page 3-25: Location of High-Level Outlet: Appendices I and J describe the location of a sluice port as being 10 feet laterally away from the fish ladder. This does not match the description on page 3-25 and is not shown in Figure 3.2-12 for the new fish ladder. The orientation of discharge from the 10-foot diameter sluice gate, located 10 feet from the entrance to the fish ladder, appears to impinge on the left downstream walls of the canyon. This orientation, while effectively designed for sluicing material away from the fish ladder, may threaten integrity of rock supporting the new ladder and result in significant impingement loss of any fish passing downstream. Mitigation measures are needed to ensure that no fish are in the vicinity of the gate when it is opened and the discharge should be directed away from the canyon walls.

FI-29

SED-26

Pages 3-25 and 3-26: The text briefly describes operation of dual high-level ports, but the modeling completed by Mussetter Engineering Inc. only examined the impacts and scenario of operating one of the ports. If the proposed sluice gates are shown correctly in Fig. 3.2-6, then the potential impacts from sluicing at each of the proposed levels should be reevaluated and effects

SED-26 such as headcutting in the reservoir sediments and release of fine material to downstream reaches should be identified. The FEIR/S should fully evaluate the timing, duration, and magnitude of sediment releases to the areas downstream of San Clemente Dam and the impacts to aquatic resources resulting from the discharge of sediment.

The FEIR/S should fully evaluate how the ports would be operated in conjunction or separately, and the impacts of the operation on sediment mobilization, passage and deposition in the river below the dam should be evaluated and described. FI-30 While a brief description of sluice gate operations is provided, the proposed schedule has not been combined with the reconstructed record of unimpaired flows to provide a full description of the frequency and duration of operation and how this will affect migration of adults and juvenile fish.

FI-31 The FEIR/S should document any previous attempts to sluice material from behind similar dams, while passing fish upstream and downstream. The FEIR/S should present enough information to the reader to be able to determine whether the proposed sluicing operations are a proven technology or are experimental.

AA-28 Page 3-26, page 3: Under electrical system. "*The existing structure would be replaced with a small pre-engineered building that would house the electronic controls for the outlet valves.*" How would the system operate during a power failure at a time when the sluicing outlet valves are in an open position? Is auxiliary power proposed, or can the valves be operated manually?

FI-32 Pages 3-25 and 3-26: The text does not mention whether the outlet would be screened and how fish passage would be handled. If unscreened, the FEIR/S should evaluate how survival of fish would be affected as they pass through the sluice gates/valves.

AA-30 Page 3-28, Para 4: Under Access from Existing Gate to San Clemente Dam: This section contains vague statements or factual errors, including: 1) the description of the location of the high road and low road; 2) the Old Carmel River Dam bridge is described as 5,800 feet long (it appears to be no longer than about 100 feet); and 3) a lack of a Figure reference and confusion created by stationing call-outs with no visual reference.

AA-31 Page 3-29, Para 5: statement, "*The roadbed would be filled with sand and gravel and topped with crushed rock...*" Is there a potential for fill material to be mobilized during high flows? If so, only clean gravel and rock should be used, without the addition of fines.

GEN-4 Page 3-30, Para 4: Under Old Carmel Dam Fish Ladder Improvements, the last sentence should be modified to read, "The right bank contains an open passageway approximately 4 feet wide by 15 feet high that at one time was equipped with a gate and operated as a sluiceway and control to raise water levels for operation of a diversion. This structure was modified in 1992 and 2000 by removing several stoplogs and the gate structure from the passageway."

AA-32 FI-33 Page 3-31, Para 2: Under San Clemente Dam Fish Ladder Replacement. "*For stream flows up to 55 cfs, all flow would pass through the proposed ladder.*" This design will encourage passage of fine grained sand and silt into the vicinity of ladder exit and hasten the need to sluice sediment from around the ladder exit and channel leading to the river. The FEIR/S should evaluate ways to mitigate this impact with a goal of having no impact on attraction of fish to the ladder entrance in the plunge pool.

AA-33 Page 3-34, Figure 3.2-12, there is a note referencing water surface elevations in the upper pool of 527 feet at 700 cfs and 522 feet at 110 cfs, but these do not match proposed normal operating elevations referenced in other sections of the EIR/S. The FEIR/S should reevaluate all descriptions, operations and impacts that are based on these incorrect assumptions.

FI-34 Page 3-35, Para 1: "*... would be a consistent velocity of ~6.6 feet per second through the slot regardless of depth.*" This velocity may exceed the swimming capability of smaller, resident-type steelhead and affect passage success during drought periods, when the only fish attempting to pass are resident type fish. The FEIR/S should investigate, describe and include modifications to allow passage of smaller resident type fish under extremely low-flow conditions.

AA-34 Page 3-35, Para 2: The FEIR/S should document the actual elevation of the plunge pool and hydraulic control for this location. This will be important for all of the alternatives. For example, with the PPP the hydraulic control for the plunge pool needs to be set to prevent down-cutting below the bottom of the entrance pool. Considering the historical down-cutting at this site and the continued lack of coarse bedload with PPP, this project may require construction of a grade control below the ladder entrance, which is a typical feature at other sites where ladders are constructed below dams.

SED-28 Page 3-35, Para 3: Last Sentence, "*Dredging upstream of the fish ladder would occur on average every three years, where significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone (using the proposed sluiceway next to the fish ladder exit).*" The FEIR/S should provide detailed analysis and review of the studies that led to an average of every three years and clarify the frequency of dredging, which is not clear. Is this one day of dredging every three years, or multiple days every three years? What happens in years when sustained high flows result in rapid refilling of the area between the ladder exit and the sluiceway opening? Does dredging include maintaining the San Clemente Creek channel? The FEIR/S should fully evaluate operation and maintenance of channels leading from both San Clemente Creek and the mainstem to the fishway.

AA-35 Page 3-35, Para 5: Under Reservoir Maintenance, a reference to a Figure showing the dam and sluice pipes should be provided.

AA-36 Page 3-35, Para 5: Under Reservoir Maintenance. "*The automated operating mechanism and manual emergency crank will be located at the dam crest, where a physical connection to the gate via a threaded steel bar is turned to lift the gate for opening and closing.*" The EIR/S should review and evaluate the feasibility of providing a manual emergency crank which can be used to lift a 10-foot diameter steel gate by turning a threaded bar. This evaluation should include estimates of the time and staffing needed to manually close the gate.

AA-37 Page 3-36, Under Construction Schedule and Operations and page 3-38, Figure 3.2-14: The schedule needs to be updated. Is the Public Utilities Commission process for recouping expenditure of funds a critical component of completing a project?

FI-35 Page 3-39, Para 1: "*Fish rescue and drawdown of the reservoir and plunge pool would continue until about May 31.*" Additional detail should be added to provide rescue, trapping, and trucking of fish in upstream and downstream directions throughout the mobilization, construction and demobilization periods, except during high flow periods when streamflow makes trapping infeasible. In addition, the time periods between mobilization, Phase1, Phase 2 and demobilization may have features that affect fish passage, so the FEIR/S should specify mitigations for fish passage throughout the project period, not just when construction is scheduled.

SED-29 Page 3-40, Para 1: "*Accumulated sediment behind the dam would be removed down to the level of the notch.*" The portion that is coarse, including coarse sand, gravel, cobble and boulder should be sorted and remain in the reconstructed channel and floodplain for habitat restoration. In addition, removal of all material down to the level of the notch may result in an unstable or undesirable channel configuration through the remainder of the deposit. For the FEIR/S, a plan view, cross-sections, and a profile of the remaining reservoir deposits that show a geomorphically stable channel should be provided.

AA-38
SED-30 Page 3-41, Para 1: "*Notching San Clemente Dam to approximately elevation 506 in the area of the existing spillway bays…*" The lower portion of the dam notch appears to be significantly wider than a channel that would be excavated through the sediment remaining upstream of the dam. The FEIR/S should show the transition (plan view, cross-sections, profile) between channels in the reservoir sediments, modified dam, and channel downstream. Does the configuration of the modified dam encourage the mobilization of sediment from behind the notched dam?

WAT-3 Page 3-44, Para 1: "*…the point of diversion would need to be replaced at a 525-foot elevation in the immediate vicinity of San Clemente Reservoir to avoid extensive improvements to the existing filter plan.*" Currently, Cal-Am is able to divert 1.4 cfs to the CV Filter Plant through the Russell Well field, without any improvements and the loss of pressure from San Clemente Dam. The FEIR/S should fully review the need for moving the diversion point upstream 6,000 feet and

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should describe potential impacts on habitat at the point of diversion and in the reach(s) affected by diversion. Alternatives to moving the diversion should be fully evaluated. These comments apply to other alternatives, including the No Project.

WAT-4

Page 3-44, Para 2: "*The screened intake would need to be constructed and maintained approximately 6,000 to 6,500 feet upstream of the dam.*" The FEIR/S should describe Cal-Am's current right to divert flow at San Clemente Dam and whether Cal-Am needs to apply to the State Water Resources Control Board for a modification to move its point of diversion. Currently, Cal-Am is limited to direct diversion of 1,100 AF at San Clemente Dam. This is equivalent to a continuous direct diversion rate of ~3.1 cfs over a typical 180-day, six-month long dry season. If more than 1,100 AF is proposed for diversion at San Clemente Dam, Cal-Am would also need to modify its water right to increase the quantity of water diverted. This comment applies to all of the alternatives, except the No Project.

SED-31

Page 3-47, Para 1: "*Previous sediment transport modeling studies determined that removing or notching the dam and letting the river flush the sediments downstream in an uncontrolled manner would pose unacceptable risks for sediment accumulation and flooding in downstream reaches of the river.*" MEI (2005) documents the quantity of sediment above elevation 506 and the amount of sediment that would build up in the river channel as a result of notching (120-140 AF at the end of the 41-year simulation (Figure 2.3, MEI[2005]). Considering this relatively small quantity of accumulated sediment, the FEIR/S should fully evaluate whether removal and storage of 930 AF of sediment is actually needed to mitigate for the long-term deposition of 120-140 AF in the river channel and whether the risk could be reduced to baseline conditions (No Project) by removing and storing significantly less material.

LAND-1

Page 3-48, Para 4: "*The use of site 4R as sediment disposal site and access easements would need to be negotiated with the District.*" Are there land use restrictions currently in effect at this site? Does the Park District have plans or policies that would prevent the use of this site?

FI

Page 3-51, Para 5: "*A removable section would be disassembled annually to allow stream and fish passage during the non-construction periods.*" The FEIR/S should describe additional mitigation that may be required for trapping and transporting fish past the construction zone at the temporary diversion facility, if channel conditions and habitat in the reach below the diversion are not suitable for juvenile residence and passage downstream during the non-construction season at low flows.

GEO-2

Page 3-54, Para 6: "*Improvement of the existing road would consist of widening the road to 20 feet (minimum width of 15 feet with turnouts for passing in tight reaches), improving the radius of curvature at sharper curves to allow passage of large trucks, and constructing a drainage ditch along the uphill edge of the road.*" The existing roadway is very narrow at 10-12 feet in width and built on steep slopes that frequently wash out during the winter. The FEIR/S should

GEO-2 fully evaluate the erosion potential along the access road and include mitigation measures to minimize impacts from increased runoff and soil erosion.

AA-39 FI-37 Page 3-56, Para 2: Statements on stream flow up to 55 cfs being routed through the ladder and dredging upstream of the fish ladder should be reviewed and updated per previous comments re: PPP on pages 3-33 to 3-35.

SED-32 Page 3-56, Para 3: *"Dredging upstream of the fish ladder would occur on average every three years, where significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone (using the proposed sluiceway next to the fish ladder exit)."*

Where are impacts and mitigations from the dredging described? What information was used to determine the frequency of dredging?

AY-6 p. 3-56 and 3-57 – a three-stage channel is proposed for the remaining reservoir sediments. The profile of the remaining sediments indicates that two very different channels would need to be constructed – one for a relatively steep channel in a narrow valley and one for a meandering channel in wide alluvial flat. No performance measures are suggested that would indicate how these channels would be monitored or maintained.

AA-40 Page 3-57, Para 3: Under construction schedule and operations, statements in the FEIR/S about the schedule for final engineering and beginning of construction should be revised based on the anticipated date of a selection of an alternative.

AA-41 Page 3-63, Para 1: "*Removal of the dam requires prior removal of the sediment accumulated in the reservoir to approximately the depth of the original streambed when the dam was placed in service in 1921.*" The low point of the pre-construction ground surface shown in Figure 3.3-2 is shown as 454 feet elevation. But, the existing excavation limit at the damsite is shown as extending down to elevation 435 at station 18 (1920 stationing) in the same figure. The FEIR/S should evaluate how the streambed will be reconfigured and stabilized at the toe of the existing dam considering that the existing excavation limit is ~ 20 feet lower than the original streambed level.

FI-38 The Draft EIR/EIS does not describe impacts to rearing habitats in the river channel within the existing inundation zone of SCR. The FEIR/S should address the potential for temporary, mid-term and long-term habitat gains/losses in inundation zones along the mainstem and San Clemente Creek.

WAT-5 Pages 3-72, Para 4: statements regarding moving the diversion point at San Clemente Dam and maintaining a maximum diversion rate of 16 cfs from a new diversion point upstream of rerouted

WAT-5

dam should have the same review, evaluation and potential actions by the SWRCB, as notching alternative. The FEIR/S should address similar issues as per comments on page 3-44, Para 1 & 2.

AA-42

Page 3-73, Para 5: "*Sediment would be removed to approximately the depth of the original streambed that existed in 1921.*" This should be reconciled with the cross-section in Figure 3.3-2 that shows the original bed was excavated approximately 20 feet lower when San Clemente Dam was built in 1921. The FEIR/S should review and evaluate how the lowered section at the damsite will affect sediment transport, especially in the vicinity of the confluence with San Clemente Creek and the toe of the new sediment plug in the old river channel.

AY-7

Page 3-80, Para 1: "*The channel profile and section in Figure 3.5-3 show only the general geometry of the channel construction as used in the MEI hydraulic analyses...*" The referenced figure shows the profile of the haul road. The FEIR/S should provide full documentation of the proposed channel geometry through the diversion channel and the post-project channel in the post-project San Clemente Creek channel downstream of the diversion channel.

SED-35

Page 3-80, Para 1: "*The channel profile...includes a diversion sill at the channel upstream El. 530 to minimize downstream sediment transport and a slightly steeper slope than the natural geometry.*" What portion of the gravel, cobble and boulders stored upstream of this location in the mainstem would be mobilized and pass downstream? Would a sill limit future recruitment of beneficial substrate (material coarser than sand) and for how long? How would dynamic equilibrium be established with a sill in place? The FEIR/S should fully evaluate effects on spawning and rearing habitat in the reach below the diversion sill and the time period before natural recruitment of gravel begins to pass this location. If the reroute alternative is the selected project, mitigation measures should include removal and storage of gravel and cobble in the old inundation zone of San Clemente Reservoir to be placed into the diversion channel.

FI-39

SED-35

SED-36

AA-43

WET-5

Page 3-80, Para 3: "*The 200-foot wide by 3-foot thick by 40-foot deep soil cement cutoff wall will be constructed to bedrock to prevent undermining and seepage of river flows below the diversion dike.*" How will a high phreatic water surface be maintained in the old sediment layers immediately upstream of San Clemente Dam, which is described on page 3-75 Para 3 as a project goal? The FEIR/S should fully evaluate how the existing wetlands will be maintained given the lack of seepage past the diversion dike and the 550 foot elevation of the proposed sediment disposal area. Based on the distribution of habitat types in the existing inundation zone, it is more reasonable that the higher elevation of new sediments in the disposal zone and lack of seepage from the old river channel, will severely limit distribution of phreatic zones and reduce wetland coverage in the project area. This should be fully evaluated in the FEIR/S and adjustments made to estimates of jurisdictional wetlands.

AY-8 Page 3-81, Para 5 & 6: "*The San Clemente Creek stream channel would be exposed and require reconstruction.*" The reconstructed channels described in Section 3 are not likely to be suitable for construction through the San Clemente Creek arm of the reservoir. The entire flow from the Carmel River mainstem, plus natural flows in San Clemente Creek must be routed through a reconstructed channel. Further, it is not clear why it would be necessary to excavate in the San Clemente Creek arm down to the pre-1921 level, except at the confluence with the mainstem. It is quite likely that the historic creek configuration near the bottom of the valley would be too narrow and would not be stable enough geomorphically to handle the increased flow. Instead, a wider channel at a higher level would probably be required to pass the combined flow of the creek and mainstem.

Chapter 4.0 Geology and Soils

GEO-3 Page 4-5 Regional Seismicity. The third paragraph cites the Converse Consultants 1982 report as evidence that the Cachagua Fault zone is not active. This discussion should reference a more recent study of the Cachagua Fault that was conducted for MPWMD as part of geotechnical investigations for the New Los Padres Reservoir Project. Pertinent discussion is found in the final report titled Geotechnical and Engineering Studies for the New Los Padres Water Supply Project (The Mark Group, March 16, 1995, see page 5-8).

GEO-4 Page 4-6 Table 4.1-1: Estimated Peak Acceleration of Specific Faults. The estimated peak horizontal acceleration for the named nearby faults is based on a calculation methodology from 1981 (see footnote 3), which may not adequately reflect revisions for more recent seismic events, including the Loma Prieta (1989) and Northridge (1994) events. These calculations should be revisited to ensure that the selected seismic design criteria are appropriate and consistent with more current methodology.

GEO-5 AY-9 Page 4-13 Alternative 3 (Carmel River Reroute and Dam Removal). Issue GS 4: *Soil Erosion,* briefly discusses the risk of erosion along access road improvements, in sediment disposal areas, and from sediment and rock discharges to streams. However, no discussion is given to assess the potential for destabilization of slopes resulting from the erosive forces of the Carmel River over the course of its rerouting through the San Clemente Creek channel. More specifically, what is the significance of the potential for high-river flows along the San Clemente Creek channel to destabilize the base of the channel slopes and possibly produce rockfalls, landslides or debris flows that could partially or completely block the channel, and result in impoundment of the river behind such a blockage?

SED-36 Page 4-17, fourth paragraph. "*The distribution of sediment downstream of the dam as a result of sluice gate operations was not modeled for the Proposed Project or Alternative 1...but MEI stated that downstream impacts under the Proposed Project with the implementation of the sluice gate would be similar to impacts simulated for Alternative 1 (Dam Notching) (MEI pers.*

SED-36 *comm. March 2006).*" Appendix I states "*... that quantitative sluicing modeling was performed for the Proposed Project.*" Please clarify and resolve these statements.

AY-10 Page 4-19, Para 4. While the theoretical peak capacity of the spillway may be 20,300 cfs, the actual capacity is much less, due to debris flow that often blocks ports during high flows (see comment on Page 3-24 and picture above).

AY-11 Page 4-20 to 4-23, Table 4.2-2. It appears that the table shows the maximum peak mean daily flow in cfs, while the title of the table seems to indicate that this is a monthly rate. USGS reports flows on a mean daily basis. Please also review text on page 4-19 that discusses monthly flows. Should this be mean daily flows?

SED-37 Page 4-25, bottom para. "*Sluicing would transport gravels as well as fine sediments downstream. The composition of the sediment loads would be similar under the Proponent's Proposed Project, Alternative 1 and Alternative 3. An increase in the transport of coarse sediment would occur, and would be beneficial for downstream fish and riparian habitats.*"

Sluicing under the PPP and Alternative 1 is proposed at flows of 300 to 700 cfs and fine material will continue toward, and presumably down, the fish ladder at flows of less than 50 cfs. Under both Alternative 2 and 3, sediment would be transported according to the available stream power, with no restrictions or artificial barriers. How can the composition of sediment loads to the downstream reaches under the PPP, Alternative 1, and Alternative 3 be similar when sluicing operations cease at flows greater than 700 cfs while sediment will continue to be routed through the bypass at flows up to the PMF?

TE-12 Page 4-211, first paragraph. "*Construction activities could result in loss of **663** acres of oak woodlands protected by the Monterey County Oak Protection Ordinance in the area mapped in 2005.*" However, Table 4.5-1 states that only **66.4** acres of oak woodlands may be affected by dam removal.

TE-13 Page 4-211, fourth paragraph. "*The acreage of vegetation cover type that would be lost as a result of Alternative 2 implementation is provided in Table 4.5-1. The total acreage of vegetation that would be lost in the area mapped in 2005 is 131 acres.*" However, Table 4.5-1 shows that the total vegetation that may be affected is 140.4 acres. Are these numbers supposed to match?

NEPA/CEQA-20 Chapter 5, Section 5.3.3, page 5-12, Seaside Basin Injection/Recovery Project:
The text incorrectly states in line 9 that: "*The environmental effects of this project have not been analyzed; however, analysis conducted for the 2000 RDEIR concluded that the well and pipeline portion of the project would have relatively minor construction impacts .....* [continues]"

Instead, the text should say:

NEPA/ CEQA-20 The environmental effects of Phase 1 of the MPWMD Aquifer Storage and Recovery (ASR) Project have been analyzed in a Draft EIR/EA released in March 2006; a Final EIR/EA is anticipated to be certified by the MPWMD Board in August 2006. The Phase 1 project entails a second injection well at the MPWMD's existing Santa Margarita Test Injection well site on the former Fort Ord, using existing CAW facilities, with the exception of a new CAW temporary pipeline that is planned for construction in Fall 2006. Subsequent phases would be the subject of separate future environmental review, and depend on the progress of other regional water supply projects described in this chapter. The DEIR/EA concluded that the well and pipeline portion of the project would have relatively minor construction impacts; operation of the project would have beneficial effects on the Carmel River hydrology and dependent fish and wildlife. [Note: All remaining existing text starting with "*however, analysis conducted for the 2000 RDEIR concluded that…..*" should be deleted].

Chapter 5, Section 5.3.3, page 5-13, MPWMD Sand City Desalination Plant. The following text should be added to the end of the existing paragraph:

NEPA/ CEQA-21 An administrative draft EIR was prepared by MPWMD and reviewed by its Board in December 2003. At that time, completion of a public Draft EIR was delayed until additional studies on seawater intake and brine discharge technology could be completed. In March 2004, the MPWMD Board determined that it would not pursue the desalination project, pending review of regional desalination projects in Moss Landing that had been proposed. As of June 2006, MPWMD has updated cost information for the desalination project, but is not actively pursuing the project.

From Appendix I -
SLUICING OPERATIONS EVALUATION

Page 7
"…a minimum of 15 to 20 days would be required for the sediment deposits in the incised channel to prograde to the vicinity of the fish ladder inlet."

Page 9

SED-38 *"8. Evaluation of the rate at which the incised channel will refill after the sluice gate is closed at the end of each sluicing period indicates that at relatively low discharges in the range of 30 to 50 cfs, the sediment deposits may prograde to near the fish ladder inlet within 5 to 7 days.*

9. The results in the previous item represent conditions after the first few sluicing operations. After repeated operations, the incision will likely progress even farther upstream than is *indicated by the analysis presented here, which should increase the time before sediment begins to affect the fish ladder during non-sluicing periods."*

From Appendix J -
SLUICING OPERATIONS AND MAINTENANCE PLAN

Page 3 - DATA ANALYSIS AND FORMULATION OF OPERATION & MAINTENANCE PLAN:

"... the sluicing envisioned on the Carmel River would occur over several hours once or twice a year."

SED-38 MPMWD Comment: Although no definitive estimate is given of how long it would take for sediment to prograde to the fish ladder after several sluicing operations have been completed, it is apparent that flows in the 30-50 cfs range have the ability to cause sediment deposits to prograde rapidly toward the fish ladder after a sluicing event. These flows occur between 40% and 50% of the time during the period December 1 to May 31 (Figure 5, Appendix I) or between 72 and 90 days per year, on average. There would appear to be numerous opportunities for sediment to move toward the fish ladder, while the number of days for optimum sluicing conditions is much lower at 13 to 27 (i.e., between 300 and 600 cfs as flow is rising or between 7% and 15% of the time).

The analysis in Appendix I and the operations proposal in Appendix J does not address the low flow condition (30-50 cfs) where sediments rapidly prograde to the fish ladder in as little as five days with no storms on the horizon to maintain the ladder in a sediment-free state.

GEN-15 Comment on the following reference: Mussetter Engineering Inc. 2006b - Summary of Hydraulic and Sediment-transport Analysis of Residual Sediment: Options for the San Clemente Dam Removal/Retrofit Project, California

Page 26, Figure 16 – This figure indicates that for the notching option, at flows above the two-year level (2,250 cfs), velocity just downstream of the dam would exceed 50 fps or more than 34 mph, which is close to the velocity associated with free fall. What is the estimated mortality rate of adult and juvenile steelhead during this type of fall when they are migrating downstream?

Other General Concerns

TE-14 What guidelines and/or conditions are proposed to ensure replacement of riparian vegetation and other mitigation associated with the construction of the Tularcitos Access Road?

TE-15 If the re-route alternative is selected, demolished dam debris should be covered with native

TE-15

material to give the area a more natural look and provide a medium for vegetation to establish.

Thank you for your consideration of these comments. If you have questions about this letter, please contact Larry Hampson, MPWMD Water Resources Engineer, in the Carmel Valley field office at (831) 659-2543.

Sincerely,

David A. Berger
General Manager

cc: MPWMD – Bell, Hampson, Stern, Christensen, Oliver, Dettman, and Fuerst

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In response refer to:
150308SWR2006SR00179:JEK

David A. Gutierrez
Division of Safety of Dams
Department of Water Resources
1416 Ninth Street, P.O. Box 942836
Sacramento, California 94236

Dear Mr. Gutierrez:

NOAA's National Marine Fisheries Service (NMFS) thanks you for the opportunity to comment on the March 2006, draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the San Clemente Dam Seismic Safety Project on the Carmel River, Monterey County, California. The California American Water Company (Cal-Am), under direction from the Department of Water Resources' Division of Safety of Dams (DWR) first determined the San Clemente Dam (SCD) was unsafe and posed a risk of failure in 1992. Since 1992, two species, the South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) and California red-legged frog (CRLF) (*Rana aurora draytonii*), were listed pursuant to the Federal Endangered Species Act (ESA) of 1973, as amended, and are present in the Carmel River watershed. This draft EIR/EIS is the third attempt by the DWR to find a project to eliminate the risk of dam failure while protecting Federally-listed species in the action area.

Since pre-consultation for the seismic safety project began in 1998, NMFS has expressed concerns with the impacts of sediment on steelhead. We have requested additional information about project specific sediment impacts in order to have sufficient information to initiate Endangered Species Act section 7 consultation. As early as November 8, 2000, NMFS stated impacts of sediment pulses resulting from sluice gate operations were likely a fatal flaw in the Proponent's Preferred Project. In addition to sediment-related concerns, NMFS has repeatedly expressed concerns to the SCD Seismic Safety Project Core Group about other aspects of the buttressing alternative. This latest draft EIR/EIS raises identical concerns from NMFS regarding potential adverse affects to listed steelhead.

General Comments

FI-78

NMFS has two general concerns with the draft SCD Seismic Safety Project EIR/EIS. The most significant concern is the large amount of take of listed species we believe will occur from the proposed sluice gate operations included in the Proponent's Preferred Project (buttressing) and Alternative 1 (notching), as described in the EIR/EIS. Available information indicates the take of steelhead will be in the form of mortality, severe sublethal effects, and delayed adult migration every year. The other concern relates to differences between the *Evaluation of Sediment Sluicing Options Associated with the San Clemente Dam Fish Ladder* (Mussetter Report) from March 16, 2006, which modeled how sediment would be managed by the sluice gate and its downstream impacts, and the Sluicing Operations and Maintenance Plan (O and M Plan).

FI-78

The sluice gate operations will pass 2 to 4 acre-feet (AF) of sediment, possibly exceeding 10 AF, with each sluicing during winter migratory periods. It is anticipated that for the next 12 to 20 years, (3 to 5 steelhead generations), sediment passed via sluicing will be predominantly fine grained and, subsequently, the suspended sediment concentrations below the dam would exceed lethal levels to steelhead. Sediment can be lethal to steelhead and their eggs by physiological means (gill trauma, interruption of osmoregulation, and cessation of reproduction and growth) and impacted habitat (reduced spawning habitat, reduced interstitial flow, entombing redds, and elimination of food sources). During high flow events, steelhead often seek shelter from high velocities along the bottom of the river channel, where suspended sediment concentrations are expected to exceed 20,000 mg/L during sluice events. This would exceed lethal levels as reported by Newcomb and Jensen (1996). Additionally, suspended sediment concentrations will fluctuate depending on the quantity of sediment released, but Mussetter's Report didn't provide a range of suspended sediment concentrations for sluicing of between 2 AF and 10.5 AF, which will need to be included in the final EIR/EIS. Furthermore, research in other systems (Bergstedt and Bergersen 1997) indicates that smaller quantities of sediment releases could increase suspended sediment concentrations to over 200 times their pre-sluicing levels for several days up to 29 km downstream (approximately the distance between SCD and the mouth of the Carmel River), again exceeding lethal limits. Essentially, the operation of the sluice gates will kill between 20 and 60% of migrating adults, migrating smolts, and rearing juveniles in the lower 18.5 miles of the Carmel River, several times a year, every year, until the dam is removed or the fish are extirpated. Clearly, this proposed action is not beneficial to steelhead and we strongly disagree with the "beneficial" determination in the EIR/EIS.

FI-79

The draft EIR/EIS' evaluation of impacts to downstream riverine habitats is inadequate. The EIR/EIS needs to address the sediment effects on the bed and water column. Under normal conditions sediment is transported over a six month period, generally the late fall through early spring period. Conversely, sluice gate releases, will travel in uniformly-sized sediment cluster that will move slowly downstream and overwhelm the riverine environment, depending on flow rate, flow duration, and channel morphology. The vast majority of the sediment released via the sluice gate method will be of uniform size, so the particles would not redistribute themselves to any significant degree downstream. At a minimum, these impacts need to be analyzed in terms of steelhead spawning, rearing, and migratory habitat.

FI-80

In addition to the impacts to the lower Carmel River of sluicing downstream of the dam, NMFS is concerned about the impacts of the sluicing operations in the Carmel River arm and San Clemente arm of the reservoir. Issues such as the water quality associated with the rapid drawdown of the reservoir during sluicing, adult fallback rates, the loss of redds built in sediment mobilized during sluicing, and upstream adult passage from San Clemente Reservoir through unnaturally turbid water have not been adequately analyzed in this draft of the EIR/EIS. We

FI-80 believe sufficient analysis of the upstream impacts of sluicing to steelhead and their redds would reveal they are subjected to lethal or near-lethal conditions.

FI-81 For those steelhead that manage to survive, additional impacts from sluicing will occur and the EIR/EIS is silent on these impacts as well. For example, NMFS is concerned over delays to fish passage when the fish ladder is closed for days at a time (provided migrating adult steelhead are able to reach the ladder) in order to facilitate sluicing events. Sediment pulses below the dam, which according to available information will be lethal to 20 to 60% of the steelhead population, will force the remaining migrating steelhead to seek shelter to avoid the lethal levels of suspended sediment carried downstream, which will delay or prevent migration. Additionally, we believe adult migration passage will be adversely affected upstream of the dam during sluicing operations. Adult burst speed was considered in the EIR/EIS, but the distance of impaired passage upstream of the dam was not. The EIR/EIS did not consider whether adult steelhead can swim at full burst for 0.5 miles[1] (they cannot) or if they would even try to swim against water with exceptionally high suspended sediment concentrations. The large sediment plugs released several times a year by sluicing will also create passage barriers downstream in some low gradient sections of the Carmel River.

SED-51 The Mussetter Report indicates sluicing would need to occur every 5 to 20 days in order to achieve sediment continuity, while the O and M Plan indicates sluicing will only occur once or twice a year. On average 16.5 AF of sediment is delivered to the reservoir each year. However, sediment delivery events are, on occasion, the result of significant stochastic events (*i.e.*, as a result of the Marble Cone fire in the head waters of the Carmel River an estimated total of 800-1000 AF of sediment was deposited behind San Clemente dam). The buttressing alternative (without sluice gates) model reported an average of 12.2 AF of sediment passing over the dam (when run for 41 years into the future). The remaining sediment (4.3 AF) would continue to build up behind the dam. This is likely why the O and M Plan only plans to sluice 4 AF of sediment each year. However, sluicing can potentially dump 9.5 to 10 AF in 24 hours, which equates to approximately 60% of 16.5 AF and 80% of the 12.2 AF passing over the dam if buttressed. Therefore, 6.5 AF will accumulate in the reservoir under the O and M Plan and 4.3 AF will accumulate under the buttressing alternative (without sluice gates). Consequently, NMFS believes the estimates in the O and M Plan are incorrectly based on the need to sluice 4.3 AF annually from the reservoir and as a result, they plan to release too little sediment to maintain fish passage to the upper river. Over time, the proposed sluicing will be inadequate to handle incoming sediment loads and there are no contingency plans for stochastic sediment delivery events.

SED-52 NMFS is concerned that the O and M Plan lacks a comprehensive analysis and provides no assurances for abnormal conditions or even conditions 5 years from now. There are no contingency plans for drought or above average rainfall events or for episodic sediment delivery (*i.e.*, wildfire and resulting sediment delivery which is a fairly predictable occurrence in the chaparral vegetation community in California). All reasonably expected conditions (wet years, dry years) needed to be realistically evaluated in terms of the totality of their potential impacts. The EIR/EIS needs to analyze the effects that will occur between the uppermost point of the reservoir incision channel to the ocean. There is also uncertainty about who will make the

[1] the upstream distance affected by sluicing

SED-52 decision to sluice, which needs to be clearly vetted. NMFS also expects mechanical problems with the sluice gates at some point in the next 100 years to create conditions that cause the fish ladder to be disconnected from the reservoir thus a contingency plan will need to be developed for this circumstance.

There are many instances throughout the draft EIR/EIS where the alternatives are compared to the baseline conditions rather than the No Action Alternative (Alternative 4). In a NEPA document, the analysis must compare the effects of an action versus the No Action Alternative. The effects determinations are inconsistent or incorrect, which creates the impression that the Proponent's Preferred Project is beneficial.

Specific Comments

<u>Mussetter's Report</u>

Section 4 summary, page 8, item 3, alludes to differences in time for wet and dry years, which we know to be substantial. NMFS recommends further analysis to address risks during non-normal flow years.

Section 4 summary, page 8, item 4: What is the depth of accumulation in the channel downstream of SCD and what is the channel geometry like and flow depths?

Section 4 summary, page 8, item 5: What physical processes occur in the stilling pool? This needs additional analysis.

Figure 22, needs an explanation of steep water surface curves in the vicinity of the dam to about 800 feet upstream, and implications for fish passage in addition to the velocity figures given.

Figure 26: What causes the spikes in velocity? Are they real or model artifacts and how will they impact steelhead migration?

<u>Sluicing Operations and Management Plan</u>

SED-53 Page 3, second paragraph, is where 'one or two sluicing events per year for several hours' is proposed, and demonstrates a significant inconsistency between the O and M Plan and the Mussetter Report.

FI-82 Page 4, first paragraph of Fish Behavior and Movement section: The operations protocol for cutoff of flows to the ladder is set at 20 or more fish passing the ladder during the previous 2 days to protect steelhead. This cutoff protocol is completely inadequate because the number of steelhead used equates to over 6 percent of the recorded adult population passing SCD in recent years.

FI-83 Page 4, last paragraph: NMFS does not believe that the plan to induce upstream migration from a resting area would work. Instead, the steelhead may just move to a different location a few feet away.

FI-84 Page 7, second paragraph: There will be a mortality and the survivors will have their migration delayed due to steelhead response to the sediment plume as it passes the length of the river from the dam to the ocean. This avoidance behavior to extreme sediment loads is well documented.

SED-54 Page 7, last paragraph: NMFS is extremely concerned by the language used in this section. To indicate that "(i)t is not possible to predict the suspended sediment load or turbidity levels from the modeling data" is unwarranted because the figures provided in the Mussetter Report were based on these data. Statements such as this call into question the analyses used, and interpretations of results, here and elsewhere in the EIR/EIS.

SED-55 Sediment and Turbidity section: This section needs to include an analysis of sediment pulse routing downstream and an analysis of such pulses on fish and habitat. Without these analyses, NMFS has little confidence in any interpretations provided in the EIR/EIS. For example, the additive effects of sediment pulses were not considered. Pulses of sediment can accumulate in low gradient sections of stream and create adverse cumulative effects beyond the individual releases.

GEN-17 Figure 5: This caption appears to be for another, unrelated figure.

GEN-18 Also, the O and M Plan fails to address such concerns as changes in dam ownership, staffing, long-term funding, and budget crises. NMFS cannot approve such an intensive and risk prone plan, without considerable changes to the O and M Plan, and then it must be third party implemented, funded up-front, and bonded for at least 100 years to ensure that the steelhead resource will not be lost due to reasonably foreseeable events.

EIR/EIS Section 4.4

FI-85 In table 4.4-2, you cannot express fish counted as a percentage of the total run of fish if the total number of fish in the run is unknown. Available information indicates that during some years, fish pass the counter on the ladder on the last day the counter is operated, strongly suggesting the adult migration was not complete. Obviously, "most" of the run has passed in this time period, but using percentages is inaccurate. There are some years that the river flows to the ocean year round and adults can move upstream at any time, and early and late migrations are known for the few years the counter was in use early or late in the year.

FI-86 Table 4.4-5: Again, percentages cannot be used in this case because only 60% of the habitats are considered. We know the lagoon provides rearing habitat and there are some areas of good quality habitat in reach 3 as well. The percentages given in the table are inflated by not including the other 4 reaches that were not analyzed.

FI-87 Sleepy Hollow Steelhead Rearing Facility section: The entire section can be eliminated as it adds nothing to the discussion of the SCD EIR/EIS. The rearing facility was established to raise fish that are displaced when the river downstream dries up every year.

FI-88 Table 4.4-6: Under PP, Reach 4 – 8,532 and 8,522 – are these supposed to be the same? Please explain the difference in numbers for reach 6a between alternatives. Under reach 5, Alt 1, why do the operations have half the effects of CY2 and 3? We recommend describing the difference between CY and operations below the chart.

FI-89 FI-1, Access Route Improvements: NMFS disagrees with the effects determination of "temporary" for this aspect of the project. The EIR/EIS indicates the roads will be permanent, some becoming the primary access routes after the project. Riparian roads are a leading cause of water quality degradation, contributing fine sediments and leading to increased cobble embeddedness. The bridge over Tularcitos is a major impact associated with this project, which is not reflected in the effects determination.

FI-90 FI-3, Operation of a Trap and Truck Facility: This has been avoided by the June 15-Oct 15 instream work window for PP and Alt 1 – no trap and truck measures will be needed. For Alt 2 and Alt 3, NMFS is still willing to eliminate the trap and truck expense to get the dam removed.

FI-91 FI-6, Water Quality Effects on Fish: Include language on fuel storage, spills, BMPs, etc. Also, for some reason, impacts to water quality resulting from the sluice gate have not been analyzed. NMFS expects the impacts to steelhead from sluice gate operations will be lethal the entire 18.5 miles below the dam.

FI-92 FI-7, Fish Ladder Closure: Long-term ladder issues, specifically those causing closure , need to be addressed – sediment inundation, sluicing operations, etc – in the EIR/EIS as well as in the O and M Plan with acceptable passage plans when the ladder is impassable.

FI-93 FI-8, Upstream Fish Passage: See General Comments on sluice gate operation and then address the inappropriate effects determination. As for passage between the reservoir and upstream habitat during sluicing, would 300-700 cfs, 1-foot deep, and the width of the channel for 0.05 miles be a passage barrier? The river was considered passable by citing steelhead burst speeds in feet per second (fps) and flow rates of about 6 fps 50 feet upstream of the dam. At this time however, 2-4 acre feet of sediment will be flowing down the Carmel at 6 fps. Steelhead don't usually swim into areas of high suspended sediment, but rather try to find cover, hold along the channel bottom, and delay their migration until there is less suspended sediment in the water. It is more likely that they swim downstream away from the sediment laden water rather than upstream through it.

FI-94 FI-9, Downstream Sediment Impacts: See General Comments and then address the inappropriate effects determination. The sluiced sediment will not be "mobilized and redistributed" but will more likely be uniformly-sized material and will move through the river in what is described as a "plug flow." It will be mobilized, but it will move downstream, smothering each area that it moves into until it reaches the ocean. In low gradient channels, this process can take decades even if flows are above normal every year. The impacts will easily range from the dam to the ocean and will exceed lethal limits the entire way downstream. In regards to the number of fish impacted, only the numbers of rearing fish are considered, but migrating adults, migrating smolts, and rearing juveniles will be subjected to lethal levels of suspended sediments in the lower river. Essentially 100% of the anadromous fish in the Carmel River will be affected by

FI-94 this project if it is carried out as described in the Mussetter Report, which notes the need to sluice every 5 to 20 days during the migratory season.

FI-95 FI-13, Stream Sediment Removal: Must remove sediment to access the lower gate in the dam face. Where will the sediment be disposed of, how will you remove it, risk of fuel spills/lubrication leaks, fine sediment against dam, *et cetera*.

FI-96 FI-14, Notching Old Carmel River Dam: NMFS understood the original plan to notch the Old Carmel River Dam would require dewatering the area around the dam. Mortality of steelhead in dewatered areas is likely to occur and would be a significant impact under NEPA. The effects determination here is incorrect.

GEN-19 Alternative 1: NMFS has many similar concerns between the Proponent's Preferred Project and this alternative. For instance, in FI-8: NMFS believes sluicing will not be beneficial to listed steelhead.

FI-97 Alternative 2, FI-9, Downstream Sediment Transport: This will be beneficial as natural sediment loads would be transported during natural sediment transport flows. Natural sediment transport would be allowed to occur during all flows during all times of the year, differentiating this alternative and Alternative 3 from the previous two alternatives that would not provide natural sediment transport, but rather pulses of sediment at levels that would be considered catastrophic if they occurred naturally.

FI-98 SED-56 In Alternative 4, sluicing seems to be part of this alternative, but it is not addressed in the same fashion as the Proponent's Preferred Project or Alternative 1. It should be addressed in the same fashion and the effects determination should be the same for both. There are several instances where the effects between the No Action Alternative and the Proponent's Preferred Project are the same in their description, but different under the effects determination.

Conclusion

AL-71 In light of the impacts described above, NMFS believes the use of sluice gates constitutes the fatal flaw in the Proponent's Preferred Project (buttressing) and Alternative 1 (notching). Based on the information NMFS has reviewed, NMFS believes the sluice gates will likely lead to the extirpation of an anadromous steelhead run in the Carmel River, which is the largest remaining run of anadromous steelhead in the S-CCC distinct population segment. NMFS, as stated many times over the past 6 years, recommends no further consideration of alternatives that include sluicing. We strongly encourage the DWR to fully consider our recommendations and move forward to address the seismic safety of the San Clemente Dam.

Thank you for your continued coordination and cooperation on this project. If you have questions regarding this letter please contact Mr. Jason Kahn at 707-575-6096 or Ms. Joyce Ambrosius at 707-575-6064.

Sincerely,

Dick Butler
Santa Rosa Area Office Supervisor
Protected Resources Division

cc: Russ Strach - NMFS
Steve Leonard – Cal-Am
John Klein – Cal-Am
Jan Driscoll – Allen Matkins LLP
Jeremy Pratt – Entrix, Inc.
Vic Iso-Ahola – MWH Americas, Inc.
David Berger – MPWMD
Bob Smith –Corps
Rob Floerke – CDFG

June 30, 2006

In response refer to:
150308SWR2006SR00179:BLS

Robert Smith, Project Manager
U.S. Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, California 94105-2197

Dear Mr. Smith:

NOAA's National Marine Fisheries Service (NMFS) thanks you for the opportunity to comment on the April 2006 Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the San Clemente Dam Seismic Safety Project on the Carmel River, Monterey County, California. The Draft EIR/EIS analyzes California American Water Company's Proposed Project (dam strengthening) and four alternatives. By letter dated April 5, 2006, NMFS provided comments on the December 2005 Administrative Draft Environmental Impact Statement Report for the San Clemente Dam Seismic Safety Project EIR/EIS. NMFS requests those comments as well as the enclosed comments (Enclosure) be addressed in the Final EIR/EIS.

As stated in the Draft EIR/EIS, California American Water Company has applied to the U.S. Army Corps of Engineers (Corps) for authorization to deposit approximately 3,200 cubic yards of fill material into waters of the U.S. to strengthen the San Clemente Dam. The Proponent's Proposed Project (and Alternative 1: dam notching with partial sediment removal) includes the use of sluice gates to regulate downstream sediment releases. This application is being processed under Section 404 of the Clean Water Act.

NMFS is providing comments on the Draft EIR/EIS pursuant to our authority under the Federal Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), the Fish and Wildlife Coordination Act (FWCA), and the National Environmental Policy Act (NEPA). A purpose of this letter and our enclosed comments is to offer the Corps our technical expertise to facilitate the conservation and protection of trust resources and to streamline the regulatory process. NMFS has provided technical assistance pursuant to the ESA to the Corps as early as 2000 regarding the San Clemente Dam Seismic Safety Project. Steelhead (*Oncorhynchus mykiss*) in the Carmel River are part of the Federally threatened South-Central California Coast (S-CCC) steelhead Distinct Population Segment (DPS). The Carmel River is designated critical habitat for S-CCC DPS steelhead.

The Corps is solely responsible for making final permit decisions pursuant to Section 404(a) of the Clean Water Act (33 U.S.C. 1344). Section 7(a)(1) of the ESA makes it clear that all Federal agencies have the responsibility for the conservation and recovery of listed threatened and endangered species. The FWCA provides that fish and wildlife resources are to receive equal consideration and be coordinated with other features of Federal projects and projects carried out under Federal permits and licenses that control or modify any bodies of water for any purpose. Section 1505.2(b) of NEPA requires that, in cases where an EIS has been prepared, the Record of Decision must identify all alternatives that were considered, "... specifying the alternative or alternatives which were considered to be environmentally preferable."

FI-42

As you may know, the current run-size for the entire S-CCC DPS is estimated be approximately 500 adults per year, which represents a decline of over 90 percent of the historic run-size. The percentage decline of the Carmel River steelhead run is likely greater. NMFS has determined the already severely depressed Carmel River steelhead run cannot be allowed to decline further if recovery of the S-CCC DPS is to be achieved.

FI-43

On August 11, 1992, a *Memorandum of Agreement Between the Department of Commerce and the Department of Army* was signed pursuant to Section 404(q) of the Clean Water Act. A purpose of this memorandum is to provide the exclusive procedures for the elevation of specific individual permit cases. Based on our review of the Draft EIR/EIS, our knowledge of river dynamics, and our technical expertise regarding listed salmonids, NMFS expects the Proponent's Proposed Project and Alternative 1 may result in substantial and unacceptable impacts to the Carmel River and would likely request the Corps to deny California American Water Company's permit as proposed.

FI-44

Based on our review of the Draft EIR/EIS, implementing the Proponent's Proposed Project or Alternative 1 will result in long-term adverse effects to all steelhead lifestages, including annual mortality, delayed adult migration and long-term degradation of the habitat downstream of San Clemente Dam that supports all lifestages of steelhead. NMFS's most significant concern is the adverse effects to steelhead and degradation of their critical habitat that would occur for as long as the San Clemente Dam remains in place and management of sediment (*i.e.*, sluicing) is conducted.

Our enclosed comments and detailed involvement since 2000 have provided the Corps the assistance necessary to develop and determine environmentally preferable alternatives. As stated

SED-41

in our April 5, 2006, letter, NMFS believes the use of sluice gates as proposed in the Proponent's Proposed Project and Alternative 1 is a fatal project flaw.

AL-10

The Draft EIR/EIS notes San Clemente Dam and Reservoir were never intended for flood control and the San Clemente Dam Seismic Safety Project has neither flood storage nor flood operations criteria. The Draft EIR/EIS also notes San Clemente Reservoir does not provide water storage for the California American Water Company system and the Proponent's Proposed Project will not improve current or future water storage. A dam and reservoir that provides neither flood storage nor water storage, commensurate

AL-10 with the long-term adverse environmental impacts associated with operating and maintaining the dam, make it clear to NMFS that Alternative 2 (dam removal) or Alternative 3 (Carmel River reroute and dam removal) are the environmentally preferable alternatives. Implementation of the Proponent's Proposed Project or Alternative 1 will likely jeopardize S-CCC DPS steelhead and destroy designated critical habitat of S-CCC DPS.

If you have any questions regarding this letter or our comments, please contact Mr. Bill Stevens at (707) 575-6066.

Sincerely,

Dick Butler
Santa Rosa Area Office Supervisor
Protected Resources Division

Enclosure

cc: Rod McInnis, NMFS, Long Beach
Russ Strach, NMFS, Sacramento
Lt. Colonel Philip Fier, U.S. Army Corps of Engineers, San Francisco
Jane Hicks, U.S. Army Corps of Engineers, San Francisco
Dave Gutierrez, California Department of Water Resources, Sacramento
Paula Landis, California Department of Water Resources, Fresno
Steve Leonard, California American Water Company, Monterey
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Mike Monroe, U.S. Environmental Protection Agency, San Francisco
Summer Allen, U.S. Environmental Protection Agency, San Francisco
David Berger, Monterey Peninsula Water Management District, Monterey
Monica Hunter, Planning and Conservation League Foundation, Salinas
Trish Chapman, California Coastal Conservancy, Oakland
Roy Thomas, Carmel River Steelhead Association, Monterey

Enclosure

National Marine Fisheries Service's (NMFS) Comments on the April 2006 Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the San Clemente Dam Seismic Safety Project on the Carmel River, Monterey County, California

June 30, 2006

South-Central California Coast Distinct Population Segment Steelhead

FI-45 The Draft EIR/EIS recognizes the protected status of the Carmel River steelhead population, but does not fully reflect the importance of the population to the South-Central California Coast (S-CCC) Distinct Population Segment (DPS). Restoring the Carmel River steelhead run is expected to play an essential role in the recovery of the S-CCC DPS, and its eventual delisting, but the Draft EIR/EIS does not acknowledge this.

FI-46 The Draft EIR/EIS provides only the most recent run-counts in the Carmel River and does not provide any historic context in which to assess the size of these most recent runs, either within the Carmel River itself or in the S-CCC DPS, of which the Carmel River is a part. The original[1] and most recently up-dated[2] NMFS's Status Review for Environmentally Significant Units of West Coast Salmon and Steelhead have reported that the historic run size of the Carmel River in 1928 was estimated by the California Department of Fish and Game at 20,000 adults per year, which is the largest steelhead run in the S-CCC DPS. The current run-size for the entire S-CCC DPS is estimated to be approximately 500 adults per year, which represents a decline of over 90 percent of the historic run-size. The percentage decline of the Carmel River steelhead run is likely greater. Analysis in the Draft EIR/EIS fails to demonstrate that the Proponent's Proposed Project and Alternative 1 will not further the decline of the Carmel River steelhead run.

FI-47 As part of the recovery planning for the S-CCC DPS, the Carmel River has been consistently ranked by NMFS as the most potentially viable steelhead watershed. NMFS has determined the already severely depressed Carmel River steelhead run cannot be allowed to decline further if recovery of the S-CCC DPS is to be achieved. Section 7(a)(1) of the Federal Endangered Species Act (ESA) makes it clear that all Federal agencies should participate in the conservation and recovery of listed threatened and endangered species.

The Carmel River has been designated as critical habitat for S-CCC DPS steelhead. The Carmel River downstream of San Clemente Dam supports a significant portion of the juvenile steelhead

[1] Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status of West Coast steelhead from Washington, Idaho, Oregon, and California. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-27.

[2] Good, T.P., R.S. Waples, and P. Adams, editors. 2005. Updated status of Federally listed ESUs of West Coast salmon and steelhead. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-66.

rearing in the lower Carmel River. The Draft EIR/EIS identifies significant adverse impacts to steelhead spawning and rearing habitat below San Clemente Dam associated with the sluicing of the reservoir to maintain effective operation of the reconstructed fish passage facilities. These include the repeated discharge of concentrated levels of finer sediments which would adversely affect steelhead habitat downstream.

FI-47

FI-46a

The mitigation identified for this significant adverse impact consists of "minimizing impacts on steelhead" and a further evaluation "to determine effects on downstream channels, habitat and fishes". This proposed mitigation is flawed in two fundamental respects. First, the proposal to further evaluate adverse effects of the proposed sediment sluicing operation on the downstream channel, habitat and fishes is not itself mitigation, and such proposals have been consistently rejected in judicial review under the California Environmental Quality Act (CEQA). Second, there is nothing in the protocols for the sluicing operations and management plan which clearly indicates to what level the impacts associated with this aspect of the proposed project would be reduced. FI-47b

FI-47c

FI-47d

Given the existing severely depressed populations of steelhead in the Carmel River, and the role of the Carmel River in the recovery of the S-CCC DPS, the vague mitigation measure proposed is not adequate to make a determination of "no significant impact". Further, a finding supporting a statement of over-riding considerations must address both the threatened status of the S-CCC DPS and the expected role the Carmel River will have in the recovery and delisting of the DPS.

NEPA/
CEQA-22

One of CEQA's main objectives is to require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. One of the purposes of the ESA is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. The Carmel River steelhead run is critical to the recovery of the S-CCC DPS. A proposed project alternative that results in the perpetual adverse modification of designated critical habitat, as well as perpetual take of listed species is inconsistent with CEQA, as well as the ESA and the recovery needs of the S-CCC DPS.

FI-47e

FI-47f

FI-47g

FI-47h

The Final EIR/EIS should: (1) address the fact that the severely depressed steelhead run in the Carmel River is one of the principal reasons the S-CCC DPS has been listed by NMFS as threatened under the ESA; (2) include a discussion on the long-term adverse impacts to listed steelhead (by direct mortality), fish passage and habitat downstream from the long-term sluicing operations as part of the Proponent's Proposed Project and Alternative 1; (3) address how the Proponent's Proposed Project and all of the alternatives will affect the restoration of the Carmel River steelhead run; and (4) provide analyses that demonstrate the Proponent's Proposed Project and Alternative 1 will not further the decline of the Carmel River steelhead run.

Effects of sediment discharged downstream of the San Clemente Dam from slucing operations

FI-48

The analysis of the sluicing operations' impacts downstream of the dam focuses on the physical behavior of the sediments. However, the analysis does not specifically address the impacts on fisheries or other aquatic resources. This lack of analysis is significant because it is principally the effects of discharged sediments (particularly fine sediments) in an artificial manner (timing, amount, duration and composition) on aquatic resources that is the focus of the CEQA analysis. In

FI-48 addition to steelhead, potentially impacted aquatic resources include benthic invertebrates and rooted aquatic vegetation.

The characterization of the sediment sluicing operations as causing only a "short-term increase in the sediment load to the downstream river" is misleading. While the immediate principal impacts of the sediment sluicing may be concentrated in a relatively short period each year, the sluicing operations are proposed in perpetuity and will be necessary in perpetuity, or at least for as long as the San Clemente Dam is in place. Consequently, the real impacts can only be evaluated on a cumulative basis. At a minimum, adult steelhead migrating upstream, benthic invertebrates, incubation of steelhead alevins, rearing/feeding of juvenile steelhead and steelhead spawning in the lower reaches of the Carmel River downstream of the San Clemente Dam will be adversely impacted in perpetuity by the sluicing operations.

FI-49

The Proponent's proposed standard regarding the timing of sediment sluicing (*i.e.*, ceasing sediment sluicing if 20 or more steelhead have passed the ladder in the previous two days) is arbitrary. Since it is arbitrary, the proposed standard could conflict with the basic objective of sediment sluicing: control sediment build-up in the river channel in the reservoir immediately above the San Clemente Dam to facilitate adequate steelhead passage opportunities through the fish ladder. It bears mention that in some years the number of steelhead proposed as the "cease sluicing standard" has constituted a significant portion of the total Carmel River steelhead run in a single month.

FI-50

As noted in the Sluicing Operations and Maintenance Plan, high turbidity and suspended sediment are potentially the most significant hazards to adult steelhead migrating up the Carmel River. Swimming performance of adult (and juvenile) salmon can be impaired by poor water quality. Migrating salmonids avoid waters with high silt loads, or cease migration when such loads are unavoidable. A large portion of the Carmel River adult steelhead population would be exposed to these effects based on the estimate that about one half (55 percent) of the adults that enter the Carmel River may move upstream of the San Clemente Dam.

FI-51

When water quality conditions are impassable to fish, their upstream movement is delayed for as long as that condition persists. Delayed fish may expend the stored energy necessary for successful migration, maturation and spawning before reaching their destination, resulting in weakened fish more disposed to disease or pre-spawning mortality. Delayed adult upstream migration is another stressor added to a population that has already declined significantly.

FI-52

The Draft EIR/EIS notes that suspended sediment levels as a result of sluicing would impair the ability of steelhead to see and feed, would impair homing, delay migration and cause physiological responses ranging from stress to death depending on the level of suspended sediment and duration of exposure. Larval steelhead and eggs would also be affected. These effects to all steelhead life stages will occur in perpetuity and the Draft EIR/EIS fails to analyze these effects to the Carmel River steelhead population in perpetuity. For instance, adults, juveniles, eggs and larval steelhead may experience severe habitat modification and up to 40 percent mortality. The proposed mitigation (*e.g.*, the Sluicing Operations and Maintenance Plan and an evaluation to determine downstream effects) is insufficient to mitigate the high levels of mortality and severe habitat degradation that will occur in perpetuity.

FI-53

The Sluicing Operations and Maintenance Plan notes steelhead throughout their range frequently encounter migratory obstructions (*e.g.*, beaver dams, cascades, logjams) which delay migration, but that such delays usually don't affect the ultimate reproductive capacity of the fish. NMFS agrees that relatively small natural barriers are well adapted to by steelhead. However, the scale of the proposed sluicing operations and the resultant effects downstream – high turbidity and suspended sediment – are profoundly unnatural in the Carmel River.

FI-54

Beaver dams and logjams are likely temporal obstructions. The sluicing operations are proposed in perpetuity and will be necessary in perpetuity, or at least for as long as the San Clemente Dam is in place. Therefore, delays to adult migration will occur for as long as sluicing operations are conducted.

SED-42

NMFS participated in the detailed sediment transport analysis conducted after the August 2000 Draft EIR/EIS was submitted. That Draft EIR/EIS also proposed dam strengthening and sluice gates. NMFS' significant commitment during those sediment transport studies was primarily to ensure dam removal was given adequate examination. NMFS was also establishing a systematic methodology for future analysis regarding the San Clemente Dam. NMFS expects that level of analysis for the proposed sluicing operations, but the Draft EIR/EIS does not include those results.

NEPA/ CEQA-23

The results of a defendable systematic analysis would include suspended sediment concentrations from the dam to the ocean for a full range of hydrologic conditions. Suspended sediment in the water column, as well as habitat alteration, would be addressed. The Draft EIR/EIS has taken an unacceptable short cut in analyzing a project that proposes to adversely effect – in perpetuity – the most essential steelhead run in the S-CCC DPS.

<u>Sluicing Operations and Maintenance Plan</u>

SED-43

The Proponent's Proposed Project and Alternative 1 will require the San Clemente Dam to continue to store sediment. Stored sediment in the reservoir will continue to be a steelhead passage impediment above the ladder. The flaws within the Sluicing Operations and Maintenance Plan are that actual sediment sluicing operations are likely to vary considerably, depending on the sediment delivery events to the reservoir and sediment deposition patterns in the reservoir. With the continued filling of the reservoir with sediment, NMFS expects there will be a braided channel near the upper end of the reservoir that will further impair steelhead passage.

SED-44

The Draft EIR/EIS states sluicing is expected to occur two-to-three times per year based on the number of flow events that occur over the winter and the length of the (steelhead) migration season, while the Sluicing Operations and Maintenance Plan states sluicing would occur over several hours once or twice a year, yet Appendix I states that aggradation would prograde near the fish ladder inlet in 5-20 days, depending on stream flow. NMFS infers from Appendix I that sluicing may be required more frequently than one-to-three times per year. Therefore, based on the information in Appendix I, it is unclear how sluicing as described in the Draft EIR/EIS and the Sluicing Operations and Maintenance Plan meets the basic objective of sediment sluicing: control sediment build-up in the river channel in the reservoir immediately above the San Clemente Dam to facilitate adequate steelhead passage opportunities through the fish ladder.

FI-55 The Draft EIR/EIS notes that the first storms of the season and the first opening of the Carmel River lagoon sandbar control the initial adult steelhead upstream migration.

FI-56 The Draft EIR/EIS states that, "(i)deally, the first sluice event for a given year would occur prior to the initial (adult upstream) steelhead migration, depending on the timing of storms." It is unknown in how many years the first sluice event will occur prior to the initial steelhead migration. NMFS is concerned that adult steelhead migrating upstream will be affected by the first (and all) sluicing events as there is no certainty in predicting when sluicing events will occur and no assurance that initial adult upstream migrants will not be present during the first sluicing period in any given year.

SED-45 The Mediterranean climate of the Carmel River Valley is prone to seasonal, prolonged and severe droughts. Wildfire and flooding are also part of the Carmel River watershed processes. The Carmel River watershed generates and stores sediment during normal or low-flow years and the river depends upon high flows for extremely high transport rates during wet years. Therefore, the Draft EIR/EIS use of average hydrologic conditions when analyzing the downstream effects of sediment sluicing and for the design of the Sluicing Operations and Maintenance Plan is inappropriate. NMFS is concerned how the Sluicing Operations and Maintenance Plan will be implemented in dry and wet years.

SED-46 Although the Sluicing Operations and Maintenance Plan includes a Proposed Sluicing Decision Tree, the decision-making processes of how often to sluice and the determination of whether a sluicing event was successful have not been adequately described. For instance, the criteria of whether flows that are increasing are likely to exceed 300 cubic feet per second (cfs) have not been described. The criteria for determining whether "storm precipitation predicted to be significant" have not been described. Also lacking are the real-time methodologies and criteria for measuring and monitoring the incision goal.

NMFS has determined the Proposed Sluicing Decision Tree in the Sluicing Operations and Maintenance Plan is too simplistic and does not account for all the unforeseen and unpredictable events that can occur each year. Each step in the Decision Tree asks questions that are difficult, if not impossible, to answer accurately. Questions raised for each step follow:

Is sediment delta passage a problem?

SED-47a How will passage problems be determined? When will it be determined when sluicing is to occur? Making a determination before the winter migration period may be inaccurate due to changing conditions behind the reservoir once high flows begin. SED-47b FI-57a Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to initiate sluicing. Since steelhead tend to migrate on the descending limb of a storm, how feasible and safe is it to place crews out on the reservoir to measure channel dimensions during storm events?

SED-47b FI-57b If sediment delta passage is a problem, but increasing flows are predicted not to exceed 300 cfs, sluicing will not occur. However, passage has already been determined to be impacted. How will fish pass through the blocked sediment delta during their migration before a sluice event has been performed? These delays need to be addressed.

SED-47c
FI-56c

Is it peak migration season?
Peak migration season is generally between February and March, however, it depends on the hydrologic cycle as to when the majority of fish migrate.

SED-47d
FI-57d

Will a passage problem potentially develop during the next storm event?
How will this be determined? It is unknown how large or small the next storm event will be and how much sediment will be carried into the reservoir.

SED-47e
FI-57e

It has already been determined that passage is a problem in the first step. But if a significant storm event is not predicted, sluicing will not occur and blocked passage will continue to delay migration.

SED-47f
FI-57f

Have 20 or more fish ascended the ladder in the past 2 days?
Per our April 5, 2006, letter, NMFS believes the decision whether 20 or more fish have ascended the ladder is an arbitrary number. Please clarify how this number was determined to be a defining point to sluice or not.

SED-47g
FI-57g

If this number of fish has ascended the ladder, sluicing will not occur even though a passage problem potentially will occur during the next storm event. This is a large number of steelhead to be trapped in the sediment delta without being able to move upstream. The impact of delay to these fish needs to be addressed.

SED-47h
FI-57h

Increasing flows likely to exceed 300 cfs?
Future hydrologic conditions are very difficult to predict. Basing management decisions (when sluicing is to occur) on unpredictable occurrences is unacceptable.

SED-47i
FI-57i

Storm precipitation predicted to be significant?
See comment above. Although predicting storm events is becoming easier, storm intensity is unknown until the storm is actually occurring.

SED-47j
FI-57j

Is flow still increasing past 300 cfs?
How long does it need to keep increasing past 300 cfs? This is unpredictable.

SED-47k
FI-57k

Continue sluicing until time limit, incision goal, or flow limit is reached.
What is the time limit for sluicing? Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to determine that enough sediment has been sluiced to provide for passage. What is the flow limit?

SED-47l
FI-57l

If flow is not increasing past 300 cfs, abort, re-open fish ladder.
How many aborted sluicing events will occur causing unnecessary delay to fish migration throughout the season due to the inability to predict hydrologic events to induce sluicing?

General Comments

FI-58

Referring to Table 2.1, FI-4, NMFS recommends adding "short-term" to impacts under Alternatives 2 and 3.

FI-59 Referring to Table 2.1, FI-7, NMFS recommends adding "long-term, significant, unavoidable" to impacts under the Proponent's Proposed Project.

FI-60 Referring to Table 2.1, FI-7, NMFS recommends adding "short-term" to impacts under Alternatives 1, 2 and 3.

FI-61 Referring to Table 2.1, FI-8, NMFS recommends FI-8 should include sluicing impacts on upstream fish migration. For the Proponent's Proposed Project and Alternative 1, it would be long-term unavoidable significant impacts, as well as beneficial with new fish ladder. NMFS suggests F1-8 may need to be separated into two separate impacts: sluicing impacts on upstream fish migration and beneficial effects of a new fish ladder.

FI-62 Referring to Table 2.1, FI-9, NMFS recommends FI-9 should include only sediment impacts to channels downstream (*i.e.*, impacting redds and steelhead habitat). For the Proponent's Proposed Project and Alternative 1, NMFS recommends adding "long-term" and FI-9 should not include impacts to upstream migration from sluicing.

FI-63 Referring to Table 2.1, FI-12, NMFS recommends changing, "Long-term *improvement* to fish passage over the dam" to "Long-term *effects* to fish passage over the dam." All other impacts do not refer to improvement, only reduction, degradation or effects. NMFS recommends consistency.

FI-64 Referring to Table 2.1, FI-12, NMFS recommends adding "long-term" to impacts under Alternatives 1, 2 and 3. NMFS has determined that dam removal is much more beneficial for steelhead than having a fish ladder. NMFS is unclear how the impacts of dam removal and a fish ladder can be distinguished from each other when they are not equal in impacts, yet both purport to have long-term beneficial impacts.

SED-48 Referring to page 2-38, NMFS expects sluicing will have *long-term* (not short-term) significant and unavoidable effects on suspended sediments and riverine sediment storage. Sluicing may have effects for a short time during the season, but sluicing, and its effects, it will occur every year in perpetuity. Thus, NMFS expects long-term effects.

FI-65
WQ-6 Referring to page 2-39, NMFS recommends adding "long-term" while describing significant unavoidable impacts to water quality and fish.

AA-45 Referring to page 3-27, NMFS is unclear whether the new Tularcitos Road will be used for all the alternatives or only the Proponent's Proposed Project and Alternative 1. Please clarify.

AA-46
FI-66 Referring to page 3-35, NMFS is unclear whether dredging upstream of the reservoir every three years will be needed along with sluicing. Please clarify and analyze all impacts to steelhead in the reservoir if dredging is to occur.

AA-47 Referring to page 3-80, NMFS recommends lowering the height of the diversion dike to the minimum height needed for hydrologic function (*i.e.*, overtopping of 100-year storm event, AA-47 stability). The additional excavated sediment (in excess of what is needed for the diversion dike) could be spread over the entire sand delta and/or crushed to improve compaction.

GEN-20 Referring to page 3-86, 3.6.2, NMFS notes the last paragraph starting with the second sentence of the section appears to be a repeat from page 3-85, second paragraph.

SED-49 Referring to pages 4-34, 4-87, 4-137, 4-139 and page 8 in Appendix I:
There is confusion as to the actual amount of sediment released, the duration period of a sluicing event, and the number times annually sluicing would occur. Page 4-34 states sluicing would occur for 2 to 4 hours to release 2 to 4 AF; page 4-87 states as much as 4.5 AF will be released over a 3 to 8 hour period and would occur once or twice a year; page 4-137 states 2 to 3 AF will be released over 1 to 4 hours; page 4-139 states sluicing will occur 2 to 3 times per year; and page 8 of Appendix I states 4.5 AF would be released over 8 hours. Appendix I (page 9) also states sediment would redeposit near the fish ladder depending on flow, in 5 to 20 days, requiring sluicing to begin again. The Final EIR/EIS should analyze the correct figures and be consistent throughout the document.

FI-67 Referring to page 4-83, (Issue WQ-6: Stream Diversions Return of Bypassed Flows) the mitigation for this effect is to install energy dissipators where the water is discharged back into the river. Bypass pipes must either be sized to provide for fish passage of juveniles or juveniles need to be trapped and moved around the diversion continually throughout the entire construction period. If trapping is not implemented, dissipators cannot be installed on the end of the diversion pipes since they would obstruct fish passage. See also Issue FI-4: Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes, page 4-131.

FI-68 Referring to page 4-85 (Issue WQ-9: Reservoir Drawdown), the Draft EIR/EIS states, "The effects of drawdown under the Proponent's Proposed Project would likely be greater than has been observed during the 2003-2005 drawdowns because drawdown rate would be faster." The Mitigation for this Impact goes on to state, "The reservoir water level would be drawn down at a relatively slow rate (about 0.5 feet or less per day), similar to that currently being used for the annual drawdown (an interim dam safety measure). Please be consistent on the effects of the drawdown.

WQ-7 Referring to page 4-88 (Issue WQ-15: Operations/Post-Project Conditions), NMFS agrees summer water quality conditions in the reservoir would be better than during drawdowns. However, water quality conditions in the reservoir due to long-term winter sluicing operations needs to be included and analyzed. Issue WQ-13 addresses water quality below the reservoir from sluicing, but not conditions in the reservoir.

WQ-8 Referring to page 4-93, in the paragraph before Issue WQ-2: is this supposed to be Alternative *3*? Also on Pg 4-94 under Issue WQ-14, it states "…the extent of potential impacts would be greater under Alternative 2." Is this also supposed to state Alternative *3*?

AA-48 Referring to page 4-128 (Issue FI-1: Access Route Improvements):
Second paragraph under Impact states, "The Carmel River would not be dewatered to upgrade the piers and bridge deck at the ORCD." However, on Pg 4-82, under Issue WQ-4, it states, "…stream

AA-48 diversions would be required in Tularcitos Creek, in the Carmel River at the OCRD Bridge,…." Please clarify if the river will be diverted or not at the ORCD bridge for construction work.

FI-69 Referring to page 4-135 (Issue FI-8: Upstream Fish Passage): it was determined upstream fish passage would be beneficial with the improved fish ladder. However, page 5-2, 5.1.4 Aquatic Biology, states, "Adult fish may fallback over the dam during sluicing." Please address this fallback impact for the Proponent's Proposed Project and Alternative 1. NMFS expects this would be a long-term significant and unavoidable impact.

FI-70 Referring to page 4-136 (Issue FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): NMFS recommends changing the determination to "Significant, unavoidable, long-term".

FI-71 The Impact discussion only addresses the sluice gate operation in front of the fish ladder. There is another proposed sluice gate to keep the intake valve clear of sediment. Please discuss fish impacts from operations of the sluice gate for the intake valve. How often and for what duration will this sluice gate be operated? How much sediment will be sluiced at a time? How will fish be kept from entrainment? Determine if these impacts will be cumulative to the impacts from the fish ladder sluice gate.

FI-72 Referring to page 4-139, the last paragraph under Impact discusses degradation of habitat conditions in Reaches 4, 5, and 6. Please clarify that this would be an annual impact to this habitat each time the sluice gates release sediment and therefore 37 percent of the juvenile fish and 35 percent of the habitat downstream of San Clemente Dam would be adversely impacted each year in which sluicing occurs. These impacts will be on-going for the life of the project.

FI-73 Referring to page 4-146 (Issue FI-12: Downstream Fish Passage over SCD, Impact, the Draft EIR/EIS states, "Passing through the notch at this elevation would expose fish to higher potential to contact the spillway surface as compared to passage over the present spillway." It is unclear to NMFS if the mitigation of creating a low flow channel would prevent contact with the spillway surface or if this impact would still occur. Please clarify. If the impact will still occur, NMFS does not expect this to be a beneficial, long-term impact, but a significant, unavoidable, long-term impact.

FI-74 Referring to page 4-147 (Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration): the determination is Significant, unavoidable, long-term; however, under the Impact discussion it states this impact would only occur during construction and restoration and would be a "temporary loss of steelhead habitat." NMFS recommends changing the determination to "Temporary".

FI-75 Referring to page 4-152 (Issue FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): NMFS recommends changing the determination to "Significant, unavoidable, short-term; beneficial long-term".

FI-76 Referring to page 4-157 (Issue FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): it is NMFS' understanding from the Project

FI-77 Description that sluice gates will not be installed for the No Project Alternative. The second paragraph discusses impacts to fish from sluicing operations as the same for the Proponent's Proposed Project. Please clarify if sluice gates will be installed for the No Project Alternative or remove the discussion of sluice gates.

FI-78 Referring to page 5-23, 5.5 (Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity):
NMFS expects the Final EIR/EIS will include a discussion on the long-term adverse impacts to listed steelhead (by direct mortality), fish passage and habitat downstream from the long-term sluicing operations for the Proponent's Proposed Project and Alternative 1 (see comment above in the *South-Central California Coast Distinct Population Segment Steelhead* section of this letter).

AA-49 The replacement of the existing OCRD Bridge is needed only under the Proponent's Proposed Project. Under Alternative 3, this bridge and the OCRD could be removed entirely for improved passage of steelhead since the bridge will not be needed.

NEPA/ CEQA 24 Work windows are discussed throughout Section 3.0. For instance, page 3-36, 3.2.7 Construction Schedule and Operations states field work in the reservoir area would start on or about April 15th. NMFS and the California Department of Fish and Game have determined the appropriate work windows for instream work for each Alternative (email from NMFS, dated 22 February 2006). For the Proponent's Proposed Project, the work window is June 15 – October 15. Alternative 1: June 15 – October 15; Alternative 2: June 1 – October 31; and Alternative 3: June 1 – October 31. Please adjust the work windows for all projects accordingly.

Northern California Council of the Federation of Fly Fishers
116 Allegro Drive, Santa Cruz CA 95060

June 1, 2006

Charyce Hatler
Department of Water Resources,
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Re: San Clemente Dam Seismic Retrofit Project, Draft EIS

Dear Ms. Hatler,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the San Clemente Dam Seismic Retrofit Project on the Carmel River. Enclosed for the record and your consideration are the comments from the Northern California Council of the Federation of Fly Fishers (NCCFFF), supporting ALTERNATIVE 3: CARMEL RIVER REROUTE AND DAM REMOVAL.

AL-2 NCCFFF represents a diverse group of California citizens who not only share a love of fly fishing, but are also dedicated to the preservation and enhancement of the state's fish populations. Our organization is active in many conservation efforts to preserve, protect and restore habitat essential to fish. This project presents a unique opportunity to help restore the largest steelhead population south of Monterey Bay, and as such we feel compelled to comment.

In support of ALTERNATIVE 3:

AL-3

- It would permanently eliminate safety concerns through the removal of the dam.
- It would permanently eliminate the fish passage barrier.
- It would permanently minimize temperature increases during passage through the reservoir site.
- It would require a minimum of sediment removal, and not require long distance transport of the sediment. Under this alternative, sediment need only be transported a short distance from the San Clemente arm to the Carmel River arm.
- Sluicing and downstream sedimentation problems are eliminated.
- Compared to the other ALTERNATIVES, negative impacts are generally short-lived and corrected with mitigation measures.

Against the PROPOSED PROJECT and ALTERNATIVE 1

AL-4

- Both will require continued sluicing to keep the fish ladder operational. This will result in the transport of significant amounts of accumulated sediment down the river channel. The increase in suspended and bedload sediment delivered to the lower river would impair aquatic habitat and directly affect redds and juvenile and adult steelhead in the river.
- Both will require a fish ladder for fish passage.
- ATLERNATIVE 1 would require extensive sediment removal and transport over a relatively long distance.

Against ALTERNATIVE 2

AL-5

- It would require massive sediment removal and transport over a relatively long distance.

Thank you for your consideration of these comments. If you have any questions, please do not hesitate to contact me.

Sincerely,

Dougald Scott, Steelhead Committee Chair
Northern California Council of the Federation of Fly Fishers
(831) 427-1394, doscott@cruzio.com

PLANNING AND CONSERVATION LEAGUE
F O U N D A T I O N

June 30, 2006

Ms. Charyce Hatler
Department of Water Resources, San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Mr. Bob Smith
U.S. Army Corps of Engineers, San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Re: San Clemente Dam Seismic Safety Project draft Environmental Impact Report/Statement

Dear Ms. Hatler and Mr. Smith,

The Planning and Conservation League Foundation (PCLF) submits the following comments on the California Department of Water Resources and the U.S. Army Corps of Engineers' *San Clemente Dam Seismic Safety Project Draft Environmental Impact Report/Statement* (DEIR/S) of April 2006. We appreciate this opportunity to comment on this project and request careful consideration of these comments as well as those submitted by other organizations and individuals.

SA-6 It has been 26 years since the DWR's Department of Safety of Dams (DSOD) first began to look into the long-term safety of the San Clemente Dam and 16 years since an engineer hired by Cal-Am determined that the dam could fail in both MCE (Maximum Credible Earthquake) and PMF (Probable Maximum Flood) conditions.

Meanwhile, human life, especially the Camp Stephanie community directly downriver, remains in danger from dam failure resulting from an earthquake with a magnitude as low as 5.5.

AS/O-36 We urge you to select Alternative 3, dam removal and river reroute, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead trout and California red-legged frog.

AS/O-37 We also find that leaving the dam structure in place (the "Proponents Proposed Project," dam thickening, and Alternative 1, dam notching) will result in significant and ongoing impacts to the environment and will not resolve the safety issue adequately. It will, moreover, burden the rate payers with the cost of maintaining and ultimately removing the structure at some point in the future.

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A member of Earth Share California

Furthermore, the technical design for "sluice gates" required for both the Proponents Proposed Project (PPP) and Alternative 1, is inherently flawed for several reasons. First, relying on the sluice gates as the primary method of sediment management will lead to significant unintended consequences caused by ongoing release of the sediments to prevent future build-up of sediment above the dam structure. The continuous release of sediment will result in impacts to water quality, will continue to cause degradation of habitat downstream of the dam site, and will assure that present trends in scouring just below the dam structure will also continue to occur. Both the PPP and Alternative 1 also require a fish ladder to allow fish passage above the dam structure that we believe will also threaten the survival of migrating steelhead unable to navigate safely through the area directly above the sluice gate, causing fish to become caught up in the downstream flow, and back downstream through the sluice gate. We believe that the fish ladder design and the flawed sluice gate design will result in a Jeopardy Opinion that will delay the start of a project indefinitely. For these reasons, it is clear that "Alternative 3" is the most viable and expedient alternative that will assure the long-term safety of the residents of the Carmel River Valley. It is also the least environmentally damaging, and therefore will move forward and expedite implementation of a project that will permanently remove the risk of dam failure associated with both MCE and PMF conditions as required by law.

FI-118
SED-71
FI-120
AS/O-38

We find that this DEIR/S is adequate if and only if the Lead Agencies select Alternative 3 as the preferred alternative for the following reasons:

First, "Alternative 3" should be the preferred alternative in the Final EIR/S because it is the best technical design and most expedient solution that assures the permanent resolution of safety issues.

Second, the Proponent's Proposed Project, dam thickening, runs the risk of drastic unintended consequences and will continue to compromise safety in the future as the dam structure continues to degrade over time, ultimately resulting in greater costs to the ratepayers. These include the cost of the current Proponent's Proposed Project, which provides a short-term solution at best, involving ongoing maintenance, operating and fish passage costs, and again in the future when the aging structure reaches the end of its life span. The Proponents Proposed Project also results in cumulative impacts to the environment under the Endangered Species Act, the Clean Water Act and the Porter Cologne Water Quality Control Act that will counter NEPA/CEQA criteria that may result in a Jeopardy Opinion by NOAA Fisheries and USFWS (Section 7 Consultation) delaying the project indefinitely.

AS/O-39

Third, the dam removal option and river reroute provides a technically superior and viable solution in a shorter time frame than either notching or dam thickening, assuring that the risk to human life and impacts to federally designated "threatened" species are reduced or completely eliminated as soon as possible.

Fourth, the public has clearly voiced its support for dam removal and river rerouting as demonstrated by public comments at the DWR/USACOE public hearing for the Draft EIR/EIS held in Carmel Valley on May 23rd and reported in the media (see attachment, "Carmel River Reroute Gets Solid Backing," Monterey Herald, May 24, 2006).

PCLF supports selection of Alternative 3, dam removal and river reroute as the preferred alternative because it is the only one that *guarantees* long-term safety, protects the environment, reduces adverse impacts to water quality, and preserves "threatened" steelhead and California red-legged frog. Furthermore, we find that the Draft EIR/S fails to fully assess the impacts of California American Water's preferred alternative, dam thickening, Alternative 1 (dam notching) or Alternative 2 (dam removal and transport of sediment to a nearby canyon), and therefore the Draft EIR/S is inadequate for assessing any of the other alternatives.

AS/O-39

We strongly urge DWR and USACE to consider public input and support for Alternative 3, and based upon the reasons cited above, select river reroute and dam removal as the technically superior design for a project that will permanently resolve the dam safety risk. PCLF will actively support the selection and implementation of Alternative 3, and will also continue to advocate for support by interested groups in the community and throughout the state for implementation of Alternative 3.

Thank you,

Mindy McIntyre
Water Program Manager
Planning and Conservation League Foundation

COMMENTS

1) The preferred alternative in the final EIR/S should be river reroute/dam removal.

NEPA/ CEQA-40

The DEIR/S states, "The need for the San Clemente Dam Seismic Safety Project is to increase dam safety to meet current standards for withstanding a Maximum Credible Earthquake (MCE) and passing the Probable Maximum Flood (PMF) at the dam" (1-2). This statement indicates that the paramount objective is to protect human safety, which rerouting the river and removal of the dam accomplishes the best.

SA-7

Nowhere in the DEIR/S does it guarantee that the dam will survive a MCE with buttressing; that means the homes downriver are still in danger. If human safety is truly the first and foremost concern, buttressing must be looked at very critically, for it fails to fundamentally resolve the problem of an aging and unsafe dam, instead simply prolonging it.

NEPA/ CEQA-41

However, it is also very important, under CEQA, that the environment not be irrevocably harmed. Rerouting the river and removing the dam is the Least Environmentally Damaging Preferred Alternative (LEDPA). It will go a long way to restoring the watershed that once existed in the Carmel River Valley, as well as protecting the two species currently covered under the Endangered Species Act, the California red-legged frog and steelhead trout.

The dam structure currently impedes the current survival of the steelhead trout. Even with a new fish ladder design, the "sluice gate" design poses a threat to fish passage that will require monitoring and modification, and perhaps lead to mitigation for ongoing impacts to steelhead. It is a stated goal for the steelhead resource to be maintained "as a self-sustaining resource and to restore it as much as possible to its historic level of productivity" (4-103). Only the removal of the dam will ensure that. The DEIR/S also notes that "the steelhead population in the Carmel River is threatened with becoming a remnant run due to the development of water resources,
FI-121 drought, watershed land use, and environmental problems" (4-103). Removing the dam will go a long way to preserving this endangered species. Dam removal and river reroute will restore natural sediment transport levels that can improve important spawning and feeding habitat conditions in the mainstream, and will also assure that migrating species can make their way to important spawning areas above the current dam site.

AS/O-40 Selecting Alternative 3 would ensure that the federal government does not issue a Jeopardy Opinion under the Endangered Species Act, which would further delay resolution of the dam safety deficiencies.

CR-12 We also note that there is no basis for rejecting Alternative 3 on cost grounds. The DEIR/S does not include any cost projections; naming the Proponent's Proposed Plan as the preferred alternative because Alternative 3 is too "costly" for CAW to afford would render the EIR/S inadequate. There are no cost estimations in the DEIR/S. Cost projections for all options are needed in order to fully grasp the financial aspect of this seismic safety project; seeing that there are none in the public record so far, Alternative 3 cannot be rejected.

AS/O-41 Lastly, Alternative 1 discussed in the DEIR/S, notching the dam to a lower level and creating sluice gates, fundamentally has the same problems as the dam thickening. Both leave a potentially unstable structure, and both use sluicing, which has forseeable difficulties discussed below. There are, moreover, water quality issues resulting from continuous release of sediment, primarily silt, that can result in increased turbidity that are essentially the same with both and which are not assess in the DEIR/S. Both the Proponent's Proposed Plan and Alternative 1 will have rising cumulative costs into the future associated with maintaining an aging structure, possibly needing modifications to address flaws in the technical design in the structural work over the decades projected for maintain the structure in the future. Neither is a permanent solution to the unsafe nature of the San Clemente Dam and will result in enormous ongoing costs to the rate payers.

2) Alternative 1, CAW's preferred alternative, has many far-reaching consequences that are not covered in the draft EIR/S, and would need to be addressed before choosing that alternative.

AS/O-42 It is likely, in our professional estimation, that simply buttressing the dam will have cumulative impacts. A primary impact is one that results from impacts to water quality resulting from the release of unknown levels of sediment, primarily silt, as the primary method to reduce the rate of build-up of sediment behind the dam structure. It is also likely that scouring patterns evident downstream of the dam site will also continue to occur, impacting fish habitat.

FI-122 The DEIR/S does not adequately cover the possible unintended consequences of dam buttressing; selecting that option will render the entire EIR/S inadequate due to lack of adequate analysis. It is very possible that buttressing will impede the upstream course of the steelhead trout even more than the poorly designed fish ladder currently does, despite the new proposed fish ladder design, due to proximity to downstream flow at the location of the sluice gates. This will further endanger the continuing survival of the steelhead trout in the Carmel River.

CR-13 The sluice gates, moreover, offer no guarantee of success, and in fact may actually result in a technically flawed sediment management strategy that will require costly modifications and mitigation that will increase the burden on the rate payers. SED-72 It is very possible, if not likely, that they will be ineffective or fail to reduce the silt buildup behind the dam to an acceptable level. FI-123 The sluice gates may also have the unintended consequence of impeding the movement of the trout up the river by creating a strong downward flow at the top that might capture fish in the current and force them back through the sluice gate downstream. CR-14 Monitoring costs may be another factor escalating costs to the ratepayers.

SED-73 Complete sediment removal remains a large problem when considering the dam buttressing and notching alternatives; it is thought by many that the sluice gates will not force larger pieces of sediment downstream, leaving their entire effect on sediment removal to be negligible, failing to restore the necessary variable elements of normal sediment flow including gravels and cobbles essential for wildlife stream habitat restoration.

3) **The river reroute/dam removal option will also permanently remove the seismic risk and threat of a large-scale flood, and will achieve the required solution in a much shorter timeframe than the dam buttressing option.**

SA-8 As discussed above, dam buttressing or notching is likely to result in the issuance of a Jeopardy Opinion concerning the California red-legged frog or steelhead trout, protected species. This would protract the process indefinitely with potential legal challenges requiring lengthy review. Meanwhile, the dam would remain, as it is now, dangerous to Camp Stephanie and other residential areas downstream of the dam. It is also likely that other environmental groups will intervene in order to challenge reconsideration of impacts to wildlife and habitat of the Carmel River Watershed that will result with the Proponents Proposed Project, or Alternatives 1 and 2. Therefore river reroute and dam removal is the most expedient solution that will guarantee the flood and seismic risks are permanently eliminated.

If the Lead Agencies choose the Proponents Preferred Project or Alternative 1 or 2, it is likely that the Lead Agencies will be required to address inadequacy of the analysis of these alternatives in the DEIR/S, requiring the need to re-circulate the DEIR/S that will lead to further indefinite delays. We urge consideration of the first priority – to assure the safety of those living in the Carmel River Valley; the unsafe San Clemente Dam should be dealt with as soon as possible and therefore Alternative 3 is the technically superior project, with the most expedient outcome.

AS/O-43 4) **It is clear that the public supports Alternative 3.**

A *Monterey County Herald* headline states, "Carmel River Reroute Gets Solid Backing," and goes on to state, "A proposal to rechannel the Carmel River upstream from San Clemente Dam…got strong public support Tuesday night at a hearing held by state and federal officials at Rancho Cañada Golf Club" (the article is attached). At this well-publicized meeting, 22 people spoke in favor of the reroute with only three opposing. The public's wishes should be able to determine how they want to deal with a dam that is literally in its backyard. The reasons stated for supporting reroute and restoring normal flows and sediment levels to the lower river basin ranged from desiring to improve public recreation (kayaking and hiking), wishing to see the river and health of wildlife recover, wanting to see traditional benefits to the community regained through improved river conditions, and recognizing that buttressing is only a "band-aid" solution that assures future costs and an ongoing burden for the rate payers.

AS/O-43

Strong public support is crucial to staging a successful project. DWR and USACE should take the broad public support for Alternative 3 into careful consideration when selecting a preferred alternative.

Conclusion

The San Clemente Dam as it is today is a dam that is unsafe for both a large-scale earthquake and large-scale flood. The DSOD has made it clear for over a decade that the dam cannot remain in its current state and Cal-Am must alter or remove it to guarantee human safety.

The only option that would make the draft EIR/S on the San Clemente Dam adequate is Alternative 3, dam removal/river reroute. With broad public support for this option, it is clear that the residents affected by these proposals, the ones who will have to shoulder any rate increases, support the removal of the dam and the river reroute.

AS/O-44

The dam/removal and river reroute option is the only one that:

- Guarantees the safety of the Carmel River Valley region in the case of an earthquake or major flood
- Adequately protects the several endangered species and recovery of critical habitat in the valley
- Ensures other benefits are protected including water quality standards

We support the DEIR/S in its current form and urge its adequate completion by selecting Alternative 3 as the preferred alternative.

Carmel Valley: Rechannel would run parallel to San Clemente Creek

Carmel River reroute gets solid backing

VERN FISHER/Herald File

Water is released through a series of holes that were drilled into San Clemente Dam in Carmel Valley. Cal Am officials estimate the dam may be in danger of collapsing if a large earthquake occurred. Fred Feizollahi, senior operations engineer, walks across the San Clemente Dam.

San Clemente Dam

Constructed: 1921

Water Capacity: 2,000 acre feet originally, now 100 acre feet

Sediment buildup: 2.4 million cubic yards

1992: Division of Dam Safety reports the dam is not earthquake safe

2003: Six holes are drilled in the dam to relieve water pressure

Alternatives:

- Tear down the dam and remove the sediment
- Shore up the dam to prevent future collapse and leave the sediment
- Notch or partly lower the dam and leave the sediment
- Tear down the dam and reroute the Carmel River while leaving most of the sediment in place
- Do nothing

By KEVIN HOWE
Herald Staff Writer

A proposal to rechannel the Carmel River upstream from San Clemente Dam so it will flow parallel to San Clemente Creek on to Carmel Valley got strong public support Tuesday night at a hearing held by state and federal officials at Rancho Cañada Golf Club.

Rerouting the river by cutting through a spur of hillside separating the river from the creek, and allowing water behind the dam to flow backward through it, would allow the dam to be torn down and avoid having nearly 2,000 acre feet of silt built up behind it over the past 85 years to clog the river, said Jeremy Pratt, project manager for the consulting firm of ENTRIX Inc.

ENTRIX is writing the environmental impact report on the dam for owner California American Water Co.

> "It's an extremely complex project. It involves a lot of issues. But dam safety is driving the process."
>
> — **David Gutierrez, Department of Water Resources assistant director of strategic planning**

The silt, he said, would be stabilized with a groutlike substance so it wouldn't flow. Leaving it in place would protect the California red-legged frogs that have made the silted-up reservoir their home.

Taking out the dam would eliminate a major physical barrier to upstream migration of steelhead salmon. Thus, two species listed as endangered would be aided by the alternative.

"It is the most environmentally, economically and socially responsible alternative," said Jonas Minton, senior project manager for the Planning and Conservation League, which supports the reroute-teardown approach.

Other alternatives offered by Pratt at the

Please see **Dam page A12**

Dam

From page A1

meeting were doing no project — it was "not feasible," he said; thickening the dam's walls and replacing the antiquated fish ladder built with it; cutting down or "notching" the dam and removing 930 acre feet of silt; and removing 1,555 acre feet of silt and tearing down the dam.

The plans all have their pluses and minuses.

"It's an extremely complex project," said David Gutierrez, assistant director of strategic planning for the state Department of Water Resources. "It involves a lot of issues. But dam safety is driving the process."

San Clemente Dam was built in 1921 to hold back 2,000 acre feet of water. Now it mostly holds back mud.

Its storage capacity is about 100 acre feet, Gutierrez said, and San Clemente, a "thin concrete arch dam," was built before engineering for earthquake safety was well understood.

In 1992, the state Division of Dam Safety reported that San Clemente could give way in an earthquake of a magnitude 5.5 on the Tularcitos Fault, which it straddles, or of a magnitude 7 on the San Andreas Fault.

The dam has been subject to overspilling during high flood seasons, and water running over the top could erode rock on either side, causing the dam to break, Gutierrez said.

A 1997 analysis by state safety experts indicated a dam failure would send 100 to 150 acre feet of water and a flood of mud downstream as far as Camp Stefani on the Carmel River, resulting in 1 to 6 feet of flooding.

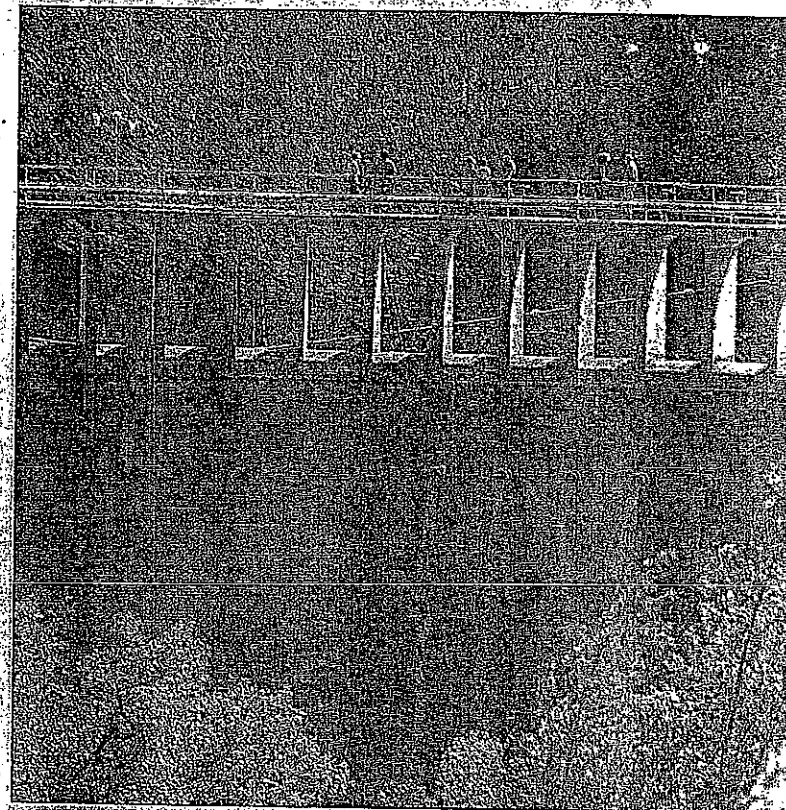
"It never was a flood-control dam," Gutierrez said, "and there is very little storage left."

Some precautions have been taken. In 2004, the dam was pierced with pipes to drain off water behind it, but they don't provide enough of an opening to prevent water from washing over it during floods, Gutierrez said.

The dam has been fitted with instruments to detect earthquakes and issue an automatic warning to fire stations downstream.

Pratt said thickening or notching the dam could be done in four years, and removing it and the silt in five.

The silt would be removed by conveyor belts rather than trucked away, he said, avoiding the spectre of roads clogged with dump trucks hauling out [illegible] Carmel Valley.



DAVID ROYAL/Herald file

Citizens and officials from the Department of Water Resources for the State of California Army Corps of Engineers and California American Water tour the San Clemente Dam in Carmel Valley in 2003.

Buttressing the dam is the cheapest alternative, but the river rerouting and dam demolition project has emerged as the second cheapest alternative, Pratt said, and it could be done in four years.

Demolition and silt removal would cost the most and temporarily destroy the frogs' habitat, while "notching" the dam is the second most costly project. Even if no project were done, Pratt said, Cal-Am would still be required to replace the fish ladder.

With the dam gone, there would be no need for fish ladders or continued maintenance of any dam structure that remained.

Heavy equipment and truck traffic would be routed to the dam-project site via Cachagua Road, Pratt said, while construction crews would drive through the Sleepy Hollow neighborhood.

Roger Williams of Carmel spoke in favor of the rerouting project, but questioned whether the silt should be held in place, rather than gradually released downriver. Dams have blocked flows of sand, gravel and stones to the state's beaches, he said, contributing to their erosion over time.

Robert Greenwood of the Carmel Valley Association questioned what would be done with tons of concrete from the dam if it is torn down.

Victoria Kennedy, president of the Sleepy Hollow Homeowners Association, whose neighborhood would be affected by construction traffic on San Clemente Drive, said residents were concerned about dust and noise from the concrete batch plant that would have to be set up to do the dam buttressing if that alternative is chosen.

She asked how traffic would be controlled or permit requirements enforced for any of the projects.

"What remedy would we have? What is the penalty for noncompliance? Who has control of the site? Who will enforce compliance or determine the amount of repairs necessary?"

Removal of the dam and rerouting the river is the best solution, said Monica Hunter of the Planning and Conservation League.

"We need to eliminate these costly Bandaids" from consideration, she said. Frank Emerson of the Carmel River Steelhead Association agreed.

"If ever a dam was crying out to be removed, it's San Clemente," he said.

Clive Sanders of the Carmel River Watershed Conservancy said the cost of fixing San Clemente "can't be borne entirely by the owner. If we're going to have major demolition of the dam, we need federal help."

Written comments on the alternatives will continue to be received through July 3, said Jane Hicks, regulatory branch chief for the Army Corps of Engineers' San Francisco District.

Comments may be sent to: Paula Landis, chief of the California Department of Water Resources San Joaquin District, 3374 E. Shields Ave., Room A-7, Fresno 93976; or Robert Smith, project manager, U.S. Army Corps of Engineers San Francisco District, 3333 Market St., San Francisco 94105.

Kevin Howe can be reached at 646-4416 or khowe@montereyherald.com.

Paula

US Army Corps of Engineers May 24, 2006

California Department of Water Resources

San Clemente Dam Seismic Safety Project

AA-1 The report and recommendations should take into consideration the environment, preservation, conservation, water resources and economics of the project. The solution to all of five of these goals is to save the existing dam by reinforcing. The sediment should be moved from the back of the dam to the front of the dam and placed as a buttress. The buttress should be large enough to allow drying of the sediment to about 5% over optimum or should be partially dried prior to being moved. A conveyor could be used to move the sediment to the down stream side of the dam. The equipment used to move, place and compact the material should stay a safe distance from the dam to protect it from damage. The placing of the fill against the dam should be done by hand and might be done in accordance with a structural backfill. The buttress should be capped in order to protect it from erosion. The capping material could be with a soil cement or concrete. An extended spill-way should be constructed across the buttress and a fish ladder must be constructed in accordance with the latest standards.

AA 2 The alternative plan to demolish the dam will have a severe impact on Carmel Valley Road unless the broken concrete and steel are buried on site. A preferable alternative to off haul or burying broken concrete in place is to partially burying the dam intact by buttressing it on the downstream side up to the level of the outflow or top of spillway. Just the top of the dam will be visible from down stream and the

AA-2 dam can serve as a walkway.

The dam can serve many functions if left in place and strengthened. It can be managed to serve as flood control
HY-1 protection which would help protect the Carmel River Basin.
TE-1 A dam will support wild life and migrating birds. Water storage can offset the use of energy used to produce water
WAT-1 by reverse osmosis (the cost of energy has become an important political issue.) The demolition of the dam will be very costly and will ultimately be paid by the consumers or
CR-1 tax payers. Court costs may be involved in some proposals being discussed.

The three most important issues to address are the safety of the dam, a sustainable water supply and the cost of the
SAF-1 project. The worst case scenario of environmental degradation would be the "no project alternative followed by an earth quake and dam failure". The other alternatives will need a environmental mitigation plan. Rerouting the river will likely require significant clearing. The strengthening of the dam with steel and concrete will involve the on site batching of concrete and delivery of cement, steel, and probably aggregate (or screening and washing on site). None of the options will
TE-2 protect the habitat of the Red Legged Frog completely, but the habitat can be moved and recreated without harm to the
FI-1 frogs. Enlarging the lake by removing the silt will enhance the fish and bird habitat.

There appears to be support for the rerouting of the Carmel River because it addresses the sedimentation problem and
AA-3 eliminates the dam. However cutting a whole new river bed could involve significant damage to the environment.

In most cases the least environmental damage will be

AA-4 achieved with the least amount of work and materials. The alternative with the fewest materials and workman is the best and cheapest option and that option is a buttress of sedimentary material. The program to protect the Red Legged

FI-2 TE-3 Frog and the Steelhead should be adequate for its purpose, but should not impact a common sense approach that recognizes the cost, water resource, disruption to neighbors and other environmental issues.

SED-1 The concept that dams harm the environment by capturing sediment is about 99% wrong. Down stream sedimentation creates far more problems than it solves. Sedimentary buildup will usually lead to flooding and additional erosion caused by flow blockage. As the Grand Canyon is proof sediment usually ends up in the mouth of the river, bay or ocean.

WAT-2 The use of rubber dams in the Carmel River could be a means of diverting water to underground storage. Rubber dams are filled with water to weigh them down. If the water level behind them is allowed to get to high, they can float or slide downstream. Rubber dams are specialized tools that are only good for specific conditions.

AA-5 The removal of the existing dam is a radical concept serving only one purpose, that should be addressed by the latest federally approved fish ladder. The removal of the dam will destroy many benefits without accomplishing a single benefit that can't be addressed by a government approved method. There is no cost-benefit ratio to consider because there is no benefit in removing the dam.

AL-29 I am Don Redgwick of 1398 Pico Ave. in Pacific Grove, 93950 and I favor salvaging the San Clemente Dam with a buttress.

Don R

Phone 831-655-3418

Charyce

June 4, 2006

US Army Corps of Engineers
California Department of Water Resources

CEQA Lead: Department of Water Resources,
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Attn. Charyce Hatler

A copy of my May 24, 2006 letter is enclosed for your convenience. This letter is intended to supplement and clarify my previous letter.

AA-6

If the geological conditions have been adequate to support the San Clemente Dam for the past 85 years, the conditions should be adequate for an earth dam. If the site is adequate for an earth dam it will be adequate for a buttress utilizing earth dam technology such as key cuts and an impervious core. The impervious core probably should be placed against the concrete dam. Since the sedimentary material is most likely pervious it might require being encapsulated to prevent erosion.

AA-7

The realignment of the Carmel River and the removal of the San Clemente Dam poses more questions than it answers.
(1) Is the plan to realignment the river permanent or a diversion for construction?
(2) Where will the excavated earth from the realignment be placed? TE-4
(3) If the realignment is permanent doesn't that significantly reduce the dam safety and steelhead issues and allow the dam to remain for the benefit of frog, bird, lake fish, and other wildlife habitat? FL-3
(4) If the dam is removed won't that leave a vertical bank of about 70 to 80 feet of material subject to erosion. Will a grout be adequate to contain the sediment from erosion?

TE-5

(5) If the dam is removed and the sediment is grouted, will that make a satisfactory habitat for the Red Legged Frog?

TE-4, con't
TI-3, con't

(6) Conversely if the Carmel River is rerouted on a permanent basis and the San Clemente Dam is left in place with or without a buttress, would that provide a superior habitat for frogs, birds, lake fish and other wild life?

AA-8

(7) If the Carmel River is rerouted could a fork in the river be created with control gates to allow a cleansing of the San Clemente Dam site or for temporary diversion for maintenance on the new river alignment?

AA-7 con't

(8) If the San Clemente Dam is demolished and removed won't that result in a 70 or 80 foot thick embankment of unstable sediment? Will the gradient become much steeper when the sediment is spread? Will a grout be used to stabilize the sediment? If a grout is utilized for containment will that provide a suitable habitat for frogs and other wildlife?

TE-5 cont'

AA-9

(9) The existing dam could serve an important function in the development of a diversion plan for the building of a buttress. However, information about the diversion plan used in the building of the dam in 1921 could lead to the locating of an abandoned tunnel. Does the County, State, Cal Am or someone else have documents from the original construction?

SED-2

(10) The loss of capacity of the Dam after the Marble Cone Fire and other years of heavy erosion could be an indicator of future erosion and sediment. Sediment seldom settles on the beaches or other preferred areas as some people seem to believe. Water Pollution Control Boards have been known to fine Contractors, Developers and others large sums of money for less than a truck load of dirt washing into a stream. Fish and Game requires a plan to be submitted and approved showing facilities and a program to control erosion. Flood Control Agencies spend millions of dollars annually in maintenance to control erosion and to stabilize river banks.

SED-3

(11) If the San Clemente Dam did not exist prior to the Marble Cone fire, what would be the estimated damage to Carmel Valley and Carmel Meadows? Would 2.4 million yards or more be in Carmel Bay if the dam was never built or would some of it have been trucked from homes, streets and parks?

NEPA/
CEQA-1

CEQA proposals should include a cost benefit analysis. I see no environmental benefit to removing the dam except the questionable conclusion that fish ladders don't work. The environmental issues relating to frogs, birds, lake fish, deer, bears, mountain lions etc. appear to be forgotten. The value of the dam as a source water and a protection from water pollution caused by watershed erosion is being ignored. Lastly the cost of removing the dam and containing the sedimentary material will be more expensive than buttressing it. A buttress would utilize a portion of the sediment and would partially bury the dam on the down stream side up to a spillway level. This would be a cost benefit greater than off hauling the material and probably less expensive than the rerouting option. I don't know the NEPA/ CEQA-1 magnitude to the rerouting proposal, but it could involve a huge dirt moving cost. If the benefit is removing the dam because fish ladders don't work according to some people, I think the other environmental issues should be considered. Dam safety is the primary consideration, but strengthening the dam with concrete or a buttress should not be ignored. David Gutierrez of the State Department of Resources said, "it's an extremely complex project" and "it involves a lot of issues, but dam safety is driving the process" I believe the most important AA-10 issues are developing a diversion plan for the river during construction, doing the work with as little negative impact on the Carmel Valley Community as possible, mitigating the environmental impacts even handedly, considering the value of the dam as a settlement basin and calculating the cost benefit ratio of the various proposals without succumbing to political pressure from single interest groups. GEN-1

SED-5 The study should include comments on the containment of the sediment and the damage that 2.4 million yards of sediment would have caused during flood years and the benefits or harm that trees, silt and debris can do when not contained.

AL-3 I believe strengthening the San Clemente Dam is the logical course of action for all of the issues I have addressed and the proposal to eliminate the dam is the worst idea in all counts except a possible advantage to ocean fish.

I am Don Redgwick of 1398 Pico Ave. Pacific Grove, PO Box 51879 Pacific Grove, CA. 93950 phone 831-655-3418

RisingLeaf
Watershed Arts

INSPIRING RESTORATION OF CULTURE,
COMMUNITIES AND HABITATS.

Cheryce Hatler
Department of Water Resources
San Joaquin District
3374 East Shields Ave
Fresno, CA 93726-6913

6/15/06
Dear Cheryce and Other Members,

Thank you for this opportunity to voice public opinion and questions regarding the fate of the San Clemente dam and its impact on the Carmel River and the community so that they can be addressed in the EIR. RisingLeaf Watershed Arts is dedicated to sustaining the beauty of this area for the appreciation and enjoyment of current and future generations. We believe that the Carmel River has outstanding scenic beauty and that the presence of a flowing river has substantial psychological, recreational and inspirational benefit for the community. We would love to see the River cared for, not just as a source of water, but as a living being and as a source of life and joy for many living creatures as well as for future generations:

AL-8

We are in favor of the alternative for the River reroute and the stabilization of the sediment; however, we would like to propose some areas, which we feel deserve further consideration and where we feel there are additional questions which should be addressed:

A) Best use of area behind the dam:

SED-39

We feel that the sediment and the area behind the dam is now being looked upon as a liability, but that it should instead be looked upon as an asset. We have the following questions in regard to its potential beneficial uses:

TE-16

1) What is the best use of the area behind the dam? Could it become a flood plain? Could it become a meadow? Could it become a marshy area and habitat for birds, frogs, etc? What is the best use of this area both from an ecological point of view and from a human use point of view?

GEN-16

The community has rallied strongly behind the restoration of the lagoon and I am sure would support restoration projects in this area as well.

SED-40

B) Best use of sediment behind the dam:

1) What is the best use of the sediment behind the dam for the long-term ecology and human use? Is the silt best returned to the ocean by a many year process to re-sand the beaches? Is it best to let the silt remain for an ecological purpose, i.e. as a habitat, as a base for growing a meadow or woodlands?

C) Sediment Stabilization:

AA-44

Rather than using an artificial substance to stabilize the sediment, we would like to propose using trees and other roots as a stabilizing force. Roots naturally jell sediment into place and then serve the dual purpose of forming a habitat. With man-made substances, there is always the issue of pollution and of long-term degradation and failure. We feel that nature itself can provide the safest and surest long-term solution to holding the sediment in place. We would like to see the following questions addressed:

1) Why would a manmade substance be used for stabilizing the sediment when nature has a proven and long-term effective method of stabilization?

TE-17

2) How could trees and vegetation be planted and used to stabilize the sediment?

3) What natural plants and trees could stabilize the sediment and at the same time provide the best habitat for red-legged frogs or for migrating and local birds?

4) What are the potential hazards of using a manmade jell? What long term mitigating measures would then be required? What would the economic cost of this be?

AA-44

Thank you for addressing these questions and for trying to find the best alternative for dealing with the dam.

Respectfully,
Pam Krone-Davis
Pam Krone-Davis
President
RisingLeaf Watershed Art

June 14, 2006

Mr. Lewis Rosenberg
P.O. Box 1693
Tijeras, NM 87059

Ms. Charyce Hatler
California Department of Water Resources
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Dear Ms. Hatler:

I read the San Clemente Dam Seismic Retrofit Project Draft Environmental Impact Report/ Environmental Impact Statement (Draft EIR/EIS) and have some concerns regarding the seismic hazards analysis presented in the Draft EIR/EIS. My concern is that the document lacks current and accurate information in the Geology and Soils section. For clarity, my comments are numbered and listed below.

GEO-7

1. The Draft EIR/EIS presents an uneven emphasis of the various constraints to the proposed project. Specifically, the "Geology and Soils" section is only 13 pages long, whereas other constraints are discussed in more detail, for example, the fisheries section is 61 pages long, and the traffic and circulation section is 53 pages long. No doubt that each of the environmental setting areas is important, but for a proposed project with "seismic retrofit" in the title, there should be more detail on the seismic constraints, even if the information in included in an appendix section.

GEO-8

2. The State of California Business and Professions Code section 7832 (person practicing or offering to practice geology subject to provisions of Geologist and Geophysicist Act) and section 7872(a) (practice without legal authorization), require that the preparer of the geology section is licensed as a Professional Geologist by the State of California Board for Geologists and Geophysicists. On page 6-2 of the Draft EIR/EIS, Mr. Rick McCartney is listed as the preparer for the geology subject area. The State of California Board for Geologists and Geophysicists website shows a "Richard F. McCartney" license PG5140. However, it is unknown if this is the same person as the report preparer.

   Because the proposed project strongly affects public safety, the geology preparer should be a California-licensed Professional Geologist (preferably also a Certified Engineering Geologist), and should sign the report as required by section 7835 (required preparation of plans by Professional Geologist - signing or stamping with seal).

GEO-9

3. The regional geologic map (Figure 4.1- 1: Geology of the Site Vicinity) is not the current published geologic map. Although the citation on figure 4.1-1 is from the "2000 RDEIR produced by Denise Duffy & Associates," the map is likely from Converse Consultants 1986 report on "New San Clemente Project preliminary design and cost estimate." The most recent published map of the area is the *"Geologic map of the Monterey Peninsula and Vicinity"* by T.W. Dibblee, Jr. (published in 1999 by the Dibblee Geologic Foundation as their map DF-71). Much of the geology on the Duffy and Dibblee maps are similar owing to that Dibblee's mapping was the source material. However, figure 4.1-1 should incorporate the 1999 Dibblee map because it is printed in color and easier to read, but most importantly, the map shows the faults differently than the Duffy map. For example, the Dibblee map depicts an east-west striking fault approximately 1/2-mile southwest of the existing reservoir. This fault is not shown on the Duffy map.

GEO-10

4. The discussion of regional seismicity (page 4-5) contains obsolete terminology for fault activity as defined by the California Division of Safety of Dams (DSOD). The term "capable" is no longer used by the DSOD to describe faults that show displacement at or near the ground surface within the last 35,000 years. Instead, the DSOD uses the terms "Latest Pleistocene active fault" and "conditionally active fault" to describe faults with movement in the last 35,000 years (*W.A. Fraser, 2001, Fault activity guidelines of the California Division of Safety of Dams: California Geological Survey Bulletin 210, p. 319-325*). The Draft EIR/EIS should evaluate the fault activity of the Cachagua and Tularcitos Faults using current DSOD methodology.

GEO-11

The discussion of fault activity does not use the most current information. The geotechnical report commissioned for the proposed New Los Padres Dam (*The Mark Group, Inc., 1995*) contains detailed evaluation of the activity of the Cachagua Fault, which is the closest fault to the San Clemente Dam. The Mark Group report uses geomorphic evidence to show that the Cachagua Fault has not moved within the last 85,000 years. Work by L.I. Rosenberg and J.C. Clark (*Quaternary faulting of the greater Monterey area: report to USGS National Earthquake Hazards Reduction Program, 1994*) used radiocarbon dating to demonstrate Holocene activity on the Tularcitos Fault. These more recent reports help address the issue of "of great importance from the point of view of dam design is the question of whether nearby faults are active or not" (Draft EIR/EIS, page 4-5).

GEO-12

The section on ground shaking (page 4-5) covers the time period from 1800 to 1985, but leaves out the last 21 years. A search of the Northern California Earthquake Data Center database as of June 14, 2006 shows 53 earthquakes of magnitude 4 or greater since 1985 within 60 km of the dam, which are the same parameters in the Draft EIR/EIS. The analysis of earthquake recurrence intervals should be revised to include these more recent data.

GEO-13

There is no discussion of the effects of earthquakes on San Clemente Dam, such as the 1989 M 7.0 Loma Prieta earthquake. What were the effects of the Loma Prieta earthquake on the San Clemente Dam? The section also does not discuss effects of other large local earthquakes such as the 1926 M6.1 Monterey Bay doublet or the 1984 M4.9 Big Sur earthquake. Does Cal-Am have repair records for the San Clemente Dam that would provide information on the effects of these earthquakes on the dam? If so, these should be reported to help understand how the dam performs during earthquakes.

GEO-14

5. The section on dam site geology (p. 4-5 to 4-6) does not really describe the site geology, other than to relate that "the dam site is underlain by granitic rocks and smaller amounts of older metamorphic rocks now included in the granitic mass." The various geologic reports done by Rogers E. Johnson and Associates for the proposed New San Clemente Dam project provide much useful information about the dam site geology. These should be summarized in a revised dam site geology section.

GEO-15

This section also contains evaluation of the Maximum Credible Earthquake (MCE) and estimated peak acceleration of specific faults. These topics would be better placed in a seismology section. Nevertheless, there are some technical difficulties with the Draft EIR/EIS. The DSOD uses maximum earthquake magnitude, slip rate, fault type, distance to the site, and geologic site conditions to evaluate earthquake hazards (*W.A Fraser and J.K. Howard, 2002, Guidelines for the use of the consequence-hazard matrix and selection of ground motion parameters: California Division of Safety of Dams*). Only distance to the site and geologic site conditions are discussed in the Draft EIR/EIS. The other topics should be provided in a revised section.

GEO-16

The information in table 4.1-1 (estimated peak acceleration of faults) is based on vague assumptions and outdated methodology. First, the "estimated Maximum Credible Earthquake magnitude (local)" is unclear because as the report disclaims, "Magnitudes and peak horizontal accelerations are based on assumed fault capability. The capabilities of these faults have not been rigorously investigated."

GEO-16 In order for the reader to evaluate if these magnitudes are appropriate for the individual faults, the fault rupture length and fault-length vs. magnitude method needs to be specified for each fault.

GEO-17 Second, the cited "estimated peak horizontal acceleration 50th percentile" uses the equations of "Hoyner [sic] and Boore (1981)." The work of Joyner and Boore (1981) has been superceded by Boore and others (*Seismological Research Letters, v. 68, no. 1, 1997*) that reflects post- Loma Prieta and Northridge earthquake ground shaking equations. Using these older equations could result in accelerations that are too low; which is a critical concern for the proposed project. The accelerations should be recalculated using current ground shaking equations and include the site class and site period used in the calculations. In addition, the DSOD recommends using the 84th percentile acceleration in cases of high or extreme consequence (*Fraser and Howard, 2002*), so it might be necessary to include additional percentile statistics if the proposed project falls into these categories.

GEO-18 Third, it is unclear as under what conditions the dam is unstable. Is it the 0.9 "g-force" (cited as footnote 6 in table 4.1-1), or is it the 0.68*g* peak horizontal acceleration for the Tularcitos Fault (listed in table 4.1-1)? It is unclear as to whether the dam will fail at one of the maximum postulated ground motions, or is it so unstable that it will fail at a lesser ground motion. Provide the ground motion at which the dam is calculated to fail so the reader can better understand the dam stability. Without an accurate assessment of ground motions, it difficult to evaluate if the proposed project meets the purpose of "to meet current standards for withstanding a Maximum Credible Earthquake" as stated in the Draft EIR/EIS, information cover sheet. Otherwise, how do we know that the impact of thickening the dam is "less than significant"?

GEO-19 6. The section on landslides could have more detailed information. It states that a landslide could be triggered by a seismic event, but cites a 1998 report by Woodward-Clyde Consultants that the abutments were found to be stable. Yet, on page 4-9 of the Draft EIR/EIS, it states that "landslides could be triggered during the construction or operation of the Proponent's Proposed Project by oversteepening hillsides during the improvement of access routes," the discussion of which is not included in the "Environmental Settings" section. Nor is there any discussion of Reservoir Landslides/Slope Stability (Issue GS-3) in the "Environmental Settings" section. It would be useful to include the Woodward-Clyde report and the information used for the reservoir landslides as appendices, or to at least provide some details of the analyses to help the reader to draw their own conclusions from the data.

In conclusion, the Draft EIR/EIS needs to be revised to include current and accurate geologic and seismic information in order for decision makers to evaluate the proposed project alternatives. I look forward to seeing a revised version.

Sincerely,

Lewis Rosenberg
Calif. Professional Geologist 5659
Calif. Certified Engineering Geologist 1777

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Chuyce

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1653 Terrace Way
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RECEIVED
JUL 03 2006
ENTRIX - SEATTLE

Paula Landis, Chief
Calif. Dept. of Water Resources
San Joaquin District
3374 East Shields Ave. Rm A7
Fresno, CA 93726

Dear Ms. Landis,

AL-7 I am writing to urge you stop the plan to buttress the San Clemente Dam on the Carmel River. The dam has been deadly to migrating fish and adds little value to downstream users. In fact, I urge you to plan for the removal of this dam, ASAP.

Thank you for this consideration.

Respectfully,
Claude Rosenthal

Carmel River Watershed Conservancy

June 30th 2006

Ms. Charyce Hatler
Department of Water Resources, San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Mr. Bob Smith
U.S. Army Corps of Engineers, San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Re: San Clemente Dam Seismic Safety Project draft Environmental Impact Report/Statement

Dear Ms.Charyce Hatler and Mr. Bob Smith,

AS/O-27

The Carmel River Watershed submits the following comments on the California Department of Water Resources' and the U.S. Army Corps of Engineers' *San Clemente Dam Seismic Safety Project Draft Environmental Impact Report/Statement* (DEIR/S) of April 2006. We trust that those who have the responsibility to review these comments take into account that this not the first or second nor the third opportunity to present comments most of which have fallen on deaf ears.

We urge you to select Alternative 3, river reroute and dam removal, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead and California red-legged frog.

GEN-37

We believe there is much study still needed on the whole process of ensuring that the end result is a river that Steelhead will be able to negotiate, work needed to ensure proper mitigation for the Steelhead and Red Legged Frogs during the years that a decommissioning will take place. May we expect an opportunity to review this material when it is assembled from the studies that have gone before.

Yours faithfully,

Clive R. Sanders, President

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Tel: 831-624-1064
WebPage www.carmelriverwatershed.org/

Santa Cruz Fly Fishermen
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Santa Cruz, CA 95063
www.santacruzflyfishermen.org

June 8, 2006

Charyce Hatler
Department of Water Resources,
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

Re: San Clemente Dam Seismic Retrofit Project, Draft EIS

Dear Ms. Hatler,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the San Clemente Dam Seismic Retrofit Project on the Carmel River. Enclosed for the record and your consideration are the comments from the Santa Cruz Fly Fishermen, supporting ALTERNATIVE 3: CARMEL RIVER REROUTE AND DAM REMOVAL. AL-2

The Santa Cruz Fly Fishermen is a club of about 150 Monterey Bay area citizens who not only share a love of fly fishing, but are also dedicated to the preservation and enhancement of fish populations in California. This project presents a unique opportunity to help restore the largest steelhead population south of Monterey Bay, and as such we feel compelled to comment.

In support of ALTERNATIVE 3:

AL-3

- It would permanently eliminate safety concerns through the removal of the dam.
- It would permanently eliminate the fish passage barrier.
- It would permanently minimize temperature increases during passage through the reservoir site.
- It would require a minimum of sediment removal, and not require long distance transport of the sediment. Under this alternative, sediment need only be transported a short distance from the San Clemente arm to the Carmel River arm.
- Sluicing and downstream sedimentation problems are eliminated.
- Compared to the other ALTERNATIVES, negative impacts are generally short-lived and corrected with mitigation measures.

Against the PROPOSED PROJECT and ALTERNATIVE 1

AL-4

- Both will require continued sluicing to keep the fish ladder operational. This will result in the transport of significant amounts of accumulated sediment down the river channel. The increase in suspended and bedload sediment delivered to the lower river would impair aquatic habitat and directly affect redds and juvenile and adult steelhead in the river.
- Both will require a fish ladder for fish passage.
- ATLERNATIVE 1 would require extensive sediment removal and transport over a relatively long distance.

Against ALTERNATIVE 2

AL-5

- It would require massive sediment removal and transport over a relatively long distance.

Thank you for your consideration of these comments. If you have any questions, please do not hesitate to contact me.

Sincerely,

Dougald Scott

Dougald Scott, Conservation Chair
Santa Cruz Fly Fishermen
(831) 427-1394, doscott@cruzio.com

John G. Williams, Ph.D.
Environmental Hydrology

13 June 2006

Gillian Taylor
Ventana Chapter, Sierra Club

By Email

Dear Gillian,

Here are my comments on the San Clemente EIR. Let me note at the outset that I am not a strong proponent of any of the alternatives considered. My comments focus on issues related to geomorphology, steelhead and steelhead habitat.

Descriptions of the long term consequences of the alternatives are inadequate.

The DEIR considers alternative treatments of San Clemente Dam, constructed in the early 1920s, and of the sediment that almost fill its reservoir. The salient lesson of the whole affair is that the long-term eventually happens. However, the DEIR does not adequately address the main long-term differences among the alternatives. The reinforcing and notching alternatives will leave a large amount of alluvial riparian habitat upstream from the dam. The removal and by-pass alternatives will not, but will result instead in more canyon habitat and upland habitat. There are real trade-offs between these, but the DEIR does not present the long-term consequences of the alternatives clearly enough to allow an informed choice among them. Presenting such an analysis would require some thought and effort, but it does not seem impossible. Generally, the analysis could be based on evaluations of habitats in the basin that are similar to the expected final results of the alternatives. For example, the channel upstream from the San Clemente Reservoir could be taken as a proxy for the habitat that would be restored by the dam removal alternative. For the reinforcing and notching alternatives, analysis could be based on existing alluvial habitat in the upper valley, or from a projection of the developmental trajectory of the habitat that now exists in the filled portions of the reservoir. TE-7

In terms of steelhead, the major tradeoff is that the dam removal alternatives should facilitate fish passage, but the canyon habitat would be less productive biologically than the alluvial habitat that would remain in the other alternatives. However, the DEIR does not provide enough information for this trade-off to be assessed. FI-4 For example, in the notching alternative, in Section 3.3, the DEIR states at p. 3-40 that "Accumulated sediment would be removed down to the level of the notch," or 506 ft. However, at p. 356, it states that the new surface "would be at about the same grade as the current sediment surface," but lowered by about 19 feet. Then, a channel shaped to carry approximately the two-year flow would be constructed, and the whole would be revegetated. However, constructing channels is not so simple (e.g., Kondolf et al. 2001), and the DEIR does not even provide relevant information such as what the existing gradient of the stream actually is. SED-6 Put differently, there is an extensive channel reconstruction element to this alternative, but unlike the elements of the project that would occur at the dam itself, the channel reconstruction is described only vaguely. As another example, in the discussion of the by-pass option (p. 3-81), the DEIR states that "Removal of the reservoir sediment in the San Clemente Creek arm would expose the pre-1921 alluvial deposits in the river

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channel and floodplain through the historic reservoir inundation zone. A three-stage channel would be provided through selective contouring along San Clemente Creek. The channel the same as is described in Section 3.3." However, information about the pre-1921 alluvial deposits is not provided, nor does Section 3.3 provide an adequate description of the channel that would be provided. As a third example, the hazard to steelhead passing over the dam is a salient issue for the assessment of the alternatives (including the preferred alternative), but little information on this point is provided. In sum, the DEIR does not provide the information necessary to make a rational selection among the alternatives, in terms of the long-term effects on steelhead.

SED-6

FI-5

The sediment transport modeling is questionable.

Sediment transport modeling was used to assess various alternatives (p. 4-123). In particular, the option of allowing the river to remove sediments in the notching alternative was rejected based on such modeling (p. 3-47). However, previous work by the engineering consultant used for the EIR, Mussetter Engineering, has been sharply criticized by experts from the United States Geological Survey (Andrews et al. 2002, attached; also available at http://wwwrcamnl.wr.usgs.gov/sws/Trinity/TrinityReview.pdf). The issue in question was this. In December 2000, after years of study, the Secretary of the Interior issued a Record of Decision (ROD) proposing a new flow regime in the Trinity River, downstream from a Bureau of Reclamation dam. On behalf of the Sacramento Municipal Utility District (SMUD), Mussetter Engineering produced a critique of a proposed flow regime, and SMUD used this critique in support of a proposal for an alternative flow regime that would have less impact on hydropower production. Essentially, Mussetter Engineering argued, based on sediment transport modeling, that the flow regime proposed by the ROD would reduce the habitat value of the Trinity River for salmon by flushing out spawning gravels. In 2002, The Bureau of Reclamation asked the United States Geological Survey (USGS) to review the issue. The USGS review, by E. D. Andrews, K. M. Nolan, and S. M. Wiele, can fairly be described as blistering, and contains statements such as "The model results displayed in the upper panel of Figure 40 are physically unreasonable" (p. 7, last paragraph). At the least, this history raises questions about the reliability of the sediment transport modeling used in the EIR. The modeling should be reviewed by independent experts before it is relied on to reject or assess alternatives..

SED-7

The sediment stabilization in the by-pass alternative should be reviewed.

Long-term stabilization of unconsolidated sediments in the historical river channel is a critical element of the by-pass alternative, since failure would deliver large amounts of sediment to the river, with possibly great economic and environmental harm. Either evidence should be provided that the stabilization method proposed is routine and well tested, or the engineering details for such stabilization should be subject to independent expert review before this alternative is selected.

AA-17

The by-pass and removal alternatives will not solve passage problems for steelhead.

The by-pass alternative is imaginative and may provide a feasible means of restoring more or less natural passage for steelhead past the San Clemente site. However, the benefits of such passage are limited by the presence of Los Padres Dam, which lies between San Clemente and most of the prime habitat in the upper watershed. Historically, Los Padres Dam has been a much larger problem for steelhead than San Clemente Dam (Williams 1983), so it is not clear that removing San Clemente Dam will provide much benefit to steelhead. Particularly if public

NEPA/ CEQA 2

NEPA/ CEQA 2 money will be needed for these alternatives, as has been suggested by some, then the benefits to steelhead from improving passage at San Clemente should be compared to the benefits to steelhead from improving passage at Los Padres.

The DEIR embodies an outdated view of steelhead biology:

FI-6 The DEIR embodies an outdated view of steelhead biology, and takes too narrow a view of the potential consequences of the alternatives. The DEIR could be improved by considering the effects of the proposed project on steelhead in terms of the concepts developed by the National Marine Fisheries Service for recovery of listed "Evolutionarily Significant Units" of salmon, such as the "viable salmonid population concept (McElhany et al. 2000). In particular, the DEIR should take into account that major alterations to the aquatic environment such as those contemplated here, can have evolutionary consequences (Ashley et al. 2003, Stearns and Hendry 2004). For the Carmel River steelhead, factors affecting the selective trade-off between anadromous and resident life history patterns (RSRP 2004) are a particular concern. Mortality during passage over Los Padres Dam seems to be such a factor.

The gradient of the sediment in the San Clemente Reservoir may not be at equilibrium.

SED-8 There is an implicit assumption in the DEIR that the slope of the sediment in the reservoir is at equilibrium. However, this may well not be the case, and this could have important consequences for the notching alternative. As noted in the DEIR, downstream coarsening of the sediment overtime can be expected. As this occurs, the channel gradient will need to steepen to adjust to the resulting greater bed resistance. It would be useful to compare the existing gradient in the reservoir sediments with the channel gradient in geomorphically similar situations farther downstream, such as downstream from Sleepy Hollow. If the final gradient can be expected to be greater than the existing gradient, then the proposal for the notching alternative as presented in the DEIR would remove more sediment than necessary, at unnecessary financial and environmental cost.

The DEIR confuses upstream and downstream:

FI-7 The Draft EIR confuses upstream and downstream in a way that may be a harmless result of careless report preparation, or may be more serious. At p. 4-124, the Draft EIR states that "... for the purpose of comparison, we will assume that about 40 percent of the habitat in the watershed to support juvenile production of YOY and about 60 percent of the habitat to support juvenile production of yearling steelhead occurs *downstream* of Los Padres Dam (Dettman and Kelley 1986)" [emphasis added]. These percentages are repeated further down the page. However, at p. 4-119, Table 4.4-6 shows that these percentages apply to habitat *upstream* from Los Padres. Whether this confusion of upstream and downstream matters depends on whether it occurred before or after the relevant comparisons were done.

The DEIR should consider modifications to the notching alternative.

AA-18 The proposed notch as shown in Figure 3.3-2 is level all the way across. It would seem more sensible to have a notch within the notch, sized to the anticipated active channel of the river, that would tend to hold the thalweg of the stream in one place. This could be placed at the point where fish would be least likely to be injured in passing over the dam. All else equal, the notch should be placed near the fish ladder. The acceleration of water as it nears the inside notch

SED-9 would create a small area of scour upstream from the dam[1], which would reduce the problem of sedimentation near the fish ladder. As noted above, the sediment transport modeling should be reviewed, particularly regarding the option of allowing the river to rework sediments in the notching alternative.

SED-10 The DEIR does not justify removal off as much sediment as is assumed in the notching alternative. For example, it is not clear why sediments could not be left as terraces to one or both sides of the reconstructed channel. Reducing the amount of sediment removed in this alternative would reduce its financial and environmental cost.

SED-11 *Consider dredging a channel to the fish ladder, rather than flushing:*

For the alternatives that would leave the dam and require a fish ladder, the EIR should consider using a suction dredge rather than flushing to maintain a channel to the ladder. The slurry could be pumped to a settling pond or dewatering facility on the flat next to the dam, and the dewatered sediment could be removed by truck. Dredging would provide greater control over the operation, and minimize the discharge of sediment into the river.

NEPA/ CEQA 3 *The Old Carmel Dam improvements should be considered separately:*

It is not clear why improvements to the Old Carmel are part of this project. If these improvements need to be made, they should be made, whether or not anything else is done.

References:

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Kondolf, G.M., M.W. Smeltzer, and S. Railsback. 2001. Design and performance of a channel reconstruction project in a coastal California gravel-bed stream. Environmental Management 28(6):761-776.

McElhany, Paul, Rucklelshaus, Mary H., Ford, Michael J., Wainwright, Thomas C., and Bjorkstedt, Eric P. h. 2000. Viable salmonid populations and the recovery of evolutionarily significant units. NOAA Technical Memorandum NMFS-NWFSC-42.

Recovery Science Review Panel (RSRP). 2004. Report of December 1-3, 2004, meeting. NOAA Fisheries, NWFSC. http://www.nwfsc.noaa.gov/trt/rsrp.cfm

Stearns, S.C. and Hendry, A.P. 2004. The salmonid contribution to key issues in evolution. Evolution illuminated: salmon and their relatives. New York, Oxford University Press.

Williams, J. G. 1983. Habitat change in the Carmel River basin. Carmel River Watershed Management Plan Working Paper Number One. Monterey Peninsula Water Management District.

[1] This scour just upstream from the dam is a typical feature of dams that are filled with sediment.

Sleepy Hollow Homeowners Association

Charyce Hatler
Department of Water Resources,
San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726-6913

June 9, 2006

Re: Draft Environmental Impact Statement Report
For the San Clemente Dam Seismic Retrofit Project

Dear Ms. Hatler:

As President of the Sleepy Hollow Homeowners' Association, along with two other Sleepy Hollow Homeowners' Association board members--Sharon Pezzolo and Jim Roberts, I attended the May 23, 2006 public hearing concerning the Draft Environmental Impact Statement Report for the San Clemente Dam Seismic Retrofit Project ("Project"). The panel hearing the testimony requested that I submit my questions that I had orally presented at the public hearing in written form. My questions are attached hereto.

TR-1 Notwithstanding my comments about the Project, the Sleepy Hollow Homeowners' Association is very concerned about the comment made during the hearing that San Clemente Road, the road through Sleepy Hollow, would be used for deliveries and access for construction workers. This type of road use would cause severe negative impacts to our residents through dust, noise, and safety concerns for our children and families that utilize the roadway for residential transportation and recreate on and near the roadway. Many of our homes are situated directly adjacent to the roadway and would incur increased levels of the negative health, quality of life, and safety issues stated above. Please note that this is a gated community and the level of use of the roadway is minimal and the residents are accustomed to this lack of traffic. The type of use contemplated is in violation of our agreement with the dam owner, California American Water Company, regarding their use of the road.

TR-2 All the alternatives presented to date, would likely require an extraordinary number of vehicles to use San Clemente Road for deliveries and construction worker access. It would also likely require construction vehicles such as concrete trucks to use the roadway and an existing bridge that is not constructed for this frequency or type of use over an extended period of time. The road will very likely prematurely fail and require complete reconstruction during the time frame of construction of the dam work. The use of this road for construction purposes of any kind is totally unacceptable to the Sleepy Hollow residents. Any project alternative must require that all vehicle traffic be prohibited from using Sleepy Hollow roads. Our association is requesting that any proposed dam project would use either the Cachagua Access Route for all construction traffic, or include the construction of the Tularcitos Road access proposed (or equivalent alternate access) in the Draft EIR/EIS for the dam's seismic safety project, to be used for all deliveries and construction worker access.

TR-3 I want to restate that the Sleepy Hollow Homeowners' Association is not against a project to protect the dam from seismic activities, but is emphatically against a project that would put any significant traffic on roads within our subdivision or cause any other significant adverse impacts to the Sleepy Hollow residents.

Sincerely yours,

Victoria Kennedy
President, Sleepy Hollow Homeowners' Association
Attachment: List of Questions Concerning Draft EIR for San Clemente Dam Seismic Safety Project

cc: Sleepy Hollow Homeowners Association Board Members
Anthony Lombardo, Lombardo & Gilles,

Victoria Kennedy, President of the Sleepy Hollow Homeowners' Association

Re: San Clemente Dam Seismic Safety Project—May 23rd Community Meeting Questions

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TR-4 1) Will any traffic due to this project use any road within the Sleepy Hollow Homeowners' Association boundary?

TR-5 2) Is the Tularcitos Route, the vehicle route that all project vehicles will use?

AA-12 4) Is the proposed batch plant location within 500 feet of two residences?

AA-13 5) Whether or not the plant's location is within 500 feet of two residences, what alternative batch plant sites where analyzed?

V-15
NOI-1 6) The preferred batch plant site should be a location that does not cause visual, dust, and noise impacts to any Sleepy Hollow subdivision residents and/or be closer to the dam. What were the limitations to locating the
AA-14 batch plant closer to the dam?

AA-15 7) What is estimated time to complete the project?

AA-16 8) What would be longest expected time to complete the project?

AQ-1 9) What are the actual activities or measures to control dust and noise?

AQ-2
TR-6 10) If there is a problem with project impacts such as noise, start times, dust, traffic control deficiencies, what will be the remedy, besides merely a phone number and person's name to call?

GEN-2 11) What will be the penalty for non-compliance with conditions stated in EIR?

GEN-3 12) Who has the authority to control the site? Only Can Am, a private entity?

GEN-4 13) How are the residents to determine who is the responsible agency, e.g., whether it is Monterey County Zoning Administrator, Monterey Peninsula Water Management District, Monterey County Sheriff's Department, the lead agency Department of Water Resources Department, U.S. Army Corps of Engineers, for each violation of the mitigation measures?

GEN-5 14) As this is privately owned project with the lead CEQA agency's office located in Fresno, who is going to be the local responsible entity to force compliance with mitigation measures or problems with project activities?

TR-7 15) Who will determine after the project is completed, what and how much repair to Carmel Valley Road or any other public or private roads will occur due to the project's activities?

TR-8 16) Will Monterey County simply accept the traffic impact fee imposed upon the project (equivalent vehicle trips) as satisfying the road repair mitigation measure?

TR-9 17) The EIR/EIS states that there will be flagmen. The document does not state how, when, or where the flagmen will be used. Please provide information as to how, when, and where flagmen will be used. Any place on public roads?

VIS-2 18) Page 2-29, does not state any visual impacts to Sleepy Hollow residents, but the batch plant will be seen by at least the homeowners of two residences in this subdivision. Why isn't the batch plant visual impact addressed in Table 2-1?

July 3, 2006

Charyce Hatler
Department of Water Resources
San Joaquin District
Fresno CA 93726-6913
Email: chatler@water.ca.gov

Bob Smith
U.S. Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2107
Email: Robert.f.smith@usace.army.mil

Dear Ms. Hatler and Mr. Smith:

San Clemente Dam Seismic Safety Project
Draft Environmental Impact Report/
Environmental Impact Statement
Monterey County

The Department of Fish and Game (DFG) has reviewed the Draft Environmental Impact Report/Statement (DEIR/S) and its appendices for the San Clemente Dam Seismic Safety Project. Our comments on the DEIR/S are based on our role as both trustee agency and responsible agency under the California Environmental Quality Act (CEQA), with additional permit authority under Section 1600 *et seq.* of Fish and Game Code, Lake and Streambed Alteration Agreements (SAA's). We are also participating in project review under the National Environmental Policy Act (NEPA), to provide input on the alternatives analysis. Our comments focus primarily on our concerns with the proponent's intent to repair the obsolete San Clemente Dam (Dam) and maintain the structure as a permanent impediment to natural fluvial processes and fish movement in the Carmel River watershed. We also describe the advantages of the fundamental opportunity still available to the project proponent to greatly improve this watershed by implementing what we deem to be the environmentally preferred option, Alternative 3, the Carmel River reroute with in-place sediment stabilization. The proponent's proposed project is currently dam strengthening with in-place sediment stabilization.

AL-14

AL-14

The impetus for the project is the requirement by the Division of Dam Safety (DSOD), which has been in place since 1995, for the Coastal Division of the California American Water Company (CAW) to bring the Dam into compliance with safety standards based on predictions of a Maximum Credible Earthquake (MCE) and a Probable Maximum Flood (PMF). It is important to note for the record that the dam no longer has any functional purpose in terms of traditional uses such as water storage or flood control, and that no assertions about such utility in the future are being made.

DFG consultation history

NEPA/
CEQA 26

Staff from the Central Coast Region of DFG have for many years provided CAW and DWR with input on various aspects of the management of aquatic resources in the Carmel River watershed. A primary concern has always been the viability of the Carmel River population of the steelhead trout, *Oncorhynchus mykiss*, which is in the South-Central California Coast (SCCC) Evolutionarily Significant Unit, designated by the National Marine Fisheries Services as Threatened. The steelhead is also a State Species of Special Concern. The California red-legged frog is another State Species of Special Concern, and is listed by the U.S. Fish and Wildlife Service as Threatened. DFG's concerns as a trustee agency for these and other riparian species in the Carmel River watershed have been largely focused on ensuring adequate instream flows and passage conditions in relation to CAW's water supply operations in Carmel Valley. This has included an ongoing need to ensure compliance with fish passage necessary over the Dam, by adequate maintenance and improvements of the existing fish ladder, as well as ensuring bypass flows and moderating drawdown regimens at the reservoir. We also provided input on earlier versions of the Draft EIR, prior to the inception of Alternative 3, which has evolved as a middle option between full dam removal and strengthening. In previous years DFG participated in "core group" meetings that dealt specifically with the DSOD order, DFG participation ceased due to staffing limitations. In December 2005, DWR requested DFG re-engagement in the process by reviewing the administrative draft of the DEIR/EIS. In response, DFG staff were redirected towards this effort and provided initial input to DWR, much of which will be repeated in this letter. However, DFG was not subsequently allowed to resume its participation in the core group process.

Overview: environmentally preferred alternative and potential effects to existing habitats

FI-99

DFG sees Dam strengthening as inherently problematic in terms of overall risk to riverine resources. The DEIR/EIS does an adequate job in providing documentation of passage at the Dam for the last several decades, but does not provide enough historical context for what is now a tenuous condition of steelhead within the watershed. While it is true that steelhead observed in an evolving series of ladder counts have shown numbers as high as 1,400 between 1962 and the mid-seventies (and as low as 15 in 1992), the key management context for the population overall is that it is currently below 5% of known historic estimates. As such, its numbers are low enough to be at risk of local extinction. Any actions DFG takes in this setting, such as voicing its opinion in the public comment process, or developing resource protection measures through the SAA process, must consider these parameters. The DFG position is that making the dam to a permanent fixture in the watershed for the foreseeable future is to exacerbate local extinction risk. While the proposed improvements to the fish ladder, viewed in isolation from the prospects of the Carmel River population, should improve passage success, they cannot compare with the positive effects of replacing the ladder with natural passage. Even the best functioning ladders will impede passage, at rates currently documented between 5% and 40% for anadromous fish. Fallback and delay, effects on reproductive success due to increased stress, hesitation at entrance pools and kelt mortality are among the known factors associated with ladders that can only reduce overall recruitment to the population.

FI-99

Herptile habitat within the San Clemente Reservoir will be impacted by any of the four alternatives, and adverse effects on habitat and populations will be expected for California red-legged frogs, western pond turtles and Coast Range newts (all are California State Species of Special Concern). The mitigation regimen proposed for these impacts (Table 2.1) would be acceptable for SAA purposes if dam removal is implemented. It needs to be noted that, if retained, the reservoir habitat represents a management challenge relative to these species, since it will need to exist in a state of perpetual disturbance due to the requirements of sluicing, dredging and bullfrog control. Although there will be a short-term series of population reductions and habitat impacts during dam removal operations, DFG considers these to be sufficiently mitigated by the long-term benefit of riverine restoration with dam removal. Alternatively (in the case of dam retention), loss of known acreages of breeding habitat for California red-legged frogs will need to be mitigated in-kind above and beyond the avoidance and translocation plans currently proposed, as conditions to be determined in the SAA process.

TE-33

Project baseline

The current condition of the watershed, with the Dam and fish ladder present, is arguably the existing baseline as defined in CEQA An improved ladder cannot possibly be viewed as a potentially adverse effect from a biological perspective. The obvious effect of the Dam on downstream channel morphology, by retaining sediment which leads to channel instability, incision and bank erosion, lack of spawnable gravel below

NEPA/
CEQA 27

NEPA/ CEQA 27 the Dam and possible lack of sediment into the Carmel Lagoon, should be considered as part of the CEQA baseline.

Unavoidable impacts and the need for subsequent mitigations

FI-100 Squarely outside of the baseline is the impact of the new proposed sluicing regimen that will be necessary in perpetuity to periodically move significant tonnages of accumulated sediment from behind the dam into the incised river corridor below it. Due to time and staffing constraints, DFG can not comment extensively on the specific details of its concerns on the Draft Plan prepared to date (Appendix J). We have instead coordinated with the National Marine Fisheries Service (NMFS) in recent months and concur with the analyses presented in their comment letter on this specific issue. The most important and basic aspect of the sluicing regimen is that it will be, along with the ladder, at the very minimum be a chronic stressor on the steelhead population. Furthermore, passage through the reservoir is likely to be poorer (higher water temperature, decreased cover, increased predation) in perpetuity with the sluicing regimen than it was in a deeper reservoir just a few years ago (and certainly inferior to a re-naturalized river reach).

FI-101 SED-57 As presented in Appendix J, sluicing operations are untested and lack specificity. They are based on migration records and behavioral observations of an already residual run and do not attempt to model the population recovery that the resource agencies believe should be a primary objective of the project. They do offer an interesting projection based on admittedly the most accessible, rather than effective, data collection methods (e.g. the use of the Robles Del Rio gage 5 miles downstream of the dam rather than the Sleepy Hollow gage). While the plan strives to identify permutations that would minimize the concurrence of sluicing and migration, the complexity of variables appropriately identified in the "Proposed Sluicing Decision Tree" (Figure 3) belies the inherent difficulty in juxtaposing the need to remove sediment from the reservoir and improve fish passage. The draft plan appears to fail to consider in detail predictable outliers to watershed conditions experienced from 1994-2005, such as fire, drought or prolonged heavier flows, which would alter debris loading, sediment particle-size distributions and vegetative encroachment in the reservoir. The adaptive management aspect of the plan appears to be traditional dredging that would occur at the upstream end of the fish ladder "on average every three years." If heavy storms and high flows are prevalent, this dredging would be precluded, making historically productive wet years the most impacted.

FI-101 SED-57

The experience of the last two decades with maintenance issues at the fish ladder amply illustrate the difficulties in achieving resource management priorities particularly during storm events. We are confident that CAW will do their best to comply with all aspects of the Sluicing Operations and Maintenance Plan that is still to be developed, but are concerned that the full implications of the can be fully understood so must be evaluated as an unknown. By design, sluicing will need to happen more or less concurrently with the adult migration of steelhead in the Carmel River. The document correctly identifies the impacts of the sluicing to fisheries and water quality as significant and unavoidable (Table 2.1, Impacts FI-9 and WQ-14).

Current and future DFG oversight and project timelines

NEPA/ CEQA 28

In the SAA process, the sluicing plan would have to be fully developed and mitigated before a SAA could be executed. Until the sluicing impacts are more thoroughly quantified, we cannot provide the range of mitigations that would be sufficient; this will need to be done through the SAA process. In contrast, the impacts of dam removal options are more quantifiable and would require less extensive mitigations.

NEPA/ CEQA 29

The strengthening of the dam within the watershed will require the regulatory agencies to perpetually exert a heightened level of oversight to the dam than what would be necessary if Alternatives 2 or 3 are ultimately selected. All four alternatives will entail impacts to the river during construction or implementation, but the impacts from the sluicing regimen and passage impediment initiated and maintained by the preferred project will continue in perpetuity. Because of this difference in the scope of impacts, DFG will be forced to modulate the impacts for the proposed project over a greater period of time. If there is no ultimate large benefit from the project, we would seek to minimize the temporal impacts to the river corridor and would likely restrict work within the river zone to periods that will most likely be between June 15 and October 15. This may be further restricted by high spring flows or early rains. In contrast, if the net effect of the project is beneficial, i.e. dam removal, it would provide a rationae for an accelerated schedule, with a possibly higher short-term risk to resources that is mitigated by an earlier capture of a significant resource benefit. This could allow completion of a dam removal option in a shorter time frame than the preferred alternative.

GEN-20

Another parameter of aquatic resource management that may be affected by the choice of alternatives is the ongoing process by which CAW complies with Order 95-10 by the State Water Resources Control Board (SWRCB) (subsequently supplanted by Order 2002-02). This Order occurred due to complaints filed by DFG and others which successfully argued that CAW diversion of waters were having an illegal and adverse effect on the public trust resources of the river. To date, DFG has participated in helping aid attain compliance with the Order by negotiating a Memorandum of Understanding (MOU) on an annual basis that regulates the bypass flows past the Dam. In the future it will be necessary for DFG to bring CAW into a more standard form of compliance through the use of the more thorough SAA process that is consistent with Section 1600 of the DFG Code. The condition of steelhead in the Carmel River will diminish or improve over time, partially in response to the presence or absence of the Dam. If the population continues its general trend of decline, it will force the resource agencies to expend greater efforts and regulatory oversight on the remaining fish and wildlife resources in the Carmel River in regulatory processes such as the ongoing Order 2002-02. The project Operator should anticipate this eventuality and consider it in any long-term cost-benefit analyses they conduct. The increased scrutiny that will need to be paid to the management of steelhead as a result of the retention of the Dam may, over the years, end up placing a greater burden on CAW than the investment that could be made in the short run to effect Alternative 3. GEN-20

Logistical considerations

Finally, DFG hopes that the CEQA and NEPA Lead Agencies have fully and responsibly considered the fact that the cost differential between the proposed project and removal alternatives, in particular Alternative 3, may not have to be fully borne by CAW. We hope that an economically based statement of overriding considerations will not be considered until a thorough review of potential and existing funding sources occurs. Resource agencies are well aware of the historic opportunity to restore a significant portion of the Carmel River watershed, and it is highly likely that they can assist CAW identifying funding support to offset the additional cost for dam removal. For its part, DFG understands DWR's interest in eliminating the risk to the public in a timely manner, and would be willing to assist within its means to facilitate efforts for obtaining funds without jeopardizing project momentum. We would also recommend that CAW note that DFG administers a Fisheries Restoration Grant Program (FRGP), and that a dam removal project of this nature would be eligible for funding (although it should be noted that FRGP grants are typically not large enough to cover more than a portion of the overall expense of a project of this scope). Perhaps more significantly, DFG provides input to other funding bodies, and could be counted on for support if and when dam removal becomes an option. The next deadline for FRGP grant proposals is in March 2007 for funds to be disbursed in 2008. We would also consider providing technical support for reducing any remaining uncertainties with finalizing designs for dam removal and or river re-route. CR-5

GEN-22

We have noted that there were some moderate ambiguities and unresolved issues in the description of Alternative 3, but have not addressed them in this letter (e.g. a curious absence of reference to the growing knowledge base pertaining to dam removal in the United States).

NEPA/ CEQA 30

Please be advised this project will result in changes to fish and wildlife resources as described in the California Code of Regulations, Title 14, Section 753.5(d)(1)(A)-(G) . An environmental filing fee as required under Fish and Game Code Section 711.4(d) should be paid to the Monterey County Clerk on or before filing of the Notice of Determination for this project.

If you have comments or questions regarding this letter, please contact Serge Glushkoff, Environmental Scientist, at (707) 944-5597 or SGlushkoff@dfg.ca.gov; or Scott Wilson, Habitat Conservation Supervisor, at (707) 944-5584

Sincerely,

Original Signed by C. Catalano for

Robert W. Floerke
Regional Manager
Central Coast Region

cc: See next page

R. Sh. H.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

June 29, 2006

Robert Smith
U.S. Army Corps of Engineers
San Francisco District
333 Market Street
San Francisco, CA 94105

Subject: Draft Environmental Impact Statement (DEIS) for the San Clemente Dam Seismic Retrofit Project (CEQ# 60182)

Dear Mr. Smith:

The U.S. Environmental Protection Agency (EPA) has reviewed the DEIS referenced above. Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our detailed comments are enclosed.

The San Clemente Dam needs to be strengthened in order to comply with the California Department of Water Resources, Division of Safety of Dams requirements to address safety deficiencies and eliminate the risk of failure from a Maximum Credible Earthquake (MCE) and Probable Maximum Flood (PMF) event. The Carmel River Watershed Assessment and Action Plan (2004) documented the need to upgrade or remove the dam (DEIS, p. 5-14). The U.S. Army Corps of Engineers (Corps) and the California Department of Water Resources are proposing to strengthen the dam and replace the existing fish ladder.

NEPA/CEQA-32

Based on our review, we have rated the document as Environmental Concerns - Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions"). We have some concerns with the proposed retrofit plan and request that additional clarifications be made in the FEIS regarding the long-term impacts and benefits associated with the alternatives. EPA recommends that the FEIS include additional information related to the Clean Water Act (CWA) Section 404(b)(1) process and the short and long-term economic and environmental costs and benefits of each alternative. In particular, the FEIS should include an analysis of the projected long-term benefits to the River and the steelhead population from the removal of the dam.

We appreciate the opportunity to review this DEIS. When the FEIS is released for public review, please send (2) copies to the address above (mailcode: CED-2). If you have any questions, please contact me at 415-972-3988 or Summer Allen, the lead reviewer for this project. Summer can be reached at 415-972-3847 or allen.summer@epa.gov.

Sincerely,

Duane James, Manager
Environmental Review Office

Main ID # 4462

Enclosures: Summary of Rating Definitions
Detailed Comments

NEPA/ CEQA-33

Clean Water Act, Section 404(b)(1)

All project alternatives will have impacts to Waters of the U.S. and wetlands and will need a Clean Water Act (CWA), Section 404(b)(1) permit. The CWA, Section 404(b)(1) Guidelines (40 CFR 230.10(a)) require the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). This determination must take into account effects to all resources.

Recommendation:
The FEIS should include a summary of the CWA, Section 404(b)(1) permitting process and ensure that the LEDPA will be selected in the Record of Decision (ROD).

CR-11

Cost Analysis

We recognize that one of the project objectives is to minimize the financial impacts to California American Water Company (CAW) rate payers (p.1-2). Appendix D in the DEIS includes the costs associated with various sediment disposal sites, which represent a portion of the costs of Alternative 2. However, it does not include a cost analysis for the other alternatives proposed, future maintenance costs, or alternative funding possibilities. This information is important to help inform decisions regarding the long-term economic costs or benefits of various measures such as dam removal and on-site sediment stabilization, as well as other alternative measures.

Recommendation:
The Alternatives Analysis in FEIS should be expanded to include a short and long-term cost analysis of the alternatives in a comparative format to help inform decisions. It should include information on the feasibility of funding for these projects and any interested parties that may be able to coordinate on project costs or related monitoring and mitigation.

FI-109

Alternatives Analysis

All project alternatives may have short-term impacts to California red-legged frog habitat and water quality due to sedimentation or sediment deposition. However, we note that selecting an alternative that incorporates dam removal (such as Alternative 2 or 3) would meet the project purpose and need, restore the natural basin hydrology, and provide long-term benefits to the threatened steelhead population in the Carmel River by improving fish passage and the stream gravel replenishment necessary for spawning. The document notes that passage in a free-flowing stream is preferable to a fish ladder (p. 5-22). It also documents a concern that the steelhead population is threatened by the development of water resources, drought, and watershed, land use, and environmental problems (p. 4-103). However, the analysis in the DEIS does not fully describe the environmental benefits (both in the River and the steelhead population) that may result from removal of the dam.

FI-110

In addition, we note that the decision to stabilize the sediment in place (as proposed in Alternative 3) would reduce habitat impacts to special status species in the area, as disposing of large volumes of sediment at the proposed sediment disposal site could destroy habitat and may also injure or kill special-status wildlife species (p. 4-209). Alternative 3 (Carmel River Reroute and Dam Removal) is expected to take the same amount of time to complete as the Proposed Project (Dam Strengthening), but unlike the Proposed Project, it would not have unmitigatable significant turbidity impacts to the Carmel River from sluicing (p. 2-37 and 5-2).

FI-110

Recommendations:
In order to fully weigh the costs and benefits of each proposed alternative, the FEIS should include a detailed analysis of the projected effects of the removal of the dam on the River and the steelhead population. This information should be used in the determination of the LEDPA.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1111 Jackson Street, Suite 520
Oakland, CA 94607

June 30, 2006

ER# 06/461

Bob Smith
U.S. Army Corps of Engineers
San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Subject: Review of Draft Environmental Impact Report / Environmental Impact Statement, San Clemente Dam Seismic Safety Project, Monterey County, California (ER 06/0461)

Dear Mr. Smith,

The Department of the Interior (Department), through the Fish and Wildlife Service (Service) in the Ventura Fish and Wildlife Office (VFWO), has participated in planning and development of the Draft Environmental Impact Report / Environmental Impact Statement Review, San Clemente Dam Seismic Safety Project, Monterey County, California (DEIR/EIS) since 2003.

Section 1.1 of the DEIR/EIS characterizes the Service as a cooperating agency in the National Environmental Policy Act planning process (page 1-1, paragraph 2), as provided by Federal regulation at 40 CFR §1501.6. Additionally, on several occasions, the U.S. Army Corps of Engineers (Corps) has verbally expressed an interest in having the Service participate in this capacity.

Therefore, the Service acknowledges and accepts the Corps' request to serve as a cooperating agency in this process. The Department offers the following comments and recommendations to be considered in the Corp's FEIR/EIS.

GENERAL COMMENTS

AL-12

The Department commends the Corps' inclusion of two alternatives (Alternatives 2 and 3) that would return the reach of the Carmel River in the project area to a natural, free-

AL-12 flowing state. Free-flowing reaches of the Carmel River upstream and downstream of the project area meander seasonally, and periodically create off-channel pools and backwater areas. These features support high-quality breeding habitat for the federally threatened California red-legged frog (Rana aurora draytonii), and the Department finds that returning the project area to a free-flowing state would enable this reach of the Carmel River to eventually function similarly for the subspecies.

The Department has several concerns regarding implementation of the proposed project (i.e., dam thickening).

AL-13 Specifically, our concerns relate to: fortification of a structure that is likely to pose a barrier to dispersal of individual California red-legged frogs; construction and operation of a concrete batch plant adjacent to the Carmel River where accidental spills and increased sedimentation could have far-reaching adverse effects to aquatic habitats that support the California red-legged frog; construction of a new, redundant access road through an undisturbed riparian area that supports the California red-legged frog; and long-term degradation of habitat for the California red-legged frog.

SPECIFIC COMMENTS

HY-12 Page 4-19, Section 4.2.1 Environmental Setting - Carmel River Hydrology, first full paragraph, last sentence: Instantaneous peak flows of 16,000 cfs on March 10, 1995, and 14,700 cfs on February 3, 1998, - both larger than the 9,000 cfs reported in the document - can be found on the U.S. Geological Survey (USGS) website for the Carmel River at Robles del Rio site at

http://nwis.waterdata.usgs.gov/nwis/peak?site_no=11143200&agency_cd=USGS&format=html

HY-13 Pages 4-20 and 4-21, Table 4.2-1 Average Monthly Flow: The table provides more significant figures than are found in the original data presented at the USGS website at http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=11143200&agency_cd=USGS - thereby implying greater precision than the data actually have (USGS presents only three significant figures below 1,000 cfs; table 4.2.1 presents as many as five).

HY-14 Pages 4-22 and 4-23, Table 4.2-2 Peak Monthly Flow for Period of Record: The table title is ambiguous - apparently what is reported is the highest daily mean flow for each month - distinguished from the instantaneous peak flow referenced in our first comment.

More information about USGS surface water data in California can be obtained from Donna Schiffer, Chief, Statewide Hydrologic Monitoring and Information Office, USGS Water Science Center at (916) 278-3097 or shiffer@usgs.gov.

TE-18 Page 4-173, Paragraph 4: The DEIR/EIS indicates that habitat loss is not a threat to California red-legged frog populations in central California. We respectfully disagree with this assertion. The recovery plan for the subspecies (Service 2002) refers to habitat

TE-18 loss and alteration as primary factors that have negatively affected the subspecies throughout its range.

TE-19 Page 4-174, Paragraph 1: The discussion of interactions between California red-legged frogs and bullfrogs (Rana catesbeiana) presented in the DEIR/EIS is not accurate in the context of the proposed project area. The Barry (1999) reference cited in the DEIR/EIS relates to Butte County, which is at least 200 miles from the project area and is not along the California coast.

TE-20 The Department is unaware of any locations in or near Monterey County where "California red-legged frogs and bullfrogs co-occur in stable relative numbers," as stated in the DEIR/EIS (Page 4-174, paragraph 1).

TE-21 California red-legged frogs and bullfrogs have never been documented to co-occur in stable relative numbers in the Carmel River watershed, and proliferation of bullfrog populations along the central California coast (e.g., Monterey County) are a substantial threat to the persistence of the California red-legged frog in this area.

TE-22 California red-legged frogs have been found on many occasions in the stomachs of bullfrogs that were collected in the project area.

TE-23 The DEIR/EIS states "Surveys during the annual San Clemente Reservoir drawdowns found California red-legged frogs and bullfrogs co-occurring throughout San Clemente Reservoir" (page 4-174, paragraph 1).

TE-24 According to survey data submitted to the Service, the number of bullfrogs detected in San Clemente Reservoir, over the referenced time period, has increased dramatically, while the number of California red-legged frogs detected by surveyors has substantially declined. These trends indicate that bullfrogs are gradually out-competing and displacing California red-legged frogs from San Clemente Reservoir.

TE-25 Page 4-174, Paragraph 4: The DEIR/EIS states "pond habitat within the Carmel River arm occurs up to the upstream end of the reservoir sediment bed, but spawning pools outside of the river channel are absent further upstream" (page 4-174, paragraph 4). However, systematic annual California red-legged frog surveys conducted between 2002 and 2006 have consistently documented California red-legged frog reproduction in side-channel and off-channel pools up to 1.5 miles upstream of San Clemente Reservoir.

TE-26 Pages 4-174 and 4-175: The DEIR/EIS uses 1997 survey data to support the conclusion of absence of California red-legged frogs from several reaches of the Carmel River in the project area (e.g., page 4-174, paragraph 3; page 4-174, paragraph 5; page 4-175, paragraph 1).

TE-27 The 1997 survey data is outdated; please include updated information in the final EIR/EIS. For example, the DEIR/EIS states that no California red-legged frogs were found in lower Tularcitos Creek during surveys in 1997 (Page 4-175, paragraph 1).

TE-27

However, an adult California red-legged frog was observed in Tularcitos Creek downstream of San Clemente Drive in 2000.

Page 4-188: In its evaluation of effects of each alternative on wildlife species, the DEIR/EIS does not identify effects of the proposed project (i.e., dam thickening) on movement and dispersal of California red-legged frogs from upstream and downstream of the project area.

Please include the following information in the FEIR/EIS.

> Dispersal of individual California red-legged frogs plays an important role in metapopulation dynamics and therefore, the persistence of populations. While California red-legged frogs can pass many obstacles, and do not require a particular type of habitat for dispersal, a potential dispersal route connecting aquatic habitat sites must be free of barriers (i.e., a physical or biological features that prevents frogs from dispersing beyond the feature) and of sufficient width.
>
> California red-legged frogs spend considerable time resting and feeding in riparian and wetland vegetation when it is present. Most of the time, when they are not in the water or making overland excursions, individual California red-legged frogs can be found within two or three hops of the water, resting secretively and feeding on land underneath a canopy provided by herbaceous plants and a variety of moisture-loving softwoods such as willows.
>
> TE-28
>
> Therefore, it is reasonable to conclude that moisture and cover provided by the riparian plant community provide suitable foraging habitat and may facilitate dispersal.
>
> Designating or creating movement corridors for California red-legged frogs is problematic. However, when an obvious corridor exists between two occupied sites, California red-legged frogs are likely to use the route (Bulger et. al 2003). An example of such an obvious corridor is the riparian zone along the Carmel River upstream and downstream of the San Clemente Dam.
>
> For a species such as the California red-legged frog to disperse beyond the San Clemente Dam (i.e., upstream or downstream), an individual must ascend or descend extremely steep slopes on either river bank adjacent to either dam abutment. Even in the unlikely event that an individual California red-legged frog is able to negotiate this slope, its exposure to predation is greatly increased during this movement.
>
> Although dispersal of individual California red-legged frogs in the project area has not been rigorously studied, it is reasonable to conclude that a structure such as the San Clemente Dam poses a substantial barrier to dispersal. If the dam is stabilized and reinforced in place as described in the

TE-28

proposed project in the DEIR/EIS, it is very likely that the dam will perpetually remain an obstacle to dispersing California red-legged frogs.

Page 4-197: In its analysis of effects of constructing and operating the concrete batch plant, the DEIR/EIS does not recognize any potential impacts to the California red-legged frog. However, California red-legged frogs are known to occur in the Carmel River immediately adjacent to the proposed site for the concrete batch plant.

TE-29

California red-legged frogs could be directly and indirectly impacted by construction and use of a concrete batch plant in this location. Constructing the concrete plant could result in destruction of upland habitat for the California red-legged frog, and any inadvertent spill of materials could lead to contamination of the Carmel River downstream of the project area.

By choosing a different location of the concrete batch plant, or selecting an alternative that does not necessitate use of a concrete batch plant, the likelihood of these adverse effects on the California red-legged frog and its habitat could be reduced or eliminated.

Pages 4-197 through 4-199: In its analysis of effects of creating the new Tularcitos Access Road, the DEIR/EIS does not recognize any potential impacts to the California red-legged frog. However, California red-legged frogs are known to occur in Tularcitos Creek and the Carmel River in the vicinity of the proposed new road alignment.

TE-30

California red-legged frogs could be directly and indirectly impacted by construction, use, and existence of this new, permanent access road. Constructing this new access road would result in destruction of aquatic and upland habitat, alteration of Tularcitos Creek and Carmel River floodplains, and increased sedimentation of Tularcitos Creek and Carmel River downstream of the project area.

Tularcitos Creek is already known to be a primary contributor of sediment to the Carmel River. Construction in the riparian corridor and floodplain of Tularcitos Creek would likely increase its contribution of sediment to the Carmel River. This increased sediment load could, in turn, further degrade habitat for the California red-legged frog downstream of the project area. By using the existing paved access road (San Clemente Drive), which is owned by Cal-Am, the likelihood of these adverse effects on the California red-legged frog and its habitat could be reduced or eliminated.

Page 4-199: The DEIR/EIS concludes that maintaining the San Clemente Reservoir pool at an elevation of 525 feet would be beneficial to the California red-legged frog. However, as noted previously, biologists have documented a steep decline in the number of California red-legged frogs and a sharp increase in the population of bullfrogs while the reservoir has been maintained at this elevation since 2003.

TE-31

As long as San Clemente Reservoir provides breeding habitat for bullfrogs, increased numbers of bullfrogs at this site and dispersal of the juvenile bullfrogs produced here pose a considerable threat to California red-legged frogs.

Emigration of bullfrogs from San Clemente Reservoir to aquatic habitat surrounding the reservoir is likely resulting in large numbers of bullfrogs encroaching on aquatic habitats that formerly supported a larger proportion of California red-legged frogs.

The thousands of bullfrogs reproducing at, and dispersing from, San Clemente Reservoir likely out-compete, displace, and predate California red-legged frogs within and near the project area. Therefore, if the reservoir would be allowed to remain in place, substantial efforts to eradicate bullfrogs from the project area will be necessary to minimize these adverse impacts to the California red-legged frog population in the area.

TE-31

Without permanently ponded water, bullfrog reproduction is severely impaired. Therefore, elimination of the reservoir (e.g., through the dam removal alternative or the dam removal and river reroute alternative) would remove breeding habitat for bullfrogs. In addition, returning the reach of the Carmel River in the project area to a free-flowing state would allow the river to seasonally create off-channel breeding habitat for California red-legged frogs in this area while reducing the likelihood of re-establishment of bullfrog reproduction.

TE-32

The Department supports the Corps' commitment to designing future monitoring and enhancement efforts to minimize impacts of the San Clemente Dam Seismic Safety Project on the California red-legged frog. We recommend that control and monitoring of non-native predators (e.g., bullfrogs, crayfish (Pacifasticus leniusculus), and centrarchid fishes) be emphasized in the final EIR/EIS, in order to minimize adverse impacts of the project on California red-legged frogs and other aquatic species.

In conclusion, we appreciate the opportunity to provide these comments. If you need further assistance, please contact Roger Root of the VFWO at (805) 644-1766 or Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 648-5028 or at lwoosley@usgs.gov.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

cc: OEPC, HQ,
FWS, Portland, OR
USGS, HQ

REFERENCES CITED

Barry, S.J. 1999. A study of the California red-legged frog (Rana aurora draytonii) of Butte County, California. PAR Environmental Services, Sacramento, California.

Bulger, J.B., N.J. Scott, and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs (Rana aurora draytonii) in coastal forests and grasslands. Biological Conservation 110(2003):85-95.

U.S. Fish and Wildlife Service. 2002. Final recovery plan for the California red-legged frog (Rana aurora draytonii). Portland, Oregon.

Changes

June 22, 2006

Ms. Paula Landis, Chief
California Department of Water Resources
San Joaquin District
3374 E. Shields Ave., Room A7
Fresno, CA 93726

Mr. Robert Smith, Project Manager
United States Army Corps of Engineers
San Francisco District
3333 Market St.
San Francisco CA 94106

Dear Ms. Landis and Mr. Smith: Regarding: San Clemente Dam draft EIR. Dam safety retrofit or dam removal.

For 6 years or more, the dam has been reported so unsafe that it could collapse in case of a large, prolonged rainfall or in case of a sizable earthquake. There are persistent rumors of toxics or hazardous materials behind the dam, yet Mr. John Klein, engineer with Cal Am Water Co. tells me that he knows of no testing or core samples taken of the sediments, mud and silt behind the dam.

WQ-2

There are hundreds of thousands of cubic yards of sediments behind the dam which have been in place, unmoved for 30, 50 and even 85 years. Toxics could be concentrated. If the alternatives to either notch the dam or demolish and remove it are chosen, sediments will be moved with shovels and bulldozers and will be greatly disturbed and dislocated. Any potential toxics could escape into the Carmel River channel and affect the Cal Am water supply as well as riverbed and ponds, wetlands and the Lagoon which the river creates.

The greatest disturbance would occur if the dam is removed. The plan is to re-channel the River into the San Clemente Creek channel. The portion of this channel which is also behind the dam is filled with sediments similar to those in the adjacent Carmel River channel behind the dam. They potentially could contain similar toxics and if they do, the toxics could also wash down the Carmel River channel, harming the watershed down the channel.

I'd like to request that core samples of the sediments of the River and Creek channels behind the dam be made to ascertain whether there are toxics, of what type and quantity, and what risk they might pose to the Carmel River channel downstream and the drinking water supply, under each possible alternative for dam safety retrofit or removal.

FI-41

The best alternative for the retrofit or dam removal project is that which is sensitive to the steelhead fish runs and the total flora and fauna of this Carmel River Watershed - - - one of the jewels of the entire state of California. If the expense is more for the dam project

FI-41 which leads to the best restoration (and continuation) of this fine watershed, interagency plans and cooperation are well justified to make the larger project possible.

CR-4 Mindful of Cal Am's obligations to safety-retrofit or demolish the dam, when RWE bought Cal Am, they certainly did their due diligence, and knew full well of the dam's structural problems. The estimated costs of dam safety work were surely subtracted from the price RWE offered Cal Am, and therefore the costs should be borne by Cal Am and RWE, and not by the ratepayers.

Thank you for your consideration and thank you for diligently seeing this project through. The San Clemente dam is taunting us to neglect it and postpone the safety project until the next big rains or the next sizable quake.

Sincerely yours

David Zaches

David Zaches
25430 Via Mariquita
Carmel, CA 93923
831/ 626-4200

Appendix D

TRANSCRIPT OF PUBLIC HEARING ON DRAFT EIR/EIS

PUBLIC HEARING

RE: SAN CLEMENTE DAM SEISMIC SAFETY PROJECT

RANCHO CANADA GOLF COURSE
4860 CARMEL VALLEY ROAD
CARMEL VALLEY, CALIFORNIA

6:30 - 8:30 P.M.
TUESDAY, MAY 23, 2006

JEREMY PRATT: So with that, Jane, if you'd like to call the public hearing formally to order?

JANE HICKS: Thanks, Jeremy.

The purpose of this hearing is to acquire information or evidence which will be considered in evaluating a request by the California American Water Company for a Department of the Army permit to discharge fill into waters of the United States to construct the San Clemente Dam Seismic Safety Project.

This permit application is being evaluated pursuant to Section 404 of the Clean Water Act. This hearing affords you, the public, the opportunity to present your views, opinions and information on the proposed project. I now call the public hearing to order.

JEREMY PRATT: The first name on the list is Jonas Minton. And I will call two names at once so people can come to both microphones. After Jonas will be William Look.

JONAS MINTON: Good evening. I'm Jonas Minton with the Planning and Conservation League Environmental Advocacy Organization.

I want to thank you all for having this meeting and for going back, not just looking at the alternatives that were looked at in 1998, in the year 2000. As you pointed out, there are significant issues that make almost any solution impossible.

SED-58

There are a few impacts that we think have not yet been addressed. The first is some of the problems with the dam strengthening and notching that we don't think are fully evaluated, and that includes the potential for sediment scour from the silted-in reservoir in a high-flow event, and that could mobilize; that is to say, carry down a lot of sediment to the downstream areas impacting both fish and residents.

SED-59
FI-102

Secondly, we think that additional attention needs to be placed on the difficulties of sluicing from either the dam strengthening alternative or the notching alternative. How do you sluice at the same time you maintain fish passage? The time that you want to sluice is when the fish want to out migrate.

AL-15

A major unacknowledged problem is the -- or, pardon me, acknowledged problem with the dam strengthening and notching as identified on page 51 is, quote, significant and unavoidable impacts to water quality, significant and unavoidable impacts to fish. Those are impacts with both the strengthening and the notching.

For those reasons, it appears to us that the viable alternative is the river rerouting and dam

AL-15

removal option, and it is our view after reading the entire EIR/EIS that that is in fact the least environmentally damaging project alternative, which the Corps, of course, is required to identify under Section 404(b)(1) of the Clean Water Act.

BOB SMITH: One minute.

JONAS MINTON: And we also believe that that is the most environmentally, economically and socially response alternative. Instead of dealing with this as a problem that has to be cemented in or hacked half way down, we think that it's possible to have a bigger solution.

The Planning and Conservation League is also sponsoring two workshops June 5th here in Carmel to look at -- for the community to look at our draft watershed restoration program that looks at both the dam removal and other improvements to the watershed. Thank you.

JEREMY PRATT: William Look. And the next after William will be Charles Franklin.

WILLIAM LOOK: Hello. My name is William Look; I am here on behalf of California Trial tonight. California Trial does not have a position yet on which alternative they would favor. However, in reading the -- and I was handed a playbook just a couple of days ago, so I'm playing a little bit of catch up here, but

SED-60

it appeared to me that looking at the river holistically, some attention ought to be made to recharging downstream gravels, and also to the ongoing problem that if the -- of addressing the problems of the fish barrier and the alternatives which do not entail removal of the dam.

AL-16

Based on what I've seen so far, however, it seems to me that as long as the entombment of the gravel can be done in a way which provides a long-term solution and not one that just defers 50 or 60 years --

BOB SMITH: One minute.

WILLIAM LOOK: -- and that might be the preferred alternative in that it provides probably the least risk to the public and least disruption of the homes in the area as well as provides what in the end would be a more natural fish passage, so long as in the end you haven't created yet another barrier where the dam was.

JEREMY PRATT: Thank you, William. Charles Franklin, followed by Hannah Schoenthal-Muse.

CHARLES FRANKLIN: My name is Charlie Franklin, and I live on the river about four or five miles down below the dam, so I'm concerned because you are messing around with my backyard.

The concept of extending the term of the

GEN-23

project to mitigate its impacts, it's a century of accumulation, roughly, and shouldn't we try and mitigate it on that kind of time scale? Does that make any sense economically? I don't know. But I didn't quite get why this four- or five-year time span seemed necessary for the project. So you could do it over a hundred years very differently and probably pick up most of the seismic mitigation in the first five years.

Anyway, a question. I didn't see it addressed. It's probably in here. Is there someone here who could

AA-50

tell me how the condition of the existing reinforcing steel was assessed?

JEREMY PRATT: What we plan to do, Charlie, is address all the questions and comments in response to the formal response that is the final EIR/EIS.

AA-51

CHARLES FRANKLIN: Okay. How large a head pressure source does Cal Am need to keep up and maintain the system? Is there going to be some permanent residual water retention object up there?

BOB SMITH: One minute.

CHARLES FRANKLIN: What?

BOB SMITH: You've got one minute.

CHARLES FRANKLIN: Okay. That's good. I've got one last question.

SED-61

The prior speaker raised the question of what

SED-61

are the appropriate compensatory sediment flows. I mean you have been stealing gravel out of my backyard for a hundred years. Over how long a period of time, how much gravel should you be giving me back to kind of put us back to where we were a hundred years ago? Thank you.

JEREMY PRATT: Thank you, Charlie. And Hannah, and following Hannah would be Roger Williams.

HANNAH SCHOENTHAL-MUSE: Hi, my name is Hannah Schoenthal-Muse, and I'm with Friends of the River, and thanks for having us today.

AL-17

Straight to the point. We think that the reroute and dam removal alternative is the most appropriate option of all. Not only will it help improve the overall health of the Carmel River, we think it will protect the viability of California's important coastal steelhead stream. So that's where we stand, and thanks for having us.

JEREMY PRATT: Thanks, Hannah. I apologize for mispronouncing your name.

HANNAH SCHOENTHAL-MUSE: That's okay.

JEREMY PRATT: And we have Roger Williams and Roy Kam --

ROY KAMINSKI: Kaminski.

JEREMY PRATT: Thank you.

ROY KAMINSKI: Come in or go out and put a ski on the end of it.

ROGER WILLIAMS: I am Roger Williams. I'm a Carmel-by-the-Sea resident. And I like the last alternative. I was really impressed with the idea of the river rerouting. The strengthening and notching of the dam don't do anything for the steelhead, or not much other than improving the fish ladder. Yet the notching has the advantage of doing a whole lot of good for at least that population of the wild life.

AL-18

But I would like to mention one other issue, and the issue is dams over the years in California have trapped sediment, which has had a negative impact on beaches. Many of the beaches up and down the state are diminishing. So I think if the bypass route is used, rather than entombing the sediment forever, a slow impact, as the previous speaker was talking about, over a hundred years of releasing some of that trapped sediment every year during the winter state would help reestablish some of the beaches.

SED-62

NEPA/CEQA-31

JEREMY PRATT: Thanks, Roger. And Roy, followed by Robert Greenwood.

ROY KAMINSKI: Thank you. It seems to me that the dam serves a purpose with head and it also serves a purpose of having water available in case we have a major fire catastrophe. So I should think that having

WAT-15

WAT-9

water in a location, maybe only 50 or 100 acre feet, would be of some service.

AA-52

And I'm just wondering if it's feasible to notch the dam a little more, lower the water level, and then put a conduit, maybe a 20-foot conduit, like run under the Thames River 200 years ago, you've gone under the English Channel, put in a 20-foot conduit into the middle of it or the base of it, and then you can drain it, and then you can drain the sediment. And seems to me you would have a free flow, and that probably would

WAT-10

eliminate the need for a desal plant in Moss Landing. If we had the river running 24 hours a day, 7 days a week, 365 days a year, I think that might solve our water problem.

AA-53

And, too, what you might do is consider a dam, a water -- a rubber dam or some balloons, maybe only three feet, just to keep water flowing the year round. And then when the flows -- when it flows, then you can turn down the dam. But I'm thinking that it may be a feasible option to notch it, lower the water level, and then drill into, maybe the center, maybe close to the base. Then that takes all of that sediment out of there or takes all of the water out of there, takes all of the weight that's pushing up against the dam now, and you may not have to do anything else. Thank you.

JEREMY PRATT: Thanks, Roy. And then we have Robert Greenwood followed by Don --

DON REDGWICK: Redgwick.

JEREMY PRATT: Thank you.

ROBERT GREENWOOD: Did you say Robert Greenwood?

JEREMY PRATT: Yes, I did.

ROBERT GREENWOOD: I'm Robert Greenwood speaking for Carmel Valley Association, and I really have a question. I have only read the summary, and the summary explains what will be done with the sediment, but the alternatives for dam removal don't say what will be done with the concrete. That seems to me a big issue that ought to be at least discussed. I don't know whether you have any answer tonight, but if you do, it would be helpful.

AA-54

JEREMY PRATT: We will address all the questions in the final EIR/EIS.

ROBERT GREENWOOD: I didn't see anything about that in the summary.

JEREMY PRATT: It is contained in chapter three, but thanks for bringing that up, maybe we should put it in the summary.

So then we have Don and Claire -- Cliff -- Clive Sanders.

DON REDGWICK: My name's is Don Redgwick from Pacific Grove. I wrote my comments down before I knew about this alternative of the river rerouting, but I think some of these things could tie in with that particular plan.

AL-19

I think the report and recommendation should take into consideration the environment, preservation, conservation, water resources and economics of the project. The solution to all five of these goals is to save the existing dam by reinforcing. The sediment should be moved from the back of the dam to the front of the dam and placed as a buttress. I think that follows a little bit with your wasting the sediment in the old channel line.

AA-55

The buttress should be large enough to allow the sediment to dry to about five percent of optimum in order to be able to secure reasonable compaction. And the material, there should be some kind of capping of the sediment for erosion control, and that would be true whether you reroute the river or not to get that sediment out. I don't know the nature of the sediment, but I imagine it's pretty erodable.

AA-56

The demolition of the dam and the removal of the sedimentation will have a severe impact on Carmel Valley Road unless the broken concrete and steel are

AA-56

buried on-site, and the sediment can't be placed somewhere else in the vicinity of the dam.

AA-57

The rerouting of the Carmel River will not cause the sediment to be stable and now to resist water runoff from the surrounding hills without some means of stabilization.

GEN-24

The dam can serve many functions if left in place and strengthened. It can be --

BOB SMITH: One minute. You have one minute.

DON REDGWICK: It can be managed to serve as a flood control protection which allow -- which would allow protection of the Carmel River basin if there is an allowance for storage during a storm. In other words, you have to keep the level down. A dam will support wild life and migrating birds. Water storage can offset the use of energy used to produce water by reverse osmosis.

CR-1

Demolition of the dam will result in a very costly cost to the taxpayers or the consumers, and it probably might involve some court costs along with it without a reasonable solution. Thank you.

My comments are kind of real screwed up. I will leave them anyway.

JEREMY PRATT: Thanks, Don. So you're turning in your written comments? Okay.

Clive or Cliff, I apologize. I'm sure I'm butchering some of your names. And followed by Hank

Smith.

CLIVE SANDERS: My name is Clive Sanders; I'm with the Carmel River Watershed Conservancy.

Having spent the last 15 years reading through your consulting efforts, I felt that I understood everything until I started looking at the next or the last 502 pages. It seems to me that we have forgotten one of the more basic things, and that is the economics of what we're doing and why we're doing it.

And I think one of the things that's left out of this study -- and I think you have done a great job of pointing out all the problems. I mean we have got 15 items here on the impacts in mitigation, many of which refer to each one of these different ways of doing things. And I realize you can't do much more than point them out. The only trouble is you are talking to people who don't understand, at least I certainly don't understand, half the things that could happen that you haven't even mentioned.

AL-20

And, therefore, I think the only alternative you are giving us is movement, the changing of the route of the Carmel River. Now I'm a guy who has been against putting a dam down all these 15 years. I have become educated with the help of a few friends, and I think that's the way to go.

CR-7

I think we need to understand a little bit better that the cost of this cannot be borne by the owner. Now the owner happens to be Cal Am, but the people who are paying for it are we. We are the people that are going to be paying for it. If we're going to have a major demolition of the dam at the level you are suggesting, then we need federal help.

Now I believe there are groups of people that are working on this. I think this has to be published, and I think in your final report you need to zero in on this aspect. Thank you.

JEREMY PRATT: Thank you, Clive. Hank Smith followed by David Zaches.

HANK SMITH: Hi, I'm Hank Smith, a resident of Monterey. I would like to offer my thanks to all the participants for coming up with these thoughtful options for us, and it obviously reflects a lot of hard work and time on your part.

AL-21

I support alternative number 3 for the following reasons. The dam no longer fulfills its intended, original purpose because of the sediment behind it. The disruption and costs of silt removal -- removal are obviously not acceptable. Spending money to buttress a worthless water storage tool escapes my notion of common sense.

FI-103

Lastly, but most importantly, alternatives other than dam removal will have a negative impact on the fish. And the ladder is not only ineffective, but even the best fish ladders -- and not many people are aware of this, but even the best fish ladders only allow 50 to 80 percent of the fish to migrate upstream. So even if we upgrade this fish ladder, we're still not really doing justice to the fish. Upgrading and ongoing care and maintenance of the fish ladder in these other alternatives will be very significant and will be borne by you and me for decades to come.

FI-104

The notching alternative bothers me because it was not clear how the fish are going to out migrate. You know, these fish are returned back, if they can. They return back to the sea and they do this several times. But the notching doesn't describe how they are going to make that journey. And we already have experienced situations on the existing dams where the water flow is such that these fish trying to make their out migration; that is, to return back to the ocean --

BOB SMITH: One minute.

HANK SMITH: -- are destroyed. So thank you very much.

JEREMY PRATT: Thank you, Hank. And so Dave and then Frank Emerson.

DAVE ZACHES: My name is Dave Zaches; I live in Carmel Valley. I am interested in following some of the comments which I thought were brilliant.

FI-105

Regarding the fish, the more care and attention we give to this fish run. I think the better. However, there was a healthy fish run here 50, 60 years ago in spite of the dam. So whether we really need to demolish the dam in order to improve the fish runs, I do not know.

WQ-9

The other thing is the toxics, the pollutants, the chemicals which have been inserted into the Carmel River area behind the dam, below the dam. We're all drinking that water. And I haven't heard anyone really address to my satisfaction, and I can't understand what's in the report frankly. It's very, very complex, and I don't know whether one part per million is okay or one part per billion is okay. But I hope a lot of attention will be given to that in the rerouting of the river way or the, you know, so-called encapsulation or trapping of the sediments and the toxics and pollutants. When that river gets to flowing, it rolls big boulders down the stream. It's a very powerful force. So I hope that whichever alternative comes up, it will consider that.

WAT-11

And the other one, I think if the river is

WAT-11

rerouted, why don't we have some sort of a water storage there, even a small one, as the gentleman in the red jacket suggested, for --

BOB SMITH: One minute.

DAVE ZACHES: -- wild life, fish, et cetera, et cetera. Thank you.

JEREMY PRATT: Thanks, Frank. And before -- or, Dave. And I apologize for mispronouncing your last name. But before Frank speaks, let me just say we're getting down to the bottom third of our list, and if anyone has been inspired, sitting here, to want to comment -- Glenna, if you would come up and get the extra sheets, feel free to sign up now.

So we have Frank Emerson followed by Victoria Kennedy.

FRANK EMERSON: Yes. Thank you. My name is Frank Emerson; I am a volunteer with the Carmel River Steelhead Association. I coordinate fish rescues. I'm a resident of Monterey, so we're a stakeholder of record. I would like to also thank you for your presentations. I thought they were very informative. In a short amount of time you've really addressed a lot of the issues. I know it is very complex.

AL-22

And what became obvious to me, it was that the one thing that really stands out for me is the first two options, the strengthening and the notching only solved one of a number of problems, and that is simply the dam safety issue. Neither option provides any more water storage, actually both do not provide any water storage, as well as flood control. So even as Dave was pointing out, if those dams were restored back to their original condition, they still won't provide flood control because they don't store enough water. They quickly fill up and water passes over them.

AL-22

So to me the biggest bang for the buck is the reroute and removal options, because it addresses not only the dam safety issue, but it restores a critically important reach of spawning habitat. It restores the ability of fish to pass freely, downstream migration of juvenile fish, adult fish, upstream migration of adult fish, restores an area to its previous condition. Dave was saying something like two miles of that river has now been inundated by sediment, so that's two miles of riverbed that could be restored.

And I really appreciated Mr. Williams' comment that over time we could recycle that cobble, because gravel injection is one of the mitigations suggested by the fisheries agencies. So there is more and more benefits obviously apparent than that option to me.

SED-64

And I'd also like to take the opportunity to

AL-22

say that we have an historic opportunity not usually seen in California. And if there was ever a dam that was crying out to be removed, it's the San Clemente Dam. It provides so little benefit and actually remains a hazard, remains a public nuisance --

BOB SMITH: One minute.

FRANK EMERSON: -- if we go with Option 1 or 2.

So, again, thank you for all the hard work you did on the presentations, and we'd like to be on record as supporting Option 4. Thank you.

JEREMY PRATT: Thanks, Frank. Victoria Kennedy and then Nancy Pratt.

VICTORIA KENNEDY: Hi, I'm Victoria Kennedy; president of the Sleepy Hollow Homeowners Association. And since it appears as if all the alternatives affect our community, particularly with traffic but also with dust and noise, I would like the following questions addressed in the final EIR.

TR-13

The first is regarding all the alternatives. Why can't you use the Tularcitos route for all of them?

TR-14

You have mentioned tonight that there's going to be deliveries and construction workers using the Sleepy Hollow access, and I would like to know how many construction workers a day we're talking about, and how many deliveries approximately? And why can't you use

TR-14

the Tularcitos route for these and not Sleepy Hollow?

AA-58

The other questions are: Is the proposed batch plant location for the dam strengthening within 500 feet of any of the Sleepy Hollow residences? And whether or not the plant's location is within 500 feet of the residences, which alternative batch plant sites were analyzed? The preferred batch plant site would be a location that does not cause visual, dust and noise impacts to any Sleepy Hollow subdivision residents and be close to them. What are the limitations to locating the batch plant closer to the dam?

AA-59

What's the longest expected time to complete any of these projects? I know you have approximate times, but what's the longest time?

AQ-13
NOI-3

What are the actual activities or measures to control dust and noise?

GEN-25

If there's a problem with project impacts such as noise, start times, dust, traffic control deficiencies, what will be the remedy besides merely a phone number and a person's name to call?

GEN-26

What would be the penalty for noncompliance with conditions stated in the EIR?

GEN-27

What has the authority -- who has the authority to control the site? Only Cal Am, a private entity, or a non-private entity?

GEN-28

Do the residents have the figure -- have to figure who is responsible -- the responsible agency, whether it is a Monterey County zoning administrator or

GEN-28 the water management district or the county sheriff's department?

GEN-29 As this is a privately-owned project with CEQA agency's office located in Fresno, who is going to be the local responsible entity to force compliance with mitigation measures or problems with project activities?

TR-15 Who will determine after the project is completed what and how much repair to Carmel Valley Road or any other public or private roads will occur due to the project's activities?

TR-16 Will Monterey County simply accept this traffic impact fee imposed upon the project, the equivalent vehicle traps as satisfying the road repair mitigation measure?

TR-17 And the EIR/EIS states that there will be flagmen. The document does not state how, when or where the flagmen will be used. Can you please provide information as to how, when and where the flagmen will be used --

BOB SMITH: One minute.

VICTORIA KENNEDY: -- any place on the public roads?

VIS-7 And my last question is on page 2/29. It does not state any visual impacts to Sleepy Hollow residents, but the batch plant will be seen by at least the

VIS-7

homeowners of two residences in the subdivision. Why isn't the batch plant visual impact addressed in Table 2-1? And that's it. Thank you very much for your time.

JEREMY PRATT: Thank you, Victoria. You are certainly going to keep us busy in the final. Victoria, you have those in writing, if we could get a copy of those.

VICTORIA KENNEDY: I will do that because I have them.

JEREMY PRATT: Thank you. And next is Nancy Pratt followed by Monica Hunter.

NANCY PRATT: And I would like to donate my name to David Dillworth with HOPE, Helping our Peninsulas and Environment, if he appears.

JEREMY PRATT: If he appears. All right. He hasn't signed up yet, Nancy. But I do like your last name.

NANCY PRATT: Yes.

JEREMY PRATT: Monica Hunter and Rex Keyes.

MONICA HUNTER: Thank you. My name is Monica Hunter; I'm with the Planning and Conservation League Foundation. I'm also a board member of the Carmel River Watershed Conservancy. And while I'm not here to speak for the board this evening, I do want to bring up an element of this that hasn't been touched on tonight, and

GEN-30

GEN-30

it represents the work of the conservancy and that is in establishing a watershed management plan and implementing a watershed-wide approach to understanding the issues and challenges of protecting water quality, riparian habitat, river channel systems, and also the linkages to the lagoon and to the beach and some of the issues that are occurring there.

I also want to mention that Carmel River watershed is a critical coastal watershed. And most of us are aware that within the state we have put tremendous effort and emphasis on a number of our programs, funding included, resources, technical expertise devoted to understanding how we can improve and protect the coastal watersheds. And this concerns impact to near-shore marine environments as well as protecting water quality for the benefit of communities; in this case, this community does rely on the Carmel River for many recreational and other local traditional uses.

So I think the watershed context is something that we can't overlook. I think removing the dam structure of stabilizing the sediment, rerouting the river, restoring the flow of the river is something that in the long run the watershed management effort would most benefit from that. I think it would solve many

GEN-30

problems and eliminate some of the costly bandaids that we're looking at in terms of trying to overcome the ongoing and permanent impacts as long as that structure remains in place. Thank you.

JEREMY PRATT: Thank you, Monica. Rex Keyes and Steve Wilpert.

REX KEYES: Hi, I'm Rex Keyes; I'm from

AL-23

Salinas, and I'm in favor of restoring the dam to its original operation like it was about 50 years ago.

SED-64

And my suggestion is gradual release of the sediment behind the dam. You can do that during a trial period, like this next winter. Release some of the sediment during high flow rates, which should deposit evenly downstream all the way to the ocean. And in the last 20 years we've had a lot of heavy rains. You've had a lot of sediment coming down, minor landslides occurring in the Carmel River, and this probably wouldn't be any more harmful than what occurs naturally.

At the end of the winter you could measure the impacts and, if it's pretty successful, each year afterwards release more and more sediment until the dam is restored to what its normal operations used to be. I

WAT-12

don't think we had a dam built in California in the last 50 years and having this increased water supply to the Monterey Peninsula would be a great value. Thank you.

JEREMY PRATT: Thanks, Rex. And Steven Wilpert?

STEVEN WILPERT: Hi, I'm Steve Wilpert; I live in Sleepy Hollow. I'm not speaking on behalf of Sleepy Hollow. In fact, I just joined this project in terms of being aware of it two years ago, so I'm not as well versed as a lot of the speakers tonight.

But I must say that I'm still amazed and I'm still scratching my head, because I still don't get it. I still don't get what the purpose of the project is. I see up on the board a very nice presentation, a dam safety project. I'm for dam safety. I'm for people not getting hurt during a hundred-year flow. I'm for people not getting hurt during a maximum credible earthquake. I'm for people not getting hurt when any dam might contribute to damage to peoples' property or people themselves.

SA-2

But I haven't seen anything or heard anything to suggest that the harm that this community is going to experience after a hundred-year storm event and after a maximum credible earthquake is going to be exacerbated by that old dam failing. I just don't get it.

I like the people at Camp Stephanie. I don't dislike them. I don't dislike anybody that lives along the Carmel River. But I just -- I just don't get it why

SA-2

we're talking about spending so much money for such a little impact relative to the destruction we're going to have around us from such a huge flow of water and such a large earthquake.

CR-8

We're spending our tax dollars; that is, Cal Am is spending its energy. I suggest leave them alone. And Cal Am is being forced to spend their customers' money a hell of a lot on a project that means so little in terms of the whole community. Thank you.

JEREMY PRATT: Thanks, Steve.

Are there more sign-ups? Great.

Anyone who still feels inspired, please.

ROY THOMAS: I am inspired, and you passed me up, so I am the other Roy in the Roy -- I'm Roy Thomas.

JEREMY PRATT: Roy, I'm sorry.

ROY THOMAS: That's all right. I thought you were saving the best till last. That's happened before.

GEN-31

I'd like to remind you of some problems with dealing with the Option 1 and 2. If you entomb a piece of concrete in the Carmel River, the cost isn't just the entombment. You've got a hundred, maybe two hundred years of maintenance on this block of concrete that, in fact, if we're all here, we'll still want to keep the fish and wild life and the recreation going on on the river. People like to boat on that river, and right now the boaters have to carry their boat around this obstruction.

I've personally -- pardon me. I'm from the Carmel River Steelhead Association; I'm the president. I have personally walked through the existing fish ladder, and never has anybody built a fish ladder to a reservoir full of sediment and not had nothing but trouble trying to keep the fish ladder functioning.

FI-106

It's going to cost lots and lots of money. And I propose that the company put up a bond, maybe 50, maybe $75 million for the next 150 years of maintenance on the fish ladder and the dam. Wow.

CR-9

I want to also remind you that when you start making new rivers, if you remember your own slide up there with acres and acres and acres of wood in the reservoir, if you don't make your new river wide enough, you'll have a new dam and it will be a wooden dam, so you have to pay attention to that.

HY-15

I am also well aware, as I'm sure you are too, of the years of starving of the lower river for gravel, and I support the concept of sorting and continually supplying sediment; i.e., sand, gravel and cobble to the river to maintain not only the height of the river and the beaches, but to help prevent bank erosion, which apparently that does, which you don't have down in

SED-65

SED-65

sizing of the river.

BOB SMITH: One minute.

FI-107

ROY THOMAS: And I'd like to remind you that the threatened and possibly soon-to-be-endangered steelhead that live in the Carmel River, because their population has been dropping in the last seven years, they have lived in the Carmel River for tens if not hundreds of thousands of years. We don't need a reinforced useless block of concrete on this river that may last another tens of thousands of years. Thank you.

JEREMY PRATT: Thank you again. I apologize. You're quite right, you were the second Roy. You two actually signed up in sequence. I read the name and thought I was done. I apologize.

We have a few more sign-ups, Nikki Nedeff and Jessica Simms.

NIKKI NEDEFF: Thank you. My name is Nikki Nedeff. I'm a lifelong resident of Carmel Valley and have spent, oh, gee, about the better part of 50 years watching, studying, playing on the Carmel River. I'm a riparian plantologist by academic training and actually spent a portion of my professional career coordinating habitat restoration on the lower Carmel River.

GEN-32

I want to echo two speakers' comments. The first speaker mentioned this is an incredibly

GEN-32

complicated project. Indeed it is. Any of the alternatives have massive impacts, far-ranging impacts from traffic to environment, red-legged frog, economic, et cetera.

GEN-33

I'd also like to echo Monica Hunter's comments that this is an opportunity to look at this project in a broader context. This is one opportunity -- removing San Clemente Dam, one opportunity to rectify a whole series of problematic issues on the Carmel River, including increasing water supply, which ultimately will benefit habitat in ways that removing the dam will not.

However, that said, I have very specific comments on removing the dam which I support. I think

AL-24

the reroute option is the most preferable in terms of the impact potentially for the environment. However,

TE-34
FI-108

removing the sediment from the San Clement side and placing it on the Carmel side still has some issues in my mind. Most importantly, will that habitat which will be lost, the wonderful riparian habitat, habitat for red-legged frog and juvenile steelhead, will that habitat be replaced by upland habitat with the addition of more sediment? So that's the first comment.

SA-3

Second comment, I think that there needs to be attention paid to the maximum credible earthquake, maximum probable flood impacts on the upstream diversion

SA-3

dam that will reroute the flow of the river through the notch in the ridge. And there also needs to be attention paid to how the face of exposed sediment that is exposed when the dam is taken down, the face of the exposed sediment on the Carmel River side is stabilized. I don't think so.

SA-4

BOB SMITH: One minute.

NIKKI NEDEFF: Grout or rip-rap or anything structural will then withstand potential earthquakes or potential erosion if the Carmel River reoccupies its original channel. So I'd just encourage you to pursue those questions in your final impact analysis. Thanks.

JEREMY PRATT: Thank you, Nikki. And Jessica Simms and Keith Vandevere.

JESSICA SIMMS: I'm Jessica Simms. I'm also a Carmel Valley native. I grew up playing, swimming and kayaking. I was just actually up there about a month ago at San Clemente Dam and had to walk my kayak all the way down.

AL-25

I also support the removal of the dam and the rerouting. It seems to be, of the options discussed, the most economical and sustainable with the least environment implications to the steelhead, the plant species and the air quality due to trucking enormous amount of truckloads of concrete away.

AA-60

GEN-34

HY-16

AA-61

I do have some questions as Robert Greenwood asked. I also wonder what will happen to the concrete. What are the impacts on San Clemente Creek? And how prone is it to flooding in the winter and how much of the banks will be eroded from that? And I also think it's important to look at the Matilija Dam in Ventura, I believe, which had similar circumstances before they removed it. Thank you.

JEREMY PRATT: Thanks, Jessica. Keith Vandevere.

KEITH VANDEVERE: Yes. Keith Vandevere. And like some of the last couple of speakers, I've spent all my life or most of my life living in the Carmel Valley watershed. And I'd just like to emphasize I am speaking on my own behalf, not on behalf of any organization or even the governmental entity which I'm often associated, but strictly for myself.

AL-26

And much of what I was going to say has been covered by other people, but I would like to say that I do very much the support the alternative, I guess it's Alternative 4, the reroute and dam removal alternative. I think it's clearly the environmentally preferable alternative, environmentally superior alternative in this case from my reading of the EIR/EIS.

And one thing I would like to point out, one

FI-109

great advantage that hasn't been mentioned tonight in terms of the dam removal, whether it was through the dam removal without rerouting or dam removal with rerouting, is that right now downstream of the San Clemente Dam there are essentially -- well, since the draining of Garzas Creek there are essentially no tributaries that are suitable for juvenile steelhead to oversummer, whereas upstream of the San Clemente Dam between the San Clemente Dam and the next obstruction, which is the Los Padres Dam, there are several very high-quality, you know, higher-elevation tributaries that do provide significant oversummering opportunities for juvenile steelhead. So that there's a real -- you know, getting fish back and forth past this current obstruction, there's a lot of reason to believe it would be of enormous benefit to the steelhead. And as we all know fish ladders, you know, don't do the job. So thank you very much for holding this hearing tonight and taking these comments.

JEREMY PRATT: Thanks, Keith. That's the end of the list of folks who signed up. Does anyone else have comments they'd like to make?

DON REDGWICK: How about rebuttal of a rebuttal?

JEREMY PRATT: You're welcome to come back to the microphone. It's Don, is it?

DON REDGWICK: My name again is Don Redgwick from Pacific Grove.

AA-62

I made a comment about buttressing the dam, and there was a comment that I'd like to reinforce my position on that. First of all, I'm a general engineer, a retired general engineering contractor. I have done -- built a few small dams, and I've done slide repairs. I have never buttressed a dam, but I have buttressed slides. And it's basically you've got weight and you are supporting the weight with the buttress. It's a method that can work. The buttress material would have to be secure so it wouldn't erode out or loose and have to be towed. I didn't put all that in my comments.

But it is a method that could work that would salvage the existing dam, which is -- you know, I would think, I don't know how many millions of dollars it would cost to build another one like that. It does serve a purpose if it can be saved.

JEREMY PRATT: Thanks. Anyone else who has an additional comment they'd like to make? So each of you come to the microphone. We'll start with you and then --

JIM LAMBERT: All right. I'll wait. I get too nervous if I stand up there.

JEREMY PRATT: Okay.

SERGE ORSHKO (phonetic): I'm Serge Orshko with California Department of Fish & Game. And our agency hasn't yet reached a formal position on the alternatives, so I can't address that.

CR-10

But just a general comment. Curiously, on the economic potentials of the project, I don't know if it's in the document. It's likely that it is, but for the comparison of the cost of the alternatives it would probably be important when costing out the buttressing option that the perpetual maintenance that will have to happen of the fish ladder and of the sluicing operation in perpetuity that those be disclosed to any decision makers. Thank you.

JEREMY PRATT: Thanks, Serge.

JIM LAMBERT: Hi, my name's Jim Lambert. I'm a member of the Carmel River Steelhead Association and I just have a couple of little questions.

FI-110

Because I couldn't tell on the map that you showed up there of the bypass route, will that provide unobstructed routes for steelhead passage without having any small ladders or anything?

JEREMY PRATT: That's correct.

JIM LAMBERT: Is that going to be bulldozed through to some degree? Or will there be tall cliffs

FI-110

and falling? I have no idea what that looks like, because I didn't see a topo map, topographical map.

JEREMY PRATT: We didn't want to get into detailed answers --

JIM LAMBERT: Right.

JEREMY PRATT: -- but it's a fairly simple question. No, there won't be any ladders and the river will be restored.

AA-63

JIM LAMBERT: And will, also, the reservoir still exist if the dam is rerouted, somewhat of a reservoir in the back of the San Clemente Dam?

JEREMY PRATT: There would be no reservoir. The dam would be removed.

JIM LAMBERT: All right. If I'm not mistaken, there is sort of like a lake back in there now.

Okay. Then when the silt gets moved out, then that reservoir would no longer exist; is that correct?

AA-63

JEREMY PRATT: That's correct.

JIM LAMBERT: Thank you. At least you answered two questions for me.

JEREMY PRATT: You were too persuasive, Jim.

JIM LAMBERT: Thank you.

JEREMY PRATT: Any other comments?

Jane, would you like to call the hearing to a close?

JANE HICKS: I call this hearing closed.

JEREMY PRATT: Thank you everyone.

(Time Noted: 8:02 p.m.)

C E R T I F I C A T E

I, KELLI A. RINAUDO, do hereby certify:

That I am a Certified Shorthand Reporter in and for the state of California, CSR license No. 6411, and Registered Merit Reporter and Certified Realtime Reporter;

That said public hearing was held at the time and place set forth and reported by me, a Certified Shorthand Reporter, and was thereafter transcribed by computer under my direction into booklet form;

That I am a disinterested person, not being in any way interested in the outcome of said action, nor connected with nor related to any parties in said action, or to their respective counsel, in any manner whatsoever.

Executed May 30, 2006.

KELLI A. RINAUDO, CSR #6411 RMR/CRR

Appendix E

RESPONSES TO COMMENTS

AIR QUALITY

WRITTEN COMMENTS RECEIVED

June 9, 2006 letter from Victoria Kennedy / Sleepy Hollow Homeowners Association

Comment AQ-1

What are the actual activities or measures to control dust and noise? **(Also AQ-13)**

Response

There are several planned fugitive dust (PM_{10}) mitigation measures that address the many sources of PM_{10} during the construction phase of a project (e.g., grading, wind erosion, entrained dust). Please refer to the Final EIR/EIS Section 4.7.3, Issues AQ-1 and AQ-2 for a description of dust mitigation measures and to Section 4.8.3 for a discussion of noise mitigation measures.

Comment AQ-2

If there is a problem with project impacts such as noise, start times, dust, traffic control deficiencies, what will be the remedy, besides merely a phone number and person's name to call? **(Also TR-6)**

Response

The project Applicant will be required to implement the mitigation measures included in the environmental document. The Applicant will be responsible for ensuring that the mitigation measures are implemented. Agencies and local government issuing permits will enforce compliance with permit conditions. Construction monitoring will be conducted to assure that permit requirements, resource protection measures, and mitigation measures are followed. The owner's contracts will embody pertinent requirements, and the Applicant will require contractors to comply with the terms of their contracts. TC-1 for each alternative includes a Traffic Coordination and Communication Plan developed in coordination with the County of Monterey Planning and Building Department, including an on-site field office for a resident Traffic/Transportation Coordinator.

Please refer to the Final EIR/EIS Section 4.7.3, including Issue AQ-3 for a description of enforcement measures for traffic generated air quality impacts.

June 20, 2006 letter from Jean Getchell / Monterey Bay Unified Air Pollution Control District

Comment AQ-3

The Federal 1-hour standard for ozone was revoked on June 15, 2005.

Response

Please refer to the Final EIR/EIS Section 4.7.1 and Table 4.7-1 for incorporation of this information.

Comment AQ-4

With the revocation of the Federal 1-hour standard for ozone, the North Central Coast Air Basin (NCCAB) is no longer classified as Maintenance for the standard. The NCCAB is classified as Non-Attainment Transitional for the State 1-hour standard for ozone.

With revocation of the Federal 1-hour standard for ozone, the NCCAB is classified as attainment for all the federal air quality standards.

Response

Please refer to the Final EIR/EIS Section 4.7.1 and Table 4.7-8 for incorporation of this change in status. The change in status is not anticipated to significantly affect General Conformity or stationary source (i.e., batch plant) permitting issues.

Comment AQ-5

The Plan was adopted by the District Board in December 2005.

Response

Please refer to the Final EIR/EIS Section 4.7.1 for incorporation of this change in SB 656 PM Plan status. The cited plan was officially adopted after the Draft EIR/EIS was published.

Comment AQ-6

With revocation of the Federal 1-hour standard for ozone, the NCCAB is classified as attainment for all the federal air quality standards.

Response

Acknowledged and noted. The change in status is not anticipated to significantly affect General Conformity or stationary source (i.e., concrete batch plant) permitting issues. The permitting process is planned for the Year One of the Project as discussed in Chapter 3 of the Final EIR/EIS.

Clean Air Act (CAA) Section 176(c) prohibits federal entities from taking actions (e.g., funding, licensing, permitting, or approving projects) in National Ambient Air Quality Standards (NAAQS) nonattainment or maintenance areas which do not conform to the State Implementation Plan (SIP) for the attainment and maintenance of NAAQS pursuant to Section 110(a) of the CAA. The Project would comply with the conformity requirements as stated in Section 176(c) of the CAA. No entity may take action in this area that does not conform to the SIP for the attainment and maintenance of the NAAQS in the North Central Coast Air Basin (NCCAB).

Comment AQ-7

Please contact the District to discuss the calculations for the on-road diesel-powered trucks and suggested mitigation measures to reduce emissions to below District daily thresholds of significance. One suggestion is to mitigate the NO_X emissions by using a product like Viscon, which would achieve an approximate 25 percent reduction in NO_X. Information concerning this product and CARB- and EPA-recognized lab test results is attached for your reference.

Response

Please refer to the Final EIR/EIS Section 4.7.3, Issues AQ-1 and AQ-2, for discussion of reduction of emissions and mitigation measures. The applicant would work closely with MBUAPCD staff upon commencement of permitting activities.

Comment AQ-8

As a precursor to the formation of ozone in an air basin that is non-attainment for the State ozone standard, NO_X is a criteria pollutant of regional (not only local) significance. The distance of the nearest residential receptors does not eliminate the impact of emissions of 443 lbs/day, when the threshold of significance is 137 lbs/day.

Response

Refer to Section 4.7-3 of the Final EIR/EIS. The text has been revised and NO_X emissions are considered a significant, short-term impact.

Comment AQ-9a

Given the distance that particulate matter can travel and the duration of time that it may remain suspended in the atmosphere, as well as the non-attainment status of the NCCAB for the State PM_{10} standard, the distance to the nearest receptors does not eliminate its significance. For road dust, the District suggests that in addition to the mitigation measures listed on pages 4-247 and 4-248, the Project Applicant consider paving any unpaved roads or placing larger-sized crushed rock. Given the duration of the project, this could substantially decrease the formation of fugitive dust.

Response

Please refer to the Final EIR/EIS Section 4.7.3, Issues AQ-1 and AQ-2.

Comment AQ-9b

For emissions from diesel construction equipment, the District suggests use of an additive such as Viscon to reduce NO, emissions and use of a diesel oxidation catalyst to reduce emissions of ROG and PM_{10}. Please contact the District to discuss strategies that have been proven to reduce emissions.

Response

Please refer to the Final EIR/EIS Section 4.7.3. The Applicant would work closely with District staff upon commencement of permitting activities.

Comment AQ-10

The mitigation measures should reduce fugitive dust to within thresholds.

Response

Please refer to the Final EIR/EIS Section 4.7.3. The applicant would work closely with District staff upon commencement of permitting activities.

Comment AQ-11

There is no information concerning the number and types of vehicles to be used in the project, or the daily traffic schedule. This should be provided and URBEMIS 2002 vs 8.7.0 should be run to calculate vehicular emissions. Please provide the District with a copy of the URBEMIS output.

Response

Please refer to the Final EIR/EIS Section 4.7.2 and Appendix X, Air Quality Calculations. The calculated information in Appendix X provides daily and annual emissions for each Alternative. However, it is not separated into the types of vehicles on a daily basis. The URBEMIS model is designed for estimating typical urban traffic impacts from residential, educational, recreational, retail, commercial, and industrial development. Non-typical projects such as dam construction work in a rural setting are not part of the URBEMIS model. As such, the URBEMIS model is not applicable for this type of project application. However, URBEMIS emission factors can be used to estimate off-road emissions as described in 4.7.2 and Table 4.7-11.

Comment AQ-12

Please contact Lance Ericksen, Manager of the District's Engineering Division, to discuss permitting requirements.

Response

Please refer to the Final EIR/EIS Section 4.7.3. The Applicant would work closely with District staff upon commencement of permitting activities.

COMMENTS RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Victoria Kennedy/Sleepy Hollow Homeowners' Association

Comment AQ-13

What are the actual activities or measures to control dust and noise? **(Also AQ-1)**

Response

See response to Comment AQ-1.

Comment AQ-14

The preferred batch plant site should be a location that does not cause visual, dust, and noise impacts to any Sleepy Hollow subdivision residents and/or be closer to the dam. What were the limitations to locating the batch plant closer to the dam? **(Also VIS-1, AA-13 and 14)**

Response

Only one of the analyzed project alternatives requires the use of a concrete batch plant, the other four (including the No Project Alternative) do not. The batch plant itself is only a component of the Proponent's Proposed Project, which includes a number of additional elements necessary to the project. Please refer to the Final EIR/EIS Section 4.7.3, Issue AQ-4 for information on batch plant siting. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to generally near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

ALTERNATIVES ANALYSIS

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment AA-1

The report and recommendations should take into consideration the environment, preservation, conservation, water resources and economics of the project. The solution to all of five of these goals is to save the existing dam by reinforcing. The sediment should be moved from the back of the dam to the front of the dam and placed as a buttress. The buttress should be large enough to allow drying of the sediment to about 5% over optimum or should be partially dried prior to being moved. A conveyor could be used to move the sediment to the down stream side of the dam. T he equipment used to move, place and compact the material should stay a safe distance from the dam to protect it from damage. The placing of the fill against the dam should be done by hand and might be done in accordance with a structural backfill. The buttress should be capped in order to protect it from erosion. The capping material could be with a soil cement or concrete. An extended spill-way should be constructed across the buttress and a fish ladder must be constructed in accordance with the latest standards.

Response

Your suggestions have been noted. Although this approach to dam safety is not a project alternative, a range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction, environmental, and maintenance factors. The alternatives presented in this Final EIR/EIS reflect the options that balance these criteria, meet the project purpose and need, and represent sound engineering solutions.

Comment AA-2

The alternative plan to demolish the dam will have a severe impact on Carmel Valley Road unless the broken concrete and steel are buried on site. A preferable alternative to off haul or burying broken concrete in place is to partially burying the dam intact by buttressing it on the downstream side up to the level of the outflow or top of spillway. Just the top of the dam will be visible from down stream and the dam can serve as a walkway.

Response

Broken concrete will be buried for the dam removal alternative (Alternative 2) at the sediment disposal site as described in Section 3.4.4. The Dam may not be buried intact because that would obstruct fish passage.

Comment AA-3

There appears to be support for the rerouting of the Carmel River because it addresses the sedimentation problem and eliminates the dam. However cutting a whole new river bed could involve significant damage to the environment.

Response

The impacts and mitigation measures associated with Alternative 3 are discussed in detail throughout Chapter 4 and summarized in Table 2-1.

Comment AA-4

In most cases the least environmental damage will be achieved with the least amount of work and materials. The alternative with the fewest materials and workman is the best and cheapest option and that option is a buttress of sedimentary material.

Response

No connection exists between the amount of work performed on an alternative and the level of its impact to the environment.

Comment AA-5

The removal of the existing dam is a radical concept serving only one purpose, that should be addressed by the latest federally approved fish ladder. The removal of the dam will destroy many benefits without accomplishing a single benefit that can't be addressed by a government approved method. There is no cost-benefit ratio to consider because there is no benefit in removing the dam.

Response

Thank you for your comment. Your concerns have been noted. The dam removal alternatives are considered to entail both impacts and benefits, as described throughout Chapter 4.

June 4, 2006 letter from Don Redgwick

Comment AA-6

If the geological conditions have been adequate to support the San Clemente Dam for the past 85 years, the conditions should be adequate for an earth dam. If the site is adequate for an earth dam it will be adequate for a buttress utilizing earth dam technology such as key cuts and an impervious core. The impervious core probably should be placed against the concrete dam. Since the sedimentary material is most likely pervious it might require being encapsulated to prevent erosion.

Response

Your suggestions have been noted. Although this approach to dam safety is not a project alternative, a range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction, environmental, and maintenance factors. The alternatives presented in this Final EIR/EIS reflect the options that balance these criteria, meet the project purpose and need, and represent sound engineering solutions **(Also AA-1).**

Comment AA-7

The realignment of the Carmel River and the removal of the San Clemente Dam poses more questions than it answers.

- *Is the plan to realignment (sic) the river permanent or a diversion for construction?*
- *Where will the excavated earth from the realignment be placed?*
- *If the realignment is permanent doesn't that significantly reduce the dam safety and steelhead issues and allow the dam to remain for the benefit of frog, bird, lake fish, and other wildlife habitat?* **(Also TE-4, FI-3)**
- *If the dam is removed won't that leave a vertical bank of about 70 to 80 feet of material subject to erosion? Will a grout be adequate to contain the sediment from erosion?*
- *If the San Clemente Dam is demolished and removed won't that result in a 70 or 80 foot thick embankment of unstable sediment? Will the gradient become much steeper when the sediment is spread? Will a grout be used to stabilize the sediment? If a grout is utilized for containment will that provide a suitable habitat for frogs and other wildlife?* **(Also TE-5)**

Response

- Yes, the reroute is permanent. See Sections 2.1.4 and 3.5.
- Excavated materials will be used in the construction of the diversion dike.
- Yes, dam safety and steelhead impacts will be significantly reduced; however, this alternative does not retain the Dam in place. Impacts to terrestrial species are described in Section 4.5.
- No vertical bank will exist. Currently a slope exists at the downstream end of the sediments. After the Dam is removed, the existing sediment face would be excavated and stabilized by mixing with soil cement, resulting in a stabilized slope of approximately 4 to 1. See Figures 3.5-4 and 3.5-5 in Section 3.5. This same method has been used at multiple project locations, including the Port of Oakland.
- See response above. Grout will contain and elevate groundwater in the upstream sediments, preserving wetland habitat for frogs.

Comment AA-8

If the Carmel River is rerouted could a fork in the river be created with control gates to allow a cleansing of the San Clemente Dam site or for temporary diversion for maintenance on the new river alignment?

Response

Your suggestions have been noted. Creating a fork in the river with control gates would introduce an unnecessary element of complexity to the project. It is not clear what is meant by “cleansing of the San Clemente Dam (SCD) site.” The restored San Clemente Creek channel will not require temporary diversion of the Carmel River for periodic maintenance. The Dam would be completely removed under Alternative 4.

Comment AA-9

The existing dam could serve an important function in the development of a diversion plan for the building of a buttress. However, information about the diversion plan used in the building of the dam in 1921 could lead to the locating of an abandoned tunnel. Does the County, State, Cal Am or someone else have documents from the original construction?

Response

Yes, the State and CAW have the documents from the original construction. No abandoned tunnel exists. A diversion plan for each of the project alternatives is described in Chapter 3.

Comment AA-10

I believe the most important issues are developing a diversion plan for the river during construction. **(Also GEN-1)**

Response

There is a drawdown and diversion plan. See Figure 3.2-9 of the EIR/EIS for the drawdown and diversion plan for the Proponent’s Proposed Project. The other action alternatives would have similar plan.

June 21, 2006 letter from Carmel Valley Association/Robert Greenwood

Comment AA-11

The major reason for this study is the potential damage to the dam by an earthquake. However, under Alternative #3, with the dam removed and the Carmel River diverted into San Clemente Creek, the mass of sediment now behind the dam would be left as a free-standing block. A major earthquake could surely destabilize and set in motion this mass of sediment, more easily than under the No Action alternative. The EIS needs to address this contingency.

Response

The accumulated sediment would not be left as a free-standing block. After the Dam is removed, the existing sediment face will be excavated and stabilized by mixing with soil-cement; resulting in a stabilized slope of approximately 4 to 1 (see Figures 3.5-4 and 3.5-5 in Section 3.5). This same method has been used at multiple project locations, including the Port of Oakland. The stabilized slope would be engineered to withstand a MCE.

May 23rd Community Meeting Questions from Victoria Kennedy / Sleepy Hollow Homeowners Association

Comment AA-12

Is the proposed batch plant location within 500 feet of two residences?

Response

The batch plant boundary would be approximately 500 to 600 feet from adjacent residences.

Comment AA-13

Whether or not the plant's location is within 500 feet of two residences, what alternative batch plant sites were analyzed? **(Also AQ-14, VIS-1, NO-4)**

Response

The concrete batch plant is a component of the Proponent's Proposed Project, which includes a number of elements necessary to the project. Please refer to Section 3.2 in this Final EIR/EIS for information on the batch plant. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

Comment AA-14

What were the limitations to locating the batch plant closer to the dam?

Response

The concrete batch plant would require site access and surface area, which is not available at location closer to the Dam. **(Also AA-13)**

Comment AA-15

What is estimated time to complete the project?

Response

The estimated project completion dates vary with the different alternatives. Project duration and construction schedules for the different alternatives are provided in Chapter 3.

Comment AA-16

What would be longest expected time to complete the project?

Response

The longest expected time for project completion is under Dam Removal (Alternative 2), which would require five years to complete construction (after an initial two years of design work and environmental monitoring). Each project schedule could be lengthened by numerous factors, such as weather, contractor availability, contractor delays, permitting, and environmental compliance.

June 13, 2006 letter from John G. Williams, Ph.D.

Comment AA-17

The sediment stabilization in the by-pass alternative should be reviewed. Long-term stabilization of unconsolidated sediments in the historical river channel is a critical element of the by-pass alternative, since failure would deliver large amounts of sediment to the river, with possibly great economic and environmental harm. Either evidence should be provided that the stabilization method proposed is routine and well tested, or the engineering details for such stabilization should be subject to independent expert review before this alternative is selected.

Response

This stabilization method is well tested and commonly used; for example, it has been used in the Port of Oakland for stabilization of underwater slopes of weak, saturated soils. Typically design details of the stabilization method will be provided in final design stages. In general, numerous slope stabilization methods have been used in the past century and show that 4:1 slopes can be easily stabilized.

Comment AA-18

The DEIR should consider modifications to the notching alternative. The proposed notch as shown in Figure 3.3-2 is level all the way across. It would seem more sensible to have a notch within the notch, sized to the anticipated active channel of the river, that would tend to hold the thalweg of the stream in one place. This could be placed at the point where fish would be least likely to be injured in passing over the dam. All else equal, the notch should be placed near the fish ladder. **(Also FI-8)**

Response

The thalweg of the stream will be maintained through implementation of the Sediment Operation and Management Plan for Fish Passage (SOMP, Appendix J). Placing a notch near the fish ladder could potentially expose upstream migrating adults that exit the ladder to high velocities with high potential to be swept downstream through the notch. Because the risk of fallback is high, placing a notch near the ladder was not considered further **(Also FI-8).**

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment AA-19

The EIR/EIS analyzes two alternatives for dam removal – one which involves complete removal of all of the accumulated sediment from the area and one which would re-route the Carmel River to isolate the accumulated sediment. The EIR/EIS should also evaluate the potential for stabilizing the sediment along the banks of the Carmel River and allowing a new conveyance channel to be cut along the original stream thalweg, or some other alignment, through the reservoir. The approach being used for sediment stabilization on the Elwha Dam Removal project could serve as a model. **(Also NEPA/CEQA-4)**

Response

It is not clear from the comment whether the author is proposing consideration of an alternative that would allow unmanaged sediment transport downstream. Such an alternative was considered in the 2000 RDEIR (Denise Duffy & Associates, Inc. 2000) and was rejected due to downstream impacts on public safety (flood hazard associated with channel aggregation) and spawning habitat.

A range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction practicability, environmental, and maintenance perspectives. The alternatives presented in this final EIR/EIS reflect the options that balance these criteria, meet the project need, and represent sound engineering solutions. The concept of stabilizing sediment in place is an element of Alternatives 1 and 3. Under Alternative 1, a geomorphically stable stream channel would need to be reestablished in the sediment remaining after excavation down to the level of the notch that would be made in the Dam at elevation 509 feet. Under Alternative 3, sediment would be stabilized in place on the Carmel River and a geomorphically stable channel would be established in San Clemente Creek.

Based on the narrow geometry of the channel and large amount of sediment already existing, large amounts of sediment could not be stabilized on the banks of the Carmel River for a dam removal alternative.

June 20, 2006 letter from Mark Delaplaine / California Coastal Commission

Comment AA-20

Alternatives 2 and 3, dam removal and dam removal and re-route, would excavate and dispose of the more than 2.5 million cubic yards of sediment that are now stored behind the dam. Notwithstanding the beneficial re-use of river sediment, these sediment piles should be held to the same standards regarding "Maximum Credible Earthquake" and "Probable Maximum Flood" as the dam itself. If the debris pile in either alternative should fail during an earthquake or a flood, it would effectively dam off the river again. The project description should account for these standards, their implementation, monitoring and maintenance with regard to the sediment storage piles.

Response

Under both alternatives, sediment would be stabilized to comply with MCE and PMF criteria. Under Alternative 2, stabilization would be achieved in the sediment disposal at Site 4R as described in Section 3.4; under Alternative 3 (which would excavate approximately 380,000 cubic yards of sediment), it would occur in-place, as described in Section 3.5.

Comment AA-21

In Alternative 3, the sediment storage plan appears to include the possibility of voids in the sediment pile, such as decomposing tree trunks, because not all of the sediment would be excavated to the original streambed, and sediment close to the dam would be piled on top of existing sediment. Large organic items that were originally covered when the dam filled, and later buried when the sediment began to collect, could have had some contact with air, continue to decompose and leave a void. The Draft EIR/EIS should include a plan to eliminate the possibility of voids. It is possible that the stabilizing plan for this pile, i.e., the soil-cement grid, would obviate this danger. If this is the case, the Draft EIR/EIS should explain how the soil-cement grid would accomplish this.

Response

The preliminary design of the proposed sediment stabilization method has considered the standard loading and failure criteria used in engineering design of slopes. There is no danger from voids causing problems in the stabilized slope.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment AA-22

Page 3-2, Para 5: Under Removal of Dam Superstructure. Given that most alternatives would likely take several years before construction could start, is the possibility of *implementing this measure being discussed as part of an Interim Retrofit Project? If so, this should be described.*

Response

Interim dam safety measures have been implemented at the direction of the Department of Water Resources, Division of Safety of Dams (DWR/DSOD). Removal of the dam superstructure is not considered a necessary interim safety measure.

Comment AA-23

Page 3-15, Para 3: Under Fish Ladder, the description for FEIR/S should be revised to reflect installation and operation of the fish bypass for downstream migration during Interim Retrofit Operations.

Response

This comment appears to address the question of what measures would be taken to pass fish during construction of the fish ladder. Details about the proposed SCD fish ladder are discussed in Section 3.2.6. Since the old fish ladder would be removed and the new one replaced at times the fish would not be in the river, no other measure would be needed to pass fish during construction of the fish ladder. Measures to be taken to protect fish during other construction activities are discussed in Chapter 4.4.

Comment AA-24

Page 3-17, Figures 3.2-5, 3.2-6 and 3.2-7: These figures appear out-of-date (Woodward-Clyde 1998) and do not match the features described in the text for fish passage and sediment sluicing. The FEIR/S should provide new updated versions.

Response

Figures 3.2-5 and 3.2-6 have been revised to reflect the current proposal for sediment sluicing and fish passage.

Comment AA-25

Page 3-18, Figure 3.2-6: The profile of the thickened dam shows a seven-foot diameter sluiceway at an invert elevation of 514, a two-foot diameter sluiceway at an invert elevation of 517, and an eight-foot diameter sluiceway at an invert elevation of 491. The discussion on p. 3-25 starting with "High-Level Outlets" describes operations that apparently would include sluicing of sediment through all three of these pipes, whereas the analysis of proposed sluicing presented in Appendix I describes placement of a new 10-foot diameter pipe through the thickened dam at an invert elevation of about 515. Please resolve the discrepancies between the main text and Appendix I.

Response

Figures 3.2-5 and 3.2-6 have been revised, to show that sluicing would occur at only one location, a new sluice port at an invert elevation of 515 feet on the left upstream face of the Dam. This port will serve both maintenance and fish passage needs. The 2-foot and 8-foot diameter sluiceways have been eliminated and the 7-foot diameter sluiceway has increased to 10 feet and moved as discussed in Appendix S (Additional Modeling to Evaluate Sediment Sluicing Options and Compare Downstream Sediment Concentrations for EIR/EIS Alternatives, San Clemente Dam Seismic Safety Project). Please note that appendices have been updated in the Final EIR/EIS in response to comments (additional appendices have been included). Therefore, Appendix I is a discussion of commercial values of sediment and Appendix S contains updated information on the MEI evaluation of sluicing operations. Other studies and reports addressing the issue can be found in Appendix M (Sediment Transport Modeling), Appendix N, (Summary of Hydraulic and a Sediment-transport Analysis of Residual Sediment: Alternatives for San Clemente Dam Removal/Retrofit Project) Appendix O (Suspended Sediment Concentration Associated with a Sluice Event), and Appendix P (Suspended Sediment Concentrations Exceedence for Alternatives).

Comment AA-26

Page 3-21, 1st bullet under Para 3: What keeps sediment and water from upwelling in the area between sheet pile barrier and dam intake during the drawdown? How would this area be dewatered without a seal capable of withstanding the differential pressure between the drawn down water surface elevation (510) and the gate at elevation 494? The FEIR/S should fully evaluate this aspect and recommend mitigation measures to match results of the evaluation.

Response

Sheetpiles have been designed and installed at project sites worldwide at 50 feet in height and greater, resisting the soil and water pressure using standard engineering design measures. Any upwelling can be handled by using sump pumps to dewater the area, if necessary. The design of the sheet piles will ensure that they can withstand such pressures, details of which will be provided during final design stages.

Comment AA-27

The discussion includes the following statement: "…the increased spacing between piers would reduce the buildup of downed trees and other debris at the existing closely spaced piers."

What effect could the modification of the spillway to allow passage of large trees have on downstream bridges and other infrastructure? Are there methods to reduce the impacts of large trees on downstream structures?

Since the dam was constructed in 1921, most of the large trees passing into the reservoir have been cut into small sections in order to pass through the spillway bays.

Nineteen bridges currently span the river downstream of the dam. Seven are publicly maintained (one by CALTRANS, five by Monterey County Public Works Department, one by the Monterey Peninsula Regional Parks District). The remainder are privately owned and maintained. All the bridges have supports within the 100-year floodway. Ten bridges have center piers in the active channel. At bridges with supports in the active channel, the minimum open length between abutments and center piers ranges from a low of about 15 feet at the south abutment of Boronda Road Bridge to as large as 80 feet at the Rancho San Carlos Road bridge. Cranes or other equipment capable of picking up trees and logs are frequently stationed at five of the 19 bridges during high flows. Equipment operators generally pick up debris caught on the upstream side of piers and abutments and transfer it downstream. Because of the difficulty associated with this (forceful flows, difficult access), and the type of equipment used (small cranes or backhoes), the largest pieces that can be moved are in the 20 to 25-foot range (2-4 tons). Larger pieces require specialized equipment, such as a boomcrane and hook assembly. The remaining 14 bridges either don't have center piers and are usually debris-free, or are not accessible to cranes.

A large amount of debris passes from the upper watershed through the river system and includes large trees, as shown in the photo below taken during the March 10, 1995 flood. The entire watershed of approximately 125 square miles above the dam contributes debris, although a small amount of debris becomes waterlogged and sinks near the Los Padres Dam spillway (note that the Los Padres Dam spillway is designed to be self-cleaning and passes a significant fraction of the debris from upstream).

Response

The existing spillway is already able to pass large trees and a new spillway would only augment that ability. This augmented ability is necessary for dam safety and is considered a dam safety improvement. The new spillway will not increase impacts associated with passing large trees.

Comment AA-28

Page 3-25: Location of High-Level Outlet: Appendices I and J describe the location of a sluice port as being 10 feet laterally away from the fish ladder. This does not match the description on page 3-25 and is not shown in Figure 3.2-12 for the new fish ladder. The orientation of discharge from the 10-foot diameter sluice gate, located 10 feet from the entrance to the fish ladder, appears to impinge on the left downstream walls of the canyon. This orientation, while effectively designed for sluicing material away from the fish ladder, may threaten integrity of rock supporting the new ladder and result in significant impingement loss of any fish passing downstream. Mitigation measures are needed to ensure that no fish are in the vicinity of the gate when it is opened and the discharge should be directed away from the canyon walls. **(Also FI-29)**

Response

The description in Chapter 3 has been revised to correctly describe the location and orientation of the sluice port. Figure 3.2-12 highlights the fish ladder design only; sluiceway details are shown on Figures 3.2-5 and 3.2-6. The location and orientation of the sluiceway would result in discharging into the plunge pool and would not impinge on the left downstream canyon wall. Rock integrity would be protected by shotcrete installed as part of dam thickening.

Operation of the sluice gate would be coordinated with operation of the fish ladder. During wet season operations, prior to operation of the sluice gate, access from the ladder into the reservoir would be prevented by closing a gate at the upstream end of the fish ladder that would prevent adult steelhead from moving into the reservoir. Access from the ladder into the remnant reservoir would be closed for several hours prior to a sluice event allow for fish that had exited the ladder to move upstream away from the sluice port. Operation of the sluice port would not occur until flows reach about 300 cfs over the Dam. The sluice port would be partially opened to increase velocities in the area in front of the port and encourage any fish that may be in the vicinity to move upstream and away from the port. The port would then be opened fully for a two hour period. . Neither of these measures can assure that all fish would be prevented from entrainment in the sluice event and could result in fallback. Fallback may already occur under existing conditions as fish that ascend the ladder get swept back downstream over the spillway. The increase in the amount of fallback is expected to be small since wet season sluicing will be minimized and if it does occur, would occur for a period of two hours per event. The fish that are swept back downstream would have to re-ascend the ladder.

Comment AA-29

Page 3-26, page 3: Under electrical system. "The existing structure would be replaced with a small pre-engineered building that would house the electronic controls for the outlet valves." How would the system operate during a power failure at a time when the sluicing outlet valves are in an open position? Is auxiliary power proposed, or can the valves be operated manually?

Response

Auxiliary power will not be necessary since leaving sluiceways open or closed will not pose a dam safety threat. They can be operated manually in the event of a power failure.

Comment AA-30

Page 3-28, Para 4: Under Access from Existing Gate to San Clemente Dam: This section contains vague statements or factual errors, including: 1) the description of the location of the high road and low road; 2) the Old Carmel River Dam bridge is described *as 5,800 feet long (it appears to be no longer than about 100 feet); and 3) a lack of a Figure reference and confusion created by stationing call-outs with no visual reference.*

Response

1) It is unclear where the high road description contains factual errors. Stationing is provided for reference and further clarification is shown on Figure 3.2-2.

2) The Final EIR/EIS has been revised to indicate that the OCRD is roughly 200 feet long.

3) Text has been modified to refer to Figure 3.2-2 for stationing reference and road segment locations.

Comment AA-31

Page 3-29, Para 5: statement, "The roadbed would be filled with sand and gravel and topped with crushed rock…" Is there a potential for fill material to be mobilized during high flows? If so, only clean gravel and rock should be used, without the addition of fines.

Response

There is potential for the roadbed fill to be mobilized. Clean gravel would be used. In addition, the roadbed facing the riverside would be protected with large rock, so that it would be locally redistributed on the roadbed, minimizing entrainment into the river. The volume of gravel, roughly 3 cubic yards, is not a large amount and would not create significant impacts to the river downstream. The roadbed would be in place for up to two years during construction, after which time it would be removed.

Comment AA-32

Page 3-31, Para 2: Under San Clemente Dam Fish Ladder Replacement. "For stream flows up to 55 cfs, all flow would pass through the proposed ladder." This design will encourage passage of fine grained sand and silt into the vicinity of ladder exit and hasten the need to sluice sediment from around the ladder exit and channel leading to the river. The FEIR/S should evaluate ways to mitigate this impact with a goal of having no impact on attraction of fish to the ladder entrance in the plunge poo(l)

Response

Please refer to revised SOMP (Appendix J) and updated discussion in Sections 4.2 and 4.4 regarding sediment passing through the fish ladder. The fish ladder is designed to pass fine sediment. If sediment accumulates and causes fish passage issues, periodic excavation of the fish ladder exit would occur.

Comment AA-33

Page 3-34, Figure 3.2-12, there is a note referencing water surface elevations in the upper pool of 527 feet at 700 cfs and 522 feet at 110 cfs, but these do not match proposed normal operating elevations referenced in other sections of the EIR/S. The FEIR/S should reevaluate all descriptions, operations and impacts that are based on these incorrect assumptions.

Response

We can find no discrepancy between Figure 3.2-12 and the discussion in other sections of the EIR/EIS. The discussion at Section 3.2.6 is consistent with the figure regarding the 700 cfs flow (Section 3.2.6 cites an elevation of 526.7 feet; the figure shows 527± feet). For the flow at 110 cfs, the comment appears to be confusing flow elevations in the upper pool with those at the fish ladder. Flow assumptions for the fish ladder are described in Section 3.2.6 and reflect the current assumptions and design for the fish ladder that would be required for the Final EIR/EIS.

Comment AA-34

Page 3-35, Para 2: The FEIR/S should document the actual elevation of the plunge pool and hydraulic control for this location. This will be important for all of the alternatives. For example, with the PPP the hydraulic control for the plunge pool needs to be set to prevent down-cutting below the bottom of the entrance pool. Considering the historical down-cutting at this site and the continued lack of coarse bedload with PPP, this project may require construction of a grade control below the ladder entrance, which is a typical feature at other sites where ladders are constructed below dams.

Response

Your comment has been noted. This will be addressed in final design of the project.

Comment AA-35

Page 3-35, Para 5: Under Reservoir Maintenance, a reference to a Figure showing the dam and sluice pipes should be provided.

Response

The Final EIR/EIS has been updated to refer to Figures 3.2-5 and 3.2-6 at this location.

Comment AA-36

Page 3-35, Para 5: Under Reservoir Maintenance. “The automated operating mechanism and manual emergency crank will be located at the dam crest, where a physical connection to the gate via a threaded steel bar is turned to lift the gate for opening and closing.” The EIR/S should review and evaluate the feasibility of providing a manual emergency crank which can be used to lift a 10-foot diameter steel gate by *turning a threaded bar. This evaluation should include estimates of the time and staffing needed to manually close the gate.*

Response

A manual emergency crank is included in the proposed design. One person can operate the manual crank.

Comment AA-37

Page 3-36, Under Construction Schedule and Operations and page 3-38, Figure 3.2-14: The schedule needs to be updated. Is the Public Utilities Commission process for recouping expenditure of funds a critical component of completing a project?

Response

The important information in the schedule is the timing, sequence and duration of the activities comprising the project alternatives. Given the uncertainty as to when projects might begin, this Final EIR/EIS has been updated to show construction schedules in terms of elapsed time rather than calendar years. The California Public Utilities Commission (CPUC) process will not affect the elapsed time project construction schedule.

Comment AA-38

Page 3-41, Para 1: "Notching San Clemente Dam to approximately elevation 506 in the area of the existing spillway bays…" The lower portion of the dam notch appears to be significantly wider than a channel that would be excavated through the sediment remaining upstream of the dam. The FEIR/S should show the transition (plan view, cross-sections, profile) between channels in the reservoir sediments, modified dam, and channel downstream. Does the configuration of the modified dam encourage the mobilization of sediment from behind the notched dam? **(Also SED-30)**

Response

A final channel profile, cross-section and plan view will be determined in the design of the channel. Notching of the Dam includes the removal of about 930 acre-feet of sediment that is currently stored in the reservoir above the elevation of the notch. Mobilization of sediment would be similar to mobilization under the Proponent's Proposed Project, and is discussed in Section 4.2.

Comment AA-39

Page 3-56, Para 2: Statements on stream flow up to 55 cfs being routed through the ladder and dredging upstream of the fish ladder should be reviewed and updated per previous comments re: PPP on pages 3-33 to 3-35. **(Also FI-37)**

Response

Thank you for drawing this to our attention. These issues are addressed in the revised SOMP (Appendix J), and in revisions to Sections 3.2, 4.2, and 4.4.

Comment AA-40

Page 3-57, Para 3: Under construction schedule and operations, statements in the FEIR/S about the schedule for final engineering and beginning of construction should be revised based on the anticipated date of a selection of an alternative.

Response

The important information in the schedule is the timing, sequence and duration of the activities comprising the project alternatives. Given the uncertainty as to when projects might begin, the Final EIR/EIS has been updated to show construction schedules in terms of elapsed time rather than calendar years.

Comment AA-41

Page 3-63, Para 1: "Removal of the dam requires prior removal of the sediment accumulated in the reservoir to approximately the depth of the original streambed when the dam was placed in service in 1921." The low point of the pre-construction ground surface shown in Figure 3.3-2 is shown as 454 feet elevation. But, the existing excavation limit at the damsite is shown as extending down to elevation 435 at station 18 (1920 stationing) in the same figure. The FEIR/S should evaluate how the streambed will be reconfigured and stabilized at the toe of the existing dam considering that the existing excavation limit is ~ 20 feet lower than the original streambed level.

Response

The stream restoration design will occur in a newly-excavated channel; the fact that the original (1921) excavation for construction at SCD was lower than the original streambed does not introduce a new restoration design challenge. This excavation occurred at the dam site itself, not throughout the stream. A stream restoration plan will be prepared as part of final design.

Comment AA-42

Page 3-73, Para 5: "Sediment would be removed to approximately the depth of the original streambed that existed in 1921." This should be reconciled with the cross-section in Figure 3.3-2 that shows the original bed was excavated approximately 20 feet lower when San Clemente Dam was built in 1921. The FEIR/S should review and evaluate how the lowered section at the damsite will affect sediment transport, especially in the vicinity of the confluence with San Clemente Creek and the toe of the new sediment plug in the old river channel.

Response

This Final EIR/EIS has been updated to indicate that the original bed was excavated 20 feet below its original level. Sediment transport with a reconstructed, geomorphically stable stream channel is discussed in Section 4.2. A stream restoration plan will be prepared as part of final design.

Comment AA-43

Page 3-80, Para 3: "The 200-foot wide by 3-foot thick by 40-foot deep soil cement cutoff wall will be constructed to bedrock to prevent undermining and seepage of river flows below the diversion dike." How will a high phreatic water surface be maintained in the old sediment layers immediately upstream of San Clemente Dam, which is described on page 3-75 Para 3 as a project goal? The FEIR/S should fully evaluate how the existing wetlands will be maintained given the lack of seepage past the diversion dike and the 550 foot elevation of the proposed sediment disposal area. Based on the distribution of habitat types in the existing inundation zone, it is more reasonable that the higher elevation of new sediments in the disposal zone and lack of seepage from the old river channel, will severely limit distribution of phreatic zones and reduce wetland coverage in the project area. This should be fully evaluated in the FEIR/S and adjustments made to estimates of jurisdictional wetlands. **(Also WET-5)**

Response

The cutoff beneath the diversion dike will be placed for maintaining the foundation stability of the dike; however, the dike itself will be permeable. The intention is to allow seepage that will maintain a high water table in the area downstream of the diversion, so that habitat for riparian species will persist.

June 15, 2006 letter from Pam Krone-Davis/RisingLeaf Watershed Art

Comment AA-44

Rather than using an artificial substance to stabilize the sediment, we would like to propose using trees and other roots as a stabilizing force. Roots naturally jell sediment into place and then serve the dual purpose of forming a habitat. With man-made substances, there is always the issue of pollution and of long-term degradation and failure. We feel that nature itself can provide the safest and surest long-term solution to holding the sediment in place. We would like to see the following questions addressed: Why would a manmade substance be used for stabilizing the sediment when nature has a proven and long-term effective method of stabilization? What are the potential hazards of using a manmade jell? What long term mitigating measures would then be required? What would the economic cost of this be?

Response

The project alternative development primary concern is to assure stabilization with well known engineering methods. Bioengineered solutions can be considered during final design stages. The soil cement is widely used and is not a hazardous substance.

June 30, 2006 comments from National Marine Fisheries Service

Comment AA-45

Referring to page 3-27, NMFS is unclear whether the new Tularcitos Road will be used for all the alternatives or only the Proponent's Proposed Project and Alternative 1. Please clarify.

Response

The Tularcitos Access Route will be used only for the Proponent's Proposed Project.

Comment AA-46

Referring to page 3-35, NMFS is unclear whether dredging upstream of the reservoir every three years will be needed along with sluicing. Please clarify and analyze all impacts to steelhead in the reservoir if dredging is to occur. **(Also FI-66)**

Response

This Final EIR/EIS has been updated to address these issues, including a revised SOMP (Appendix J) and revised environmental evaluations in Sections 4.2 and 4.4. Dredging may be used to establish a fish passage channel prior to the beginning of each migration season. The text on Page 3-35 has been revised and is consistent with the rest of the document.

Comment AA-47

Referring to page 3-80, NMFS recommends lowering the height of the diversion dike to the minimum height needed for hydrologic function (i.e., overtopping of 100-year storm event, stability). The additional excavated sediment (in excess of what is needed for the diversion dike) could be spread over the entire sand delta and/or crushed to improve compaction.

Response

Providing freeboard is necessary for diversion dike design and is based upon sediment and flood routing performed to date. The diversion dike height may be further evaluated as a part of final design.

Comment AA-48

Referring to page 4-128 (Issue FI-1: Access Route Improvements):

Second paragraph under Impact states, "The Carmel River would not be dewatered to upgrade the piers and bridge deck at the ORCD." However, on Pg 4-82, under Issue WQ-4, it states, "…stream diversions would be required in Tularcitos Creek, in the Carmel River at the OCRD Bridge." Please clarify if the river will be diverted or not at the ORCD bridge for construction work.

Response

There will be partial stream diversion at the OCRD (Old Carmel River Dam) Bridge for construction. Section 4.3.3 has been clarified.

Comment AA-49

The replacement of the existing OCRD Bridge is needed only under the Proponent's Proposed Project. Under Alternative 3, this bridge and the OCRD could be removed entirely for improved passage of steelhead since the bridge will not be needed **(Also GEN-12)*.***

Response

Removal of the OCRD for fish passage could be considered separately, but is not required to meet the purpose/objectives and need of this project.

NOTE: COMMENTS AA-50 THROUGH AA-63 CORRESPOND TO COMMENTS RECEIVED A THE MAY 23, 2006 PUBLIC HEARING

Comment AA-50

Charles Franklin/Resident

How was the condition of the existing reinforcing steel assessed?

Response

There is minimal reinforcing steel in the Dam (e.g., spillway piers and at the crest) and it is not relied upon for structural strength in the overall dam structure, nor is it an essential element in dam safety designs.

Comment AA-51

Charles Franklin/Resident

How large a head pressure source does Cal Am need to keep up and maintain the system? Is there going to be some permanent residual water retention object up there?

Response

In order to maintain pressure in its system, CAW requires intake at El. 525. The Proponent's Proposed Project and Alternative 1 are the only alternatives that would retain existing structures and water behind the Dam. All of the alternatives to the

Proponent's Proposed Project, including Alternative 1 (Dam Notching), will require a new intake system upstream that draws water directly from the river at a pressure head of El. 525. The new intake system would not require a water retention structure. See discussion of the new intake system in Section 3.3.4 on the modification of low-level outlet works and CAW water diversion point.

Comment AA-52

Roy Kaminski

I'm just wondering if it's feasible to notch the dam a little more, lower the water level, and then put a conduit, maybe a 20-foot conduit, like run under the Thames River 200 years ago, you've gone under the English Channel, put in a 20-foot conduit into the middle of it or the base of it, and then you can drain it, and then you can drain the sediment.

Response

Although this approach to dam safety is not a project alternative, a range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction, environmental, and maintenance factors. The alternatives presented in this Final EIR/EIS reflect the options that balance these criteria, meet the project purpose and need, and represent sound engineering solutions **(Also AA-1, AA-6)**.

Comment AA-53

Roy Kaminski

What you might do is consider a dam, a water -- a rubber dam or some balloons, maybe only three feet, just to keep water flowing the year round. And then when the flows -- when it flows, then you can turn down the dam. But I'm thinking that it may be a feasible option to notch it, lower the water level, and then drill into, maybe the center, maybe close to the base. Then that takes all of that sediment out of there or takes all of the water out of there, takes all of the weight that's pushing up against the dam now, and you may not have to do anything else. Thank you.

Response

See response to AA-52. Dam notching is considered as part of Alternative 1.

Comment AA-54

Robert Greenwood/Carmel Valley Association

The alternatives for dam removal don't say what will be done with the concrete.

Response

For Alternatives 1 and 2, the concrete will be disposed of at the sediment disposal site (see Section 3.4.4). For Alternative 3, a major portion of the broken concrete will be used in the stabilization of the sediment pile (see Figure 3.5-5). The rest will be used as rip-rap for the stabilized sediment slope.

Comment AA-55

Don Redgwick/Resident of Pacific Grove

The buttress should be large enough to allow the sediment to dry to about five percent of optimum in order to be able to secure reasonable compaction. And the material, there should be some kind of capping of the sediment for erosion control, and that would be true whether you reroute the river or not to get that sediment out. I don't know the nature of the sediment, but I imagine it's pretty erodable. (sic)

Response

Your suggestions have been noted. Although this approach to dam safety is not a project alternative, a range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction, environmental, and maintenance factors. The alternatives presented in this Final EIR/EIS reflect the options that balance these criteria, meet the project purpose and need, and represent sound engineering solutions **(Also AA-1, AA-6, and AA-52)**.

Comment AA-56

Don Redgwick/Resident of Pacific Grove

The demolition of the dam and the removal of the sedimentation will have a severe impact on Carmel Valley Road unless the broken concrete and steel are buried on-site, and the sediment can't be placed somewhere else in the vicinity of the dam.

Response

The concrete will be disposed of at the sediment disposal site (see Section 3.4.4). A major portion of the broken concrete will be used in the stabilization of the sediment pile (see Figure 3.5-5). The rest will be used as rip-rap for the stabilized sediment slope.

Comment AA-57

Don Redgwick/Resident of Pacific Grove

The rerouting of the Carmel River will not cause the sediment to be stable and now to resist water runoff from the surrounding hills without some means of stabilization.

Response

For a discussion of the approach to stabilizing sediment under Alternative 3, please refer to Section 3.5.4. Sediments will be placed in a pile in thin lifts and compacted. Soil cement mixing and geotextiles will be used to stabilize it. In addition, broken concrete from the demolished dam will be placed at the toe of the sediment slope for further protection.

Comment AA-58

Victoria Kennedy/Sleepy Hollow Homeowners Association

The other questions are: Is the proposed batch plant location for the dam strengthening within 500 feet of any of the Sleepy Hollow residences? And whether or not the plant's location is within 500 feet of the residences, which alternative batch plant sites were analyzed? The preferred batch plant site would be a location that does not cause visual, dust and noise impacts to any Sleepy Hollow subdivision residents and be close to them. What are the limitations to locating the batch plant closer to the dam?

Response

Please refer to responses to comments AA-12, AA-13, and AA-14

Comment AA-59

Victoria Kennedy/Sleepy Hollow Homeowners Association

What's the longest expected time to complete any of these projects? I know you have approximate times, but what's the longest time?

Response

Please refer to response to Comment AA-16.

Comment AA-60

Jessica Simms/Resident of Carmel Valley

I also wonder what will happen to the concrete **(also AA-56).**

Response

The concrete will be disposed of at the sediment disposal site (see Section 3.4.4). A major portion of the broken concrete will be used in the stabilization of the sediment pile (see Figure 3.5-5). The rest will be used as rip-rap for the stabilized sediment slope.

Comment AA-61

Jessica Simms/Resident of Carmel Valley

I also think it's important to look at the Matilija Dam in Ventura, I believe, which had similar circumstances before they removed it.

Response

The engineering and environmental documentation related to Matilija Dam have been reviewed by the project team.

Comment AA-62

Don Redgwick/Resident of Pacific Grove

I made a comment about buttressing the dam, and there was a comment that I'd like to reinforce my position on that. First of all, I'm a general engineer, a retired general engineering contractor. I have done built a few small dams, and I've done slide repairs. I have never buttressed a dam, but I have buttressed slides. And it's basically you've got weight and you are supporting the weight with the buttress. It's a method that can work. The buttress material would have to be secure so it wouldn't erode out or loose and have to be towed. I didn't put all that in my comments. But it is a method that could work that would salvage the existing dam, which is – you know, I would think, I don't know how many millions of dollars it would cost to build another one like that. It does serve a purpose if it can be saved.

Response

Your suggestions have been noted. Buttressing the existing dam is the Proponent's Proposed Project. Although this approach to dam safety is not a project alternative, a range of engineering options to meet the need for dam safety have been evaluated during the development of the project alternatives, considering project feasibility from economic, construction, environmental, and maintenance factors. The alternatives presented in this Final EIR/EIS reflect the options that balance these criteria, meet the project purpose and need, and represent sound engineering solutions **(Also AA-1, AA-6, AA-52, and AA-55)**.

Comment AA-63

Jim Lambert/Carmel River Steelhead Association

Will, also, the reservoir still exist if the dam is rerouted, [will there be] somewhat of a reservoir in the back of the San Clemente Dam? Then when the silt gets moved out, then that reservoir would no longer exist; is that correct?

Response

For Alternatives 2 and 3, the Dam would be removed and the reservoir would no longer exist.

June 27, 2006 letter from Steven A. Hillyard

Comment AA-64

The EIR/EIS considers five alternatives including two that interest me. First, it considers removing slit in preparation for removing the dam. Second, it considers strengthening the dam. Since both are feasible, this means that the dam continues to be a technically viable water storage facility with a current status of being burdened by extensive deferred maintenance. Because the EIS/EIR fails to consider this alternative, it is deficient.

Your agencies can take notice of the fact that the Monterey Peninsula has a very urgent water storage need. Further, you can assume that additional water storage or desalinization facilities will be built to meet this need. The current debate over the desalinations plants planned for Moss Landing is credible evidence of the validity of these assumptions.

There are very significant environmental impacts associated with the alternatives to using San Clemente Dam for meeting at least a portion of the Peninsula's water needs. Those associated with the desalination project, including operational impacts such as the discharge of green house gasses associated with powering the process, are the most glaring.

Because San Clemente Darn is a viable storage facility, the alternative "uses" that call for it to be taken out of service are burdened with the external environmental impacts associated with replacing its storage capacity. To make an informed decision in the permitting process, decision makers should be informed of these impacts. To facilitate that, the EIS/EIR should consider the rehabilitation alternative. **(Also WAT-13)**

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose/objectives and need of the action which the EIR/EIS evaluates is to improve safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District (MPRPD)

Comment AA-65

Cross-sections, cut-material, and images of road improvements and construction and Site 4R are necessary for adequate environmental review.

Response

A typical road cut section is shown in revised Figure 3.3-5 for the new road to Site 4R. The cut will be made into soil. Road improvements for access to Site 4R are described in Sections 3.3 and 3.4

Comment AA-66

Another example: Figures 3.3.3 and 3.3.4: These figures show the Cachagua/4R Access Route (jeep trail) and Conveyor Route through the Park District's San Clemente Open Space and a large Sediment Disposal site within the property but there is no written description of either in Section 3.2 Proposed Project.

Response

Figures 3.3.3 and 3.3.4 illustrate the access route in Alternative 1 (Dam Notching). The Proponent's Proposed Project would not use any of the routes that transverse MPRPD owned land. Sediment would not be removed or transported under the Proponent's Proposed Project.

Comment AA-67

Figure 3.2.2: This figure shows the Cachagua/4R Access Route (jeep trail) and Conveyor Route through The Park District's San Clemente Open Space and a large Sediment Disposal site within the property but there is no written description of either in Section 3.2 Proposed Project.

Response

Figures 3.2-1 and 3.2-1 show all facilities for all alternatives. The Proponent's Proposed Project would not use any of the routes that transverse MPRPD owned land. No sediment would be removed or transported under the Proponent's Proposed Project. The Cachagua Access Route, including the Jeep Trail and the conveyor route and the sediment disposal site are described in Section 3.3 which discusses Alternative 1 (Dam Notching).

Comment AA-68

3.3 Sediment Transport: The document does not adequately describe the "gravity feed reclaim tunnel system" for conveying the sediment to Site 4R in the park.

Response

Section 3.3.4 of this Final EIR/EIS has been updated to further describe how disposal site 4R would be used. A gravity feed reclaim tunnel system, typically used in mining applications, would be employed. The system consists of a buried hopper (box structure with opening at the top) which is installed underneath the excavated sediment stockpile and collects and deposits sediments onto the conveyor system. The conveyor system is a tunnel structure (similar to a half round culvert) that protects the conveyor leading to the hopper, and the conveyor equipment.

Comment AA-69

3.3 Sediment Transport: The document does not adequately describe how the road will be used or impacted by expected project use.

Response

Section 4.9.3 of this Final EIR/EIS has been updated to more fully describe these impacts and mitigation measures. The road will be used for mobilization of conveyor equipment, mobilization of heavy earth moving and construction equipment, occasional (bi-weekly) mid-size equipment mobilization, and daily worker access during the construction season. This is an unpaved access road that will be maintained as necessary to provide the construction access described.

Comment AA-70

Exhibit 3.3.5: This exhibit provides little to no value in evaluating the impact of heavy equipment on a narrow, unsurfaced, steep road or any information on necessary road improvements and their impacts to accommodate the expected project uses.

Response

The figure is located in Chapter 3, which comprises the description of the project alternatives, not the evaluation of their impacts. Impacts to roads are discussed in Section 4.9.

Comment AA-71

3.3 Sediment Disposal: The document states that the maximum capacity for sediment disposal at Site 4R Is "'undetermined" but there is no evidence in the document to support the finding that Site 4R can adequately accept the estimated 1.5M CY of sediment material.

Response

Figure 3.3-4 presents an area capacity curve developed from a United States Geological Survey (USGS) topographical map of the area. This figure demonstrates that Site 4R has adequate capacity to hold the sediment volume planned for disposal there. See also Appendix G for further discussion on screening of sediment disposal sites.

Comment AA-72

The document provides a cursory description of Site 4R preparation but is inadequate for proper review as there are no details as to how vegetation "clearing and grubbing will take place, and how and where the "stripping and stockpiling of organic soils" will occur. **(Also TE-35)**

Response

Clearing and grubbing means clearing and rooting of trees, bushes, shrubs, etc. via common mechanical equipment removal methods (e.g., chainsaws, excavators, and bulldozers). Stripping of organic soils is also achieved via bulldozers and excavators. Stockpiling will occur on the sediment disposal construction site, where the organic soils stockpile footprint will occupy a small area adjacent to construction and sediment placement operations.

Comment AA-73

The document also states "a culvert pipe would likely be placed along the ravine bottom the full length of the site…" For review purposes, this vague language is inadequate. Will or will not a pipe of the scale and scope described be installed? What are the possible environmental impacts if a pipe is or isn't installed? This type of information is not to be found in the document.

Response

A culvert pipe will be placed along the ravine bottom. The culvert pipe is placed for engineering considerations. There are no additional environmental impacts beyond those described throughout Chapter 4 for the placement of the sediment pile.

Comment AA-74

The document states that the site will be "winterized" at the end of each construction season but fails to adequately describe the impacts of introducing non-native stabilizing material into the park and any mitigation measures to remove the weeds proposed for introduction. Non-native vegetation is also proposed for introduction to the site for the final topsoil re-placement **(Also TE-11 and TE-36)**

Response

No introduction of non-native plants is proposed in the discussion of "winterizing" or in the final topsoil replacement in Chapter 3. Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover would be removed outside the roadway would be revegetated with an appropriate seed mix. This seed mix would be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and would contain native species that are indigenous to the Project Area. However, native materials are not always available in the quantities needed for a project. The availability of seed can be affected by non-project events that result in a high demand for local native seed. If insufficient native seed is available, non-natives may be included in the seed mix. Such non-native species would be species known not to be invasive or persistent.

Comment AA-75

The document states that there will be 6-inches of Class 2 base-rock imported for the road surface but does not explain what will be done with this material after the project is completed.

Response

At the discretion of the MPRPD, the base-rock will be left in place for improved access along the Jeep Trail. The base-rock along the new access road to the reservoir will be removed at the end of construction when the road will be removed and the pre-construction conditions restored.

Comment AA-76

Project Access and improvements: The document gives a minimal description of the road improvements that does not adequately allow an effective review of potential impacts. This description needs graphic support in the form of pre-project conditions and post-project enhanced conditions. The simple statement that the road will be widened to 20-feet does not adequately describe the scope and scale of the necessary road-cut, where the cut material will be deposited what the road will look like after the project, or what new maintenance requirements The Park District will inherit if the road improvements are left in or restored upon completion of the project.

Response

Figure 3.3-5 has been updated to show the road cut for the conveyor road and a typical section for road improvements. Along the Jeep Trail, cut material would be used in road widening and excess cut materials would be deposited in the sediment disposal site. The new access road would be restored to pre-construction conditions and the MPRPD would be consulted on whether the MPRPD would like to retain improvements to the Jeep Trail after the project is complete. No additional maintenance would be required on the Jeep Trail than already exists.

Comment AA-77

The new ½-mile long access road to Site 4R is similarly described in cursory terms and provides no graphic imagery of pre-project conditions and post-project impacts/conditions. There is also no description of what will become of this road upon project-completion.

Response

See response to Comment AA-76.

Comment AA-78

3.4 Alternative 2: The comments above apply to this alternative as well. The descriptions and graphic support need improvement if an adequate environmental *review is to be undertaken. This alternative impacts the Park District to a greater magnitude in that the volume of sediment to be deposited in the park is 2.5M CY.*

Response

Road improvements would not vary as a function of the volume of sediment to be moved **(Also AA-76).**

Comment AA-79

3.5 Alternative 3: Though this alternative does not propose Site 4R, it does affect The Park District's road into and through its San Clemente Open Space. The comments above that apply to the road are applicable for this alternative as well.

Response

Please see response to Comment AA-76. It is not clear what effects the MPRPD believes would occur to the road beyond those already documented for the Jeep Trail.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment AA-80

Any sediment storage should be done in as natural a way as possible with the least amount of Geo-grid and concrete, while appreciating the possibility of earthquakes.

Response

Thank you for your comment. Your concerns have been noted. Alternative 3 is designed to assure stabilization using well-known engineering methods and will withstand a MCE. Bioengineered solutions can be considered during final design.

ALTERNATIVES SUPPORTED/OPPOSED

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment AL-1

I favor salvaging the San Clemente Dam with a buttress.

Response

Thank you for your comment in support of the Proponent's Proposed Project.

June 1, 2006 letter from Dougald Scott, Northern California Council of the Federation of Fly Fishers/Santa Cruz Fly Fishermen

Comment AL-2

Northern California Council of the Federation of Fly Fishers supports ALTERNATIVE 3: CARMEL RIVER REROUTE AND DAM REMOVAL

Response

Thank you for your comment in support of Alternative 3.

Comment AL-3

- *In support of ALTERNATIVE 3:*
- *It would permanently eliminate safety concerns through the removal of the dam.*
- *It would permanently eliminate the fish passage barrier.*
- *It would permanently minimize temperature increases during passage through the reservoir site.*
- *It would require a minimum of sediment removal, and not require long distance transport of the sediment. Under this alternative, sediment need only be transported a short distance from the San Clemente arm to the Carmel River arm.*
- *Sluicing and downstream sedimentation problems are eliminated.*
- *Compared to the other ALTERNATIVES, negative impacts are generally short-lived and corrected with mitigation measures.*

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

Comment AL-4

Against the PROPOSED PROJECT and ALTERNATIVE 1

- *Both will require continued sluicing to keep the fish ladder operational. This will result in the transport of significant amounts of accumulated sediment down the river channel. The increase in suspended and bedload sediment delivered to the lower river would impair aquatic habitat and directly affect redds and juvenile and adult steelhead in the river.*
- *Both will require a fish ladder for fish passage.*
- *ALTERNATIVE 1 would require extensive sediment removal and transport over a relatively long distance.*

Response

Thank you for your comment opposing the Proponent's Proposed Project and Alternative 1. Your concerns have been noted. Sediment impacts for these two alternatives are evaluated primarily in Sections 4.2 and 4.4. The revised Sediment Operations and Management Plan for Fish Passage (SOMP) is in Appendix J.

Comment AL-5

Against ALTERNATIVE 2

- *It would require massive sediment removal and transport over a relatively long distance.*

Response

Thank you for your comment opposing Alternative 2.

June 4, 2006 letter from Don Redgwick

Comment AL-6

I believe strengthening the San Clemente Dam is the logical course of action for all of the issues I have addressed and the proposal to eliminate the dam is the worst idea in all counts except a possible advantage to ocean fish.

Response

Thank you for your comment in support of the Proponent's Proposed Project.

Undated letter from Claude Rosenthal

Comment AL-7

I am writing to urge you to stop the plan to buttress the San Clemente Dam on the Carmel River. The dam has been deadly to migrating fish and adds little value to downstream users. . In fact, I urge you to plan for the removal of this dam, ASAP.

Response

Thank you for your comment opposing the Proponent's Proposed Project. Your concerns have been noted. The existing dam is part of the baseline environmental condition for the project. It is not an impact of the project.

June 15, 2006 letter from Pam Krone-Davis, Rising Leaf Watershed Arts

Comment AL-8

We are in favor of the alternative for the River reroute and the stabilization of the sediment.

Response

Thank you for your comment in support of Alternative 3.

June 14, 2006 letter from Linda Agerbak

Comment AL-9

I opt for Alternative 3: Carmel River reroute, dam removal, and sediment stabilization, because it's a cost-effective, permanent, environmentally beneficial solution:

- *It permanently removes the risk of dam failure.*
- *By restoring the San Clemente Creek bed, it restores the river channel to a geologically stable pattern.*
- *It allows the fish free-flowing passage upstream and downstream.*
- *It limits the release of sediment downstream through the use of 2650 feet of the Carmel River bed to store the accumulated sediment.*
- *No need for massive movement of sediment by truck or conveyor belt.*
- *It limits short-term turbidity.*
- *It avoids the concrete batch plant operation.*

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

June 30, 2006 letter from Dick Butler, National Marine Fisheries Service (NMFS)

Comment AL-10

Our enclosed comments and detailed involvement since 2000 have provided the Corps the assistance necessary to develop and determine environmentally preferable alternatives. As stated in our April 5, 2006, letter, NMFS believes the use of sluice gates as proposed in the Proponent's Proposed Project and Alternative 1 is a fatal project flaw. The Draft EIR/EIS notes San Clemente Dam and Reservoir were never intended for flood control and the San Clemente Dam Seismic Safety Project has neither flood storage nor flood operations criteria. The Draft EIR/EIS also notes San Clemente Reservoir does not provide water storage for the California American Water Company system and the Proponent's Proposed Project will not improve current or future water *storage. A dam and reservoir that provides neither flood storage nor water storage, commensurate with the long-term adverse environmental impacts associated with operating and maintaining the dam, make it clear to NMFS that Alternative 2 (dam removal) or Alternative 3 (Carmel River reroute and dam removal) are the environmentally preferable alternatives. Implementation of the Proponent's Proposed Project or Alternative 1 will likely jeopardize S-CCC DPS steelhead and destroy designated critical habitat of S-CCC DPS.*

Response

Thank you for your comment. Your concerns regarding the alternatives have been noted. The existing dam is part of the baseline environmental condition for the project. It is not an impact of the project. The Dam continues to serve its intended function as a point of diversion for CAW.

April 5, 2006 letter from Dick Butler, National Marine Fisheries Service (NMFS)

Comment AL-11

NMFS believes the use of sluice gates constitutes the fatal flaw in the Proponent's Preferred Project (buttressing) and Alternative 1 (notching). Based on the information NMFS has reviewed, NMFS believes the sluice gates will likely lead to the extirpation of an anadromous steelhead run in the Carmel River, which is the largest remaining run of anadromous steelhead in the S-CCC distinct population segment. NMFS, as stated many times over the past 6 years, recommends no further consideration of alternatives that include sluicing. We strongly encourage the DWR to fully consider our recommendations and move forward to address the seismic safety of the San Clemente Dam.

Response

Thank you for your comment. Your concerns have been noted. The EIR/EIS has been updated to provide a more in-depth analysis of sediment management; please refer to Sections 4.2 and 4.4 in particular. The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) both require consideration of a reasonable range of alternatives; for this project, these include alternatives which entail sediment management techniques, such as sluicing.

June 30, 2006 letter from Patricia Sanderson Port, U.S. Fish and Wildlife Service

Comment AL-12

The Department commends the Corps' inclusion of two alternatives (Alternatives 2 and 3) that would return the reach of the Carmel River in the project area to a natural, free-flowing state. Free-flowing reaches of the Carmel River upstream and downstream of the project area meander seasonally, and periodically create off-channel pools and backwater areas. These features support high-quality breeding habitat for the federally *threatened California red-legged frog (Rana aurora draytonii), and the Department finds that returning the project area to a free-flowing state would enable this reach of the Carmel River to eventually function similarly for the subspecies.*

Response

Thank you for your comment in support of the dam removal alternatives (Alternatives 2 and 3).

Comment AL-13

The Department has several concerns regarding implementation of the proposed project (i.e., dam thickening). Specifically, our concerns relate to: fortification of a structure that is likely to pose a barrier to dispersal of individual California red-legged frogs; construction and operation of a concrete batch plant adjacent to the Carmel River where accidental spills and increased sedimentation could have far-reaching adverse effects to aquatic habitats that support the California red-legged frog; construction of a new, redundant access road through an undisturbed riparian area that supports the California red-legged frog; and long-term degradation of habitat for the California red-legged frog.

Response

The existing dam is part of the baseline environmental condition for the project. It is not an impact of the project. Impacts to the California red-legged frog are discussed in Chapter 4.5 (Vegetation and Wildlife) and are noted throughout Chapter 4. Potential impacts of the batch plant are discussed throughout Chapter 4, particularly in Sections 4.7 (Air Quality), 4.8 (Noise), and 4.11 (Aesthetics) as well as in Appendix R. Potential impacts associated with access road construction are addressed throughout Chapter 4.

July 3, 2006 letter from Robert W. Floerke, California Department of Fish and Game

Comment AL-14

Our comments focus primarily on our concerns with the proponent's intent to repair the obsolete San Clemente Dam (Dam) and maintain the structure as a permanent impediment to natural fluvial processes and fish movement in the Carmel River watershed. We also describe the advantages of the fundamental opportunity still available to the project proponent to greatly improve this watershed by implementing what we deem to be the environmentally preferred option, Alternative 3, the Carmel River reroute with in-place sediment stabilization. The proponent's proposed project is currently dam strengthening with in-place sediment stabilization. The impetus for the project is the requirement by the Division of Dam Safety (DSOD), which has been in place since 1995, for the Coastal Division of the California American Water Company (CAW) to bring the Dam into compliance with safety standards based on predictions of a Maximum Credible Earthquake (MCE) and a Probable Maximum Flood (PMF). It is important to note for the record that the dam no longer has any functional purpose in *terms of traditional uses such as water storage or flood control, and that no assertions about such utility in the future are being made.*

Response

Thank you for your comment. Your concerns have been noted. The Dam has never served to provide water storage or flood control; it continues to serve its intended function as a point of diversion for California American Water (CAW). As a result of CEQA review, the state of California, through the California Coastal Conservancy, has taken a preliminary interest in funding the Carmel River Reroute and Dam Removal (Alternative 3) project under a scenario in which CAW would turn over the project and property surrounding the Dam to a non-profit or governmental entity plus contribute a share of the funding. The Department of Water Resources (DWR) has given the parties until December 30, 2007 to determine whether this is a viable option.

COMMENTS RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Jonas Minton, Planning and Conservation League Environmental Advocacy Organization:

Comment AL-15

A major acknowledged problem with the dam strengthening and notching as identified on page 51 is, quote, significant and unavoidable impacts to water quality, significant and unavoidable impacts to fish. Those are impacts with both the strengthening and the notching. For those reasons, it appears to us that the viable alternative is the river rerouting and dam removal option, and it is our view after reading the entire EIR/EIS that that is in fact the least environmentally damaging project alternative, which the Corps, of course, is required to identify under Section 404(b)(1) of the Clean Water Act. And we also believe that that is the most environmentally, economically and socially response alternative. Instead of dealing with this as a problem that has to be cemented in or hacked half way down, we think that it's possible to have a bigger solution.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted. All of the action alternatives have impacts that are significant and unavoidable.

William Look, California Trout

Comment AL-16

Based on what I've seen so far, however, it seems to me that as long as the entombment of the gravel can be done in a way which provides a long-term solution and not one that just defers 50 or 60 years -- and that might be the preferred alternative in that it provides probably the least risk to the public and least disruption of the homes in the area as well as provides what in the end would be a more natural fish passage, so long as in the end you haven't created yet another barrier where the dam was.

Response

Thank you for your comment. Your concerns have been noted.

Hannah Schoenthal-Muse, Friends of the River

Comment AL-17

Straight to the point. We think that the reroute and dam removal alternative is the most appropriate option of all. Not only will it help improve the overall health of the Carmel River, we think it will protect the viability of California's important coastal steelhead stream. So that's where we stand, and thanks for having us.

Response

Thank you for your comment in support of Alternative 3.

Roger Williams, Resident of Carmel-by-the-Sea

Comment AL-18

I like the last alternative. I was really impressed with the idea of the river rerouting. The strengthening and notching of the dam don't do anything for the steelhead, or not much other than improving the fish ladder. Yet the notching has the advantage of doing a whole lot of good for at least that population of the wildlife.

Response

Thank you for your comment in support of Alternative 3.

Don Redgwick, Resident of Pacific Grove

Comment AL-19

I think the report and recommendation should take into consideration the environment, preservation, conservation, water resources and economics of the project. The solution to all five of these goals is to save the existing dam by reinforcing. The sediment should be moved from the back of the dam to the front of the dam and placed as a buttress. I think that follows a little bit with your wasting the sediment in the old channel line.

Response

Thank you for your comment in support of the Proponent's Proposed Project. Your concerns have been noted.

Clive Sanders, Carmel River Watershed Conservancy

Comment AL-20

I think the only alternative you are giving us is movement, the changing of the route of the Carmel River. Now I'm a guy who has been against putting a dam down all these 15 *years. I have become educated with the help of a few friends, and I think that's the way to go.*

Response

Thank you for your comment in support of Alternative 3.

Hank Smith, Resident of Monterey

Comment AL-21

I support Alternative number 3 for the following reasons. The dam no longer fulfills its intended, original purpose because of the sediment behind it. The disruption and costs of silt removal are obviously not acceptable. Spending money to buttress a worthless water storage tool escapes my notion of common sense.

Response

Thank you for your comment in support of Alternative 3. SCD was never intended to be a water storage facility but it still continues to serve its intended function as a point of diversion for CAW.

Your concerns have been noted.

Frank Emerson, Carmel River Steelhead Association:

Comment AL-22

The first two options, the strengthening and the notching only solved one of a number of problems, and that is simply the dam safety issue. Neither option provides any more water storage, actually both do not provide any water storage, as well as flood control. So even as Dave was pointing out, if those dams were restored back to their original condition, they still won't provide flood control because they don't store enough water. They quickly fill up and water passes over them.

So to me the biggest bang for the buck is the reroute and removal options, because it addresses not only the dam safety issue, but it restores a critically important reach of spawning habitat. It restores the ability of fish to pass freely, downstream migration of juvenile fish, adult fish, upstream migration of adult fish, restores an area to its previous condition. Dave was saying something like two miles of that river has now been inundated by sediment, so that's two miles of riverbed that could be restored. We have an historic opportunity not usually seen in California. And if there was ever a dam that was crying out to be removed, it's the San Clemente Dam. It provides so little benefit and actually remains a hazard, remains a public nuisance if we go with Option 1 or 2. So, again, thank you for all the hard work you did on the presentations, and we'd like to be on record as supporting Option 4. Thank you.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted. SCD was not originally constructed for water storage or flood control and has never served those purposes but the Dam would continue to function as a point of diversion for the CAW water system.

Rex Keyes, Resident of Salinas

Comment AL-23

I'm in favor of restoring the dam to its original operation like it was about 50 years ago.

Response

Thank you for your comment. The Dam continues to serve its original function as a point of diversion for the CAW water system.

Nikki Nedeff, Resident of Carmel Valley

Comment AL-24

The reroute option is the most preferable in terms of the impact potentially for the environment.

Response

Thank you for your comment in support of Alternative 3.

Jessica Simms, Resident of Carmel Valley

Comment AL-25

I also support the removal of the dam and the rerouting. It seems to be, of the options discussed, the most economical and sustainable with the least environment implications to the steelhead, the plant species and the air quality due to trucking enormous amount of truckloads of concrete away.

Response

Thank you for your comment in support of Alternative 3.

Keith Vandevere, Resident of Carmel Valley

Comment AL-26

I do very much the support the alternative, I guess it's Alternative 3, the reroute and dam removal alternative. I think it's clearly the environmentally preferable alternative, environmentally superior alternative in this case from my reading of the EIR/EIS.

Response

Thank you for your comment in support of Alternative 3.

June 30, 2006 letter from Clive R. Sanders, Carmel River Watershed Conservancy

Comment AL-27

We urge you to select Alternative 3, river reroute and dam removal, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead and California red-legged frog.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

June 28, 2006 letter from Jim Crenshaw, California Sportfishing Protection Alliance

Comment AL-28

We urge you to select Alternative 3, river reroute and dam removal, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead and California red-legged frog.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted. All alternatives meet the need of meeting current safety standards with respect to a Maximum Credible Earthquake (MCE) and Probable Maximum Flood (PMF).

Comment AL-29

We also find that leaving the dam structure in place (Proponent's Proposed Project, dam thickening, and Alternative 1, dam notching) will result in significant and ongoing impacts to the environment and will not resolve the safety issue, but only prolong the burden on the ratepayers of maintaining and ultimately removing the structure at some point in the future.

Response

Thank you for your comment raising concerns regarding the Proponent's Proposed Project and Alternative 1. The Proponent's Proposed Project and Alternative 1 meet the need of meeting current safety standards with respect to the MCE and PMF.

Comment AL-30

The fish ladder design and the flawed sluice gate design would most probably result in a Jeopardy Opinion under the Endangered Species Act. This will delay the start of a project indefinitely. For these reasons, it is clear that Alternative 3 is the most viable and expedient alternative that will assure the long-term safety of the residents of the Carmel River Valley.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

Comment AL-31

We find that this DEIR/S is adequate if and only if the Lead Agencies select Alternative 3 as the preferred alternative for the following reasons:

First, Alternative 3 should be the preferred alternative in the Final EIR/S because it is the best technical design and most expedient solution that assures the safety issues are resolved permanently.

Second, the Proponent's Proposed Project, dam thickening, runs the risk of drastic unintended consequences and will continue to compromise safety in the future as the dam structure continues to degrade over time, and will also result in cumulative impacts to the environment under the Endangered Species Act, the Clean Water Act, the Porter Cologne Water Quality Act, NEPA and CEQA. It would also most probably result in a Jeopardy Opinion by NOAA Fisheries and USFWS (Section 7 Consultation) delaying the project.

Third, the river reroute and dam removal alternative provides a technically superior and viable solution in a shorter time frame than either notching or dam thickening, assuring that the risk to human life and impacts to federally designated "threatened" species are reduced or completely eliminated as soon as possible.

Fourth, the public has clearly voiced its support for the river rerouting and dam removal alternative as demonstrated by public comments at the DWR/USACOE public hearing for the Draft EIR/EIS held in Camel Valley on May 23rd and reported in the media (see attachment, front page article "Carmel River reroute gets solid backing", Monterey Herald, May 24,2006).

CSPA supports selection of Alternative 3, river reroute and dam removal, as the preferred alternative because it is the only one that guarantees a final solution for long-term safety and also protects the environment and reduces adverse impacts to water quality, and "threatened" steelhead and California red-legged frog.

Response

Thank you for your comment in support of Alternative 3. The Proponent's Proposed Project and all of the action alternatives satisfy current safety standards with respect to the MCE and PMF. Based on equal scheduling assumptions, the Proponent's Proposed Project would have the shortest implementation schedule. It is uncertain whether any of the action alternatives would result in issuance of a jeopardy opinion, however, any decision may be challenged and it is not possible to forecast with confidence how such conjectural challenges would affect project implementation schedules. Your comments regarding other alternatives have been noted.

Comment AL-32

CSPA will actively support the selection and implementation of Alternative 3, and will also continue to advocate for support by interested groups in the community and throughout the state for implementation of Alternative 3.

Response

Thank you for your comment in support of Alternative 3.

Undated Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment AL-33

San Clemente Dam must be completely removed. Any options involving sluice gates and fish ladders will "take" (death of a critical part of the population hindering recovery leading to further decline and toward extinction) of steelhead. The long term costs, i.e. forever of operation, maintenance, management and liability of a semi-abandoned dam are huge. The risk of earthquakes and flood liability still remain. The only civilized and sane option is complete removal.

Response

Thank you for your comment in support of dam removal. Your concerns have been noted. Costs of operation and maintenance are presented in Section 3.1, Table 3.1-1, and are not a large component of total project cost. The Proponent's Proposed Project and Alternative 1 both meet the need of meeting current safety standards with respect to the MCE and PMF. San Clemente Dam is (SCD) not "semi-abandoned" and still fulfills its original purpose of providing a point of diversion for CAW.

July 12, 2006 email from Bob Baiocchi, Carmel River Steelhead Association

Comment AL-34

The best solution and most reasonable alternative is to have the dam removed because it is useless, the fish ladder does not work, the reservoir is filled with sediment and the dam is an obstruction to navigation and steelhead migration in the river. You don't *abandon a defective automobile in the middle of a public freeway to satisfy local political reasons. See attachment. Have it removed. Thank you.*

Response

Thank you for your comment in support of dam removal. The Dam continues to serve its intended function as a point of diversion for CAW.

June 28, 2006 letter from Bob Baiocchi, Carmel River Steelhead Association

Comment AL-35

One of the most reasonable alternatives that should have been included in the draft EIR/EIS under CEQA is the removal of San Clemente Dam because the dam is an obstruction to the navigable waters of the Carmel River.

Response

Thank you for your comment. Dam removal is evaluated under Alternatives 2 and 3.

June 30, 2006 letter from Mindy McIntyre, Planning and Conservation League Foundation

Comment AL-36

We urge you to select Alternative 3, dam removal and river reroute, as the preferred project to ensure the long-term safety of the residents of the Carmel River Valley as well as the continued protection and improvement of the environment that provides critical habitat for the "threatened" steelhead trout and California red-legged frog.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted. All alternatives meet the need of meeting current safety standards with respect to the MCE and PMF. As a result of CEQA review, the state of California, through the California Coastal Conservancy, has taken a preliminary interest in funding the Carmel River Reroute and Dam Removal (Alternative 3) project under a scenario in which CAW would turn over the project and property surrounding the Dam to a non-profit or governmental entity plus contribute a share of the funding. DWR has given the parties until December 30, 2007 to determine whether this is a viable option.

Comment AL-37

We also find that leaving the dam structure in place (the "Proponents Proposed Project," dam thickening, and Alternative 1, dam notching) will result in significant and ongoing impacts to the environment and will not resolve the safety issue adequately. It will, moreover, burden the ratepayers with the cost of maintaining and ultimately removing the structure at some point in the future.

Response

Thank you for your comment. The Proponent's Proposed Project meets the need of meeting current safety standards with respect to the MCE and PMF. It would not lead to a need for dam removal at a later time.

Comment AL-38

We believe that the fish ladder design and the flawed sluice gate design will result in a Jeopardy Opinion that will delay the start of a project indefinitely. For these reasons, it is clear that "Alternative 3" is the most viable and expedient alternative that will assure the long-term safety of the residents of the Carmel River Valley. It is also the least environmentally damaging, and therefore will move forward and expedite implementation of a project that will permanently remove the risk of dam failure associated with both MCE and PMF conditions as required by law.

Response

Thank you for your comment in support of Alternative 3. Based on equal scheduling assumptions, the Proponent's Proposed Project would have the shortest implementation schedule. It is uncertain whether any of the action alternatives would result in issuance of a jeopardy opinion, however, any decision may be challenged and it is not possible to forecast with confidence how such conjectural challenges would affect project implementation schedules. The Proponent's Proposed Project and all of the action alternatives would satisfy current safety standards with respect to the MCE and PMF. As a result of CEQA review the state of California, through the California Coastal Conservancy, has taken a preliminary interest in funding the Carmel River Reroute and Dam Removal (Alternative 3) project under a scenario in which CAW would turn over the project and property surrounding the Dam to a non-profit or governmental entity plus contribute a share of the funding. DWR has given the parties until December 30, 2007 to determine whether this is a viable option.

Comment AL-39

We find that this DEIR/S is adequate if and only if the Lead Agencies select Alternative 3 as the preferred alternative for the following reasons:

First, "Alternative 3" should be the preferred alternative in the Final EIR/S because it is the best technical design and most expedient solution that assures the permanent resolution of safety issues.

Second, the Proponent's Proposed Project, dam thickening, runs the risk of drastic unintended consequences and will continue to compromise safety in the future as the dam structure continues to degrade over time, ultimately resulting in greater costs to the ratepayers. These include the cost of the current Proponent's Proposed Project, which provides a short-term solution at best, involving ongoing maintenance, operating and fish passage costs, and again in the future when the aging structure reaches the end of its life span. The Proponents Proposed Project also results in cumulative impacts to the *environment under the Endangered Species Act, the Clean Water Act and the Porter Cologne Water Quality Control Act that will counter NEPA-CEQA criteria that may result in a Jeopardy Opinion by NOAA Fisheries and USFWS (Section 7 Consultation) delaying the project indefinitely.*

Third, the dam removal option and river reroute provides a technically superior and viable solution in a shorter time frame than either notching or dam thickening, assuring that the risk to human life and impacts to federally designated "threatened" species are reduced or completely eliminated as soon as possible.

Fourth, the public has clearly voiced its support for dam removal and river rerouting as demonstrated by public comments at the DWR/USACE public hearing for the Draft EIR/EIS held in Camel Valley on May 23rd and reported in the media (see attachment, "Carmel River Reroute Gets Solid Backing," Monterey Herald, May 24,2006).

PCLF supports selection of Alternative 3, dam removal and river reroute as the preferred alternative because it is the only one that guarantees long-term safety, protects the environment, reduces adverse impacts to water quality, and preserves "threatened" steelhead and California red-legged frog. Furthermore, we find that the Draft EIR/EIS fails to fully assess the impacts of California American Water's preferred alternative, dam thickening, Alternative 1 (dam notching) or Alternative 2 (dam removal and transport of sediment to a nearby canyon), and therefore the Draft EIR/S is inadequate for assessing any of the other alternatives.

We strongly urge DWR and USACE to consider public input and support for Alternative 3, and based upon the reasons cited above, select river reroute and dam removal as the technically superior design for a project that will permanently resolve the dam safety risk. PCLF will actively support the selection and implementation of Alternative 3, and will also continue to advocate for support by interested groups in the community and throughout the state for implementation of Alternative 3.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

The adequacy of an EIR/EIS depends upon its compliance with the NEPA and CEQA regulations, not upon the selection of a particular alternative.

The costs of the Proponent’s Proposed Project are summarized in Section 3.1, Table 3.1-1; the Proponent’s Proposed Project would be the most cost-effective of the alternatives considered. Further requirements to stabilize the Dam at some unknown future date are not expected.

Based on equal scheduling assumptions, the Proponent’s Proposed Project would have the shortest implementation schedule. It is uncertain whether any of the action alternatives would result in issuance of a jeopardy opinion, however, any decision may be challenged and it is not possible to forecast with confidence how such conjectural challenges would affect project implementation schedules. The Proponent's Proposed Project and all of the action alternatives would satisfy current safety standards with respect to the MCE and PMF.

The comment regarding cumulative impacts of the Proponent's Proposed Project is not clear enough to provide a response. The comment is also not clear in what respect the impacts of the Proponent's Proposed Project and Alternatives 1 and 2 have not been fully assessed. As a result of CEQA review, the state of California, through the California Coastal Conservancy, has taken a preliminary interest in funding the Carmel River Reroute and Dam Removal (Alternative 3) project under a scenario in which CAW would turn over the project and property surrounding the Dam to a non-profit or governmental entity plus contribute a share of the funding. DWR has given the parties until December 30, 2007 to determine whether this is a viable option.

Comment AL-40

Selecting Alternative 3 would ensure that the federal government does not issue a Jeopardy Opinion under the Endangered Species Act, which would further delay resolution of the dam safety deficiencies.

Response

Thank you for your comment. It is uncertain whether any of the action alternatives would result in issuance of a jeopardy opinion, however, any decision may be challenged and it is not possible to forecast with confidence how such conjectural challenges would affect project implementation schedules. The selection of Alternative 3 does not ensure the outcome of Endangered Species Act (ESA) consultation.

Comment AL-41

Lastly, Alternative 1 discussed in the DEIR/S, notching the dam to a lower level and creating sluice gates, fundamentally has the same problems as the dam thickening. Both leave a potentially unstable structure, and both use sluicing, which has foreseeable difficulties discussed below. There are, moreover, water quality issues resulting from continuous release of sediment, primarily silt, that can result in increased turbidity that are essentially the same with both and which are not assess in the DEIR/S. Both the proponent's Proposed Plan and Alternative 1 will have rising cumulative costs into the future associated with maintaining an aging structure, possibly needing modifications to address flaws in the technical design in the structural work over the decades projected for maintain the structure in the future. Neither is a permanent solution to the unsafe nature of the San Clemente Dam and will result in enormous ongoing costs to the ratepayers.

Response

Thank you for your comment. Your concerns have been noted. The Dam would not be unstable under either Alternative 1 or the Proponent's Proposed Project; both meet the need for dam safety. The effects of sediment sluicing, including water quality effects, are updated throughout Chapter 4 of the Final EIR/EIS. The costs of ongoing operation and maintenance are included in Section 3.1, Table 3.1-1. Whether the Proponent's Proposed Project or one of the action alternatives is implemented, future expenditures to address flaws in technical design and structural work are not expected to be required.

Comment AL-42

Alternative 1, CAW's preferred alternative, has many far-reaching consequences that are not covered in the draft EIR/S, and would need to be addressed before choosing that alternative.

It is likely, in our professional estimation, that simply buttressing the dam will have cumulative impacts. A primary impact is one that results from impacts to water quality resulting from the release of unknown levels of sediment, primarily silt, as the primary method to reduce the rate of build-up of sediment behind the dam structure. It is also likely that scouring patterns evident downstream of the dam site will also continue to occur, impacting fish habitat.

Response

Thank you for your comment. Alternative 1 (Dam Notching) is not the proponent's proposed or preferred project. Cumulative impacts are addressed in Section 5.3 of the Final EIR/EIS. The effects of sediment sluicing, including water quality effects, are updated throughout Chapter 4 of this Final EIR/EIS.

Comment AL-43

It is clear that the public supports Alternative 3. A Monterey County Herald headline states, "Carmel River Reroute Gets Solid Backing," and goes on to state, "A proposal to rechannel the Carmel River upstream from San Clemente Dam... got strong public support Tuesday night at a hearing held by state and federal officials at Rancho Canada Golf Club" (the article is attached). At this well-publicized meeting, 22 people spoke in favor of the reroute with only three opposing. The public's wishes should be able to determine how they want to deal with a dam that is literally in its backyard. The reasons stated for supporting reroute and restoring normal flows and sediment levels to the lower river basin ranged from desiring to improve public recreation (kayaking and hiking), wishing to see the river and health of wildlife recover, wanting to see traditional benefits to the community regained through improved river conditions, and recognizing that buttressing is only a "band-aid" solution that assures future costs and an ongoing burden for the rate payers.

Strong public support is crucial to staging a successful project. DWR and USACE should take the broad public support for Alternative 3 into careful consideration when selecting a preferred alternative.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted.

Comment AL-44

The San Clemente Dam as it is today is a dam that is unsafe for both a large-scale earthquake and large-scale flood. The DSOD has made it clear for over a decade that the dam cannot remain in its current state and CalAm must alter or remove it to guarantee human safety. The only option that would make the draft EIR/S on the San Clemente Dam adequate is Alternative 3, dam removal/river reroute. With broad public support for this option, it is clear that the residents affected by these proposals, the ones who will have to shoulder any rate increases, support the removal of the dam and the river reroute. The dam removal and river reroute option is the only one that: guarantees the safety of the Carmel River Valley region in the case of an earthquake or major flood; adequately protects the several endangered species and recovery of critical habitat in the valley; ensures other benefits are protected including water quality standards.

We support the DEIR/S in its current form and urge its adequate completion by selecting Alternative 3 as the preferred alternative.

Response

Thank you for your comment in support of Alternative 3. Your concerns have been noted. The adequacy of an EIR/EIS depends upon its compliance with the NEPA and CEQA regulations, not upon the selection of a particular alternative.

PROJECT COST / EFFECTS ON WATER RATES

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment CR-1

The demolition of the dam will be very costly and will ultimately be paid by the consumers or taxpayers. Court costs may be involved in some proposals being discussed.

Response

Thank you for your comment. Project objectives include minimizing financial impacts to California American Water (CAW) ratepayers. Court costs and the cost of associated delays are conjectural and are not included in project cost estimates. Please refer to Section 3.1 and Table 3.1-1 of the Final EIR/EIS for a summary of comparative costs for the alternatives considered.

May 25, 2006 letter from Anthony G. Davi, Sr.

Comment CR-2

I recognize that the cost of retrofitting will be high. However, if the river is diverted, silt removed, fishes and frogs protected and ultimately the dam is removed, we the rate payers will foot the bill by increased rates to pay for the aforesaid without the benefit of any improvement in our water supply.

Response

Thank you for your comment. The Carmel River would only be rerouted under Alternative 3 (Carmel River Reroute and Dam Removal). Project objectives include minimizing financial impacts to CAW ratepayers.

June 30, 2006 letter from Trish Chapman / California Coastal Conservancy

Comment CR-3

Section 1.4 Project Purpose, Need and Objectives. The fourth stated objective of the project is to "minimize financial impacts to CAW rate payers". The EIR/EIS should provide cost estimates for each of the alternatives, including the costs of ongoing maintenance. Without this information, the alternatives can not be assessed in regards to this objective.

Response

Please refer to Section 3.1 and Table 3.1-1 of the Final EIR/EIS for a summary of comparative costs for the alternatives considered.

<u>June 22, 2006 letter from David Zaches</u>

Comment CR-4

Mindful of CalAm's obligations to safety-retrofit or demolish the dam, when RWE, bought CalAm, they certainly did their due diligence, and knew full well of the dam's structural problems. The estimated costs of dam safety work were surely subtracted from the price RWE offered CalAm, and therefore the costs should be borne by CalAm and RWE, and not by the ratepayers.

Response

Thank you for your comment. The National Environmental Protection Act (NEPA) and the California Environmental Quality Act (CEQA) do not dispose obligations to pay project costs. However, project objectives include minimizing financial impacts to CAW ratepayers.

<u>July 3, 2006 letter from Robert W. Floerke / Department of Fish and Game</u>

Comment CR-5

Finally, DFG hopes that the CEQA and NEPA Lead Agencies have fully and responsibly considered the fact that the cost differential between the proposed project and removal alternatives, in particular Alternative 3, may not have to be fully borne by CAW. We hope that an economically based statement of overriding considerations will not be considered until a thorough review of potential and existing funding sources occurs. Resource agencies are well aware of the historic opportunity to restore a significant portion of the Carmel River watershed, and it is highly likely that they can assist CAW identifying funding support to offset the additional cost for dam removal. For its part, DFG understands DWR's interest in eliminating the risk to the public in a timely manner, and would be willing to assist within its means to facilitate efforts for obtaining funds without jeopardizing project momentum. We would also recommend that CAW note that DFG administers a Fisheries Restoration Grant Program (FRGP), and that a dam removal project of this nature would be eligible for funding (although it should be noted that FRGP grants are typically not large enough to cover more than a portion of the overall expense of a project of this scope). Perhaps more significantly, DFG provides input to other funding bodies, and could be counted on for support if and when dam removal becomes an option. The next deadline for FRGP grant proposals is in March 2007 for funds to be disbursed in 2008. We would also consider providing technical support for reducing any remaining uncertainties with finalizing designs for dam removal and or river re-route.

Response

Please refer to Section 3.1 and Table 3.1-1 of the Final EIR/EIS for a summary of comparative costs for the alternatives considered. Funding strategies for Alternative 3 are being thoroughly explored by CAW. Thank you for your advice and for your offers of technical support and of assistance in identifying funding.

NOTE: COMMENTS CR-6 THROUGH CR-10 CORRESPOND TO MAY 23, 2006 PUBLIC HEARING TESTIMONY COMMENTS

Comment CR-6

Don Redgwick/Resident of Pacific Grove

Demolition of the dam will result in a very costly cost to the taxpayers or the consumers, and it probably might involve some court costs along with it without a reasonable solution.

Response

Comment noted. Project objectives include minimizing financial impacts to CAW ratepayers. Please refer to Section 3.1 and Table 3.1-1 of this Final EIR/EIS for a summary of comparative costs for the alternatives considered. Court costs and the cost of associated delays are conjectural and are not included in project cost estimates.

Comment CR-7

Clive Sanders/Carmel River Watershed Conservancy

I think we need to understand a little bit better that the cost of this cannot be borne by the owner. Now the owner happens to be Cal Am, but the people who are paying for it are we. We are the people that are going to be paying for it. If we're going to have a major demolition of the dam at the level you are suggesting, then we need federal help. Now I believe there are groups of people that are working on this. I think this has to be published, and I think in your final report you need to zero in on this aspect.

Response

Comment noted. Project objectives include minimizing financial impacts to CAW ratepayers. Please refer to Section 3.1 and Table 3.1-1 of this Final EIR/EIS for a summary of comparative costs for the alternatives considered. Funding strategies are being thoroughly explored by CAW.

Comment CR-8

Steve Wilpert/Resident of Sleepy Hollow

We're spending our tax dollars; that is, Cal Am is spending its energy. I suggest leave them alone. And Cal Am is being forced to spend their customers' money a hell of a lot on a project that means so little in terms of the whole community.

Response

Comment noted. Project objectives include minimizing financial impacts to CAW ratepayers.

Comment CR-9

Roy Thomas/Carmel River Steelhead Association

It's going to cost lots and lots of money. And I propose that the company put up a bond, maybe 50, maybe $75 million for the next 150 years of maintenance on the fish ladder and the dam.

Response

Comment noted. Project objectives include minimizing financial impacts to CAW ratepayers. Funding for operation and maintenance of the dam, fish ladder and sluice gate would be provided through the normal budgetary process of the owner and paid by the revenues of the water system, as regulated by the CPUC. A bond would not be necessary to maintain the fish ladder and dam.

Comment CR-10

Serge Glushkoff/California Department of Fish and Game

Curiously, on the economic potentials of the project, I don't know if it's in the document. It's likely that it is, but for the comparison of the cost of the alternatives it would probably be important when costing out the buttressing option that the perpetual maintenance that will have to happen of the fish ladder and of the sluicing operation in perpetuity that those be disclosed to any decision makers.

Response

Please refer to Section 3.1 and Table 3.1-1 of this Final EIR/EIS for a summary of comparative costs for the alternatives considered. O&M costs for all the alternatives are included in the table.

June 29, 2006 letter from Duane James/U.S. Environmental Protection Agency

Comment CR-11

We recognize that one of the project objectives is to minimize the financial impacts to California American Water Company (CAW) rate payers (p. 1-2). Appendix D in the DEIS includes the costs associated with various sediment disposal sites, which represent a portion of the costs of Alternative 2. However, it does not include a cost analysis for the other alternatives proposed, future maintenance costs, or alternative funding possibilities. This information is important to help inform decisions regarding the long-term economic costs or benefits of various measures such as dam removal and on-site sediment stabilization, as well as other alternative measures.

Recommendation: The Alternatives Analysis in FEIS should be expanded to include a short and long-term cost analysis of the alternatives in a comparative format to help inform decisions. It should include information on the feasibility of funding for these projects and any interested parties that may be able to coordinate on project costs or related monitoring and mitigation.

Response

It is not clear what is intended to be included in the short-term versus the long-term cost breakout requested in this comment. Construction and implementation costs (which are typically short-term) and operations and maintenance (O&M) costs (typically long-term) are provided in Section 3.1, Table 3.1-1 of this Final EIR/EIS. The table compares costs for each of the alternatives considered, including the Proponent's Proposed Project.

Funding strategies are being thoroughly explored by CAW. In general, CAW would seek approval from the California Public Utilities Commission (CPUC) for recovery through water sales revenues of the cost of any project it is ordered to carry out. However, the CPUC will not rule on which costs may be included in the rate base until such a rate hearing occurs. No other feasible funding source or strategy for the dam notching (Alternative 1) or dam removal (Alternative 2) has been identified to date. For the Carmel River reroute (Alternative 3), the state of California, through the California Coastal Conservancy, has indicated a preliminary interest in funding the project under a scenario in which CAW would turn over the project and property surrounding the Damto a non-profit or governmental entity plus contribute a share of the funding necessary to complete the San Clemente Dam seismic Safety Project in compliance with Division of Safety Dams (DSOD) specifications.

June 30, 2006 letter from Mindy McIntyre/Planning and Conservation League Foundation

Comment CR-12

We also note that there is no basis for rejecting Alternative 3 on cost grounds. The DEIR/S does not include any cost projections; naming the Proponent's Proposed Plan as the preferred alternative because alternative 3 is too ["costly"] for CAW to afford would render the EIR/S inadequate. There are no cost estimations in the [DEIR/S]. Cost projections for all options are needed in order to fully grasp the financial aspect of this seismic safety project; seeing that there are none in the public record so far, Alternative 3 cannot be rejected.

Response

Please refer to Chapter 3.1 and Table 3.1-1 of this Final EIR/EIS for a summary of comparative costs for the alternatives considered. The table provides comparative capital and O&M costs for the Proponent's Proposed Project and alternatives. No "preferred alternative" has been designated by the Lead Agencies.

Comment CR-13

The sluice gates, moreover, offer no guarantee of success, and in fact may actually result in a technically flawed sediment management strategy that will require costly modifications and mitigation that will increase the burden on the ratepayers.

Response

Mitigation measures, including sluicing, would be monitored during their implementation. Monitoring and adaptive management is an integral component of the proposed Sediment Operation and Management Plan for Fish Passage (SOMP). Please refer to Appendix J.

Please refer to Section 3.1 and Table 3.1-1 of this Final EIR/EIS for a summary of comparative costs for the alternatives considered. The O&M costs of the Proponent's Proposed Project are higher than those of the dam removal alternatives (Alternatives 2 and 3), but the capital costs of Alternatives 2 and 3 are much higher than the Proponent's Proposed Project. The rate impacts of Alternatives 2 and 3 due to increased capital costs would be many times higher than those of the Proponent's Proposed Project, notwithstanding its higher annual costs.

Comment CR-14

Monitoring costs may be another factor escalating costs to the ratepayers.

Response

Thank you for your comment. Monitoring costs, while small, were considered in preparing the cost estimates for the alternatives (see Chapter 3.1).

FISH & AQUATIC BIOLOGY

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment FI-1

None of the options will protect the habitat of the Red Legged Frog completely, but the habitat can be moved and recreated without ham to the frogs. Enlarging the lake by removing the silt will enhance the fish and bird habitat. **(Also TE-2)**

Response

Thank you for your comment. Comment noted.

Comment FI-2

The program to protect the Red Legged Frog and the Steelhead should be adequate for its purpose, but should not impact a common sense approach that recognizes the cost, water resource, disruption to neighbors and other environmental issues. **(Also TE-3)**

Response

Thank you for your comment. Comment noted.

June 4, 2006 letter from Don Redgwick

Comment FI-3

If the realignment is permanent doesn't that significantly reduce the dam safety and steelhead issues and allow the dam to remain for the benefit of frog, bird, lake fish, and other wildlife habitat? **(Also AA-7, TE-4)**

Conversely if the Carmel River is rerouted on a permanent basis and the San Clemente Dam is left in place with or without a buttress, would that provide a superior habitat for frog, birds, lake fish and other wild life? **(Also TE-4)**

Response

Yes, permanent realignment would eliminate dam safety issues and provide steelhead passage in a free-flowing river. Leaving the Dam in place was not considered because the reservoir would fill over time and is populated by exotic species, which have adverse effect on native species.

June 13, 2006 letter from John G. Williams

Comment FI-4

In terms of steelhead, the major tradeoff is that the dam removal alternatives should facilitate fish passage, but the canyon habitat would be less productive biologically than *the alluvial habitat that would remain in the other alternatives. However, the DEIR does not provide enough information for this trade-off to be assessed.*

Response

The text has been revised to more fully address this concern. The concept that alluvial habitat is more productive than canyon habitat may not apply to the alluvial river channel upstream from SCD. Steelhead density data collected by MPWMD shown in Table 4.4-3 indicates that the present alluvial habitat upstream of the Dam has significantly lower densities of juvenile steelhead compared to the canyon reaches downstream of the Dam or upstream of the former reservoir area. Figure 4.4-6 shows the total abundance of juvenile steelhead in Reach 3 (SCD reservoir area) is relatively low compared to the abundance in Reach 4 (downstream of the Dam) or Reach 2 (upstream of the reservoir area). Table 4.4-11 quantifies the length of channel (in feet) and provides an estimate of the number of steelhead affected by the different alternatives. Table 4.4-11 also provides information to evaluate tradeoffs. These tables are discussed in Section 4.4-3 under the different alternatives for Fisheries Impacts FI-1, FI-4, FI-6, FI-9a, and FI-9b. Any estimates of the change in abundance that would occur when the alluvial channels are converted to canyon channels would be speculation.

Comment FI-5

The hazard to steelhead passing over the dam is a salient issue for the assessment of the alternatives (including the preferred alternative), but little information on this point is provided. In sum, the DEIR does not provide the information necessary to make a rational selection among the alternatives, in terms of the long-term effects on steelhead.

Response

A detailed summary of impacts to steelhead is located in Table 2.1 Fisheries Impact Issue FI-12 Downstream Fish Passage over SCD. In summary, if a new ladder is constructed under the Proponents Proposed Project, downstream fish passage conditions would improve because the ladder would carry more than 5 times the flow it can now carry (maximum flow of 10 cfs for the present ladder) which means that all water up to 50 to 55 cfs would pass through the ladder providing fish a safer downstream passage way through the ladder. If the Dam remains as is, downstream fish passage impacts continue as an existing condition. If the Dam is notched, the impacts would change. If the Dam is removed, passage impacts would be eliminated.

Comment FI-6

The DEIR embodies an outdated view of steelhead biology, and takes too narrow a view of the potential consequences of the alternatives. The DEIR could be improved by considering the effects of the proposed project on steelhead in terms of the concepts developed by the National Marine Fisheries Service for recovery of listed "Evolutionarily Significant Units" of salmon, such as the "viable salmonid population concept (McElhany *et al. 2000). In particular, the DEIR should take into account that major alterations to the aquatic environment such as those contemplated here, can have evolutionary consequences (Ashley et al. 2003, Stearns and Hendry 2004). For the Carmel River steelhead, factors affecting the selective trade-off between anadromous and resident life history patterns (RSRP 2004) are a particular concern. Mortality during passage over Los Padres Dam seems to be such a factor.*

Response

Fish mortality in passing over Los Padres Dam (LPD) is not an impact of this project. Alternatives that provide steelhead recovery are not within the scope of this Final EIR/EIS. The purpose and need of the action which the Final EIR/EIS evaluates is to provide safety, not to recover listed fish. NMFS would assure the safety of steelhead for any approved project though a Section 7 or Section 10 consultation under ESA and such an analysis may be conducted during that process.

Comment FI-7

The Draft EIR confuses upstream and downstream in a way that may be a harmless result of careless report preparation, or may be more serious. At p. 4-124, the Draft EIR states that "for the purpose of comparison, we will assume that about 40 percent of the habitat in the watershed to support juvenile production of YOY and about 60 percent of the habitat to support juvenile production of yearling steelhead occurs downstream of Los Padres Dam (Dettman and Kelley 1986)" [emphasis added]. These percentages are repeated further down the page. However, at p. 4-119, Table 4.4-6 shows that these percentages apply to habitat upstream from Los Padres. Whether this confusion of upstream and downstream matters depends on whether it occurred before or after the relevant comparisons were done.

Response

Thank you for your comment. The section has been rewritten to clarify the text.

Comment FI-8

This [the notch in the dam under Alternative 1] could be placed at the point where fish would be least likely to be injured in passing over the dam. All else equal, the notch should be placed near the fish ladder. The acceleration of water as it nears the inside notch would create a small area of scour upstream from the dam[1]*, which would reduce the problem of sedimentation near the fish ladder. As noted above, the sediment transport modeling should be reviewed, particularly regarding the option of allowing the river to rework sediments in the notching alternative.* **(Also AA-18)**

[1] This scour just upstream from the dam is a typical feature of dams that are filled with sediment.

Response

Placing the notch near the fish ladder could potentially expose upstream migrating adults that exit the ladder to high velocities with high potential to be swept downstream through the notch. Because the risk of fallback is high, placing the notch near the ladder was not considered further. Regarding sediment transport, see response to Comment SED-8.

June 28, 2006 letter from Jim Crenshaw / California Sportfishing Protection Alliance

Comment FI-9

Both the PPP and Alternative 1 also require a fish ladder to allow fish passage above the dam structure. Unfortunately that will also threaten survival of migrating steelhead unable to navigate safely through the area directly above the sluice gate, causing fish to become caught up in the downstream flow, and back downstream through the sluice gate.

Response

Please refer to the SOMP (Appendix J). Protocols call for the sluice gate to be open for a period of 2 hours. A grate would be closed on the upstream end of the ladder to prevent fish from swimming out of the ladder into the front of the sluice gate before and during the sluicing event.

THERE IS NO COMMENT FI-10

June 30, 2006 letter from Trish Chapman / California Coastal Conservancy

Comment FI-11

Old Carmel River Dam (OCRD). The proposed project and all alternatives propose notching the OCRD to improve fish passage. This will not provide complete and unimpaired passage for fish at this location. Complete removal of the OCRD should be included as mitigation for ongoing fish impacts under the proponent's proposed project and Alternative 1.

Response

Complete removal of OCRD is not considered because the abutments on both sides of the river support a bridge at this location. Notching would remove a major section of the Dam down to riverbed between the abutments eliminating any fish passage issues at the site. Notching OCRD is unrelated to the partial notching of SCD (Alternative 1) to achieve dam safety. Alternatives that remove fish passage obstacles such as at OCRD are not within the scope of the Proponents Proposed Project or its alternatives examined in this Final EIR/EIS. The purpose and need of the action which the Final EIR/EIS evaluates is to provide safety, not to improve fish passage throughout the

Carmel River. Improvement to fish passage at OCRD does provide partial mitigation for impacts to fish of the Proponent's Proposed Project and Alternatives 1, 2, and 3.

Comment FI-12

The amount of spawning and/or rearing habitat that would be permanently lost in the abandoned portion of the Carmel River should also be analyzed.

Response

An evaluation of the distribution of spawning habitat in the Carmel River up and downstream of SCD is provided in Table 4.4-5. There is very limited spawning habitat downstream of SCD in Reach 4 because of poor substrate conditions (an armored bed). Spawning habitat is not present in the Carmel River for about 2,500 feet upstream of the Dam because the channel is mostly a sand bed. However, conditions are constantly changing and spawning opportunities are expected to improve in the future. A new Table 4.4-11 has been added in Section 4.4.3 to clarify the tradeoffs of the various alternatives. For Alternative 1, the newly constructed channels upstream of the Dam would increase the amount of spawning habitat compared to what is present under existing conditions in Reach 3 and in San Clemente Creek. For Alternative 2, the reconstructed channels would provide about the same length of channel for the Carmel River and about 1,500 feet of San Clemente Creek (a change from an alluvial channel to a canyon channel) and it would create about 850 ft of new channel for San Clemente Creek (the length of channel presently underneath the reservoir).

Comment FI-13

Depending on the findings of the hydrology and water resources impact analysis, additional impacts may need to be analyzed, including long-term impacts to spawning and/or rearing habitat as a result of changes in San Clemente Creek hydrology and channel morphology.

Response

Expanded sediment transport modeling has been incorporated in the revised Sections 4.2 and 4.4. Table 4.4-10 shows the overall changes to stream channel lengths and fish populations for each alternative. Spawning habitat is not considered to be a limiting factor in the Carmel River. Table 4.4-10 provides the overall changes to channel lengths for the Alternatives.

Comment FI-14

The proposed fish ladder will have delay by design for sluicing operations. The significance of the delay has been mischaracterized by a) comparing it to natural delays with which any stock has co-evolved and b) citing studies for long-run salmonids in the more constant flows of the Columbia River system. Delay is unlikely to be as significant to long-run fish in steady flows as it is to Carmel steelhead. In the reservoir, upstream movement is likely to be impacted despite sluicing operations.

Response

Please see the revised SOMP (Appendix J) for sluicing protocols. Delays from ladder closure are anticipated to be on the order of hours, and include the time period before and during the sluice event. If there were six sluice events during the migration season and the ladder were closed for a full day each time that would affect 3.6 percent of the days of the migration season. If there were two such sluicing events in the peak season and the ladder is closed for a full day each time that would affect 3.4 percent of the days of the peak season.

Comment FI-15

The potential delay on fish passage may be significantly underestimated. Page 3-35 of the document acknowledges that "significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone." For this reason, the EIR/EIS anticipates the need for dredging the channel every 3 years. Based on this, it seems that passage could be blocked for significantly longer periods of time than are analyzed in the EIR/EIS if dredging is needed to clear the channel. **(Also SED-13)**

Response

The SOMP (Appendix J) has been revised to provide a more road-based focus on sediment management. Dredging would be used in the fall to prepare the site to support fish passage. Large storm events would create backwater effects at the Dam and generate turbulence immediately upstream of the Dam that would maintain passage conditions upstream of the ladder. If an event occurs that renders the site impassible, a plan would be developed to remove debris from the upstream side of the ladder to restore fish passage as soon as possible, similar to a permitted activity that occurs on the Lower Yuba River at Daguerre Point Dam for Central Valley Chinook salmon and steelhead.

Comment FI-16

Passage through the reservoir is likely to be poorer (higher water temperature, decreased cover, increased predation) in perpetuity under sluicing operations than it was with a deep reservoir just a few years ago and certainly poorer than a renatuaralized stream reach.

Response

The purpose of the project is not to maintain a deep reservoir at San Clemente Dam (SCD). The filling of the reservoir is part of the baseline environmental condition. It is not an impact of the project. Without any action, there will soon be no reservoir behind SCD. Under the No Project Alternative (Alternative 4) passage would not occur through a reservoir but through a remnant pool and flowing channel. Temperature and lack of cover would become less of a problem as the Carmel River develops into a more mature channel upstream of SCD, much as it has throughout the rest of the reservoir area. Major predators for steelhead in the Carmel River are birds but San Clemente Reservoir does support green sunfish and perhaps a few brown trout. Eliminating the reservoir would eliminate green sunfish habitat.

Comment FI-17

Issue FI-9 Sediment Impacts to Downstream Channels from Sluicing, Dredging of Sediment Transport Downstream. The impacts to steelhead from sediment caused by sluicing operations would be significant and permanent. The mitigation discussion states that "sluicing operations would begin with short duration sluices and impacts would be thoroughly evaluated to determine effects on downstream channels, habitats, and fishes." More information needs to be provided about regarding [sic] this intended course of action. What will be done to keep the upstream channel clear if short duration sluices are not sufficient to do so? What level or type of downstream impact would trigger a change in the SOMP, given that the impact is already identified as significant? If downstream impacts are such that different course of action is warranted, what would the alternative approach be to dealing with sediment in the reservoir? **(Also SED-14)**

Response

Please see the revised SOMP (Appendix J) and Mitigation for Impact Issue FI-9a (FI-9 in the Draft EIR/EIS). Sluicing would change the timing of the sediment being transported downstream, but would not greatly influence the overall volume of sediment transported past the Dam or greatly influence the characteristics of the downstream channel relative to the amount of the sediment that would be transported by storm flows.

Comment FI-18

Based on the information provided in Appendix I, the Sluicing Operations and Maintenance Plan (SOMP) outlined in Appendix J does not seem sufficient to maintain a viable channel from the exit of the fish ladder to the reaches above the reservoir. The impact discussion for Issue FI-9 states that sluicing operations would occur over a 1 to 4 hour event when flow is over 300 cfs and increasing. According to Section 3.3 of Appendix I, the incised channel created by each sluicing event could be filled back-in within a few days. Given the unpredictability of stream flows in the river, sluicing will not provide a sufficient guarantee that there will be an adequate channel for fish passage from the exit of the fish ladder to the reaches above the river. The proponent's proposed project and Alternative 1 must develop a more reliable way to insure fish passage past the ladder. **(Also SED-15)**

Response

See the additional sediment transport analyses that are discussed in Section 4.2. The revised SOMP is Appendix J and FI-9 is FI-9a, and FI-9b in the Final EIR/EIS.

Comment FI-19

The sluicing operations presented for the proponent's proposed project and the Alternative 1 are untested and lack specificity. In addition, the plan is based on migration records of an already residual run and an idealized world of average hydrology, single storm events and steady state conditions. Real operations, with the vagaries of real-time hydrology, sediment movement, debris and difficulty in access/operation during storm are likely to overwhelm the flexibility of the chosen system. The proponent's project and Alternative 1 need to define an alternate approach that would be used if sluicing operations are not adequate maintain fish passage without significant impacts on fish or downstream reaches. **(Also SED-19)**

Response

Additional sediment transport modeling was conducted to address behavior of the sediment wedge upstream of the fish ladder and other methods were developed to address sedimentation that could impair fish passage in SOMP (Appendix J). Please see the discussion in Sections 4.2.3 and 4.4.3. Maintaining access to and from a fish ladder on the Lower Yuba River has been successfully implemented and permitted in a NMFS BO. This would be a similar approach but would employ sluicing and dredging as tools to maintain access.

Comment FI-20

Operations and Maintenance, Proposed Project and Alternative 1. Both the proponent's proposed project and Alternative 1 will require permanent ongoing maintenance of the fish ladder and the sediment behind the dam (through sluicing or other methods) to mitigate for impacts of leaving the dam in place. How will this maintenance be guaranteed? Will there be a maintenance endowment? **(Also SED-17)**

Response

Funding for operation and maintenance of the sluice gate would be provided through the normal budgetary process of the owner and paid by the revenues of the water system.

June 20, 2006 letter from Mark Delaplaine/California Coastal Commission

Comment FI-21

Introducing sediment into the river by sluicing, as in the proposed project and alternative 1, could adversely affect steelhead and their habitat by causing abrasion of the fish, decreased dissolved oxygen, disturbance of streambeds and filling of the interstitial spaces between spawning gravel. Where the sluicing operations are described in the Draft EIR/EIS as mitigation for "short-term, significant and unavoidable" effects, it would appear that the mitigation itself could possibly cause long-term changes in the amount and type of sediment transported from the upper watershed to the lower Carmel River, changes in the sediment composition in the river and changes in the amount of *sediment stored in the river below SCD. The sluicing operations proposed require further study to determine their efficiency and long-term effects, particularly with regard to the part of the river that is in the coastal zone.* **(Also SED-19)**

Response

There is a misconception on the part of the reviewer that the river would remain free of upstream sediment in perpetuity. This is not the case as sediment would begin moving past the Dam in the very near future with or without sluicing. Please refer to the revised SOMP. Sluicing would only change the short-term timing and volume of sediment moved past the dam site. The effects of sluicing would not be detectable more than about 2.5 to 3 miles downstream of SCD because of the existing sediment contribution from tributaries.

Comment FI-22

Extraordinary measures are currently employed on the river to accommodate steelhead, such as a rearing facility, fish ladders and trap and truck operations. These artificial management methods all cause very high mortality rates that threaten the long-term health of the steelhead population. The construction activities of each of the project alternatives would put additional stress on the steelhead population that may reduce the population to a size that threatens loss of genetic diversity and fitness, and could reduce it to a remnant.

The proposed project, as well as the proposed alternatives, will interrupt and reduce flow levels of the Carmel River, particularly during summer and fall months when most of the construction will take place, and the river is naturally at its lowest. Among the proposed alternatives, the shortest estimated duration of construction is two years, while the longest is five years. Each alternative would disrupt spawning, rearing and migration, putting great additional stress on an already stressed population. A significant additional reduction in numbers would substantially reduce the viability of the population. The Draft EIR/EIS either should acknowledge that this accumulation of stress will likely cause a reduction in the steelhead population's size, genetic diversity and fitness, or should demonstrate convincingly why such adverse effects will not take place.

Response

The completed project would not significantly affect flows in the river. Brief flow disturbance would occur during the construction period. The construction period has been established to avoid impairment of the migration season. Rearing in the construction area would be disturbed but not in the remaining river. Spawning should not be disturbed since this would generally occur prior to the construction season. River flows during the low flow periods are established through a cooperative agreement between the MPWMD, CAW, CDFG and NMFS. State and federal agencies are actively managing all activities on the Carmel River that may have an effect on the current steelhead populations. They would continue to do so through their permitting processes.

Permits and authorizations from the California Department of Fish and Game (CDFG) (Streambed Alteration Agreement), and NMFS (ESA) would address construction activities associated with the Dam improvements or removal. These permits would allow an agreed-upon and acceptable number of short-term mortalities associated with the project.

Comment FI-23

In neither section 4.4 Fisheries or Appendix G Carmel Reach Descriptions, does the Draft EIR/EIS adequately describe the fisheries potential in each of the reaches of the Carmel River. Because each reach is quite unique in terms of human impact and habitat conditions, the Draft EIR/EIS should include more detailed fisheries information in narrative form for each reach of the river, including a description of spawning and rearing habitat, current artificial management efforts and estimates of steelhead mortality rates from all causes. The current descriptions of reaches 0 through 3 include good information regarding spawning and rearing potential for steelhead, but descriptions of reaches 5 through 7 include no fisheries information. Descriptions of reaches 8 and 9 include only the barest information regarding fisheries.

Response

NEPA and CEQA guidelines provide that impacts shall be discussed in proportion to their significance. The project would have important impacts to fisheries in the stream reaches immediately above and below the Dam (reaches 3 and 4). Information provided includes juvenile population densities, length of channel and general distribution of spawning and rearing habitat in the Carmel River. Please refer to Tables 4.4-1, 4.4-3, 4.4-4, 4.4-5, 4.4-6, and 4.4-7 and Figures 4.4-1, 4.4-2, and 4.4-6. Table 4.4-9, 4.4-10, and 4.4-11 were added to clarify impacts of the different alternatives to San Clemente Creek and reaches 3 and 4, 5, and 6.

Additional text regarding spawning and rearing habitat in Reaches 4, 5, 7, 8 and 9 has been added to section 4.4.1 Environmental Setting / Habitat Reaches and Distribution of Spawning Habitat, to summarize all currently available information. Table 4.4-11 was prepared to summarize impacts of the Proponent's Proposed Project and the alternatives to spawning and rearing habitat in the reaches closest to the Dam.

Comment FI-24

The Draft EIR/EIS should include a more detailed map of each river reach with current fisheries conditions and short and long term changes expected as a result of the proposed project.

Response

NEPA and CEQA guidelines provide that impacts shall be discussed in proportion to their significance. The project would have the most important impacts to fisheries in the stream reaches nearest the Dam (San Clemente Creek and Carmel River reaches 3 and 4 and to a lesser extent reaches 5 and 6). Juvenile fish conditions in the Carmel River are highly variable from year to year in response to the size of the returning adult run and habitat conditions. Current conditions do not necessarily represent the range of conditions that can occur in the river. A summary of the available data is presented, and a long-term average is used to estimate impacts to fish populations. Maps and descriptions of the Carmel River fishery and geomorphic reaches are provided in Figures 4.4-1, 4.4-2 and Table 4.4-1. Juvenile abundance data (densities by year and population levels) are provided in Tables 4.4-3 and 4.4-4. Habitat distribution in the river is provided in Tables 4.4-5 and 4.4-6. An impact summary of the different alternatives to channel length (habitat) and steelhead abundance is provided in Table 4.4-11. An additional Table 4.4-11 shows in more detail the trade-offs between the Proponent's Proposed Project and the alternatives.

Comment FI-25

Mitigation for FI-4 effects – Reservoir Drawdown, and FI-5 effects—Diversion of Carmel River and San Clemente Creek for Construction Purposes, consists of trapping fish above the reservoir and relocating them to "other suitable habitat downstream of the SCD." The Draft EIR/EIS should include a detailed plan for this relocation and an assessment of the risks, given the high mortality rate currently experienced at the Sleepy Hollow Rearing Facility and the existing trap and truck operations, and the low rates of successful rearing on the river as a whole. This plan should be subject to review by NMFS, [C]DFG and USFWS.

Response

Agency approval of a detailed plan for the relocation of steelhead would occur as part of permitting the selected alternative, as directed by NMFS, CDFG, and USFWS. NEPA and CEQA require a focused evaluation of impacts and development of mitigation measures. More information is often required in permitting a project. For example the Biological Assessment required under the ESA would describe the resource, impact mechanisms, and detail measures to avoid or minimize take for steelhead. In the case of the San Clemente Dam Seismic Safety Project, EIR/EIS, permitting has not been done in parallel with NEPA and CEQA.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment FI-26

Page 2-2, Para 1: The statement, "and a trap and truck facility would be operated for one construction year", appears to conflict with other descriptions of proposed mitigations for trapping and handling steelhead in the Fish Chapter. The Final EIR/EIS should fully describe how fish will be trapped and trucked for each alternative during the entire scheduled project period, not only during actual construction activities. If fish are not trapped and trucked during the entire scheduled period, the FEIR/S should fully *describe how fish movements will be impacted during the off-construction period and whether additional mitigations are needed.*

Response

A detailed plan would be prepared for the selected alternative during permitting. Please refer to response to Comment FI-25.

Comment FI-27

Page 2-39, Para 1: Under Fisheries: "The PPP and all alternatives would entail short-term losses of fish habitat." With at least one alternative–the Dam Removal Alternative – there would be long-term beneficial changes to habitats. The FEIR/S should fully evaluate short-term, mid-term and long-term changes for spawning and rearing habitats from the upper end of San Clemente Reservoir to the Carmel River Lagoon.

Response

Please refer to response to Comment FI-12.

Comment FI-28

Page 2-39, Para 1: Under Fisheries: In the Summary Statement, the operation and impacts to Sleepy Hollow Steelhead Rearing Facility and its vulnerability to increased sediment and turbidity is not mentioned. The FEIR/S should fully evaluate impacts of the alternatives and describe the mitigation measures that Cal-Am will implement to reduce impacts to SHSRF. If the impacts, especially during construction, cannot be avoided, the FEIR/S should disclose impacts and potential take associated with not rearing steelhead at SHSRF during the construction period. It should be noted that the MPWMD operates and maintains the SHSRF as mitigation for impacts to steelhead from water extraction in Carmel Valley.

Response

Agree that mention should have been made of the potential impacts from project activities to the SHSRF in the summary statement. Impacts to the SHSRF are analyzed under FI-15, Water quality or supply effects on operation of the Sleepy Hollow Steelhead Rearing Facility, for the Proponent's Proposed Project and each alternative.

Comment FI-29

Page 3-25: Location of High-Level Outlet: Appendices I and J describe the location of a sluice port as being 10 feet laterally away from the fish ladder. This does not match the description on page 3-25 and is not shown in Figure 3.2-12 for the new fish ladder. The orientation of discharge from the 10-foot diameter sluice gate, located 10 feet from the entrance to the fish ladder, appears to impinge on the left downstream walls of the canyon. This orientation, while effectively designed for sluicing material away from the fish ladder, may threaten integrity of rock supporting the new ladder and result in significant impingement loss of any fish passing downstream. Mitigation measures are *needed to ensure that no fish are in the vicinity of the gate when it is opened and the discharge should be directed away from the canyon walls.*

Response

In this section has been revised to correctly describe the location and orientation of the sluice port. Figure 3.2-12 is intended to highlight the fish ladder design only; sluiceway details are shown on Figures 3.2-5 and 3.2-6. The location and orientation of the sluiceway would result in discharging into the plunge pool and would not impinge on the left downstream canyon wall. Rock integrity would be protected by shotcrete installed as part of dam thickening.

Operation of the sluice gate would be coordinated with operation of the fish ladder. During wet season operations, prior to operation of the sluice gate, access from the ladder into the reservoir would be prevented by closing a gate at the upstream end of the fish ladder that would prevent adult steelhead from moving into the reservoir. Access from the ladder into the remnant reservoir would be closed for several hours prior to a sluice event allow for fish that had exited the ladder to move upstream away from the sluice port. Operation of the sluice port would not occur until flows reach about 300 cfs over the Dam. The sluice port would be partially opened to increase velocities in the area in front of the port and encourage any fish that may be in the vicinity to move upstream and away from the port. The port would then be opened fully for a two hour period. Neither of these measures can assure that all fish would be prevented from entrainment in the sluice event and could result in fallback. Fallback may already occur under existing conditions as fish that ascend the ladder get swept back downstream over the spillway. The increase in the amount of fallback is expected to be small since wet season sluicing will be minimized and if it does occur, would occur for a period of two hours per event. The fish that are swept back downstream would have to re-ascend the ladder.

Comment FI-30

The FEIR/S should fully evaluate how the ports would be operated in conjunction or separately, and the impacts of the operation on sediment mobilization, passage and deposition in the river below the dam should be evaluated and described. While a brief description of sluice gate operations is provided, the proposed schedule has not been combined with the reconstructed record of unimpaired flows to provide a full description of the frequency and duration of operation and how this will affect migration of adults and juvenile fish

Response

Please refer to the revised SOMP (Appendix J) for a full description of sluicing to support fish passage. The revised SOMP includes an integration of operations with existing streamflow conditions.

Comment FI-31

The FEIR/S should document any previous attempts to sluice material from behind similar dams, while passing fish upstream and downstream. The FEIR/S should present enough information to the reader to be able to determine whether the proposed sluicing operations are a proven technology or are experimental.

Response

There are no comparable examples to draw upon regarding sluicing sediment from behind a dam of this size specifically for the purpose to maintain fish passage. Sluicing has been done for other purposes such as maintaining hydroelectric intakes free of sediment or to clear sediment from diversion dams. Much larger volumes of sediment have been sluiced in these examples compared to what is being considered at SCD. Based upon available information, this sediment sluicing plan is experimental and would be closely monitored, evaluated and refined. Please refer to the revised SOMP for details.

Comment FI-32

Pages 3-25 and 3-26: The text does not mention whether the outlet would be screened and how fish passage would be handled. If unscreened, the FEIR/S should evaluate how survival of fish would be affected as they pass through the sluice gates/valves.

Response

The sluiceway is not screened. When in operation downstream fish would pass through the sluiceway. The ladder would be closed and operation of the sluiceway would eliminate flow from the dam spillway. Hydraulic modeling indicates no backwater would occur and the flow in the sluiceway would not be under pressure. Fish moving through the sluiceway would be carried by the flow similar to fish moving over the Dam, except the fall would be slightly lower, however the concentration of flow would be much greater as would the turbulence where it enters the plunge pool. The concentration of flow and the sediment being transported would expose fish to impacts with sediment particles that would cause injury to fish under certain conditions. Overall downstream fish passage is improved under this alternative because the ladder would provide downstream passage at all flows up to 55 cfs and a portion of the flows when flows are greater than 55 cfs. Sluicing would occur for relatively brief periods several times a year.

Comment FI-33

Page 3-31, Para 2: Under San Clemente Dam Fish Ladder Replacement. "For stream flows up to 55 cfs, all flow would pass through the proposed ladder." This design will encourage passage of fine grained sand and silt into the vicinity of ladder exit and hasten the need to sluice sediment from around the ladder exit and channel leading to the river. The FEIR/S should evaluate ways to mitigate this impact with a goal of having no impact on attraction of fish to the ladder entrance in the plunge pool.

Response

The ladder is designed to pass fined sediment. Sediment accumulation in front of the ladder would be removed by sluicing or dredging. Please refer to the Revised SOMP. Consistent with the requirements of NEPA and CEQA, the Draft EIR/EIS seeks to provide all feasible mitigation with a goal of reducing impacts to a level less than significant.

Comment FI-34

Page 3-35, Para 1: "… would be a consistent velocity of ~6.6 feet per second through the slot regardless of depth." This velocity may exceed the swimming capability of smaller, resident-type steelhead and affect passage success during drought periods, when the only fish attempting to pass are resident type fish. The FEIR/S should investigate, describe and include modifications to allow passage of smaller resident type fish under extremely low-flow conditions.

Response

The proposed fish ladder would provide a large improvement over existing conditions, since juvenile fish cannot move up the existing ladder at all under any flow conditions. The stated 6.6 f/s velocity is the speed of the water at the slot. The distance over which that velocity would occur expands both up and downstream of the slot at higher flows, and contracts to shorter distances at low flows. Juvenile fish would be able to burst through the slot or jump through the slot. Juvenile fish cannot ascend the existing ladder at any flow.

Comment FI-35

Page 3-39, Para 1: "Fish rescue and drawdown of the reservoir and plunge pool would continue until about May 31." Additional detail should be added to provide rescue, trapping, and trucking of fish in upstream and downstream directions throughout the mobilization, construction and demobilization periods, except during high flow periods when streamflow makes trapping infeasible. In addition, the time periods between mobilization, Phase1, Phase 2 and demobilization may have features that affect fish passage, so the FEIR/S should specify mitigations for fish passage throughout the project period, not just when construction is scheduled.

Response

Detailed rescue and relocation plans would be developed for the selected project during permitting phase. Please refer to response to Comment FI-25.

Comment FI-36

Page 3-51, Para 5: "A removable section would be disassembled annually to allow stream and fish passage during the non-construction periods." The FEIR/S should describe additional mitigation that may be required for trapping and transporting fish past the construction zone at the temporary diversion facility, if channel conditions and *habitat in the reach below the diversion are not suitable for juvenile residence and passage downstream during the non-construction season at low flows.*

Response

A detailed plan to provide fish passage during non-construction periods would be developed for the selected project during permitting phase. Please refer to response to Comment FI-25.

Comment FI-37

Page 3-56, Para 2: Statements on stream flow up to 55 cfs being routed through the ladder and dredging upstream of the fish ladder should be reviewed and updated per previous comments re: PPP on pages 3-33 to 3-35. **(Also AA-39)**

Response

Thank you for drawing this to our attention. These issues are addressed in the revised SOMP (Appendix J).

Comment FI-38

The Draft EIR/EIS does not describe impacts to rearing habitats in the river channel within the existing inundation zone of SCR. The FEIR/S should address the potential for temporary, mid-term and long-term habitat gains/losses in inundation zones along the mainstem and San Clemente Creek.

Response

The existing inundation zone in the reservoir is identified as Fisheries Reach 3 and is included in Figure 4.4-1, and Tables 4.4-1, 4.4-3 and 4.4-5. The document defines impact mechanisms and time frames in Section 4.4.2 and discussed impacts in Section 4.4.3. New Tables 4.4-11 and 4.4-11 have been added for clarification. Please refer to the response to FI-12.

Comment FI-39

The FEIR/S should fully evaluate effects on spawning and rearing habitat in the reach below the diversion sill.

Response

An evaluation of habitat gains and losses is provided in Table 4.4-11 and is clarified in Table 4.4-11.

Comment FI-40

Page 26, Figure 16 – This figure indicates that for the notching option, at flows above the two-year level (2,250 cfs), velocity just downstream of the dam would exceed 50 feet fps or more than 34 mph, which is close to the velocity associated with free fall.

What is the estimated mortality rate of adult and juvenile steelhead during this type of fall when they are migrating downstream?

Response

This comment refers to a reference document (MEI 2007b) included in the Appendix S. The channel velocity from Figure 16 for a 2,250 cfs flow event is in the 6 to 8 feet per second (fps) range but the velocities are in this range for the maximum mean daily flow, the 100 year flow and the PMF flows. Velocity, in and of itself, doesn't cause injury. Injury or death would occur as a result of downstream steelhead striking immovable objects, such as the edge of a dam or downstream obstructions. Injury or death could also occur from rapid deceleration or by encountering severe turbulence. Terminal velocities (in free fall through the air) are a function of the body mass. Juvenile fish do not reach a terminal velocity high enough to cause injury (Bell 1991). This is a well-known fact employed by the CDFG and used to plant fingerlings into remote high mountain lakes by airplane. Large juvenile or adult steelheads do reach terminal velocities that can cause injury or death when dropped from the air into standing water. The effect would be substantially less if the fish are entrained in the flow and entering the plunge pool. Mortality rates for fish striking water (a free fall through the air) is 0 percent for a velocity of up to about 60 fps increasing linearly up to about 100 percent at 150 fps. Mortality rates for fish striking a solid object is 0 percent for velocities up to about 35 fps and increases linearly to about 20 percent at 60 fps and about 90 percent at 170 fps (Bell 1991). The highest velocity indicated in the referenced Figure is about 68 fps. At these velocities, the mortality rate of fish striking a solid object in the water would be about 28 to 30 percent.

The mortality and injury rates have to be compared to conditions that would exist at the base of the Dam during these large flow events (fish are entrained in moving water and being carried into a turbulent pool) which would reduce the impact compared to a fish that is free falling through the air into standing water. The comparison of impacts have to be compared to existing conditions (which would be similar in magnitude, if not higher because there are vertical supports between the 24 spillways that fish could impact under existing conditions compared to no supports with the notched dam and two with the Proponent's Proposed Project). Finally, fish do not tend to migrate downstream during extremely high flow events and typically hold in areas outside of the main flow until flow conditions become less chaotic.

June 22, 2006 letter from David Zaches

Comment FI-41

The best alternative for the retrofit or dam removal project is that which is sensitive to the steelhead fish runs and the total flora and fauna of this Camel River Watershed - one of the jewels of the entire state of California. If the expense is more for the dam project which leads to the best restoration (and continuation) of this fine watershed, interagency plans and cooperation are well justified to make the larger project possible.

Response

Thank you for your comment. Comment noted.

June 30, 2006 letter from Dick Butler / NOAA's NMFS

Comment FI-42

As you may know, the current run-size for the entire S-CCC DPS is estimated be approximately 500 adults per year, which represents a decline of over 90 percent of the historic run-size. The percentage decline of the Carmel River steelhead run is likely greater. NMFS has determined the already severely depressed Carmel River steelhead run cannot be allowed to decline further if recovery of the S-CCC DPS is to be achieved.

Response

Thank you for your comment. Comment noted.

Comment FI-43

Based on our review of the Draft EIR/EIS, our knowledge of river dynamics, and our technical expertise regarding listed salmonids, NMFS expects the Proponent's Proposed Project and Alternative 1 may result in substantial and unacceptable impacts to the Carmel River and would likely request the Corps to deny California American Water Company's permit as proposed.

Response

Thank you for your comment. Comment noted.

Comment FI-44

Based on our review of the Draft EIR/EIS, implementing the Proponent's Proposed Project or Alternative 1 will result in long-term adverse effects to all steelhead life stages, including annual mortality, delayed adult migration and long-term degradation of the habitat downstream of San Clemente Dam that supports all life stages of steelhead. NMFS's most significant concern is the adverse effects to steelhead and degradation of their critical habitat that would occur for as long as the San Clemente Dam remains in place and management of sediment (i.e., sluicing) is conducted.

Response

Continuing effects of SCD on fish passage and habitat, including annual mortality, delayed adult migration, and long-term degradation of the habitat downstream of SCD that supports all life stages of steelhead, are part of the baseline environmental condition. They are not impacts of the project. Sediment will soon begin to be passed downstream under the No Project Alternative, as the reservoir fills. Sluicing under the Proponent's Proposed Project and Alternative 1 would affect only the timing and concentration of sediment transport.

June 30, 2006 comments from National Marine Fisheries Service

Comment FI-45

The Draft EIR/EIS recognizes the protected status of the Carmel River steelhead population, but does not fully reflect the importance of the population to the South-Central California Coast (SCCC) Distinct Population Segment (DPS). Restoring the Carmel River steelhead run is expected to play an essential role in the recovery of the S-CCC DPS, and its eventual delisting, but the Draft EIR/EIS does not acknowledge this.

Response

Thank you for this perspective. Comment noted. The purpose and need of the action which the Final EIR/EIS evaluates is to improve dam safety, not to restore a listed fish species. All alternatives affect fish passage, and each includes elements to minimize the effect on fish and make improvements compared to existing conditions in maintaining fish passage and mitigating significant impacts. During permitting and implementation of the selected project the Applicant would strive to describe protection measures in detail and work with NMFS to avoid or minimize take during construction and operation.

Comment FI-46

The Draft EIR/EIS provides only the most recent run-counts in the Carmel River and does not provide any historic context in which to assess the size of these most recent runs, either within the Carmel River itself or in the S-CCC DPS, of which the Carmel River is a part. The original[2] and most recently up-dated[3] NMFS's Status Review for Environmentally Significant Units of West Coast Salmon and Steelhead have reported that the historic run size of the Carmel River in 1928 was estimated by the California Department of Fish and Game at 20,000 adults per year, which is the largest steelhead run in the S-CCC DPS. The current run-size for the entire S-CCC DPS is estimated to be approximately 500 adults per year, which represents a decline of over 90 percent of the historic run-size. The percentage decline of the Carmel River steelhead run is likely greater. Analysis in the Draft EIR/EIS fails to demonstrate that the Proponent's Proposed Project and Alternative 1 will not further the decline of the Carmel River steelhead run.

Response

NEPA and CEQA do not have the same objectives as the ESA . The Draft EIR/EIS is intended to provide full disclosure of impacts and propose feasible mitigation measures,

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[2] Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status of West Coast steelhead from Washington, Idaho, Oregon, and California. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-27.

[3] Good, T.P., R.S. Waples, and P. Adams, editors. 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-66.

with the objective of reducing impacts to a level that is less than significant. Impacts from the proposed project and any alternatives are evaluated relative to existing conditions. This does not require analysis of impacts to the entire S-CCC DPS or relative to the historical abundance of adult steelhead in the Carmel River. This analysis would occur under a section 7 or section 10 consultation. The period that was used for analysis utilized data on the adult run size and juvenile abundance. These data sets are inconsistently available historically. The purpose of the EIR/EIS is to evaluate the impacts of the project on existing habitat and fish population in the Carmel River, not to demonstrate the relative impact of the project on the status of the DPS. The selected alternative would be permitted presumably through a section 7 consultation between USACE and NMFS and USFWS and Reasonable and Prudent measures would be employed to avoid and minimize take.

The cited NMFS status review estimate for historic and current run size has been added to the section *Status of Carmel River Steelhead*, at the end of paragraph 1.

Comment FI-47

As part of the recovery planning for the S-CCC DPS, the Carmel River has been consistently ranked by NMFS as the most potentially viable steelhead watershed. NMFS has determined the already severely depressed Carmel River steelhead run cannot be allowed to decline further if recovery of the S-CCC DPS is to be achieved. Section 7(a)(1) of the Federal Endangered Species Act (ESA) makes it clear that all Federal agencies should participate in the conservation and recovery of listed threatened and endangered species.

The Carmel River has been designated as critical habitat for S-CCC DPS steelhead. The Carmel River downstream of San Clemente Dam supports a significant portion of the juvenile steelhead rearing in the lower Carmel River. The Draft EIR/EIS identifies significant adverse impacts to steelhead spawning and rearing habitat below San Clemente Dam associated with the sluicing of the reservoir to maintain effective operation of the reconstructed fish passage facilities. These include the repeated discharge of concentrated levels of finer sediments which would adversely affect steelhead habitat downstream.

Response

Please refer to the revised SOMP (Appendix J) and the response to Comments FI-45 and FI-46

Comment FI-47a

The mitigation identified for this significant adverse impact consists of "minimizing impacts on steelhead" and a further evaluation "to determine effects on downstream channels, habitat and fishes". This proposed mitigation is flawed in two fundamental respects.

First, the proposal to further evaluate adverse effects of the proposed sediment sluicing operation on the downstream channel, habitat and fishes is not itself mitigation, and such proposals have been consistently rejected in judicial review under the California Environmental Quality Act (CEQA).

Response

Sediment sluicing is employed to keep sediment from accumulating in the area in front of the fish ladder. The action would facilitate fish passage from the ladder exit into upstream channels. With or without sluicing, fine sediment will begin to pass SCD in the near future and it would affect the Proponent's Proposed Project condition of the river downstream of the Dam. Active management of the sediment is mitigation. Monitoring of the effects of that sediment on downstream aquatic habitat and riverine resources makes logical sense to document the degree of change and provide feedback to the Adaptive Management Component. This would influence future sluicing events as it may affect Reach 4 and more downstream channels. The Sluicing Management Committee, of which NMFS would be part, would make decisions based on information received though monitoring. Result of the evaluation would be used to refine sediment management options to support fish passage and to address any potential options to manage sediment delivery to the downstream river channel through a determination of which tool to employ: sluicing, dredging or trap and truck. Please refer to the revised SOMP.

Comment FI-47b

Second, there is nothing in the protocols for the sluicing operations and management plan which clearly indicates to what level the impacts associated with this aspect of the proposed project would be reduced.

Response

Please refer to the revised SOMP.

Comment FI-47c

Given the existing severely depressed populations of steelhead in the Carmel River, and the role of the Carmel River in the recovery of the S-CCC DPS, the vague mitigation measure proposed is not adequate to make a determination of "no significant impact".

Response

The finding under FI-9a, (Sediment Impacts to Downstream Channels from Sluicing, Dredging, or Sediment Transport Downstream) for the Proponent's Proposed Project and Alternatives 1 and 4 is significant and unavoidable, and for Alternatives 2 and 3, significant, unavoidable, beneficial, and long-term.

Comment FI-47d

Further, a finding supporting a statement of overriding considerations must address both the threatened status of the S-CCC DPS and the expected role the Carmel River will have in the recovery and delisting of the DPS.

Response

Neither the Draft nor the Final EIR/EIS present Statements of Overriding Considerations. These would be prepared by the California Department of Water Resources (DWR) in certifying the Final EIR/EIS. In order to certify the Final EIR/EIS, it is not necessary for the state of California to prepare a document that meets the requirements of a Recovery Plan under the Endangered Species Act (ESA). Protection measures for listed steelhead under the selected alternative would be incorporated during permitting, as part of the Section 7 consultation.

Comment FI-47e

Address the fact that the severely depressed steelhead run in the Carmel River is one of the principal reasons the S-CCC DPS has been listed by NMFS as threatened under the ESA.

Response

The status of Carmel River steelhead is discussed in detail on pages 4-103 through 4-119 of the Draft EIR/EIS.

Comment FI-47f

Include a discussion on the long-term adverse impacts to listed steelhead (by direct mortality), fish passage and habitat downstream from the long-term sluicing operations as part of the Proponent's Proposed Project and Alternative 1; include a discussion on the long-term adverse impacts to listed steelhead (by direct mortality), fish passage and habitat downstream from the long-term sluicing operations as part of the Proponent's Proposed Project and Alternative 1.

Response

Table 4.4-11 quantifies the length of channel (in feet) and provides an estimate of the number of steelhead affected by the different alternatives for construction and operation. The table also provides an estimate of the percent of steelhead habitat affected in the long-term under the entries opposite the "Operations" rows. These tables are discussed in Section 4.4.3 under the different alternatives under the Fisheries Impacts FI-1, FI-2, FI-4, FI-5, FI-6, FI-8, FI-9a, FI-9b, and F-12.

Comment FI-47g

Address how the Proponent's Proposed Project and all of the alternatives will affect the restoration of the Carmel River steelhead run.

Response

The purpose and need of the action which the Final EIR/EIS evaluates is to provide dam safety, not to recover steelhead in the Carmel River. Project effects on the Carmel River steelhead are discussed in detail throughout Chapter 4.4.

Comment FI-47h

Provide analyses that demonstrate the Proponent's Proposed Project and Alternative 1 will not further the decline of the Carmel River steelhead run.

Response

Please refer to response to Comment FI-46.

Comment FI-48

The analysis of the sluicing operations' impacts downstream of the dam focuses on the physical behavior of the sediments. However, the analysis does not specifically address the impacts on fisheries or other aquatic resources. This lack of analysis is significant because it is principally the effects of discharged sediments (particularly fine sediments) in an artificial manner (timing, amount, duration and composition) on aquatic resources that is the focus of the CEQA analysis. In addition to steelhead, potentially affected aquatic resources include benthic invertebrates and rooted aquatic vegetation.

Response

Please refer to the revised SOMP (Appendix J). Impacts are assessed in Table 4.4-11 and 4.4-11 and discussed in Section 4.4.3 under FI-6, FI9a, and FI-9b.

Comment FI-49

The characterization of the sediment sluicing operations as causing only a "short-term increase in the sediment load to the downstream river" is misleading. While the immediate principal impacts of the sediment sluicing may be concentrated in a relatively short period each year, the sluicing operations are proposed in perpetuity and will be necessary in perpetuity, or at least for as long as the San Clemente Dam is in place. Consequently, the real impacts can only be evaluated on a cumulative basis. At a minimum, adult steelhead migrating upstream, benthic invertebrates, incubation of steelhead alevins, rearing/feeding of juvenile steelhead and steelhead spawning in the lower reaches of the Carmel River downstream of the San Clemente Dam will be adversely impacted in perpetuity by the sluicing operations.

Response

The difference between the short-term increase in sediment loads and the long-term effects of the existing dam is distinguished and evaluated in Section 4.4.3 under Fisheries Impact FI-9a for the Proponent's Proposed Project and each alternative. Sediment would begin passing the Dam under existing conditions, even under the No

Project Alternative. With the existing dam nearly full of sediment, silt, sand and gravel would soon begin passing downstream over the Dam into the river below and would continue to do so in perpetuity. Sediment sizes gradually would shift from finer materials to coarser materials over time. Sluicing would have a short-term impact by: 1) beginning to pass sediment downstream earlier than would otherwise occur and 2) slightly advancing the timing of the sediment that would be passed downstream for the storm event in which sluicing occurs. The overall impacts of sluicing to maintain fish passage would be a minor short-term shift in sediment transport past the Dam. Sediment transport would be reinitiated to a greater degree under Alternative 1 and much more rapidly restored under Alternatives 2 and 3. For Alternatives 1, 2, and 3, initial larger volumes of fine sediment would be released downstream from reworking the sediment behind the Dam than would occur with the Proponent's Proposed Project and No Project. Sediment transport past the Dam needs to be evaluated against the long-term background effect of sediment being passed downstream of SCD under existing conditions and the No Project Alternative. Please refer to the revised SOMP (Appendix J).

Comment FI-50

The Proponent's proposed standard regarding the timing of sediment sluicing (i.e., ceasing sediment sluicing if 20 or more steelhead have passed the ladder in the previous two days) is arbitrary. Since it is arbitrary, the proposed standard could conflict with the basic objective of sediment sluicing: control sediment build-up in the river channel in the reservoir immediately above the San Clemente Dam to facilitate adequate steelhead passage opportunities through the fish ladder. It bears mention that in some years the number of steelhead proposed as the "cease sluicing standard" has constituted a significant portion of the total Carmel River steelhead run in a single month.

Response

We have eliminated this standard from the Revised SOMP. The standard was developed based on an analysis of daily ladder counts at SCD from 1993 to 2004. The fish passage data indicate that when daily steelhead counts reached at least 20 fish, a series of days followed where counts were equal or higher. The objective of this standard was to avoid sluicing when potentially large numbers of adults were in the river downstream of SCD. Please refer to the revised SOMP.

Comment FI-51

As noted in the Sluicing Operations and Maintenance Plan, high turbidity and suspended sediment are potentially the most significant hazards to adult steelhead migrating up the Carmel River. Swimming performance of adult (and juvenile) salmon can be impaired by poor water quality. Migrating salmonids avoid waters with high silt loads, or cease migration when such loads are unavoidable. A large portion of the Carmel River adult steelhead population would be exposed to these effects based on *the estimate that about one half (55 percent) of the adults that enter the Carmel River may move upstream of the San Clemente Dam.*

Response

The Carmel River experiences naturally high turbidity or suspended sediment loads during storm events already. The primary constituents affected by sluicing are turbidity and suspended sediment. Sluicing events would be short-term (occurring over periods on the order of hours). Since sluicing would occur on the rising limb of the hydrograph, sediment released during sluicing would be mobilized by the storm flows that follow. Sediment that is sluiced prior to storm events would not be available to be transported over the Dam during a storm, so sluicing would result in a minor shift in timing, concentration and duration of levels of turbidity and suspended sediment.

Turbidity and suspended sediment would be locally higher just below the Dam during the time of sluicing and for a period of time following sluicing until the turbidity created by storm flows meets or exceeds the turbidity from the sluicing event. Sediment that is sluiced would either be carried downstream, or temporarily deposited in the plunge pool or along the edge of the water along the river below the Dam. Sediment that has been deposited in the plunge pool would be resuspended by the increasing storm flows and carried downstream. Thus, the effects of increased suspended sediment and turbidity due to sluicing would be localized in time and space. It would not expose the entire run of steelhead to higher levels of these constituents for two reasons: (1) the impacts would be restricted primarily to upstream mile or so of Reach 4 and (2) sluicing would only occur for a matter of hours a few times a season so would not expose the entire run to its effect. Please refer to the revised SOMP (Appendix J) for more detail.

The estimate that about half the adults that enter the river move upstream of the Dam is based on very limited tagging from a study done for only a single year when harvest was allowed on the river in the mid 1980 and should not be used to represent current conditions.

Comment FI-52

When water quality conditions are impassable to fish, their upstream movement is delayed for as long as that condition persists. Delayed fish may expend the stored energy necessary for successful migration, maturation and spawning before reaching their destination, resulting in weakened fish more disposed to disease or pre-spawning mortality. Delayed adult upstream migration is another stressor added to a population that has already declined significantly.

Response

Thank you for your comment. Comment noted.

Comment FI-53

The Draft EIR/EIS notes that suspended sediment levels as a result of sluicing would impair the ability of steelhead to see and feed, would impair homing, delay migration and cause physiological responses ranging from stress to death depending on the level of suspended sediment and duration of exposure. Larval steelhead and eggs would also be affected. These effects to all steelhead life stages will occur in perpetuity and the Draft EIR/EIS fails to analyze these effects to the Carmel River steelhead population in perpetuity. For instance, adults, juveniles, eggs and larval steelhead may experience severe habitat modification and up to 40 percent mortality. The proposed mitigation (e.g., the Sluicing Operations and Maintenance Plan and an evaluation to determine downstream effects) is insufficient to mitigate the high levels of mortality and severe habitat degradation that will occur in perpetuity.

Response

Please refer to the revised SOMP. The analysis in the Final EIR/EIS was based upon modeled sediment being transported through the sluiceway. Suspended sediment and turbidity levels would fall dramatically once the sluiced sediment enters the plunge pool. The effects to steelhead adults and juveniles would be similarly reduced.

Comment FI-54

The Sluicing Operations and Maintenance Plan notes steelhead throughout their range frequently encounter migratory obstructions (e.g., beaver dams, cascades, logjams) which delay migration, but that such delays usually don't affect the ultimate reproductive capacity of the fish. NMFS agrees that relatively small natural barriers are well adapted to by steelhead. However, the scale of the proposed sluicing operations and the resultant effects downstream – high turbidity and suspended sediment – are profoundly unnatural in the Carmel River.

Beaver dams and logjams are likely temporal obstructions. The sluicing operations are proposed in perpetuity and will be necessary in perpetuity, or at least for as long as the San Clemente Dam is in place. Therefore, delays to adult migration will occur for as long as sluicing operations are conducted.

Response

Agree that sediment management would occur as long as SCD remains in place. Please refer to the revised SOMP and the response to Comment FI-53.

Comment FI-55

The Draft EIR/EIS notes that the first storms of the season and the first opening of the Carmel River lagoon sandbar control the initial adult steelhead upstream migration.

Response

Thank you for your comment. Comment noted.

Comment FI-56

The Draft EIR/EIS states that, "ideally, the first sluice event for a given year would occur prior to the initial (adult upstream) steelhead migration, depending on the timing of storms." It is unknown in how many years the first sluice event will occur prior to the initial steelhead migration. NMFS is concerned that adult steelhead migrating upstream will be affected by the first (and all) sluicing events as there is no certainty in predicting when sluicing events will occur and no assurance that initial adult upstream migrants will not be present during the first sluicing period in any given year.

Response

Please refer to the revised SOMP. A fish passage channel would be proactively established by dredging prior to the start of the migration season. The channel would then be maintained by sluicing. If dredging and sluicing do not eliminate the impairment to upstream migration, adults would be captured from the ladder and released upstream of obstruction.

Comment FI-57

NMFS has determined the Proposed Sluicing Decision Tree in the Sluicing Operations and Maintenance Plan is too simplistic and does not account for all the unforeseen and unpredictable events that can occur each year. Each step in the Decision Tree asks questions that are difficult, if not impossible, to answer accurately. Questions raised for each step follow. **(Also SED-47)**

Comment FI-57a

Is sediment delta passage a problem?

How will passage problems be determined? When will it be determined when sluicing is to occur? Making a determination before the winter migration period may be inaccurate due to changing conditions behind the reservoir once high flows begin. Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to initiate sluicing. Since steelhead tend to migrate on the descending limb of a storm, how feasible and safe is it to place crews out on the reservoir to measure channel dimensions during storm events? **(Also SED-47a)**

Response

Please refer to the revised SOMP. Passage would be determined from observations made of channel conditions upstream. During winter high flows, depth of flow through the reservoir to the Dam has rarely been a problem. Crews would periodically examine the channel upstream from the fish ladder for signs of standing waves or riffles indicative of bars or shoaling. It is not safe to place crews out on the water during high flow events. But it would be possible to install a floating suction dredge that could be operated remotely using cables strung across back of the Dam upstream from the fish ladder opening.

Comment FI-57b

If sediment delta passage is a problem, but increasing flows are predicted not to exceed 300 cfs, sluicing will not occur.

However, passage has already been determined to be impacted. How will fish pass through the blocked sediment delta during their migration before a sluice event has been performed? These delays need to be addressed. **(Also SED-47b)**

Response

Please refer to the revised SOMP. We have employed two other tools, including dredging upstream sediments or trapping and trucking the fish from the ladder and moving them around the obstruction. Also we would approach the migration seasons by preparing a channel that would develop a channel of sufficient width and depth to allow passage to occur from the ladder up into the Carmel River or San Clemente Creek. The occurrence of flows at the Dam does not necessarily indicate that there would be sufficient surface flow in the lower river to connect with the lagoon or the ocean, at least under existing operations with overdraft occurring in the Carmel Valley aquifer. A flow of only 300 cfs at SCD would not be sufficient to open the mouth of the Carmel River during fall when the river is recharging; therefore passage at SCD would not normally become an issue at these flows. If the issue were to arise, passage would be achieved through dredging, or adult fish would be captured from the ladder and released upstream of the obstruction.

Comment FI-57c

Is it peak migration season?

Peak migration season is generally between February and March, however, it depends on the hydrologic cycle as to when the majority of fish migrate. **(Also SED-47c)**

Response

Additional text has been added to section *4.4.1 Environmental Setting / Adult Run Timing,* last paragraph, to summarize and clarify peak migration season in the Carmel River and at SCD.

Comment FI-57d

Will a passage problem potentially develop during the next storm event?

How will this be determined? It is unknown how large or small the next storm event will be and how much sediment will be carried into the reservoir. **(Also SED-47d)**

Response

Please refer to the revised SOMP and response to Comment FI-57b.

Comment FI-57e

It has already been determined that passage is a problem in the first step. But if a significant storm event is not predicted, sluicing will not occur and blocked passage will continue to delay migration. **(Also SED-47e)**

Response

Dredging would be used to establish and maintain passage in the event of no or limited storm flows. If blockage still occurs adult fish would be captured in the ladder and moved upstream of the obstruction. Please refer to the revised SOMP (Appendix J).

Comment FI-57f

Have 20 or more fish ascended the ladder in the past 2 days?

Per our April 5, 2006, letter, NMFS believes the decision whether 20 or more fish have ascended the ladder is an arbitrary number. Please clarify how this number was determined to be a defining point to sluice or not. **(Also SED-47f)**

Response

These criteria would be used in deciding whether or not to sluice. The number (20 fish) is based on analysis of migration data that indicates that, when this many fish are in the ladder, subsequent days would also see the passage of high numbers of fish. Not sluicing during these periods protects these groups of steelhead from the impacts of sediment released by sluicing and maintains passage through the ladder. Under this situation it may be more prudent to dredge a channel than to sluice to maintain a channel. Please refer to response to Comment FI-50 and the Revised SOMP.

Comment FI-57g

If this number of fish has ascended the ladder, sluicing will not occur even though a passage problem potentially will occur during the next storm event. This is a large number of steelhead to be trapped in the sediment delta without being able to move upstream. The impact of delay to these fish needs to be addressed. **(Also SED-47g)**

Response

We have removed this standard from the protocols. Please refer to the revised SOMP and the response to FI-50. Fish passage would be managed proactively using three tools, sluicing, dredging and trap and truck.

Comment FI-57h

Increasing flows likely to exceed 300 cfs?

Future hydrologic conditions are very difficult to predict. Basing management decisions (when sluicing is to occur) on unpredictable occurrences is unacceptable. **(Also SED-47h)**

Response

Please refer to the revised SOMP. Storms would be tracked using satellite imagery and rainfall, and streamflows would be tracked in real time. The MPWMD has good data on rainfall and streamflow relationships. Real time rainfall would be integrated into the predictions and validated with real-time flow data from gaging sites installed on the Carmel River in the watershed upstream of LPD and downstream of the confluence with Cachagua Creek. These stream gage data would be used to document flow conditions upstream of the SCD and the storm and rainfall data would predict if flows are expected to increase or decrease.

Comment FI-57i

Storm precipitation predicted to be significant?

Please refer to comment above. Although predicting storm events is becoming easier, storm intensity is unknown until the storm is actually occurring. **(Also FI-47i)**

Response

Please refer to the revised SOMP. Operations would depend on realtime data from rain gages installed in the upstream watershed.

Comment FI-57j

Is flow still increasing past 300 cfs?

How long does it need to keep increasing past 300 cfs? This is unpredictable. **(Also SED-47j)**

Response

Please refer to the revised SOMP. Actual operation would depend on realtime data on rainfall and streamflows upstream of SCD. Review of storm hydrographs indicate that flows continue to increase well past 300 cfs, rapidly reaching the flow limit within a matter of hours. The Carmel River hydrographs show rapid increases in flows in response to rainfall. These conditions are predictable based on existing information and would be refined in practice with realtime rainfall and streamflow data.

Comment FI-57k

Continue sluicing until time limit, incision goal, or flow limit is reached. What is the time limit for sluicing?

Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to determine that enough sediment has been sluiced to provide for passage. What is the flow limit? **(Also SED-47k)**

Response

Please refer to the revised SOMP. The flow range for sluicing is between about 300 and 700 cfs. The time limit would be based on the amount of material to sluice. There would be no reservoir, only a flowing channel. Depth for fish passage would be determined by examination of the channel for conditions that would impair passage, such as shallow water and high velocities, such as would occur at a riffle.

Comment FI-57l

If flow is not increasing past 300 cfs, abort, re-open fish ladder.

How many aborted sluicing events will occur causing unnecessary delay to fish migration throughout the season due to the inability to predict hydrologic events to induce sluicing? **(Also SED-47l)**

Response

Please refer to the revised SOMP (Appendix J). If sluicing can't occur, the channel could be dredged to provide access, but this would be necessary only if passage was impaired.

Comment FI-58

Refer to Table 2.1, FI-4, NMFS recommends adding "short-term" to impacts under Alternatives 2 and 3.

Response

Table 2.1 will be revised to reflect comment.

Comment FI-59

Refer to Table 2.1, FI-7, NMFS recommends adding "long-term, significant, unavoidable" to impacts under the Proponent's Proposed Project.

Response

The fish ladder closure is a temporary impact; the new ladder would be an improvement over the existing conditions.

Comment FI-60

Refer to Table 2.1, FI-7, NMFS recommends adding "short-term" to impacts under Alternatives 1, 2 and 3.

Response

Table 2.1 will be revised to reflect comment.

Comment FI-61

Refer to Table 2.1, FI-8, NMFS recommends FI-8 should include sluicing impacts on upstream fish migration. For the Proponent's Proposed Project and Alternative 1, it would be long-term unavoidable significant impacts, as well as beneficial with new fish ladder. NMFS suggests F1-8 may need to be separated into two separate impacts: sluicing impacts on upstream fish migration and beneficial effects of a new fish ladder.

Response

Table 2.1 will be revised to reflect comment.

Comment FI-62

Refer to Table 2.1, FI-9, NMFS recommends FI-9 should include only sediment impacts to channels downstream (i.e., impacting redds and steelhead habitat). For the Proponent's Proposed Project and Alternative 1, NMFS recommends adding "long-term" and FI-9 should not include impacts to upstream migration from sluicing.

Response

Downstream impacts from sluicing would be temporary due to the fine sediment that would be initially sluiced downstream. Over time the sediments would become coarser and would be beneficial over the long-term. Issue FI-8 does not include impacts to upstream migration from sluicing. Those are addressed in Issue FI-7. The recommendation is to restate the impacts as "short-term significant unavoidable, long-term beneficial" for the Proponent's Proposed Project and Alternative 1.

Comment FI-63

Refer to Table 2.1, FI-12, NMFS recommends changing, "Long-term improvement to fish passage over the dam" to "Long-term effects to fish passage over the dam." All other impacts do not refer to improvement, only reduction, degradation or effects. NMFS recommends consistency.

Response

Agreed, Table 2.1 will be revised to reflect comment.

Comment FI-64

Refer to Table 2.1, FI-12, NMFS recommends adding "long-term" to impacts under Alternatives 1, 2 and 3. NMFS has determined that dam removal is much more beneficial for steelhead than having a fish ladder. NMFS is unclear how the impacts of dam removal and a fish ladder can be distinguished from each other when they are not equal in impacts, yet both purport to have long-term beneficial impacts.

Response

Table 2.1 will be revised to reflect comment.

Comment FI-65

Refer to page 2-39, NMFS recommends adding "long-term" while describing significant unavoidable impacts to water quality and fish. **(Also WQ-6)**

Response

Downstream impacts from sluicing would be temporary due to the fine sediment that would be transported initially. Over time, the sediments would become coarser and would be beneficial over the long-term.

Comment FI-66

Refer to page 3-35, NMFS is unclear whether dredging upstream of the reservoir every three years will be needed along with sluicing. Please clarify and analyze all impacts to steelhead in the reservoir if dredging is to occur. **(Also AA-46)**

Response

Please refer to the revised SOMP (Appendix J). Dredging would be used to establish a fish passage channel prior to the beginning of the migration season.

Comment FI-67

Referring to page 4-83, (Issue WQ-6: Stream Diversions Return of Bypassed Flows) the mitigation for this effect is to install energy dissipaters where the water is discharged back into the river. Bypass pipes must either be sized to provide for fish passage of juveniles or juveniles need to be trapped and moved around the diversion continually throughout the entire construction period. If trapping is not implemented, dissipaters cannot be installed on the end of the diversion pipes since they would obstruct fish passage. Please refer to also Issue FI-4: Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir for Construction Purposes, page 4-131.

Response

As indicated on page 4-131 in the Draft EIR/EIS and in Section 4.4.1 under the subsection on Sleepy Hollow Steelhead Rearing Facility in the second paragraph after Table 4.4-6 in the Final EIR/EIS, the diversions would be screened and fish traps would be installed.

Comment FI-68

Referring to page 4-85 (Issue WQ-9: Reservoir Drawdown), the Draft EIR/EIS states, "The effects of drawdown under the Proponent's Proposed Project would likely be greater than has been observed during the 2003 to 2005 drawdowns because drawdown rate would be faster." The Mitigation for this Impact goes on to state, "The reservoir water level would be drawn down at a relatively slow rate (about 0.5 feet or less per day), similar to that currently being used for the annual drawdown (an interim dam safety measure). Please be consistent on the effects of the drawdown.

Response

The average drawdown rate would be consistent with 2003 to 2006 drawdown rates, however, pumps would be installed and the reservoir lowered at a constant rate that is different from the 2003 to 2006 drawdown, which is regulated by the operation of the drawdown ports. With the loss of head, it becomes more difficult to draw the reservoir down below a certain level. The rate of drawdown would be increased for the lower elevations compared to the 2003 to 2006 drawdowns.

Comment FI-69

Refer to page 4-135 (Issue FI-8: Upstream Fish Passage): it was determined upstream fish passage would be beneficial with the improved fish ladder. However, page 5-2, 5.1.4 Aquatic Biology, states, "Adult fish may fallback over the dam during sluicing." Please address this fallback impact for the Proponent's Proposed Project and Alternative 1. NMFS expects this would be a long-term significant and unavoidable impact.

Response

Fallback would occur when a fish that had ascended the ladder become entrained in the flows in front of the sluice gate. Measures would be taken under these two alternatives to avoid this impact by closing the ladder and attempting to move adults from in front of the sluiceway prior to fully opening the gate.

Comment FI-70

Refer to page 4-136 (Issue FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): NMFS recommends changing the determination to "Significant, unavoidable, long-term".

Response

Downstream impacts from sluicing would be temporary due to the fine sediment that would be transported initially. Over time the sediments would become coarser and would be beneficial over the long-term.

Comment FI-71

The Impact discussion only addresses the sluice gate operation in front of the fish ladder. There is another proposed sluice gate to keep the intake valve clear of sediment. Please discuss fish impacts from operations of the sluice gate for the intake valve. How often and for what duration will this sluice gate be operated? How much sediment will be sluiced at a time? How will fish be kept from entrainment? Determine if these impacts will be cumulative to the impacts from the fish ladder sluice gate.

Response

There would not be second sluiceway. The project description has been revised to reflect this change. The intake tower would be moved near the existing sluiceway.

Comment FI-72

Refer to page 4-139, the last paragraph under Impact discusses degradation of habitat conditions in Reaches 4, 5, and 6. Please clarify that this would be an annual impact to this habitat each time the sluice gates release sediment and therefore 37 percent of the juvenile fish and 35 percent of the habitat downstream of San Clemente Dam would be adversely impacted each year in which sluicing occurs. These impacts will be on-going for the life of the project.

Response

Please see the revised SOMP (Appendix J). Sediment released through sluiceway would initially be sand and would begin to coarsen to gravel and cobble as the upstream bed composition changes. This would occur with or without the sluicing as sediment would begin to move past the Dam in the very near future. For all alternatives there would be an initial period of fine sediment transported downstream, followed by period where sediment sizes would coarsen. For all alternatives there would be an initial negative impact to the 37 percent of juvenile fish and 35 percent of the habitat in reaches 4, 5, and 6 downstream of SCD followed by an improvement to habitat conditions in these reaches. The duration of the negative impact is expected be slightly longer for the Proponent's Proposed Project compared to Alternative 1 In addition, Alternative 1 would be slightly longer than Alternative 2 which would be longer than Alternative 3. Alternative 3 would have the least amount of fine sediment released downstream because the footprint of the exposed reservoir area would be the smallest of all the alternatives.

Comment FI-73

Refer to page 4-146 (Issue FI-12: Downstream Fish Passage over SCD, Impact, the Draft EIR/EIS states, "Passing through the notch at this elevation would expose fish to higher potential to contact the spillway surface as compared to passage over the present spillway." It is unclear to NMFS if the mitigation of creating a low flow channel would prevent contact with the spillway surface or if this impact would still occur. Please clarify. If the impact will still occur, NMFS does not expect this to be a beneficial, long-term impact, but a significant, unavoidable, long-term impact.

Response

Creating a low flow notch in the notched dam would direct the low flows through a small cross section, increasing the depth of flow and minimizing the potential for fish to contact the spillway and incur injury. It would not completely eliminate the possibility for fish to contact the spillway because as flows increase, spill would occur across the entire notch at some point and fish could contact the spillway surface. However, it minimizes the amount of time that fish would be exposed to shallow depth of flow when conditions would more inclined to produce injury. For this alternative, all flows up to 55 cfs would pass through the fish ladder greatly reducing the potential for injury for fish. This, in combination with the low flow notch would greatly reduce the risk of abrasion from the spillway. Thus, it represents a beneficial change from existing conditions.

Comment FI-74

Refer to page 4-147 (Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration): the determination is Significant, unavoidable, long-term; however, under the Impact discussion it states this impact would only occur during construction and restoration and would be a "temporary loss of steelhead habitat." NMFS recommends changing the determination to "Temporary".

Response

Agreed, the impact would be considered temporary.

Comment FI-75

Refer to page 4-152 (Issue FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): NMFS recommends changing the determination to "Significant, unavoidable, short-term; beneficial long-term".

Response

Agreed, the impact would be changed to "Significant, unavoidable, short-term; beneficial long-term".

Comment FI-76

Refer to page 4-157 (Issue Comment FI-9: Sediment Impacts to Downstream Channels from Sluicing, Dredging or Sediment Transport Downstream): it is NMFS' understanding from the Project Description that sluice gates will not be installed for the No Project Alternative. The second paragraph discusses impacts to fish from sluicing operations as the same for the Proponent's Proposed Project. Please clarify if sluice gates will be installed for the No Project Alternative or remove the discussion of sluice gates.

Response

The No Project Alternative would not include a new fish ladder and sluicing would not be employed.

Comment FI-77

Refer to page 5-23, 5.5 (Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity): NMFS expects the Final EIR/EIS will include a discussion on the long-term adverse impacts to listed steelhead (by direct mortality), fish passage and habitat downstream from the long-term *sluicing operations for the Proponent's Proposed Project and Alternative 1 (see comment above in the South-Central California Coast Distinct Population Segment Steelhead section of this letter).*

Response

Short-term impacts from sluicing include exposure to turbidity and suspended sediment throughout Reach 4 and delays in the ladder during sluicing operations. The delay to upstream migration would occur if steelhead are in the ladder and are unable to exit the ladder for the period of time sediment is being sluiced. Exposure to suspended sediment by sluicing is discussed under FI-9a and in this response to Comments under SED-42 and FI-78 and FI-79. Table 4.4-11 shows the changes to habitat and Table 4.4-11 has been included to summarize impacts to the habitat.

April 5, 2006 letter from Dick Butler / NMFS

Comment FI-78

NMFS has two general concerns with the draft SCD Seismic Safety Project EIR/EIS. The most significant concern is the large amount of take of listed species we believe will occur from the proposed sluice gate operations included in the Proponent's Preferred Project (buttressing) and Alternative 1 (notching), as described in the EIR/EIS. Available information indicates the take of steelhead will be in the form of mortality, severe sub lethal effects, and delayed adult migration every year. The other concern relates to differences between the Evaluation of Sediment Sluicing Options Associated with the San Clemente Dam Fish Ladder (Mussetter Report) from March 16, 2006, which modeled how sediment would be managed by the sluice gate and its downstream impacts, and the Sluicing Operations and Maintenance Plan (O and M Plan).

The sluice gate operations will pass 2 to 4 acre-feet (AF) of sediment, possibly exceeding 10 AF, with each sluicing during winter migratory periods. It is anticipated that for the next 12 to 20 years, (3 to 5 steelhead generations), sediment passed via sluicing will be predominantly fine grained and, subsequently, the suspended sediment concentrations below the dam would exceed lethal levels to steelhead. Sediment can be lethal to steelhead and their eggs by physiological means (gill trauma, interruption of osmoregulation, and cessation of reproduction and growth) and impacted habitat (reduced spawning habitat, reduced interstitial flow, entombing redds, and elimination of food sources). During high flow events, steelhead often seek shelter from high velocities along the bottom of the river channel, where suspended sediment concentrations are expected to exceed 20,000 mg/L during sluice events. This would exceed lethal levels as reported by Newcomb and Jensen (1996). Additionally, suspended sediment concentrations will fluctuate depending on the quantity of sediment released, but Mussetter's Report didn't provide a range of suspended sediment concentrations for sluicing of between 2 AF and 10.5 AF, which will need to be included in the final EIR/EIS. Furthermore, research in other systems (Bergstedt and Bergersen 1997) indicates that smaller quantities of sediment releases could increase suspended sediment concentrations to over 200 times their pre-sluicing levels for several days up *to 29 km downstream (approximately the distance between SCD and the mouth of the Carmel River), again exceeding lethal limits. Essentially, the operation of the sluice gates will kill between 20 and 60% of migrating adults, migrating smolts, and rearing juveniles in the lower 18.5 miles of the Carmel River, several times a year, every year, until the dam is removed or the fish are extirpated. Clearly, this proposed action is not beneficial to steelhead and we strongly disagree with the "beneficial" determination in the EIR/EIS.*

Response

The analysis conducted for Final EIR/EIS analysis of sediment sluicing was decided by a Core Team of lead and cooperating agencies, in which NMFS also participated.

The suspended sediment concentration in the Carmel River downstream of the dam site is a function of the sediment transport capacity of the river and the available sediment load. Following removal of the Dam (Alternatives 2 and 3), the full background sediment load is available for transport downstream within the limits of the transport capacity.

With the Dam in place under the Proponent's Proposed Project, about 65 percent of the background load would be available downstream of the Dam. Under the notched dam alternative, about 83 percent of the background load would be available in the lower river. This amount of sediment would be augmented in the short-term by any sediment that was sluiced. The volume of sediment sluiced at any time is related to the sediment management decisions as outlined in the revised Sediment Management and Operations Plan (see Appendix J).

Overall, the controlling factor is the sediment transport capacity of the river. If sediment is sluiced, it would only flow downstream within the limits of the transport capacity of the river. If the sluiced sediment plus the background load exceeds the transport capacity, the excess material would drop out and only be re-suspended when the transport capacity increases or the sediment supply decreases (sluicing stops). Please also review the response to comment SED-42.

For the next three to five generations of steelhead, sediment would move past SCD whether there is sluicing or not. The Dam is nearly completely full of sediment and would soon begin passing sediment downstream. The impacts to steelhead would occur under future conditions with No Project Alternative. Sluicing would induce a short-term change in the timing of some of the sediment being moved past the Dam.

SOMP: The analysis of suspended sediment was based on the maximum modeled suspended sediment concentrations. These concentrations are based upon the maximum load that the river can carry and not actual loads measured from the river and therefore represent the worst case scenario. The values evaluated in the Final EIR/EIS examined the maximum levels from the graph (about 20,000 ppm at a flow of about 4,000 cfs) and applied these concentrations to potential sluicing times of up to two days. The suspended sediment concentrations and duration was used to represent the worst case scenario. These concentrations and durations were then applied to the severity of ill effects (SEV) model developed by Newcombe and Jensen (1996). These values represent the absolute maximum suspended sediment values that would occur in the river under existing conditions given the maximum amount of sediment that could be transported by the river.

During the 2003 drawdown a relationship was developed between suspended sediment concentration, streamflow and turbidity in the river about 450 feet downstream of SCD (ENTRIX 2003). The suspended sediment load in the river was measured at a maximum of about 50 mg/l (mg/l is equivalent to ppm) at a flow of about 30 cfs. The maximum suspended sediment load is about 3,500 ppm at a flow of 50 cfs. Based upon this information, the modeled maximum suspended sediment loads, at least at the lower end of the flow spectrum, could be up to two orders of magnitude higher than what actually occurs in the river.

Sluicing would occur only between flows of 300 to 700 cfs. Therefore a more realistic analysis would evaluate the suspended sediment concentrations associated with these flows. An evaluation would analyze suspended sediment concentrations of 5,000 to 7,000 ppm for flows of 300 to 700 cfs. Concentrations in this range for an exposure of up to 7 hours result in SEV scores of 6, 7, 8 or 9 (from Newcombe and Jensen 1996) (Table 4.4-8). SEV scores of 6 to 8 are classified as Sub lethal Effects, and described as moderate to major physiological stress, habitat degradation, and long-term reduction in feeding rate and feeding success. An SEV score of 9 is classified as a Lethal or Paralethal Effect. However, level 9 is described as reduced growth rates, delayed hatching and reduced fish density (Table 4.4-8). If in-river suspended sediment loads are one to two orders of magnitude less, the SEV scores would fall into the Behavioral and Sub lethal Effects ranges.

Direct comparison of Bergstadt and Begerstom (1997) that addressed a sluicing event on the Wind River in Wyoming is not at all comparable to the Carmel River for the following reasons: the geology of the Wind River basin is sedimentary compared to the Carmel River which is principally granitic. Sluicing occurred 25 times and 32 times during the low flow period for the two years studied. Sluicing was for the purpose of maintaining a large agricultural diversion, not to sustain fish passage. The volume of sluiced sediment was far in excess of what is being proposed for operations at SCD.

Comment FI-79

The draft EIR/EIS' evaluation of impacts to downstream riverine habitats is inadequate. The EIR/EIS needs to address the sediment effects on the bed and water column. Under normal conditions sediment is transported over a six month period, generally the late fall through early spring period. Conversely, sluice gate releases, will travel in uniformly-sized sediment cluster that will move slowly downstream and overwhelm the riverine environment, depending on flow rate, flow duration, and channel morphology. The vast majority of the sediment released via the sluice gate method will be of uniform *size, so the particles would not redistribute themselves to any significant degree downstream. At a minimum, these impacts need to be analyzed in terms of steelhead spawning, rearing, and migratory habitat.*

Response

The impacts from sluicing are discussed in Section 4.4.3 under FI-9a for each alternative. (Please see the Response to Comment SED-42). Sluicing would occur in the same time period that sediment is naturally transported in the Carmel River (fall to spring).

There is no such thing as a sediment cluster. Sediment does not move in the manner described in this comment. Sediment would not accumulate at locations downstream of the Dam creating impediments to upstream movement. Downstream habitat would be altered by sediment moving past the Dam with or without operation of the sluice gates once the Dam is filled with sediment and silt, sand and gravel begin to move past the Dam. Sluicing would result in a minor change in the timing of sediment transported past the Dam. Sediment movement would be advanced to precede a storm event and then would be mobilized during the storm event. Sediment would fill interstitial spaces in the predominately cobble and boulder substrate of Reach 4 reducing habitat quality for invertebrates and juvenile steelhead.

Comment FI-80

In addition to the impacts to the lower Carmel River of sluicing downstream of the dam, NMFS is concerned about the impacts of the sluicing operations in the Carmel River arm and San Clemente arm of the reservoir. Issues such as the water quality associated with the rapid drawdown of the reservoir during sluicing, adult fallback rates, the loss of redds built in sediment mobilized during sluicing, and upstream adult passage from San Clemente Reservoir through unnaturally turbid water have not been adequately analyzed in this draft of the EIR/EIS. We believe sufficient analysis of the upstream impacts of sluicing to steelhead and their redds would reveal they are subjected to lethal or near-lethal conditions.

Response

Regarding water quality in the reservoir, please see response to Comment WQ-7. Regarding fallback, please see response to Comment FI-69. Substrate upstream from the proposed sluiceway and dam is predominately sand and would not support steelhead redd construction or incubation. Please refer to the revised SOMP. Sluicing would only occur during the rising limb of a storm event and turbidity would be increasing along with the high flows. The reservoir would not be drawdown because there would be no reservoir. Water surface elevations would decrease as water ceases to spill over the Dam and begins to flow through the sluiceway.

Comment FI-81

For those steelhead that manage to survive, additional impacts from sluicing will occur and the EIR/EIS is silent on these impacts as well. For example, NMFS is concerned over delays to fish passage when the fish ladder is closed for days at a time (provided migrating adult steelhead are able to reach the ladder) in order to facilitate sluicing events. Sediment pulses below the dam, which according to available information will be lethal to 20 to 60 percent of the steelhead population, will force the remaining migrating steelhead to seek shelter to avoid the lethal levels of suspended sediment carried downstream, which will delay or prevent migration. Additionally, we believe adult migration passage will be adversely affected upstream of the dam during sluicing operations. Adult burst speed was considered in the EIR/EIS, but the distance of impaired passage upstream of the dam was not. The EIR/EIS did not consider whether adult steelhead can swim at full burst for 0.5 miles[4] (they cannot) or if they would even try to swim against water with exceptionally high suspended sediment concentrations. The large sediment plugs released several times a year by sluicing will also create passage barriers downstream in some low gradient sections of the Carmel River.

Response

The terminology used in comments FI-79 and FI-81 are indicative of the commentors unclear understanding of how sediment moves in riverine systems. The various terms “sediment cluster”, “sediment plugs” or “sediment pulses” are undefined and inconsistent with terminology associated with sediment transport mechanics. The amount of sediment that would be sluiced at any one time is very small compared to the total amount moving in the river. Sluicing would only change the timing of sediment moving past the Dam, not the amount. Sluicing in and of itself would not generate enough sediment to create conditions that would prevent fish passage. It would not accumulate near the entrance to the fish ladder because following storm flows would mobilize the sediment from this section of the river. Please see the Revised SOMP for a comprehensive discussion of sediment management. Operation of the sluiceway would not close the fish ladder for days at a time but for a matter hours. The movement of sediment downstream of the Dam and the modeled levels of suspended sediment were discussed in the response to SED-42, FI-78 and FI-79 and apply to this response as well. Presently, the closest upstream spawning sites are about 2,000 to 2,500 feet upstream of SCD on both the Carmel River and Sam Clemente Creek and are well upstream of the effects of sluicing as envisioned in the SOMP.

The distribution of high velocities upstream of the Dam is during the modeled sluicing in the MEI report were shown in Figures 25 and 26 representing sluicing at 300, and 500 cfs flows for 2, 4 and 8 hours.

Figure 25 (300 cfs) shows modeled average channel velocities immediately upstream of the sluice way at about 7.25 fps falling to between 4.75 and 5.25 fps by 100 feet

4 The upstream distance affected by sluicing

upstream of the sluice way. Over the next 400 feet the average channel velocities range from 4.75 to 6.25 fps, then drop to between 4.5 and 5.25 fps for the next 300 to 400 feet upstream and then drop to between 4.5 to 2 fps for the next 2,000 feet.

Modeled average channel velocities for a sluice event at 500 cfs show higher velocities at the Dam (up to 8.5 fps, and velocities in the 3 to 6 fps range for the remainder of the channel up to about 2,000 feet upstream. The highest velocities are associated with the moving nick point in the channel as the bed is scoured upstream of the sluice way.

Swimming speeds for adult steelhead are from Bell (1986) as cited in Bjornn and Reiser (1991) and shown below.

Cruising:	0 to 4.6 fps
Sustained:	4.6 to 15.7 fps
Burst:	15.7 to 26.5 fps

Cruising speed is defined as a speed the fish can maintain for an extended period of time, Sustained speed can be maintained for a period of several minutes. Burst speeds can be maintained for a few seconds. Adult steelhead cruising and sustained speeds indicate that fish would be able to pass upstream even during sluice gate operation. Burst speeds would be sufficient to escape the high velocities near the sluice gate. Based upon the distribution of modeled average velocities, adult steelhead would have no difficulty in successfully moving upstream even when the sluice gate is open. Velocities would be much less when the sluice gate was closed and the dam spilling.

Comment FI-82

Page 4, first paragraph of Fish Behavior and Movement section: The operations protocol for cutoff of flows to the ladder is set at 20 or more fish passing the ladder during the previous 2 days to protect steelhead. This cutoff protocol is completely inadequate because the number of steelhead used equates to over 6 percent of the recorded adult population passing SCD in recent years.

Response

Please see the revised SOMP and response to Comments FI-50, FI-57f and FI-57g. The protocols do not call for cutting off flows to the ladder, only that a gate would be closed at the top of the ladder to prevent fish from swimming out into the sluicing event and be subject to fallback. The protocol was established to avoid impacts to large groups of steelhead that would be migrating upstream.

Comment FI-83

Page 4, last paragraph: NMFS does not believe that the plan to induce upstream migration from a resting area would work. Instead, the steelhead may just move to a different location a few feet away.

Response

Thank you for your comment. Comment noted. The movement of steelhead away form the sluice gate is exactly the type of movement we would hope to induce. As the sluice gate is opened, this movement pattern would continue in an upstream direction putting distance between the steelhead and the sluice gate. We would avoid rapidly opening the sluice gate to allow fish to continue to move upstream away from the high velocity water.

Comment FI-84

Page 7, second paragraph: There will be mortality and the survivors will have their migration delayed due to steelhead response to the sediment plume as it passes the length of the river from the dam to the ocean. This avoidance behavior to extreme sediment loads is well documented.

Response

Please refer to the response to Comment SED-42, FI-78 and FI-79. Suspended sediment would not move in plume that passes the length of the river. The carrying capacity of the river would determine the sediment load downstream of the Dam. Sediment that is sluiced and not carried by the river would remain in the plunge pool until flows increase to the point it is mobilized.

Comment FI-85

In table 4.4-2, you cannot express fish counted as a percentage of the total run of fish if the total number of fish in the run is unknown. Available information indicates that during some years, fish pass the counter on the ladder on the last day the counter is operated; strongly suggesting the adult migration was not complete. Obviously, "most" of the run has passed in this time period, but using percentages is inaccurate. There are some years that the river flows to the ocean year round and adults can move upstream at any time, and early and late migrations are known for the few years the counter was in use early or late in the year.

Response

NMFS itself consistently uses unqualified percentages to make estimates of the size of remaining listed populations even though the actual historic and current numbers of the runs are unknown or guessed at. Because the information presented in the table is qualified (on page 4-107), it is appropriate to express it as percentages. Early and late migrations are known from some years, but even these late movements have time limits. As an example, Shapavolov and Taft (1954) operated a trap year round on Waddell Creek, within a mile of the ocean. Upstream adults were taken from late

October to July over the ten-year study but never did this range of movement occur in the same year. When fish moved early, such as late October, the last migrant was taken in late April. In years when fish were collected in late June or July, the migration didn't start until late December. In all cases the early and late migrating individuals were solitary fish and later running fish were typically females. The point is that what is presented as the migration percentages are well-founded estimates of the core of the run.

It is acknowledged that the fish that move outside of mid December to May 31 time frames make up a small percentage of the totals but could retain some behavioral traits important to the population in an evolutionary context.

Comment FI-86

Table 4.4-5: Again, percentages cannot be used in this case because only 60 percent of the habitats are considered. We know the lagoon provides rearing habitat and there are some areas of good quality habitat in reach 3 as well. The percentages given in the table are inflated by not including the other 4 reaches that were not analyzed.

Response

Please refer to comment to FI-85. The Table is referenced to Dettman (1990) and is a basic piece of background information presented here to provide an overview of the spawning habitat distribution in the Carmel River. This table refers to spawning habitat, not rearing habitat, so it does not address the lagoon at all.

Comment FI-87

Sleepy Hollow Steelhead Rearing Facility section: The entire section can be eliminated as it adds nothing to the discussion of the SCD EIR/EIS. The rearing facility was established to raise fish that are displaced when the river downstream dries up every year.

Response

Comments were received during agency review of the Draft EIR/EIS that specifically requested this section be included in the Final EIR/EIS. The section needs to be in the document to set the stage for project impacts that affect the rearing facility.

Comment FI-88

Table 4.4-6: Under PP, Reach 4 – 8,532 and 8,522 – are these supposed to be the same? Please explain the difference in numbers for reach 6a between alternatives. Under reach 5, Alt 1, why do the operations have half the effects of CY2 and 3? We recommend describing the difference between CY and operations below the chart.

Response

The discrepancy between the operations take estimates for reach 4 between projects is a typographical error. The correct number is 8,522. Thank you for calling it to our attention.

There is no difference in the numbers for Reach 6a between the alternatives. For Reach 6a, the analysis indicates there would be no effect from construction, but sediment and turbidity would be transported into Reach 6a under the project operations for all the alternatives and the No Project Alternative.

For Reach 5, operations have a much greater effect than construction because sediment and turbidity from the reconstructed channel and the bare floodplain in the former reservoir inundation zone would be carried downstream affecting Reaches 4, 5, and 6.

Comment FI-89

FI-1, Access Route Improvements: NMFS disagrees with the effects determination of “temporary” for this aspect of the project. The EIR/EIS indicates the roads will be permanent, some becoming the primary access routes after the project. Riparian roads are a leading cause of water quality degradation, contributing fine sediments and leading to increased cobble embeddedness. The bridge over Tularcitos is a major impact associated with this project, which is not reflected in the effects determination.

Response

With the exception of Tularcitos Creek, all other roads are existing and runoff from them is an existing condition. The impacts are considered temporary during construction. Construction of the bridge over Tularcitos Creek would be staged to avoid impacts to the creek. Access to both abutments can occur from either end of the bridge. Construction of the bridge would occur outside of the active channel. Approximately 100 feet of channel would be temporarily dewatered during the construction season (CY1) and any fish found in the section would be rescued and relocated. Upstream flow would be directed through a pipe that would run through the construction area. The short length of channel is affected only temporarily during construction year 1, mitigation is offered and no ongoing impacts are anticipated, therefore it is not considered to be a major impact.

Comment FI-90

FI-3, Operation of a Trap and Truck Facility: This has been avoided by the June 15-Oct 15 instream work window for PP and Alt 1 – no trap and truck measures will be needed. For Alt 2 and Alt 3, NMFS is still willing to eliminate the trap and truck expense to get the dam removed.

Response

Thank you for your comment. Comment noted.

Comment FI-91

FI-6, Water Quality Effects on Fish: Include language on fuel storage, spills, BMPs, etc. Also, for some reason, impacts to water quality resulting from the sluice gate have not been analyzed. NMFS expects the impacts to steelhead from sluice gate operations will be lethal the entire 18.5 miles below the dam.

Response

Impacts to water quality from construction activities are addressed in Section 4.3. Impacts to water quality from sluicing are provided in Section 4.4.3 under FI-6 for each alternative. Impacts considered include increased turbidity and suspended sediment loads. Please see the response to comments for FI-78 and SED-42. The sediment transport capacity of the river would determine how much of the channel would be affected by sluicing operations. The time slot for sluicing is short (hours) and would occur on the rising limb of a storm hydrograph. Increased levels of turbidity from sluicing would be expected to occur in the Carmel River down through Reach 5 and possibly into Reach 6 before the levels would be undetectable from the following storm flows. Increased levels of suspended sediment from sluicing would be expected to occur throughout Reach 4 and possibly into Reach 5. Some of the sediments released by the sluicing operation would be locally deposited in the plunge pool area and along the channel downstream. As streamflows increase following the sluicing event, these sediments would be re-mobilized and moved downstream similar to what occurs under a typical storm flow event. The volume of sediment that is sluiced from behind the Dam would be unavailable for transport past the Dam during the following storm event.

Comment FI-92

FI-7, Fish Ladder Closure: Long-term ladder issues, specifically those causing closure , need to be addressed – sediment inundation, sluicing operations, etc – in the EIR/EIS as well as in the O and M Plan with acceptable passage plans when the ladder is impassable.

Response

Please refer to the revised SOMP (Appendix J). The ladder would not become impassable; it is designed to facilitate sediment passage. A section of the channel upstream of the ladder may become impassable. If sluicing or dredging cannot be successful in restoring passage, upstream migrants would be captured from the ladder and transported past the obstruction and released into the river.

Comment FI-93

FI-8, Upstream Fish Passage: Please refer to General Comments on sluice gate operation and then address the inappropriate effects determination. As for passage *between the reservoir and upstream habitat during sluicing, would 300-700 cfs, 1-foot deep, and the width of the channel for 0.05 miles be a passage barrier? The river was considered passable by citing steelhead burst speeds in feet per second (fps) and flow rates of about 6 fps 50 feet upstream of the dam. At this time however, 2-4 acre feet of sediment will be flowing down the Carmel at 6 fps. Steelhead don't usually swim into areas of high suspended sediment, but rather try to find cover, hold along the channel bottom, and delay their migration until there is less suspended sediment in the water. It is more likely that they swim downstream away from the sediment laden water rather than upstream through it.*

Response

Please refer to the revised SOMP for an improved explanation of the effects of the sluicing. Steelhead do not hold along the channel bottom during large flow events because that would expose them to saltating bedload and the highest concentration of suspended sediment in the river channel. Fish hold near the sides of the channel or near banks in low velocity water during floods.

Comment FI-94

FI-9, Downstream Sediment Impacts: Please refer to General Comments and then address the inappropriate effects determination. The sluiced sediment will not be "mobilized and redistributed" but will more likely be uniformly-sized material and will move through the river in what is described as a "plug flow." It will be mobilized, but it will move downstream, smothering each area that it moves into until it reaches the ocean. In low gradient channels, this process can take decades even if flows are above normal every year. The impacts will easily range from the dam to the ocean and will exceed lethal limits the entire way downstream. In regards to the number of fish impacted, only the numbers of rearing fish are considered, but migrating adults, migrating smolts, and rearing juveniles will be subjected to lethal levels of suspended sediments in the lower river. Essentially 100 percent of the anadromous fish in the Carmel River will be affected by this project if it is carried out as described in the Mussetter Report, which notes the need to sluice every 5 to 20 days during the migratory season.

Response

This comment is based on a misunderstanding of how sediment would be transported. Effects are not anticipated to be observable the entire distance of the Carmel River from the Dam to the ocean. Lethal levels of suspended sediment would not occur and are discussed in FI-78 and FI-79. Please refer to the response to the revised SOMP (Appendix J) for a better understanding of sediment transport. The reviewer is referred to the modeling studies conducted by MEI (MEI 2007a, MEI 2006b) to assess the impacts of dam removal with sediment release.

Comment FI-95

FI-13, Stream Sediment Removal: Must remove sediment to access the lower gate in the dam face. Where will the sediment be disposed of, how will you remove it, risk of fuel spills/lubrication leaks, fine sediment against dam, et cetera.

Response

The second paragraph under Issue FI-13 on p.4-155 in the Draft EIR/EIS discusses sediment storage upstream of the Dam. This discussion remains in FI-13 under Alternative 3 in the Final EIR/EIS. Risks to water quality related to construction activities are located under Issues WQ-2 and WQ-14.

Comment FI-96

FI-14, Notching Old Carmel River Dam: NMFS understood the original plan to notch the Old Carmel River Dam would require dewatering the area around the dam. Mortality of steelhead in dewatered areas is likely to occur and would be a significant impact under NEPA. The effects determination here is incorrect.

Response

The impact and mitigation discussion for Issue FI-14 presents the dewatering and rescue procedures on page 4-141 in the Draft EIR/EIS and remains in 4.4.3 of the Final EIR/EIS. The fish would be rescued and relocated to suitable habitat.

Comment FI-97

Alternative 2, FI-9, Downstream Sediment Transport: This will be beneficial as natural sediment loads would be transported during natural sediment transport flows. Natural sediment transport would be allowed to occur during all flows during all times of the year, differentiating this alternative and Alternative 3 from the previous two alternatives that would not provide natural sediment transport, but rather pulses of sediment at levels that would be considered catastrophic if they occurred naturally.

Response

Alternatives 2 and 3 would also provide substantial pulses of fine grained sediment to downstream reaches once the Dam is removed. There would be substantial amounts of fine sand remaining in the former inundation zone. Since the area cannot be revegetated until the Dam is removed, bare soil would be exposed and would be susceptible to erosion for the first few seasons. While there would be a more immediate restoration of sediment transport through the former reservoir inundation zone compared to the Proponent's Proposed Project, Alternative 1, or the No Project Alternative (Alternative 4), it may take a few years before sediment reaches the Dam site and moves into the channel downstream. Our analysis indicates that there would be short-term impacts to sediment downstream of the dam site with long-term benefits once the area is sufficiently revegetated and sediment transport is restored in the channel for Alternatives 2 and 3.

Comment FI-98

In Alternative 4, sluicing seems to be part of this alternative, but it is not addressed in the same fashion as the Proponent's Preferred Project or Alternative 1. It should be addressed in the same fashion and the effects determination should be the same for both. There are several instances where the effects between the No Action Alternative and the Proponent's Preferred Project are the same in their description, but different under the effects determination. **(Also SED-56)**

Response

The fish ladder and sediment management are no longer part of the No Project Alternative (Alternative 4).

July 3, 2006 letter from Robert W. Floerke / Department of Fish and Game

Comment FI-99

[C]DFG sees Dam strengthening as inherently problematic in terms of overall risk to riverine resources. The DEIRIEIS does an adequate job in providing documentation of passage at the Dam for the last several decades, but does not provide enough historical context for what is now a tenuous condition of steelhead within the watershed. While it is true that steelhead observed in an evolving series of ladder counts have shown numbers as high as 1,400 between 1962 and the mid-seventies (and as low as 15 in 1992), the key management context for the population overall is that it is currently below 5 percent of known historic estimates. As such, its numbers are low enough to be at risk of local extinction. Any actions CDFG takes in this setting, such as voicing its opinion in the public comment process, or developing resource protection measures through the SAA process, must consider these parameters. The [C]DFG position is that making the dam to a permanent fixture in the watershed for the foreseeable future is to exacerbate local extinction risk. While the proposed improvements to the fish ladder, viewed in isolation from the prospects of the Carmel River population, should improve passage success, they cannot compare with the positive effects of replacing the ladder with natural passage. Even the best functioning ladders will impede passage, at rates currently documented between 5 percent and 40 percent for anadromous fish. Fallback and delay, effects on reproductive success due to increased stress, hesitation at entrance pools and kelt mortality are among the known factors associated with ladders that can only reduce overall recruitment to the population.

Response

Comment noted. The purpose and need of the proposed action which the Final EIR/EIS evaluates is to provide dam safety, not to improve fish passage or recover populations of fish. The presence of SCD on the river is an existing condition; it is not an impact of the project.

Comment FI-100

Squarely outside of the baseline is the impact of the new proposed sluicing regimen that will be necessary in perpetuity to periodically move significant tonnages of accumulated sediment from behind the dam into the incised river corridor below it. Due to time and staffing constraints, [C]DFG can not comment extensively on the specific details of its concerns on the Draft Plan prepared to date (Appendix J). We have instead coordinated with the National Marine Fisheries Service (NMFS) in recent months and concur with the analyses presented in their comment letter on this specific issue. The most important and basic aspect of the sluicing regimen is that it will be, along with the ladder, at the very minimum be a chronic stressor on the steelhead population. Furthermore, passage through the reservoir is likely to be poorer (higher water temperature, decreased cover, increased predation) in perpetuity with the sluicing regimen than it was in a deeper reservoir just a few years ago (and certainly inferior to a re-naturalized river reach).

Response

Please refer to the revised SOMP (Appendix J). A great deal of the area upstream of the Dam was barren of vegetation in 1997, the first year the reservoir was operated without the stop logs. Based upon the rapid development of a defined and vegetated channel upstream of the Dam in the Carmel River we expect similar conditions to develop all along the river up to very near the Dam. This would greatly improve passage conditions and would also avoid the temperature, predation and habitat issues that are implied to persist in the reservoir for the long-term.

Comment FI-101

As presented in Appendix J, sluicing operations are untested and lack specificity. They are based on migration records and behavioral observations of an already residual run and do not attempt to model the population recovery that the resource agencies believe should be a primary objective of the project. They do offer an interesting projection based on admittedly the most accessible, rather than effective, data collection methods (e.g. the use of the Robles Del Rio gage 5 miles downstream of the dam rather than the Sleepy Hollow gage). While the plan strives to identify permutations that would minimize the concurrence of sluicing and migration, the complexity of variables appropriately identified in the "Proposed Sluicing Decision Tree" (Figure 3) belies the inherent difficulty in juxtaposing the need to remove sediment from the reservoir and improve fish passage. The draft plan appears to fail to consider in detail predictable outliers to watershed conditions experienced from 1994-2005, such as fire, drought or prolonged heavier flows, which would alter debris loading, sediment particle-size distributions and vegetative encroachment in the reservoir. The adaptive management aspect of the plan appears to be traditional dredging that would occur at the upstream end of the fish ladder "on average every three years." If heavy storms and high flows are prevalent, this dredging would be precluded, making historically productive wet years the most impacted.

The experience of the last two decades with maintenance issues at the fish ladder amply illustrate the difficulties in achieving resource management priorities particularly during storm events. We are confident that CAW will do their best to comply with all aspects of the Sluicing Operations and Maintenance Plan that is still to be developed, but are concerned that the full implications of the plan be fully understood so must be evaluated as an unknown. By design, sluicing will need to happen more or less concurrently with the adult migration of steelhead in the Carmel River. The document correctly identifies the impacts of the sluicing to fisheries and water quality as significant and unavoidable (Table 2.1, Impacts FI-9 and WQ-14).

Response

Please refer to the revised SOMP (Appendix J). The purpose and need of the proposed action which this Final EIR/EIS evaluates is to provide dam safety, not to improve fish passage or recover populations of fish. The presence of SCD and its effects on the river is an existing condition; it is not an impact of the project.

While this may be considered a “residual” run, the information on migration timing and magnitude is very applicable. A restored run would migrate upstream, spawn and outmigrate during the same time frame because the access to the river and tributaries is provided by winter stormflows. The histograms provided in Figures 4.4-5 are similar to the run timing and magnitude to the histograms in Shapvolav and Taft on Waddell Creek from steelhead studies conducted between 1932 and 1942 on what was then a healthy run of steelhead. Waddell Creek is in the Central California Coastal ESU and migration occurs slightly earlier than the South-Central California Coastal ESU and the Carmel River in general.

Realtime data was obtained from the USGS for use in the sluicing analyses. The Sleepy Hollow gage is maintained by the MPWMD for the purpose of measuring low summer flows and is not rated above flows of about 300 cfs.

The Carmel River is very dynamic in nature and the ongoing evolution of channel development in the inundation zone of San Clemente Reservoir is a testament to the dynamics. The fact that a channel has been formed and vegetated in the last 10 years is a positive factor for the future of the river. We expect that the channel would develop and stabilize in the near future immediately upstream from the Dam, and that this would be a very useful feature supporting fish passage upstream of the fish ladder **(Also SED-57)**.

NOTE: COMMENTS COMMENT FI-102 TO COMMENT FI-110 CORRESPOND TO PUBLIC HEARING TESTIMONY COMMENTS

Comment FI-102

Jonas Minton/Planning and Conservation League Environmental Advocacy Organization

We think that additional attention needs to be placed on the difficulties of sluicing from either the dam strengthening alternative or the notching alternative. How do you sluice at the same time you maintain fish passage? The time that you want to sluice is when the fish want to out-migrate.

Response

Please refer to the revised SOMP (Appendix J) for an explanation of sluicing operations. Sluicing does not present an impairment threat for downstream migrating juveniles. During sluicing access from the ladder would be closed to prevent upstream migrating fish from exiting the ladder and being exposed to potential fallback through the open sluiceway. However, downstream migration can occur either through the ladder, over the Dam or through the sluice way. Sluicing does not impair the ability of fish to move downstream past the Dam. Downstream migrating steelhead would be exposed to short-term, locally higher suspended sediment loads and turbidity in the river downstream of SCD.

Comment FI-103

Hank Smith/Resident of Monterey

Lastly, but most importantly, alternatives other than dam removal will have a negative impact on the fish. And the ladder is not only ineffective, but even the best fish ladders -- and not many people are aware of this, but even the best fish ladders only allow 50 to 80 percent of the fish to migrate upstream. So even if we upgrade this fish ladder, we're still not really doing justice to the fish. Upgrading and ongoing care and maintenance of the fish ladder in these other alternatives will be very significant and will be borne by you and me for decades to come.

Response

Thank you for your comment. Comment Noted.

Comment FI-104

Hank Smith/Resident of Monterey

The notching alternative bothers me because it was not clear how the fish are going to out migrate. You know, these fish are returned back, if they can. They return back to the sea and they do this several times. But the notching doesn't describe how they are going to make that journey. And we already have experienced situations on the existing dams where the water flow is such that these fish trying to make their out migration; that is, to return back to the ocean are destroyed.

Response

The fish would migrate downstream in the same way as they do currently. However, with the notching the distance into the plunge pool would be about 20 feet less than under existing conditions. The new fish ladder would be designed to carry all the flow in the river up to about 55 cfs, and a portion of the flow thereafter. The existing fish ladder can only carry about 10 cfs.

Comment FI-105

Dave Zach's/Resident of Carmel Valley

Regarding the fish, the more care and attention we give to this fish run. I think the better. However, there was a healthy fish run here 50, 60 years ago in spite of the dam. So whether we really need to demolish the dam in order to improve the fish runs, I do not know.

Response

Thank you for your comment. Comment noted.

Comment FI-106

Roy Thomas/Carmel River Steelhead Association:

Never has anybody built a fish ladder to a reservoir full of sediment and not had nothing but trouble trying to keep the fish ladder functioning.

Response

Comment noted. The existing reservoir full of sediment and the existing fish ladder are existing conditions. They are not impacts of the project. The new ladder would be an improvement over the existing conditions.

Comment FI-107

Roy Thomas/Carmel River Steelhead Association

The threatened and possibly soon-to-be-endangered steelhead that live in the Carmel River, because their population has been dropping in the last seven years, they have lived in the Carmel River for tens if not hundreds of thousands of years.

Response

Thank you for your comment. Comment noted.

Comment FI-108

Nikki Need/Resident of Carmel Valley

Removing the sediment from the San Clement side and placing it on the Carmel side still has some issues in my mind. Most importantly, will that habitat which will be lost, the wonderful riparian habitat, habitat for red-legged frog and juvenile steelhead, will *that habitat be replaced by upland habitat with the addition of more sediment? So that's the first comment.*

Response

The habitat along the existing Carmel River from the Dam up to about 3,800 feet upstream of the Dam would be converted to a mixture of upland and wetland habitat. Sediment from the San Clemente arm would be removed and stored in the part of the Carmel River arm that would be cut off from the river. There are opportunities to create wetland and pond habitats that would support California red-legged frogs in this area but it would no longer be a riparian system along the Carmel River and it would not support steelhead. The river would flow through the San Clemente arm. The habitat existing in the Carmel River upstream of the Dam beyond the 3,800 feet distance would remain in tact.

Comment FI-109

Keith Andover/Resident of Carmel Valley

Right now downstream of the San Clemente Dam there are essentially – well, since the draining of Garzas Creek there are essentially no tributaries that are suitable for juvenile steelhead to oversummer, whereas upstream of the San Clemente Dam between the San Clemente Dam and the next obstruction, which is the Los Padres Dam, there are several very high-quality, you know, higher-elevation tributaries that do provide significant oversummering opportunities for juvenile steelhead. So that there's a real – you know, getting fish back and forth past this current obstruction, there's a lot of reason to believe it would be of enormous benefit to the steelhead. And as we all know fish ladders, you know, don't do the job.

Response

Comment noted. The reservoir and the fish ladder are existing conditions. They are not impacts of the project, although the new ladder would be an improvement over the existing conditions.

Comment FI-110

Jim Lambert/Carmel River Steelhead Association

I couldn't tell, on the map that you showed up there of the bypass route, will that provide unobstructed routes for steelhead passage without having any small ladders or anything? Is that going to be bulldozed through to some degree? Or will there be tall cliffs and falling? I have no idea what that looks like, because I didn't see a topographical map

Response

The concept is that fish passage would be provided through the San Clemente Creek arm without the use of ladders or other fish passage structures. Please refer to Chapter 3.5 for a description of the Alternative 3, including a topographic map.

June 29, 2006 letter from Duane James/U.S. Environmental Protection Agency

Comment FI-11

All project alternatives may have short-term impacts to California red-legged frog habitat and water quality due to sedimentation or sediment deposition. However, we note that selecting an alternative that incorporates dam removal (such as Alternative 2 or 3) would meet the project purpose and need, restore the natural basin hydrology, and provide long-term benefits to the threatened steelhead population in the Camel River by improving fish passage and the stream gravel replenishment necessary for spawning. The document notes that passage in a free-flowing stream is preferable to a fish ladder (p. 5-22). It also documents a concern that the steelhead population is threatened by-the development of water resources, drought, and watershed, land use, and environmental problems (p. 4-103). However, the analysis in the DEIS does not fully describe the environmental benefits (both in the River and the steelhead population) that may result from removal of the dam.

Response

Benefits of dam removal are presented in Table 2.1 and discussed under Impacts FI-7, FI-9a, FI-9b, , and FI-13 for Alternatives 2 and 3. The project does not alter flows, it only retains, notches or removes a dam that retains a former reservoir now nearly completely full of sediment.

Comment FI-112

In addition, we note that the decision to stabilize the sediment in place (as proposed in Alternative 3) would reduce habitat impacts to special status species in the area, as disposing of large volumes of sediment at the proposed sediment disposal site could destroy habitat and may also injure or kill special-status wildlife species (p. 4-209). Alternative 3 (Carmel River Reroute and Dam Removal) is expected to take the same amount of time to complete as the Proposed Project (Dam Strengthening), but unlike the Proposed Project, it would not have unmitigatable, significant turbidity impacts to the Camel River from sluicing (p. 2-37 and 5-2).

Recommendations: In order to fully weigh the costs and benefits of each proposed alternative, the FEIS should include a detailed analysis of the projected effects of the removal of the dam on the River and the steelhead population. This information should be used in the determination of the LEDPA.

Response

The impacts and benefits of the alternatives are discussed in presented in Table 2.1 and discussed under Impacts FI-7, FI-9a, FI-9b, and FI-13 for all the alternatives and the Proponent's Proposed Project. The differences in long-term impacts to the river are relatively minor, since sediment would soon begin to pass the Dam. Coarser sediment would become transported downstream more quickly under Alternative 2 and 3 compared the Proponent's Proposed Project and Alternative 1.The impact to the river could be greater in the short-term for the Alternatives compared to the Proponent's Proposed Project since the river has been starved of sediment downstream of SCD for about 80 years. Restoring the full 16.5 AF of average annual sediment transport past the dam site with removal and notching alternatives could impair the river more in the initial years after dam removal compared to the Proponent's Proposed Project.

Long-term benefits to spawning and rearing habitat would occur to primarily to Reach 4 downstream of the Dam. New channels would develop upstream of the Dam and its not possible to say if that habitat would be better or worse than existing channels, but its likely conditions would be better and there would be more channel that currently occurs upstream of the Dam since some of the poorer reaches of channel near the Dam would be replaced with better channel. Some of the better reaches of channel in the upstream reaches would be replaced with similar quality habitat. Comparison of channel gains and losses is presented in a new Table 4.4-11 and summarized in Table 4.4-11.

The major benefit for the steelhead population would be the removal of the fish passage barrier at SCD. This would provide steelhead movement into the upper watershed with essentially unimpaired access past the dam site and could increase migration and spawning success of adults passing the Dam, or increase the number of fish passing the Dam. The ability to count the number of fish passing SCD however would be lost so documenting impacts of the project or the recovery of the population would become difficult.

<u>Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report</u>

Comment FI-113

It is obvious from review of the EIR that a 10 ft. diameter sluice gate operated as described in the operational plan will not protect threatened steelhead from "take" (death of a critical part of the population hindering recovery and leading to further decline toward extinction).

The 10 ft. gate is too small to have the desired sediment management effect and allow safe passage. It has a narrow window of effectiveness. It would not operate well at flows above 600 cfs because of backwater effects. Timing of operation is critical and costs of keeping a gate operator and a fish ladder operator present doesn't seem realistic knowing how dams have been operated in this state. Many times the debris and sediment flows will clog and jam this small sluice gate as well as the fish ladder. The *expense and disruption of shutting down and shoveling out the 60 plus bays of the fish ladder multiple times during wet years, has not been evaluated.*

The fact that steelhead frequently restart their migration on the rising limb of the hydrograph makes any operation of a sluice gate likely to wash back and probably kill migrating Steelhead resting in the reservoir or pooling below the dam. A "take" (the death of a critical part of the population hindering recovery and leading to further decline toward extinction) of threatened species would be expected.

I have contacted fish passage experts in Alaska, Washington, Oregon and California and could find no one who knew of a fish ladder functioning successfully on a reservoir that is 90 percent full of sediment. Even light sediment will tend to settle in the calm resting areas designed into a fish ladder, disrupting or blocking passage.

Response

The fish ladder is designed to facilitate passage of sediment. The 10-foot sluice gate is located and designed based on an analysis of sediment transport at the fish ladder entrance. Fish fallback has been identified as a potential issue with operation of a sluice gate (please see response to Comment FI-69). Minimization of the effects have been incorporated as part of the mitigation plan.

Comment FI-114

Any new diversion point, or old one for that matter, needs to have a properly sized, durable and functioning fish screen.

Response

As indicated under Impact FI-11, any relocated surface water diversion would have a CDFG and NMFS compliant fish screen installed.

Comment FI-115

It is very important to understand that there are no areas of the Carmel River or its tributaries below San Clemente Dam that have spawning habitat and perennial flow. This means that if San Clemente fish ladder does not function, the offspring of steelhead forced to spawn on the suitable habitat will be dried up and lost. To put it simply a failed retrofit will cause the extinction of steelhead on the Camel River.

Response

Thank you for your comment. Comment noted. The fish ladder is expected to function as designed.

June 28, 2006 letter from Bob Baiocchi / Carmel River Steelhead Association

Comment FI-116

San Clemente Dam has a fish ladder. However, the draft EIR/EIS did not include data and information that the fish ladder allows for steelhead trout species to effectively use the fish ladder and migrate upstream safety at all times when the reservoir is choked with sediment.

Discovery work conducted by the Carmel River Steelhead Association shows that fish ladder on reservoirs that are filled with sediment do not work effectively because the fish ladder becomes choked with sediment and becomes non-operational for fish passage.

The draft EIR/EIS must include data and information that shows the fish ladder was effectively working and allowed all steelhead trout species to migrate safety upstream to spawning and rearing habitat in the upper Carmel River. Consequently, there must be evidence in the draft EIR/EIS that provides proof to the public that the fish ladder provided passage at all times and allowed for safe passage of all federal protected steelhead trout to the upper river when the reservoir is filled with sediment.

Response

Data from the existing fish ladder is presented in Figure 4.4-4 and discussed in the accompany text. No efficiency studies have ever been conducted on the existing ladder. Ladder counts have been made at SCD and in the ladders at LPD, but there is no information on how many fish that approach the ladders and of those how many enter the ladder. There is no information on how many fish that enter the ladders complete their ascent. There is no information on how many fish fallback over the Dam after ascending the ladder. The new ladder would be designed to pass sediment. The presence and effects of the existing dam and fish ladder are part of the baseline environmental condition. The proposed new fish ladder would be an improvement over existing conditions.

Comment FI-117

Case law provides for monitoring under CEQA. The draft EIR/EIS must include a Steelhead Ladder Monitoring Plan for the fish ladder during the post project period for the life of the project so that the public can be assured the fish ladder is working at all times and that the fish ladder is allowing safe passage for steelhead to migrate upstream above the dam. However, if the most reasonable alternative was selected and the dam was removed, the defective fish ladder would not be necessary.

Response

A monitoring plan would be developed for the selected alternative as part of permitting.

Comment FI-118

It is well known that dams prevent the downstream recruitment of spawning gravels for downstream spawning of resident and anadromous fisheries. In this case the San Clemente Dam is preventing the downstream recruitment of spawning gravel in a significant large portion of the streambed of the Carmel River that has adverse impacts *to spawning habitat of federally protected steelhead trout species in the lower Carmel River.*

Response

This is an existing condition. It is not an impact of the project. The Dam has been holding back sediment for over 80 years and is nearly full of sediment. For the entire Proponent's Proposed Project, Alternative 1, and the No Project Alternative, sediment would soon begin moving over the Dam as the reservoir is filled **(Also SED-69)**.

Comment FI-119

The draft EIR/EIS must include a Steelhead Trout Gravel Recruitment Plan for the lower Carmel River below San Clemente Dam in the event the removal of the dam is not ordered by any regulatory state and federal agency.

Response

The effect of the existing dam on sediment delivery to the downstream reaches is part of the baseline environmental condition. It is not an impact of the project. The Dam is nearly full of sediment and would soon be passing sediment downstream. For that reason, all alternatives, the Proponent's Proposed Project and the No Project Alternative would result in sediment being transported past the Dam in the very near future. Please refer to response to Comment FI-115 **(Also SED-70).**

Comment FI-120

The San Clemente Dam obstructs the navigable waters of the Carmel River for fish and public boating. Clearly Cal-American has a public duty to protect federally listed steelhead trout in the Carmel River from it's water diversions from the Carmel River Watershed. Consequently it would be reasonable, in the public interest, and in the best interest of the federally protected Steelhead Trout to require Cal-American Water Company to prepare a Carmel River Steelhead Plan that would significantly improve the steelhead resources in the Camel River Watershed to the Pacific Ocean, including the Camel River Lagoon. Said Management Plan must be included in the final EIR/EIS.

Response

The effects of the existing dam on fish and kayaking passage are part of the baseline environmental condition. They are not impacts of the project. The purpose and need of the action which this Final EIR/EIS evaluates is to provide dam safety, not to improve steelhead resources or kayaking.

June 30, 2006 letter from Mindy McIntyre/Planning and Conservation League Foundation

Comment FI-121

The technical design for "sluice gates" required for both the Proponents Proposed Project (PPP) and Alternative 1, is inherently flawed for several reasons. First, relying on the sluice gates as the primary method of sediment management will lead to significant unintended consequences caused by ongoing release of the sediments to prevent future build-up of sediment above the dam structure. The continuous release of sediment will result in impacts to water quality, will continue to cause degradation of habitat downstream of the dam site, and will assure that present trends in scouring just below the dam structure will also continue to occur.

Response

Please refer to the revised SOMP (Appendix J). Sluicing is one method used to manage sediment build-up. A second tool is dredging. If access from the ladder is blocked, fish can be captured in the ladder and moved upstream of the impaired passage. Habitat downstream of the Dam is degraded from lack of sediment transport past the Dam. The sluicing operations would not be continuous but intermittent. Sluicing would move sediment staged to be mobilized from upstream of the Dam to downstream during storm flows **(Also SED-71)**.

Comment FI-122

Both the PPP and Alternative 1 also require a fish ladder to allow fish passage above the dam structure that we believe will also threaten the survival of migrating steelhead unable to navigate safely through the area directly above the sluice gate, causing fish to become caught up in the downstream flow, and back downstream through the sluice gate.

Response

The sluice gate has been positioned to maximize sediment removal from upstream of the ladder and minimize the risk of fish to fallback through the sluice way when it is opened. Access from the ladder into the upstream channel would be prevented prior to and during sluicing events.

Comment FI-123

The dam structure currently impedes the current survival of the steelhead trout. Even with a new fish ladder design, the "sluice gate" design poses a threat to fish passage that will require monitoring and modification, and perhaps lead to mitigation for ongoing impacts to steelhead. It is a stated goal for the steelhead resource to be maintained "as a self-sustaining resource and to restore it as much as possible to its historic level of productivity" (4-103). Only the removal of the dam will ensure that. The DEIR/S also notes that "the steelhead population in the Carmel River is threatened with becoming a *remnant run due to the development of water resources, drought, watershed land use, and environmental problems" (4-103). Removing the dam will go a long way to preserving this endangered species. Dam removal and river reroute will restore natural sediment transport levels that can improve important spawning and feeding habitat conditions in the mainstream, and will also assure that migrating species can make their way to important spawning areas above the current dam site.*

Response

Comment noted. The goal stated on Page 4-103 of the Draft EIR/EIS is CIF's goal. The purpose and need of the proposed action which the Final EIR/EIS evaluates is to provide dam safety, not to recover steelhead. The presence of SCD and its effects on the river is an existing condition; it is not an impact of the project.

Comment FI-124

The DEIR/S does not adequately cover the possible unintended consequences of dam buttressing; selecting that option will render the entire EIR/EIS inadequate due to lack of adequate analysis. It is very possible that buttressing will impede the upstream course of the steelhead trout even more than the poorly designed fish ladder currently does, despite the new proposed fish ladder design, due to proximity to downstream flow at the location of the sluice gates. This will further endanger the continuing survival of the steelhead trout in the Carmel River.

Response

The new fish ladder design and siting are consistent with CDFG and NMFS current design criteria for fish passage. The sluice gate would be operated only intermittently (hours at a time and only several times a year). The upstream end of the ladder would be closed to prevent steelhead from moving out into the high velocity water in front of the sluice way during sluicing. The sluice gate would be situated at a location and orientation to minimize impacts to migrating steelhead.

Comment FI-125

The sluice gates may also have the unintended consequence of impeding the movement of the trout in the river by creating a strong downward flow at the top that might capture fish in the current and force them back through the sluice gate downstream.

Response

The sluice gate has been positioned to maximize sediment removal from upstream of the ladder and minimize the risk of fish to fallback through the sluice way when it is opened. Access from the ladder into the upstream channel will be prevented prior to and during sluicing events.

GENERAL COMMENTS

WRITTEN COMMENTS RECEIVED

June 4 letter from Don Redgwick

Comment GEN-1

I believe the most important issues are developing a diversion plan for the river during construction, doing the work with as little negative impact on the Carmel Valley Community as possible, mitigating the environmental impacts even handedly, considering the value of the dam as a settlement basin and calculating the cost benefit ratio of the various proposals without succumbing to political pressure from single interest groups.

Response

Thank you for your comment.

May 23 Community Meeting Questions from Victoria Kennedy/Sleepy Hollow Homeowners' Association

Comment GEN-2

What will be the penalty for non-compliance with conditions stated in EIR?

Response

It is not clear what non-compliance situations this comment is intended to reference. Agencies and local government issuing permits would enforce compliance with permit conditions. Construction monitoring would be conducted to assure that permit requirements, resource protection measures, and mitigation measures are followed. The Applicant's contracts would embody permit requirements, and the Applicant will require contractors to comply with the terms of their permits in the contracts.

Comment GEN-3

Who has the authority to control the site? Only CalAm, a private entity?

Response

As discussed above in response to Comment GEN-2, agencies and local governments issuing permits will enforce compliance at the site, as necessary. The Applicant will manage and direct contractor activities at the site.

Comment GEN-4

How are the residents to determine who is the responsible agency, e.g., whether it is Monterey County Zoning Administrator, Monterey Peninsula Water Management District, Monterey County Sheriff's Department, the lead agency Department of Water

Resources Department, U.S. Army Corps of Engineers, for each violation of the mitigation measures?

Response

The Applicant would coordinate with local residents through the on-site construction manager. The on-site construction manager will retain copies of all project permits and will provide residents with a list of contact information for permitting agencies on request.

Comment GEN-5

As this is a privately owned project with the lead CEQA agency's office located in Fresno, who is going to be the local responsible entity to force compliance with mitigation measures or problems with project activities?

Response

As discussed above in responses to comments GEN-2 through GEN-4, an on-site construction manager would retain copies of all permits. Local residents may request contact information for any jurisdictional agency or permit at any time. Agencies and local government issuing permits would enforce compliance with permit conditions.

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment GEN-6

Learn from experience. The EIR/EIS does not refer to any of the literature on dam removal. If the dam removal literature was reviewed in developing the alternatives, it should be cited. If it was not reviewed, then it should be and the alternatives should be revised based on the experience of earlier work and research.

Response

An extensive review of dam removal literature was provided as part of the previous Recirculated Draft Environmental Impact Report (RDEIR [Denise Duffy & Associates, Inc.2000]). The RDEIR was reviewed and is cited. The project engineers of Montgomery, Watson and Harza (MWH), are familiar with the practice and approach to dam removal in the industry.

Comment GEN-7

Alternative 2, Water Quality Impact Analysis. Where does this section start? Page 4.93 appears to be in the middle of the discussion, but there is no heading to mark the beginning.

Response

The section subhead for Alternative 3 was missing on this page in the Draft. A subhead reading "Alternative 3 (Carmel River Reroute and Dam Removal) has been inserted on the page, before the paragraph that begins "Water quality impacts and mitigation for Issue WQ-1."

Comment GEN-8

Vegetation and Wildlife Impacts. The impact of sediment released by sluicing operations on downstream aquatic habitat and aquatic fauna are not analyzed and should be. This would be an ongoing, permanent impact and could be significant.

Response

The comment is not clear. It states that this is a "vegetation and wildlife" impact, but then requests information on sluicing impacts to downstream aquatic habitat and aquatic life. The discussion of sediment impacts on downstream aquatic habitat and aquatic life due to sluicing has been expanded in Section 4.4, Fisheries, of this EIR/EIS.

Comment GEN-9

Appendix D. The figures referred to in the memo should be included.

Response

The figures are now included in Appendix G of this Final EIR/EIS.

June 20, 2006 letter from Mark Delaplaine / California Coastal Commission

Comment GEN-10

Pagination of Draft EIR/EIS: The pagination of the Draft EIR/EIS makes navigation of the report very difficult. We would appreciate it if the pagination included more than the main section number plus the page number, e.g., 1-x, 2-x, 3-x or 4-x, and included the subsection number as well, e.g., 1.2-x or 2.5-x, etc. In the CD Rom version, it would be helpful if references to other sections, including the table of contents, were hyper linked for easy navigation.

Response

Thank you for your comment. Pagination has been updated in the Final EIR/EIS. In addition, bookmarks are provided in the electronic copies of the EIR/EIS (which are being provided to most recipients) for easier navigation.

Comment GEN-11

Errata: The Draft EIR/EIS variously refers to Old Carmel River Dam (OCRD) as 1,500 feet (pg. 2-5), 1,700 feet (pg. 3-30), 1,800 feet (pg. 3-40) and 0.5 miles (pg. 4-102) downstream of SCD.

Response

Thank you for drawing attention to this inconsistency. The correct distance is 1,800 feet. The EIR/EIS has been corrected to indicate this.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment GEN-12

For project impacts and components that are common to all alternatives, the Final EIR/EIS (or FEIR/S) should fully describe level of impact and measures to mitigate for impacts. For example, the reconstruction and retrofitting of the bridge at Old Carmel Dam (OCD) is a component of all alternatives, so a full description of impacts and mitigation measures to make OCD passable at all flows should be included in the Final EIR/S.

Response

The EIR/EIS evaluates all impacts regardless of whether they are unique to an alternative, or held in common among more than one alternative. Impacts and mitigation measures, including those associated with the Old Carmel River Dam (CORD), are fully described. Improvement to provide fish passage at OCRD under all flows is not a purpose or need of the action that the EIR/EIS evaluates (although fish passage at San Clemente Dam (SCD) is an objective of the project).

Comment GEN-13

Page 3-8, Para 4: "Approximately four miles upstream", should be corrected. Los Padres Dam is five miles upstream of San Clemente Dam (23.5 -18.5).

Response

Comment noted. Los Padres Dam (LPD) is 5 miles upstream, as stated and the EIR/EIS has been corrected.

Comment GEN-14

Page 3-30, Para 4: Under Old Carmel Dam Fish Ladder Improvements, the last sentence should be modified to read, "The right bank contains an open passageway approximately 4 feet wide by 15 feet high that at one time was equipped with a gate and operated as a sluiceway and control to raise water levels for operation of a diversion. This structure was modified in 1992 and 2000 by removing several stoplogs and the gate structure from the passageway."

Response

Thank you for this correction. This Final EIR/EIS includes this change.

Comment GEN-15

Comment on the following reference: Mussetter Engineering Inc. 2006b – Summary of Hydraulic and Sediment-transport Analysis of Residual Sediment: Options for the San Clemente Dam Removal/Retrofit Project, California.

Response

This appears to be an incomplete sentence in the comment letter.

June 15, 2006 letter from Pam Krone-Davis / RisingLeaf Watershed Art

Comment GEN-16

The community has rallied strongly behind the restoration of the lagoon and I am sure would support restoration projects in this area as well.

Response

Thank you for your comment.

April 5, 2006 letter from Dick Butler / NOAA's NMFS

Comment GEN-17

Figure 5: This caption appears to be for another, unrelated figure.

Response

This figure was in the *Sediment Operation and Management Plan* in the Draft EIR/EIS, but has been superceded by the revised *Sediment Operation and Management Plan for Fish Passage* (SOMP, Appendix J) in the Final EIR/EIS.

Comment GEN-18

Also, the [Sluice Gate] O and M Plan fails to address such concerns as changes in dam ownership, staffing, long-term funding, and budget crises. NMFS cannot approve such an intensive and risk prone plan, without considerable changes to the O and M Plan, and then it must be third party implemented, funded up-front, and bonded for at least 100 years to ensure that the steelhead resource will not be lost due to reasonably foreseeable events.

Response

This comment appears to relate to a National Marine Fisheries Service (NMFS) approval action on a permit, and would be addressed during permitting. Under those alternatives for which the SOMP (Appendix J) would be implemented (the Proponent's Proposed Project or Alternative 1), there are no current or foreseen changes in dam ownership or budget crises. Funding for operation and maintenance of the Dam, fish ladder, and sluice gate would be provided through the normal budgetary process of the owner and paid by the revenues of the water system, as regulated by the California

Public Utilities Commission (CPUC). A bond would not be necessary to maintain the fish ladder. It is not clear what is intended by the comment on “changes in staffing.”

Comment GEN-19

Alternative 1: NMFS has many similar concerns between the Proponent’s Preferred Project and this alternative. For instance, in FI-8: NMFS believes sluicing will not be beneficial to listed steelhead.

Response

The effects of sluicing under Alternative 1 are discussed in section 4.4.3 under Impact Issues FI-8, and FI-9b. For Alternative 1, Impact Issue FI-8, Upstream Fish Passage, is discussed in Section 4.4.3 and the corresponding impacts involve demolition of the old fish ladder, construction of a new ladder and implementation of the SOMP (Appendix J) to ensure upstream passage. Operation of the new ladder would improve passage conditions at SCD, a benefit to fish passage compared to existing conditions. Although implementation of the SOMP would serve as mitigation for upstream fish passage, some sediment management actions, such as sluicing, could cause fishery impacts. Notwithstanding these mitigation-related impacts, implementation of the SOMP would reduce overall impacts to steelhead.

<u>June 30, 2006 comments from National Marine Fisheries Service (NMFS)</u>

Comment GEN-20

Referring to page 3-86, 3.6.2, NMFS notes the last paragraph starting with the second sentence of the section appears to be a repeat from page 3-85, second paragraph.

Response

Comment noted. Thank you for this correction. The redundant paragraph has been deleted.

<u>July 3, 2006 letter from Robert W. Floerke / Department of Fish and Game (CDFG)</u>

Comment GEN-21

Another parameter of aquatic resource management that may be affected by the choice of alternatives is the ongoing process by which CAW complies with Order 95-10 by the State Water Resources Control Board (SWRCB) (subsequently supplanted by Order 2002-02). This Order occurred due to complaints filed by DFG and others which successfully argued that CAW diversion of waters were having an illegal and adverse effect on the public trust resources of the river. To date, DFG has participated in helping aid attain compliance with the Order by negotiating a Memorandum of Understanding (MOU) on an annual basis that regulates the bypass flows past the Dam. In the future it will be necessary for DFG to bring CAW into a more standard form of compliance *through the use of the more thorough SAA process that is consistent with Section 1600 of the DFG Code. The condition of steelhead in the Carmel River will diminish or improve over time, partially in response to the presence or absence of the Dam. If the population continues its general trend of decline, it will force the resource agencies to expend greater efforts and regulatory oversight on the remaining fish and wildlife resources in the Carmel River in regulatory processes such as the ongoing Order 2002-02. The project Operator should anticipate this eventuality and consider it in any long-term cost-benefit analyses they conduct. The increased scrutiny that will need to be paid to the management of steelhead as a result of the retention of the Dam may, over the years, end up placing a greater burden on CAW than the investment that could be made in the short run to effect Alternative 3.*

Response

Thank you for this regulatory background and guidance. CAW [Applicant] will continue to work cooperatively with all appropriate permitting agencies during the implementation of this seismic safety project and for as long as they own the Dam.

Comment GEN-22

We have noted that there were some moderate ambiguities and unresolved issues in the description of Alternative 3, but have not addressed them in this letter (e.g. a curious absence of reference to the growing knowledge base pertaining to dam removal in the United States).

Response

An extensive review of dam removal literature was provided as part of the previous RDEIR (Denise Duffy & Associates, Inc. 2000). The RDEIR was reviewed and is cited. The project engineer (MWH) is familiar with the practice and approach to dam removal in the industry.

NOTE: COMMENTS COMMENT GEN-23 TO COMMENT GEN-34 CORRESPOND TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

<u>Comments Received at May 23, 2006 Public Hearing</u>

Comment GEN-23

Charles Franklin/Resident

The concept of extending the term of the project to mitigate its impacts, it's a century of [sediment] accumulation, roughly, and shouldn't we try and mitigate it on that kind of time scale? Does that make any sense economically? I don't know. But I didn't quite get why this four- or five-year time span seemed necessary for the project. So you could do it over a hundred years very differently and probably pick up most of the seismic mitigation in the first five years.

Response

The four to five year time span refers to the estimated time it would take to complete Alternatives 1, 2, or 3 (the Proponent's Proposed Project could be completed in four years). The long-term SOMP is discussed in Appendix J. As described in Section 3.1, a previous EIR on the project (Denise Duffy & Associates, Inc. 2000) evaluated an alternative that would have released sediment over a 60 to 100 year period. This alternative was considered and eliminated due to its long-term effects on fish and water quality, due to its potential effects on flooding, and because the ability to control releases was not demonstrated. Seismic mitigation would occur through modifications to the Dam or dam removal, not through sediment release.

Comment GEN-24

Don Redgwick/Resident of Pacific Grove

The dam can serve many functions if left in place and strengthened. It can be managed to serve as a flood control protection which allow -- which would allow protection of the Carmel River basin if there is an allowance for storage during a storm. In other words, you have to keep the level down. A dam will support wildlife and migrating birds.

Response

SCD was not originally constructed for flood control or water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. If left in place, it would be operated and maintained to fulfill its original purpose and would not be used to provide flood control or water storage.

Comment GEN-25

Victoria Kennedy/Sleepy Hollow Homeowners Association

If there's a problem with project impacts such as noise, start times, dust, traffic control deficiencies, what will be the remedy besides merely a phone number and a person's name to call?

Response

Construction monitoring would be conducted to assure that permit requirements, resource protection measures, and mitigation measures are followed. If problems such as those listed above occur, the Applicant and permitting agencies, will require contractors to comply with these measures. The Applicant will coordinate with local residents through the on-site construction manager. The on-site construction manager will retain copies of all project permits and will provide residents with a list of contact information for permitting agencies on request

Comment GEN-26

Victoria Kennedy/Sleepy Hollow Homeowners Association

What would be the penalty for noncompliance with conditions stated in the EIR?

Response

See response to GEN-2.

Comment GEN-27

Victoria Kennedy/Sleepy Hollow Homeowners Association

Who has the authority to control the site? Only Cal Am, a private entity, or a non-private entity?

Response

See response to GEN-3.

Comment GEN-28

Victoria Kennedy/Sleepy Hollow Homeowners Association

Do the residents have to figure who is responsible – the responsible agency, whether it is a Monterey County zoning administrator or the water management district or the county sheriff's department?

Response

See response to GEN-4

Comment GEN-29

Victoria Kennedy/Sleepy Hollow Homeowners Association

As this is a privately-owned project with CEQA agency's office located in Fresno, who is going to be the local responsible entity to force compliance with mitigation measures or problems with project activities?

Response

See response to GEN-5

Comment GEN-30

Monica Hunter/Planning and Conservation League Foundation AND Carmel River Watershed Conservancy

I do want to bring up an element of this that hasn't been touched on tonight, and it represents the work of the conservancy and that is in establishing a watershed *management plan and implementing a watershed-wide approach to understanding the issues and challenges of protecting water quality, riparian habitat, river channel systems, and also the linkages to the lagoon and to the beach and some of the issues that are occurring there. I also want to mention that Carmel River watershed is a critical coastal watershed. And most of us are aware that within the state we have put tremendous effort and emphasis on a number of our programs, funding included, resources, technical expertise devoted to understanding how we can improve and protect the coastal watersheds. And this concerns impact to near-shore marine environments as well as protecting water quality for the benefit of communities; in this case, this community does rely on the Carmel River for many recreational and other local traditional uses. So I think the watershed context is something that we can't overlook. I think removing the dam structure of stabilizing the sediment, rerouting the river, restoring the flow of the river is something that in the long run the watershed management effort would most benefit from that. I think it would solve many problems and eliminate some of the costly bandaids that we're looking at in terms of trying to overcome the ongoing and permanent impacts as long as that structure remains in place.*

Response

Comment noted.

Comment GEN-31

Roy Thomas/Carmel River Steelhead Association

I'd like to remind you of some problems with dealing with the Option 1 and 2. If you entomb a piece of concrete in the Carmel River, the cost isn't just the entombment. You've got a hundred, maybe two hundred years of maintenance on this block of concrete that, in fact, if we're all here, we'll still want to keep the fish and wild life and the recreation going on, on the river. People like to boat on that river and right now the boaters have to carry their boat around this obstruction.

Response

Comment noted. For health and safety reasons, no recreational use is authorized on the reservoir which would remain in the Proponent's Proposed Project and Alternative 1. The Dam would be removed and sediment removed or stabilized in place in Alternatives 2 and 3.

Comment GEN-32

Nikki Nedeff/Resident of Carmel Valley

This is an incredibly complicated project. Indeed it is. Any of the alternatives have massive impacts, far-ranging impacts from traffic to environment, red-legged frog, economic, et cetera.

Response

Comment noted.

Comment GEN-33

Nikki Nedeff/Resident of Carmel Valley

This is an opportunity to look at this project in a broader context. This is one opportunity – removing San Clemente Dam – one opportunity to rectify a whole series of problematic issues on the Carmel River, including increasing water supply, which ultimately will benefit habitat in ways that removing the dam will not.

Response

Comment noted. Removal of the Dam would not increase water supply.

Comment GEN-4

Jessica Simms/Resident of Carmel Valley

What are the impacts of Alternative 3 on San Clemente Creek?

Response

The impacts of Alternative 3 on San Clemente Creek are discussed throughout Chapter 4 of this Final EIR/EIS.

June 27, 2006 letter from Laurence P. Horan/Law Offices of Horan, Lloyd, Karachale, Dyer, Schwartz, Law & Cook

Comment GEN-35

The use of our access road by trucks and other vehicles for the purposes outlined in the Draft EIS/EIR would create significant unmitigated impacts with respect to: (1) geologic stability; (2) vegetation; (3) different species of birds, including wild pigeons, mourning doves, California quail, and great blue heron; (4) red-legged frog; (5) California steelhead/salmon; (6) our river frontage and the despoliation and elimination of a significant number of acres of sensitive wetlands; (7) impaired air quality; (8) significant traffic safety impacts at the intersection of Cachagua Road and elsewhere on the property; (9) destruction of the pastoral rural quality of life which both the owners and their donee Park District have strived assiduously to maintain; and (10) destruction of a valuable historic resource: one of the first settler cabins in the Carmel Valley, which the owners have restored and which can never be duplicated.

It is almost unthinkable that the voluminous documents comprising the draft EIS/EIR pay virtually no heed whatever to the foregoing impacts, nor does it mention in any significant manner the fact of 960 acres of park land and the historic Murphy's cabin.

Response

Evaluation of the Cachagua Access Route with respect to each of the above-listed impacts can be found throughout Chapter 4 of the EIR/EIS. No alternative would destroy the Stone Cabin or remove the river frontage. The Monterey Peninsula Regional Park District (MPRPD) was contacted several times during the preparation of the Draft EIR/EIS and was requested to provide guidance and input regarding effects on MPRPD owned lands. The MPRPD has not responded, and no mention has been made of the donated property. This Final EIR/EIS includes recreation and land use sections, which evaluate impacts and mitigation measures for these resources areas. The air quality, noise, traffic and circulation, and aesthetics sections (Sections 4.7, 4.8, 4.9, and 4.11) have been updated with an evaluation of impacts to the users of the Stone Cabin.

June 27, 2006 letter from William H. Leahy/Big Sur Land Trust

Comment GEN-36

The San Clemente Dam has been documented in numerous scientific studies to be detrimental to the ecological viability of the Carmel River and poses a significant safety hazard for the community. The Big Sur Land Trust is supportive of a project that would provide for the long-term restoration of the river and its biological resources including the steelhead trout and California Red-Legged Frog. An opportunity such as that provided by removal of the San Clemente Dam should be viewed in the larger context of watershed restoration so that multiple objectives can be accomplished through expenditure of public and private funds. There is growing recognition of the value that dam removal can bring to restoring ecosystem function within river systems. The Carmel River is an important resource for all Californians and can be an example of creative collaboration for restoring ecosystem function and providing a safer, healthier watershed for current and future residents and visitors to this unique river. The Big Sur Land Trust welcomes the opportunity to be a partner in the restoration of this important watershed.

Response

The effects of the existing dam are part of the baseline environmental condition. They are not impacts of the project. Thank you for your comment regarding long-term restoration opportunities and your offer of partnership.

June 30, 2006 from Clive R. Sanders/Carmel River Watershed Conservancy

Comment GEN-37

We believe there is much study still needed on the whole process of ensuring that the end result is a river that Steelhead will be able to negotiate, work needed to ensure proper mitigation for the Steelhead and Red Legged Frogs during the years that a decommissioning will take place. May we expect an opportunity to review this material when it is assembled from the studies that have gone before?

Response

The Lead Agencies would chose a project alternative based on this Final EIR/EIS. The Notice of Determination (NOD) and Record of Determination (ROD) will provide public disclosure of the selected project. A decision as to whether or not to remove the Dam has not been determined. Public involvement would continue throughout project approval and permitting.

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District

Comment GEN-38

GIS ortho-photo quads for use as base-maps for comparison between all projects, which show project locations, specific project component sites, property boundaries, landmarks, geographic features, and include meta data in electronic format. This data is readily available.

Response

Figure 3.2-2 in Section 3.2 of this Final EIR/EIS provides this information (project components, property boundaries, landmarks, geographic features). Although Geographical Information System (GIS) ortho-photo quads were not used to create the map, the figure is adequate for the level of detail required in this EIR/EIS.

June 28, 2006 letter from Jim Crenshaw / California Sportfishing Protection Alliance

Comment GEN-39

Furthermore, we find that the Draft EIR/S fails to fully assess the impacts of the Proponent's Proposed Project (dam thickening), Alternative 1 (dam notching) or Alternative 2 (dam removal and transport of sediment to a nearby canyon), and therefore the Draft EIR/EIS is inadequate for selecting any of the other alternatives.

Response

Impacts of all these alternatives are discussed in this Final EIR/EIS. This comment does not identify which impacts are believed to be not fully assessed.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment GEN-40

The fish ladder on the old Camel River Dam is located on the south end not the north.

Response

The river generally runs south to north. The fish ladder is located on the west side of the Carmel River.

June 28, 2006 letter from Bob Baiocchi/Carmel River Steelhead Association

Comment GEN-41

When a dam owner builds a dam on a public waterway, it should be understood that the dam would be removed from the public waterway when the dam becomes obsolete. In the case of the San Clemente Dam, it was built in 1921 and the reservoir has become filled with sediment. The San Clemente Dam and Reservoir is obsolete. It is unreasonable and not in the public interest for any dam owner or water diverter in California to built a dam and not be responsible for it when the dam's life has ended. The duty and responsibility of the removal of the San Clernente Dam is that of Cal-American Water Company, and not that of the public or public agencies.

Response

SCD is not considered obsolete. The alternatives that would retain the Dam, including the Proponent's Proposed Project, would continue its useful life indefinitely. The reservoir has never served flood control or water storage purposes, and the accumulation of sediment in the reservoir has not impaired the ability of the facility to continue to provide its original function, as a point of diversion for California American Water (CAW).

GEOLOGY

WRITTEN COMMENTS RECEIVED

June 20, 2006 letter from Mark Delaplaine/California Coastal Commission

Comment GEO-1

Comment

Page 4-10 of the Draft EIR/EIS describes mitigation for issue GS-4, Soil Erosion, but includes mitigation only "with implementation of standard erosion control methods and BMPs on the down slope side of all construction zones." [underlining added]. The Draft EIR/EIS should include soil erosion mitigation and BMPs upslope as well as down slope of construction zones.

Response

Agreed. The implementation of standard erosion control methods and Best Management Practices (BMPs), such as those in the (Stormwater Pollution Protection Plan (SWPPP, Appendix K) would apply to any disturbed areas during construction, including both the upslope and down slope sides of all construction zones. The text in this Final EIR/EIS has been revised accordingly.

June 29, 2006 letter from David A. Berger/Monterey Peninsula Water Management District

Comment GEO-2

Page 3-54, Para 6: "Improvement of the existing road would consist of widening the road to 20 feet (minimum width of 15 feet with turnouts for passing in tight reaches), improving the radius of curvature at sharper curves to allow passage of large trucks, and constructing a drainage ditch along the uphill edge of the road." The existing roadway is very narrow at 10-12 feet in width and built on steep slopes that frequently wash out during the winter. The FEIR/S should fully evaluate the erosion potential along the access road and include mitigation measures to minimize impacts from increased runoff and soil erosion.

Response

This subject is discussed under Issue GS-2: Access Route Landslides/Slope Stability. As stated under the mitigation for GS-2, "Prior to conducting access road improvements, a qualified geotechnical engineer or engineering geologist would survey all road rights-of-way to provide construction design specifications that would avoid any potential for landslides. To ensure slope stability, BMPs developed during design specifications would be implemented in addition to applicable ones identified in the SWPPP (Appendix K)" This would mitigate any impact to a less than significant level.

Comment GEO-3

Page 4-5 Regional Seismicity. The third paragraph cites the Converse Consultants 1982 report as evidence that the Cachagua Fault zone is not active. This discussion should reference a more recent study of the Cachagua Fault that was conducted for MPWMD as part of geotechnical investigations for the New Los Padres Reservoir project. Pertinent discussion is found in the final report titled Geotechnical and Engineering Studies for the New Los Padres Water Supply Project (The Mark Group, March 16, 1995, see page 5-8).

Response

The section has been updated in this Final EIR/EIS to include information from the Geotechnical and Engineering Studies for the New Los Padres Water Supply Project, and other more recent references. The conclusion remains the same as in the Draft EIR/EIS.

Comment GEO-4

Page 4-6 Table 4.1-1: Estimated Peak Acceleration of Specific Faults. The estimated peak horizontal acceleration for the named nearby faults is based on a calculation methodology from 1981 (see footnote 3), which may not adequately reflect revisions for more recent seismic events, including the Loma Prieta (1989) and Northridge (1994) events. These calculations should be revisited to ensure that the selected seismic design criteria are appropriate and consistent with more current methodology.

Response

The estimated peak acceleration and MCE has been described using the 1995 report by WCC, and the 1995 Mark Group report for the New Los Padres Water Supply Project. Both of these studies consider the lessons learned by the Northridge and Loma Prieta earthquakes. The project description does not require modification based upon this information. As stated in section 3.2 of the EIR/EIS, in 2004 MWH reviewed and approved the approach in the 1995 WCC report. The Division of Safety Dams (DSOD) approved the design criteria in 1998 and approved contract drawings and specifications for the seismic retrofit of San Clemente Dam (SCD) in 2001. When the owner files an application to DSOD to construct the project, DSOD will review the previously approved design or the if new final design is submitted using current criteria. To be approved, the new design would have to meet the design criteria in place at the time the construction.

Comment GEO-5

Page 4-13 Alternative 3 (Carmel River Reroute and Dam Removal). Issue GS 4: Soil Erosion, briefly discusses the risk of erosion along access road improvements, in sediment disposal areas, and from sediment and rock discharges to streams. However, no discussion is given to assess the potential for destabilization of slopes resulting from the erosive forces of the Carmel River over the course of its rerouting through the San Clemente Creek channel. More specifically, what is the significance of the potential for *high-river flows along the San Clemente Creek channel to destabilize the base of the channel slopes and possibly produce rockfalls, landslides or debris flows that could partially or completely block the channel, and result in impoundment of the river behind such a blockage?* **(Also HY-9)**

Response

The canyon walls that would be exposed after dam removal and excavation of sediment will not have vegetation, and there will be residual sediment on the walls and channel bed that could not be excavated. The walls may be subject to rockfall or even mass wasting from rainfall or river flow. Some of the bedrock in the area will help stabilize the canyon walls, but to what extent is uncertain. This effect would be anticipated in Issues WR-2a and WR-4a. These issues evaluate impacts due to changes in sediment flux passing the San Clemente Dam site, and changes in sediment composition downstream of the dam site. The evaluation includes consideration of erosion of sediment deposits upstream of the Dam that were not removed during excavation.

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment GEO-6

Alternative 3, Issues GS-5: Diversion Bypass Blasting. As stated in the EIR under Alternative 3, blasting to create the diversion bypass channel will "irretrievably alter the landscape by removing approximately 145 acre-feet of rock…." (p. 4-14). Irretrievably altering the topography in such a substantial way should be a significant impact.

Response

The rock resource has not been identified as warranting specific protections or preservation. As such, its removal would not constitute a significant impact. Its removal is disclosed, and the loss of the resource is described as irretrievable, but not significant.

June 14, 2006 letter from Lewis Rosenberg

Comment GEO-7

The Draft EIR/EIS presents an uneven emphasis of the various constraints to the proposed project. Specifically, the "Geology and Soils" section is only 13 pages long, whereas other constraints are discussed in more detail, for example, the fisheries section is 61 pages long, and the traffic and circulation section is 53 pages long. No doubt that each of the environmental setting areas is important, but for a proposed project with "seismic retrofit" in the title, there should be more detail on the seismic constraints, even if the information in included in an appendix section.

Response

Under NEPA and CEQA we are required to provide sufficient information for an issue as determined by its potential effect. The level of discussion in the Section 4.1 Geology and Soils section is proportional to the expected effects and appropriately identifies the significance of potential impacts. The section has been updated to reflect more recent information pertinent to the analysis of geology and soils based on other comments.

Comment GEO-8

The State of California Business and Professions Code section 7832 (person practicing or offering to practice geology subject to provisions of Geologist and Geophysicist Act) and section 7872(a) (practice without legal authorization), require that the preparer of the geology section is licensed as a Professional Geologist by the State of California Board for Geologists and Geophysicists. On page 6-2 of the Draft EIR/EIS, Mr. Rick McCartney is listed as the preparer for the geology subject area. The State of California Board for Geologists and Geophysicists website shows a "Richard F. McCartney" license PG 5140. However, it is unknown if this is the same person as the report preparer.

Because the proposed project strongly affects public safety, the geology preparer should be a California-licensed Professional Geologist (preferably also a Certified Engineering Geologist), and should sign the report as required by section 7835 (required preparation of plans by Professional Geologist - signing or stamping with seal).

Response

License PG number 5140 is held by Richard F. McCartney, the preparer of the Geology and Soils section in the Draft EIR/EIS. The section was modified for the Final EIR/EIS by Daniel R. Tormey, Ph.D., PG number 5927. Neither the California Environmental Quality Act (CEQA) nor the National Environmental Protection Act (NEPA) require a Registered Geologist to prepare or stamp the applicable impacts analysis (CEQA Guidelines Section 15149). During the final design phase of the project, geologists, engineers, and geotechnical engineers would develop appropriate design specifications for the project. These design specification documents will be stamped by the appropriate registered professional.

Comment GEO-9

The regional geologic map (Figure 4.1- 1: Geology of the Site Vicinity) is not the current published geologic map. Although the citation on figure 4.1-1 is from the "2000 RDEIR produced by Denise Duffy & Associates," the map is likely from Converse Consultants 1986 report on "New San Clemente Project preliminary design and cost estimate." The most recent published map of the area is the "Geologic map of the Monterey Peninsula and Vicinity" by T.W. Dibblee, Jr. (published in 1999 by the Dibblee Geologic Foundation as their map DF-71). Much of the geology on the Duffy and Dibblee maps are similar owing to that Dibblee's mapping was the source material. However, figure 4.1-1 should incorporate the 1999 Dibblee map because it is printed in color and easier to read, but most importantly, the map shows the faults differently than the Duffy map.

For example, the Dibblee map depicts an east-west striking fault approximately 1/2-mile southwest of the existing reservoir. This fault is not shown on the Duffy map.

Response

The Geologic Map (Figure 4.1-1) of the Monterey Peninsula and Vicinity by T.W. Dibblee, Jr., published in 1999 has been reviewed and incorporated into the Geology and Soils Section 4.1 of the Final EIR/EIS. Incorporation of this more current map does not change the results of the review.

Comment GEO-10

The discussion of regional seismicity (page 4-5) contains obsolete terminology for fault activity as defined by the California Division of Safety of Dams (DSOD). The term "capable" is no longer used by the DSOD to describe faults that show displacement at or near the ground surface within the last 35,000 years. Instead, the DSOD uses the terms "Latest Pleistocene active fault" and "conditionally active fault" to describe faults with movement in the last 35,000 years (W.A. Fraser, 2001, Fault activity guidelines of the California Division of Safety of Dams: California Geological Survey Bulletin 210, p. 31 9-323). The Draft EIR/EIS should evaluate the fault activity of the Cachagua and Tularcitos Faults using current DSOD methodology.

Response

The text in this Final EIR/EIS has been updated to reflect this comment. See Section 4.1.

Comment GEO-11

The discussion of fault activity does not use the most current information. The geotechnical report commissioned for the proposed New Los Padres Dam (The Mark Group, Inc., 1995) contains detailed evaluation of the activity of the Cachagua Fault, which is the closest fault to the San Clemente Dam. The Mark Group report uses geomorphic evidence to show that the Cachagua Fault has not moved within the last 85,000 years. Work by L.I. Rosenberg and J.C. Clark (Quaternary faulting of the greater Monterey area: report to USGS National Earthquake Hazards Reduction Program, 1994) used radiocarbon dating to demonstrate Holocene activity on the Tularcitos Fault. These more recent reports help address the issue of "of great importance from the point of view of dam design is the question of whether nearby faults are active or not" (Draft EIR/EIS, page 4-5).

Response

The text in this Final EIR/EIS has been updated to reflect this comment. See Section 4.1. The results of the review have not changed.

Comment GEO-12

The section on ground shaking (page 4-5) covers the time period from 1800 to 1985, but leaves out the last 21 years. A search of the Northern California Earthquake Data Center database as of June 14, 2006 shows 53 earthquakes of magnitude 4 or greater since 1985 within 60 km of the dam, which are the same parameters in the Draft EIR/EIS. The analysis of earthquake recurrence intervals should be revised to include these more recent data.

Response

The recurrence interval has been updated to reflect more recent reports of seismicity in the area. A Maximum Credible Earthquake (MCE) and ground accelerations have not been changed as a result of this information.

Comment GEO-13

There is no discussion of the effects of earthquakes on San Clemente Dam, such as the 1989 M 7.0 Loma Prieta earthquake. What were the effects of the Loma Prieta earthquake on the San Clemente Dam? The section also does not discuss effects of other large local earthquakes such as the 1926 M6.1 Monterey Bay doublet or the 1984 M4.9 Big Sur earthquake. Does Cal-Am have repair records for the San Clemente Dam that would provide information on the effects of these earthquakes on the dam? If so, these should be reported to help understand how the dam performs during earthquakes.

Response

California American Water (CAW) was contacted on Thursday, July 27 2006 and indicated that there were no repair records available, and no evidence that any repairs were necessary on the Dam as a result of earthquakes since the construction of the Dam in 1921. DSOD conducted an inspection of the Dam after the Loma Prieta earthquake, and their records indicate no reports of damage.

Comment GEO-14

The section on dam site geology (p. 4-5 to 4-6) does not really describe the site geology, other than to relate that "the dam site is underlain by granitic rocks and smaller amounts of older metamorphic rocks now included in the granitic mass." The various geologic reports done by Rogers E. Johnson and Associates for the proposed New San Clemente Dam project provides much useful information about the dam site geology. These should be summarized in a revised dam site geology section.

Response

The text of the section has been revised in this Final EIR/EIS to include more recent and more site-specific descriptions of geology. See Section 4.1.

Comment GEO-15

This section also contains evaluation of the Maximum Credible Earthquake (MCE) and estimated peak acceleration of specific faults. These topics would be better placed in a seismology section. Nevertheless, there are some technical difficulties with the Draft EIR/EIS. The DSOD uses maximum earthquake magnitude, slip rate, fault type, distance to the site, and geologic site conditions to evaluate earthquake hazards (W.A. Fraser and J.K. Howard, 2002, Guidelines for the use of the consequence-hazard matrix and selection of ground motion parameters: California Division of Safety of Dams). Only distance to the site and geologic site conditions are discussed in the Draft EIR/EIS. The other topics should be provided in a revised section.

Response

The estimated peak acceleration and MCE has been described using the 1995 report by Woodward-Clyde Consultants (WCC) and the 1995, The Mark Group report for the New Los Padres Water Supply Project. The project description does not require modification based upon this information. As stated in section 3.2 of this Final EIR/EIS, in 2004, the engineering firm of Montgomery, Watson and Harza, Inc. (MWH) reviewed and approved the approach in the 1995 WCC report. DSOD approved the design criteria in 1998 and approved contract drawings and specifications for the Seismic Retrofit of San Clemente Dam in 2001. When the owner files an application to DSOD to construct the project, DSOD will review the previously approved design or the new final design, if submitted, using current criteria. To be approved, the final design would have to meet current design criteria and be in place at the time the construction application submitted.

Comment GEO-16

The information in table 4.1-1 (estimated peak acceleration of faults) is based on vague assumptions and outdated methodology. First, the "estimated Maximum Credible Earthquake magnitude (local)" is unclear because as the report disclaims, "Magnitudes and peak horizontal accelerations are based on assumed fault capability. The capabilities of these faults have not been rigorously investigated." In order for the reader to evaluate if these magnitudes are appropriate for the individual faults, the fault rupture length and fault-length vs. magnitude method needs to be specified for each fault.

Response

The geology section in this Final EIR/EIS has been revised to include more recent evaluations of MCE and peak accelerations by WCC and the Mark Group (both 1995). These reports describe the correlation between fault length and rupture length versus earthquake magnitude.

Comment GEO-17

The cited "estimated peak horizontal acceleration 50th percentile" uses the equations of "Joyner and Boore (1981)." The work of Joyner and Boore (1981) has been superceded by Boore and others (Seismological Research Letters, v. 68, no. 1, 1997) that reflects *post- Loma Prieta and Northridge earthquake ground shaking equations. Using these older equations could result in accelerations that are too low; which is a critical concern for the proposed project. The accelerations should be recalculated using current ground shaking equations and include the site class and site period used in the calculations. In addition, the DSOD recommends using the 84th percentile acceleration in cases of high or extreme consequence (Fraser and Howard, 2002), so it might be necessary to include additional percentile statistics if the proposed project falls into these categories.*

Response

The text of the geology section has been modified to include the methods of Idriss (1993) and Geomatrix (1992) for determining ground accelerations. As stated in section 3.2 of this Final EIR/EIS, in 2004, the engineering firm MWH reviewed and approved the approach in the 1995 WCC report. DSOD approved the design criteria in 1998 and approved contract drawings and specifications for the Seismic Retrofit of San Clemente Dam in 2001. When the owner files an application to DSOD to construct the project, DSOD will review the previously approved design or the new final design, if submitted, using current criteria. To be approved, the final design would have to meet current design criteria and be in place at the time the construction application submitted.

Comment GEO-18

It is unclear as under what conditions the dam is unstable. Is it the 0.9 "g-force" (cited as footnote 6 in table 4.1-I), or is it the 0.68g peak horizontal acceleration for the Tularcitos Fault (listed in table 4.1-I)? It is unclear as to whether the dam will fail at one of the maximum postulated ground motions, or is it so unstable that it will fail at a lesser ground motion. Provide the ground motion at which the dam is calculated to fail so the reader can better understand the dam stability. Without an accurate assessment of ground motions, it difficult to evaluate if the proposed project meets the purpose of "to meet current standards for withstanding a Maximum Credible Earthquake" as stated in the Draft EIR/EIS, information cover sheet. Otherwise, how do we know that the impact of thickening the dam is "less than significant"?

Response

The MCE on the Tularcitos Fault is magnitude 6.5, with a peak horizontal acceleration at the Dam of 0.70 g. The MCE for the San Andreas Fault is magnitude 8.0, with a peak horizontal acceleration at the Dam of 0.19 g. As such, the MCE and ground acceleration from the Tularcitos Fault sets the design conditions at the Dam. As stated in section 3.2 of this Final EIR/EIS, in 2004, the engineering firm MWH reviewed and approved the approach in the 1995 WCC report. DSOD approved the design criteria in 1998 and approved contract drawings and specifications for the Seismic Retrofit of San Clemente Dam in 2001. When the owner files an application to DSOD to construct the project, DSOD will review the previously approved design or the new final design, if submitted, using current criteria. To be approved, the final design would have to meet current design criteria and be in place at the time the construction application submitted.

Comment GEO-19

The section on landslides could have more detailed information. It states that a landslide could be triggered by a seismic event, but cites a 1998 report by Woodward-Clyde Consultants that the abutments were found to be stable. Yet, on page 4-9 of the Draft EIR/EIS, it states that "landslides could be triggered during the construction or operation of the Proponent's Proposed Project by oversteepening hillsides during the improvement of access routes," the discussion of which is not included in the "Environmental Settings" section. Nor is there any discussion of Reservoir Landslides/Slope Stability (Issue GS-3) in the "Environmental Settings" section. It would be useful to include the Woodward-Clyde report and the information used for the reservoir landslides as appendices, or to at least provide some details of the analyses to help the reader to draw their own conclusions from the data.

Response

The landslides portion of the geology section has been updated in this Final EIR/EIS to include more discussion of landslides. See Section 4.1. The supporting technical reports are available from the lead agencies for review by interested parties.

June 14, 2006 letter from Linda Agerbak

Comment GEO-20

EROSION, POLLUTION, FIRE: Serious and ongoing steps must be taken to monitor and minimize run-off and erosion caused by construction activities. Steps must also be taken to minimize the increased risk of forest fire.

Response

Measures to minimize run-off and erosion caused by construction activities are discussed in Section 4.3 Water Quality and in the SWPPP (Appendix K). The BMPs included in the Fire Prevention and Suppression Plan (Appendix Z) include such items as installing spark arrestors on vehicle exhaust pipes, etc. These BMPs would provide fire prevention and suppression measures during construction.

HYDROLOGY

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment HY-1

It can be managed to serve as flood control protection which would help protect the Carmel River Basin.

Response

SCD was not originally constructed for flood control or water storage, but to provide a point of diversion for CAW on the Carmel River and head for gravity feed into the water system. The original capacity of the San Clemente Reservoir was 2,200 acre-feet and the current capacity is 100 AF. Even if the reservoir were dredged and returned to the original capacity, the storage volume would not be sufficient to provide downstream flood control. During a large flood, reservoir storage would rapidly fill on the rising limb of the hydrograph and the peak flow would pass through a full reservoir nearly unaltered, even if the reservoir were completely empty at the start of the flood.

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment HY-2

Alternative 3 Impact Analysis. The impact analysis for Alternative 3 does not adequately describe or evaluate the hydrology and water resources impacts. A list of additional issues that should be evaluated include: capacity of San Clemente Creek to transport the water, sediment, and woody debris diverted from the Carmel River into the creek. Analysis should evaluate things such as volume and velocity at peak flows, potential for bank or channel scour as a result of changed hydrology, potential for log jams, etc.

Response

The final channel design will be based on detailed hydraulic analysis of the channel slope, cross section, and sediment material for a series of flows, ranging from bankfull to the design flood. Based on pre-dam data for San Clemente Creek, there would be appropriate capacity to convey the combined flow of the creek and Carmel River, transport sediment, and convey large woody debris. Figure 4.2.3 of the Final EIR/EIS shows typical cross section used in the sediment transport modeling of Alternative 3 that would be based on the hydraulic characteristics of the river.

Comment HY-3

Alternative 3 Impact Analysis. The impact analysis for Alternative 3 does not adequately describe or evaluate the hydrology and water resources impacts. A list of additional issues that should be evaluated include: changes to channel bed geometry in San

Clemente Creek – aggrade or degrade the creek bed. If the creek bed degrades, how far upstream would this degradation be expected to migrate?

Response

The restoration of San Clemente Creek would be designed to provide a geomorphically stable channel that will neither aggrade nor degrade. **(Also HY-2)**

Comment HY-4

Alternative 3 Impact Analysis. The impact analysis for Alternative 3 does not adequately describe or evaluate the hydrology and water resources impacts. A list of additional issues that should be evaluated include: changes in groundwater elevation along the abandoned portion of the Carmel River channel.

Response

After the Carmel River flow is bypassed into San Clemente Creek, the water table underlying the bypassed section of the river would decline. This would be a less than significant impact to groundwater resources. The potential impacts on other resources due to lowering the water table are discussed in the specific resource sections of this EIR/EIS.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment HY-5

Page 2-5, Para 2: Description of Reroute and Dam Removal, the statement, "The San Clemente Creek channel would be reconstructed through its historic inundation zone from the exit of the diversion channel to the damsite…", conflicts with the description provided on page 3-81, where the reconstruction is defined as the same as described in section 3.3 for the notching alternative. The notching alternative references reconstruction only in the uppermost 900-foot long section of the inundation zone. Also note the comments on Page 3-81 concerning routing the combined flows from the mainstem and San Clemente Creek through the historic San Clemente Creek channel.

Response

The last line of Page 3-81 that states that the channel would be the same as described in Section 3.3 is incorrect. The channel will be sized to convey the low and high flows of the combined Carmel River and San Clemente Creek flows and to be geomorphically stable. The final design of the channel will accommodate the combined flow of both streams as described in Section 4.2.

Comment HY-6

Page. 3-56 and 3-57 – a three-stage channel is proposed for the remaining reservoir sediments. The profile of the remaining sediments indicates that two very different *channels would need to be constructed – one for a relatively steep channel in a narrow valley and one for a meandering channel in wide alluvial flat. No performance measures are suggested that would indicate how these channels would be monitored or maintained.*

Response

The design of the geomorphically stable channel would identify the channel bed slopes and the cross sectional shapes of the channel sections along the channel length. As required under CEQA, mitigation monitoring measures would be prepared by the Applicant to accompany findings before project approval is made. A mitigation monitoring plan would also be developed in cooperation with the appropriate regulatory agencies during the permitting phase of the project and would incorporate final design information.

Comment HY-7

Page 3-80, Para 1: "The channel profile and section in Figure 3.5-3 show only the general geometry of the channel construction as used in the MEI hydraulic analyses…" The referenced figure shows the profile of the haul road. The FEIR/S should provide full documentation of the proposed channel geometry through the diversion channel and the post-project channel in the post-project San Clemente Creek channel downstream of the diversion channel.

Response

The figure referenced in the comment was inadvertently left out of the document. See MEI's *Summary of Hydraulic and Sediment-transport Analysis of Residual Sediment* (Appendix N) for a generalized bed profile for the restored channel. Note that this profile may change during the design of the channel as explained in Comment HY-6.

Comment HY-8

Page 3-81, Para 5 & 6: "The San Clemente Creek stream channel would be exposed and require reconstruction." The reconstructed channels described in Section 3 are not likely to be suitable for construction through the San Clemente Creek arm of the reservoir. The entire flow from the Carmel River mainstem, plus natural flows in San Clemente Creek must be routed through a reconstructed channel. Further, it is not clear why it would be necessary to excavate in the San Clemente Creek arm down to the pre-1921 level, except at the confluence with the mainstem. It is quite likely that the historic creek configuration near the bottom of the valley would be too narrow and would not be stable enough geomorphically to handle the increased flow. Instead, a wider channel at a higher level would probably be required to pass the combined flow of the creek and mainstem.

Response

The restored channel for Alternative 3 would be designed to convey the combined flow. The available hydraulic capacity of San Clemente Creek was investigated by MEI and it was determined that the available cross sectional area in San Clemente Creek would be sufficient to convey the combined flow of both streams. The excavation would be carried to an elevation near the historic San Clemente Creek channel invert to minimize the scour of sediment that would remain between the historic bed and the new channel bed. The final cross section, and bed slope of the restored channel would be designed to convey the anticipated sediment load and water.

Comment HY-9

Page 4-13 Alternative 3 (Carmel River Reroute and Dam Removal). Issue GS 4: Soil Erosion, briefly discusses the risk of erosion along access road improvements, in sediment disposal areas, and from sediment and rock discharges to streams. However, no discussion is given to assess the potential for destabilization of slopes resulting from the erosive forces of the Carmel River over the course of its rerouting through the San Clemente Creek channel. More specifically, what is the significance of the potential for high-river flows along the San Clemente Creek channel to destabilize the base of the channel slopes and possibly produce rockfalls, landslides or debris flows that could partially or completely block the channel, and result in impoundment of the river behind such a blockage? **(Also GEO-5)**

Response

See response to Comment GEO-5. Under both Alternatives 2 and 3, the historic channel banks of San Clemente Creek or Carmel River would be exposed following dam removal and excavation of the stored sediment. Under both proposed dam removal alternatives, at the damsite, it is about 60 feet from the current top of the sediment down to the proposed new channel elevation. In this portion of the Project Area, the banks of San Clemente Creek and the Carmel River have been under water, and more recently sediment, since the Dam was completed in 1921. Once these hill slopes are exposed following dam removal, there would be a period of time before upland vegetation is reestablished during which either surface erosion (rilling) or mass wasting (landslides) is possible. The existence, frequency, and magnitude of these erosion events are speculative at this time. The length of time it would take for the denuded hill slope above the channel to reestablish vegetation in order to minimize erosion is unknown. The restored channel for both alternatives would be designed to accommodate the anticipated sediment loads in the river and high flows without erosion of the channel bed or banks.

Comment HY-10

Page 4-19, Para 4. While the theoretical peak capacity of the spillway may be 20,300 cfs, the actual capacity is much less, due to debris flow that often blocks ports during high flows (see comment on Page 3-24 and picture above).

Response

Comment noted. Any blockage of the spillway bays would reduce the capacity of the spillway. The statement in the EIR/EIS should be considered an upper limit that is independent of factors such as debris blockage.

Comment HY-11

Page 4-20 to 4-23, Table 4.2-2. It appears that the table shows the maximum peak mean daily flow in cfs, while the title of the table seems to indicate that this is a monthly rate. USGS reports flows on a mean daily basis. Please also review text on page 4-19 that discusses monthly flows. Should this be mean daily flows?

Response

Table 4.2-2 refers to the peak average daily flow recorded for each month during the period of record. The text has been corrected in the Final EIR/EIS.

June 30, 2006 letter from Patricia Sanderson Port / U.S. Fish and Wildlife Service

Comment HY-12

Page 4-19, Section 4.2.1 Environmental Setting - Carmel River Hydrology, first full paragraph, last sentence: Instantaneous peak flows of 16,000 cfs on March 10, 1995, and 14,700 cfs on February 3, 1998, - both larger than the 9,000 cfs reported in the document - can be found on the U.S. Geological Survey (USGS) website for the Carmel River at Robles del Rio site at:

http://nwis.waterdata.usgs.gov/nwis/peak?site_no=11143200&agency_cd=USGS&format=html

Response

This paragraph was summarizing the data shown in Table 4.2-2 and references the maximum average daily flow per month, not the instantaneous peak flow recorded at the gage. The text in the Final EIR/EIS describing the table has been corrected to clarify.

Comment HY-13

Pages 4-20 and 4-21, Table 4.2-1 Average Monthly Flow: The table provides more significant figures than are found in the original data presented at the USGS website at:

http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=11143200&agency_cd=USGS

thereby implying greater precision than the data actually have (USGS presents only three significant figures below 1,000 cfs; table 4.2.1 presents as many as five).

Response

The additional significant digits were a result of averaging the average daily data. The table has been corrected in this Final EIR/EIS to reflect the appropriate level of significant numbers.

Comment HY-14

Pages 4-22 and 4-23, Table 4.2-2 Peak Monthly Flow for Period of Record: The table title is ambiguous - apparently what is reported is the highest daily mean flow for each month - distinguished from the instantaneous peak flow referenced in our first comment. More information about USGS surface water data in California can be obtained from Donna Schiffer, Chief, Statewide Hydrologic Monitoring and Information Office, USGS Water Science Center at (916) 278-3097 or shiffer@usgs.gov.

Response

The table title has been changed for clarification. Comment noted.

NOTE: COMMENTS HY-15 THROUGH HY-16 CORRESPONDS TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

Comment HY-15

Roy Thomas/Carmel River Steelhead Association:

I want to also remind you that when you start making new rivers, if you remember your own slide up there with acres and acres and acres of wood in the reservoir, if you don't make your new river wide enough, you'll have a new dam and it will be a wooden dam, so you have to pay attention to that.

Response

Comment noted.

Comment HY-16

Jessica Simms/Resident of Carmel Valley:

What are the impacts on San Clemente Creek? And how prone is it to flooding in the winter and how much of the banks will be eroded from that?

Response

The hydraulic analysis of the combined flow of the bypassed Carmel River and San Clemente Creek indicates that there would be sufficient capacity in the San Clemente Creek arm to create a channel that would convey the combined flow. Although a geomorphologically stable channel would be created through the former reservoir impoundment area, there would still be the potential for that the channel would move or reconfigure itself in response to flow or background sediment loading. The extent of bank erosion during such a dynamic process or the potential for hillslope erosion uphill of the channel is speculative at this time. However, if large-scale erosion were to occur, the additional sediment load from the event would flow to the channel along with the natural background load of the Carmel River and San Clemente Creek. This combined sediment load would be conveyed downstream depending on the sediment transport capacity of the Carmel River.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment HY-17

The hydraulics of putting a river into a creek channel needs analysis, not only channel width and depth needs consideration but the number and sharpness of bends are a concern. The Carmel River carries heavy loads of wood at times. We don't need a log jam dam.

Response

This question addresses design issues for the final channel. In general, the design would consider the magnitude of high and low-flow events in the river/creek, sediment loading, available channel cross-section, and the desired channel slope. These factors would be incorporated into the final design of the channel.

LAND USE

WRITTEN COMMENTS RECEIVED

June 29, 2006 letter from David A. Berger/Monterey Peninsula Water Management District (MPRPD)

Comment LAND-1

Page 3-48, Para 4: "The use of site 4R as sediment disposal site and access easements would need to be negotiated with the District." Are there land use restrictions currently in effect at this site? Does the Park District have plans or policies that would prevent the use of this site?

Response

This comment has been addressed in Section 4.13, Land Use, in this Final EIR/EIS

June 27, 2006 letter from Laurence P. Horan/Law Offices of Horan, Lloyd, Karachale, Dyer, Schwartz, Law & Cook

Comment LAND-2

Any of the alternatives explored in the draft EIS/EIR which would utilize the access road to the property from Cachagua Road to the area of the San Clemente Dam, any rerouting of the Carmel River in that area, or any deposition of any of the silt accumulated behind San Clemente Dam would create a situation in which the use of our remaining property and the historic Murphy stone cabin, the use of the Park District's property for scenic and park purposes, or the maintenance of the terms of the scenic conservation easement imposed by us some 36 years ago would be vitiated. **(Also REC-2)**

Response

The project has been redesigned so that access to the Stone Cabin would not be obstructed. None of the alternatives would reroute the Carmel River in the area near the Stone Cabin. Potential Impacts relating to the users of the Stone Cabin are discussed in Sections 4.13, Land Use, and 4.12, Recreation in the Final EIR/EIS. Impacts to Stone Cabin and its users are also discussed in Sections 4.7 (Air Quality), 4.8 (Noise), 4.9 (Traffic and Circulation) and 4.11 (Visual Resources and Aesthetics).

July 3, 2006 letter from Tim Jensen/Monterey Peninsula Regional Park District

Comment LAND-3

As examples: Both 3.2 Proposed Project and 3.3 Alternative 1 do not have adequate project area descriptions, land ownership, or map depicting land ownership and boundaries.

Response

This comment has been addressed in Section 4.13, Land Use, in this Final EIR/EIS. Also refer to Figure 4.13-1, which shows land ownership in the Project Area.

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District

Comment LAND-4

The document states that The Park District has previously expressed "tentative support for sediment disposal at Garland Ranch.. .", provides a citation, but does not list The Park District as an agency consulted in Section 6.0 Lists and References. The Park District requests that the document cited be made available to The Park District for review.

Response

The Monterey Peninsula Regional Park District (MPRPD) was contacted by the core team to invite consultation on several occasions prior to the release of the Draft EIR/EIS. Because no response was received from the MPRPD until after the Draft EIR/EIS was released in April 2006, it is not listed in Section 6.0. There have been a number of discussions with the Park District since the release of the Draft EIR/EIS and information from them is included in relevant sections of the Final EIR/EIS, including Sections 4.12, Recreation, and 4.13, Land Use. Regarding the document cited, it is available for review at the California American Water (CAW) offices in Monterey, California. The MPRPD will be listed as an agency consulted in Section 6.0 Lists and References in the Final EIR/EIS.

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District

Comment LAND-5

An aerial photograph and on-the-ground images of pre-project condition and post-project impact are needed to adequately evaluate this project.

Response

Aerial photography and on-ground imagery pre-project conditions and post-project impacts were not considered necessary to document or evaluate impacts in this area. A land use map is included in this Final EIR/EIS (see Figure 4.13-1, Section 4.13 (Land Use) showing land ownership in the project area. Refer to Section 4.11 and response to Comments VIS-1 through VIS-6 for an assessment of visual resources, which includes photographs of pre-project conditions.

NEPA/CEQA COMPLIANCE

WRITTEN COMMENTS RECEIVED

June 4, 2006 letter from Don Redgwick

Comment NEPA/CEQA-1

CEQA proposals should include a cost benefit analysis. I see no environmental benefit to removing the dam except the questionable conclusion that fish ladders don't work. The environmental issues relating to frogs, birds, lake fish, deer, bears, mountain lions etc. appear to be forgotten. The value of the dam as a source of water and a protection from water pollution caused by watershed erosion is being ignored. Lastly the cost of removing the dam and containing the sedimentary material will be more expensive than buttressing it. A buttress would utilize a portion of the sediment and would partially bury the dam on the down stream side up to a spillway level. This would be a cost benefit greater than off- hauling the material and probably less expensive than the rerouting option. I don't know the magnitude to the rerouting proposal, but it could involve a huge dirt moving cost. If the benefit is removing the dam because fish ladders don't work according to some people, I think the other environmental issues should be considered.

Response

CEQA does not require a cost-benefit analysis in the EIR/EIS. An economic or social change by itself shall not be considered a significant effect on the environment unless they lead to physical changes that cause environmental impacts (CEQA Guidelines 15131 and 15382, Public Resources Code 21068). CEQA does allow consideration of economic and other impacts when approving a project (Public Resources Code 21002). Environmental impacts to wildlife are addressed in Section 4.5 of the EIR/EIS. California red-legged frogs are a listed species under the Endangered Species Act (ESA) and are extensively considered in that section. The project does not provide water storage; see response to Comments WAT-3, 6, 7, 8 and 13 and WAT-10, 11, and 12. Water quality effects are addressed in EIR/EIS Section 4.3. Please refer to Chapter 3.1 and Table 3.1-1 of the Final EIR/EIS for a summary of comparative costs for the alternatives considered. The Final EIR/EIS considers and documents a full range of environmental issues; it is not limited to consideration of fish passage alone.

June 13, 2006 letter from John G. Williams, Ph.D.

Comment NEPA/CEQA-2

The by-pass and removal alternatives will not solve passage problems for steelhead. The by-pass alternative is imaginative and may provide a feasible means of restoring more or less natural passage for steelhead past the San Clemente site. However, the benefits of such passage are limited by the presence of Los Padres Dam, which lies between San Clemente and most of the prime habitat in the upper watershed. Historically, Los Padres Dam has been a much larger problem for steelhead than San

Clemente Dam (Williams 1983), so it is not clear that removing San Clemente Dam will provide much benefit to steelhead. Particularly if public money will be needed for these alternatives, as has been suggested by some, then the benefits to steelhead from improving passage at San Clemente should be compared to the benefits to steelhead from improving passage at Los Padres.

Response

The Proponent's Proposed Project and all of the action alternatives meet the project objective to provide fish passage at San Clemente Dam (SCD). Improving fish passage at Los Padres Dam (LPD) is not within the scope of this Final EIR/EIS.

Comment NEPA/CEQA-3

The Old Carmel Dam improvements should be considered separately. It is not clear why improvements to the Old Carmel are part of this project. If these improvements need to be made, they should be made, whether or not anything else is done.

Response

Improvements to the existing access road to the plunge pool from Old Carmel River Dam (OCRD) and upgrading of the OCRD Bridge (OCRB) are needed for the Proponent's Proposed Project and Alternative 1 (Dam Notching). Therefore, they must be considered in the evaluation of each of these alternatives. Improvement to fish passage at OCRD is included in all of the action alternatives.

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment NEPA/CEQA-4

The EIR/EIS analyzes two alternatives for dam removal – one which involves complete removal of all of the accumulated sediment from the area and one which would re-route the Carmel River to isolate the accumulated sediment. The EIR/EIS should also evaluate the potential for stabilizing the sediment along the banks of the Carmel River and allowing a new conveyance channel to be cut along the original stream thalweg or some other alignment through the reservoir. The approach being used for sediment stabilization on the Elwha Dam Removal project could serve as a model. **(Also AA-19)**

Response

It is not clear from the comment whether the author is proposing consideration of an alternative that would allow unmanaged sediment transport downstream. Such an alternative was considered in the 2000 RDEIR (Denise Duffy & Associates 2000) and rejected due to downstream impacts on public safety (flood hazard associated with channel aggredation) and spawning habitat. The concept of stabilizing sediment in place is an element of Alternatives 1 and 3. Under Alternative 1, a geomorphically stable stream channel would need to be reestablished in the sediment remaining after excavation down to the level of the notch that would be made in the Dam at elevation

509 feet. Under Alternative 3, sediment would be stabilized in place on the Carmel River and a geomorphically stable channel would be established in San Clemente Creek.

Comment NEPA/CEQA-5

Upstream fish passage for adults: No matter how well a fish ladder is designed, there is always a subset of the population that will be blocked and almost all of the population will experience some delay.

Response

The effect of the existing fish ladder on fish passage is part of the baseline environmental condition. It is not an impact of the project. The Proponent's Proposed Project and all of the action alternatives propose fish passage elements that would improve conditions beyond the existing baseline.

Comment NEPA/CEQA-6

Downstream fish passage for juveniles: The proponent's proposed project should improve downstream passage at the dam over current conditions, but passage through the sluice or over the dam in spillway will still have an impact.

Response

This impact is considered in this Final EIR/EIS as part of impact FI-12 (Section 4.4). The existing impact to fish passing over the Dam is part of the baseline environmental condition. It is not an impact of the project. Improvements to the fish ladder and spillway under the Proponent's Proposed Project would provide a long-term net benefit to fish passage at the Dam.

Comment NEPA/CEQA-7

Alternative 1, Issue FI-13: Stream Sediment Removal, Storage, and Associated Restoration. The determination states that the impact is significant, unavoidable, and long-term; however, the impact discussion states that the impact is temporary. These two statements are inconsistent.

Response

Impact Issue FI-13 has been corrected to determine the short-term impact as significant and unavoidable (see Chapter 4.4 and revised Table 2.1).

Comment NEPA/CEQA-8

Section 5.5 Relationship between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity. One of the project purposes stated in Section 1.4 is to "provide fish passage at the dam." Any option that leaves the dam in place will have impacts on passage of adults, juveniles and kelts that cannot be *fully mitigated. As such, the last paragraph of Section 5.5 is understated and incomplete. See comment on Impact FI-9 Upstream Fish Passage for more details.*

Response

Each alternative meets the project objective to provide fish passage at SCD. The impacts to fish passage of the existing dam are part of the baseline environmental condition. They are not impacts of the Proponent's Proposed Project or any of the alternatives. The final paragraph of Section 5.5 has been expanded to clarify that all of the action alternatives improve fish passage as compared to the baseline environmental condition, even where the Dam is retained, and the fish ladder and revised Sediment Operation and Management Plan for Fish Passage (SOMP, Appendix J) would be implemented to provide passage.

June 20, 2006 letter from Mark Delaplaine / California Coastal Commission

Comment NEPA/CEQA-9

Should the proposed project go forward, the Coastal Commission will require that a consistency certification be submitted to the California Coastal Commission for this federally-permitted project, based on its impacts in the coastal zone.[1] *This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act.*[2] *The consistency certification should include a finding as to whether the activities are consistent with the California Coastal Management Program and the necessary information to support that conclusion, including an analysis of the project's consistency with Chapter 3 of the Coastal Act. (See CFR Section 930.58 for a full listing of the information required for a complete consistency certification.)*

Response

Thank you for your advice as to the requirements of the Coastal Commission and the Coastal Zone Management Act. The project is located 18 river miles above the mouth of Carmel River. It would not adversely affect any coastal zone resources. Existing conditions may affect coastal zone resources, but these are not impacts of the project. The 2000 RDEIR (Denise Duffy & Associates) discussed sediment management alternatives that would allow natural transport of accumulated sediment downriver and to the coastal zone. This was found to have unacceptable impacts to fish (spawning) and public safety (flooding due to riverbed aggredation). In preparing this Final EIR/EIS, California American Water (CAW) explored the market potential for the accumulated gravel and sediment, and learned that the cost of removing it would exceed its market value. The cost and impacts (traffic, safety) of excavating and trucking sediment to beaches for nourishment would be similar to those identified in the 2000 RDEIR for

[1] Unless the USACE itself assumes responsibility for the project, as described further in this response to comments section.
[2] 16 U.S.C. Section 1456, with implementing regulations at 15CFR Part 930.

sediment removal via truck; these impacts were considered unacceptable then and those alternatives were eliminated from consideration in this Final EIR/EIS.

Comment NEPA/CEQA-10

The Draft EIR/EIS should provide information on the quantity and quality of sediment trapped by SCD, identify environmentally advantageous options for delivering to the beach and littoral zone appropriate sediment, and identify environmentally advantageous options for placing sand on the beach or in the nearshore zone.

Response

Sediment trapping at SCD is discussed in this Final EIR/EIS Section 4.2, Hydrology and Water Quality. Effects of the existing dam on sediment delivery to the coastal zone are part of the baseline environmental condition. The project would not adversely affect sediment delivery to the coastal zone. Beach nourishment is not within the scope of this Final EIR/EIS. The purpose and need of the action that the EIR/EIS evaluates does not include improving beaches or the nearshore zone. Note that under all alternatives, all or a substantial portion of the annual sediment load naturally generated in the watershed will soon begin passing the dam site. In addition, a limited amount of gravel injection to the river could be implemented and is discussed briefly under Impact Issue WR-3a (Section 4.2). Please refer to the response to Comment NEPA/CEQA-9 for amplification on previous consideration of the cost and impacts of transport of sediment from behind SCD.

Comment NEPA/CEQA-11

Further testing of the sediments in the reservoir is needed to determine the volume of reservoir sediment that could be considered acceptable for beach or nearshore nourishment.

Response

Sediment trapped at SCD is discussed in this Final EIR/EIS Section 4.2, Hydrology and Water Quality. Beach nourishment is not within the scope of this EIR/EIS. The purpose and need of the action that the Final EIR/EIS evaluates does not include improving beaches or the nearshore zone. Note that under all alternatives, all or a substantial portion of the annual sediment load naturally generated in the watershed will soon begin passing the dam site. In addition, a limited amount of gravel injection to the river could be implemented and is discussed briefly under Impact Issue WR-3a (Section 4.2). Please refer to the response to NEPA/CEQA-9 for amplification on previous consideration of the cost and impacts of transport of sediment from behind SCD.

Comment NEPA/CEQA-12

The proposed action and Alternative 1, dam thickening and dam notching, include sluicing some of the existing and future sediment past the dam into the river flow in an effort to "maintain the existing surface water supply intake in the reservoir, and to *ensure fish passage through the accumulated sediment." These plans will not return a substantial portion of the trapped sand to the beach, and what sand there is in these sluiced waters will almost certainly take many years to get to the beach.*

Response

Sluicing is proposed as mitigation for fish passage. It is not intended to provide beach nourishment. The purpose and need of the action that the EIR/EIS evaluates does not include improving beaches or the nearshore zone. Note that under all alternatives, all or a substantial portion of the annual sediment load naturally generated in the watershed will soon begin passing the dam site. In addition, a limited amount of gravel injection to the river could be implemented and is discussed briefly under Impact Issue WR-3a (Section 4.2). Please refer to the response to NEPA/CEQA-9 for amplification on previous consideration of the cost and impacts of transport of sediment from behind SCD.

Comment NEPA/CEQA-13

Alternatives 2 and 3, dam removal and dam re-route and removal, both entail locking up the accumulated sediment permanently using two different disposal methods. In either case, the accumulated sand that would have naturally made its way to the beach would be permanently inaccessible to the beach. Sediments in the waters from upstream of the removed dam would take many years to get to the beach, as well

Response

There would be no scenarios short of dam failure under which the existing accumulated sediment would naturally make its way to coastal beaches. Under the No Project (No Action) alternative, the existing dam would remain in place, as would the sediment accumulated behind it. The purpose and need of the action that this Final EIR/EIS evaluates does not include improving beaches or the nearshore zone. Note that under all alternatives, all or a substantial portion of the annual sediment load naturally generated in the watershed will soon begin passing the dam site. In addition, a limited amount of gravel injection to the river could be implemented and is discussed briefly under Impact Issue WR-3a (Section 4.2). Please refer to the response to NEPA/CEQA-9 for amplification on previous consideration of the cost and impacts of transport of sediment from behind SCD.

Comment NEPA/CEQA-14

Neither the proposed action, nor any of the alternatives, includes a plan for delivering any amount of the sand and gravel currently trapped behind the dam to the beach. The Draft EIR/EIS should include information on changes to downstream morphology from the proposed plan and alternatives, a plan for allowing delivery of some of the accumulated sand to the beach, in a manner that would best benefit the entire riverine system, and in particular, the portion of the river located in the coastal zone. In addition, *the Draft EIR/EIS should propose options for environmentally advantageous placement or use of beach compatible sediments for beach nourishment.*

Response

The purpose and need of the action that this Final EIR/EIS evaluates does not include improving beaches or the nearshore zone. Please refer to the response to NEPA/CEQA-9 for amplification on previous consideration of the cost and impacts of transport of sediment from behind SCD.

Comment NEPA/CEQA-15

The Draft EIR/EIS shows that any method of slowly releasing the accumulated sediment into the river in an effort to mimic natural processes would greatly decrease water quality, to the point of endangering the steelhead fishery. It would appear that this option has not been fully explored.

Response

This Final EIR/EIS does not address any method of slowly releasing the accumulated sediment into the river in an effort to mimic natural processes. As described in Section 3.1, a previous EIR (RDEIR 2000) on the project described an alternative that would have released sediment over a 60 to 100 year period. This alternative was considered and eliminated due to its long-term effects on fish and water quality, due to its potential effects on flooding, and because the ability to control releases was not demonstrated.

Comment NEPA/CEQA-16

Further, the Draft EIR/EIS should include an alternative that shows the feasibility of off-stream water storage, in order to maximize flows during the low-flow periods that are most detrimental to the steelhead, as described by NMFS.[3]

Response

Water storage and fish flows are not within the scope of this Final EIR/EIS. The purpose and need of the action that this Final EIR/EIS evaluates does not include either water storage or improving fish flows. The impacts to river flows of the existing dam are part of the baseline environmental condition. They are not impacts of the Proponent's Proposed Project or any of the alternatives.

Comment NEPA/CEQA-17

The Commission staff would like to see in the Draft EIR/EIS an alternative that includes and explores the following NMFS recommendations: Probably the greatest single opportunity for substantially mitigating these impacts would be for Cal-Am to: 1) increase its diversions during seasonal (winter) high flows, 2) adhere to the minimum bypass flows and cumulative diversion rate recommendations, 3) store the diverted

[3] "Instream Flow Needs for the Carmel River," pg. 29, June 3, 2002, NMFS, Southwest Region.

winter waters off stream (either Aquifer storage or ponds) for use during periods of low flow, and 4) make concomitant reductions in its unlawful diversions from the Carmel River. With these actions, Cal-Am would greatly reduce its diversions during low flow periods, while offsetting those reductions with additional diversions during the high flows of winter.[4]

Response

The National Marine Fisheries Service (NMFS) recommendation cited addresses means to improve existing conditions, which are part of the environmental baseline for this Final EIR/EIS. Alternatives that would provide fish flows are not within the scope of this Final EIR/EIS. The purpose and need of the action which this Final EIR/EIS evaluates does not include improving fish flows. The impacts to river flows of the existing dam are part of the baseline environmental condition. They are not impacts of the Proponent's Proposed Project or any of the alternatives.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District (MPRPD)

Comment NEPA / CEQA-18

The alders that established a well vegetated canopy around the existing San Clemente Reservoir were killed as a result of the Interim Drawdown Project, beginning 2003. The FEIR/S should include mitigation measures to revegetate the margin of the remaining reservoir area as part of Proposed Project, Notching Project, and Rerouting Alternative.

Response

The interim drawdown does not currently require mitigation to revegetate the riparian zone surrounding the reservoir. The effects of the interim drawdown are part of the baseline environmental condition. They are not impacts of the Proponent's Proposed Project or its alternatives that would require mitigation.

Comment NEPA / CEQA-19

The FEIR/S should fully review the need for moving the diversion point upstream 6,000 feet and should describe potential impacts on habitat at the point of diversion and in the reach(s) affected by diversion. Alternatives to moving the diversion should be fully evaluated. These comments apply to other alternatives, including the No Project **(Also WAT-3)**

Response

The purpose and need of the action that the EIR/EIS evaluates include maintaining a CAW point of diversion on the Carmel River. Therefore, all alternatives that would remove the Dam would require that the point of diversion on the Carmel River be replaced. To maintain the head provided at the existing point of diversion (the Dam), it

[4] "Instream Flow Needs for the Carmel River," pg. 29, June 3, 2002, NMFS, Southwest Region.

would be necessary to relocate the diversion point approximately 6,000 feet upstream. This feature is common to all dam removal alternatives. Evaluations of the effects of relocating the diversion upstream are in Chapters 4.2 and 4.4 of this Final EIR/EIS. Any change in CAW's point of diversion would require approval of the State Water Resources Control Board (SWRCB), which has an established review process.

Comment NEPA/CEQA-20

Chapter 5, Section 5.3.3, page 5-12, Seaside Basin Injection/Recovery Project: The text incorrectly states in line 9 that: "The environmental effects of this project have not been analyzed; however, analysis conducted for the 2000 RDEIR concluded that the well and pipeline portion of the project would have relatively minor construction impacts [continues]"

Instead, the text should say:

The environmental effects of Phase 1 of the MPWMD Aquifer Storage and Recovery (ASR) Project have been analyzed in a Draft EIR/EA released in March 2006; a Final EIR/EA is anticipated to be certified by the MPWMD Board in August 2006. The Phase 1 project entails a second injection well at the MPWMD's existing Santa Margarita Test Injection well site on the former Fort Ord, using existing CAW facilities, with the exception of a new CAW temporary pipeline that is planned for construction in Fall 2006. Subsequent phases would be the subject of separate future environmental review, and depend on the progress of other regional water supply projects described in this chapter. The DEIR/EA concluded that the well and pipeline portion of the project would have relatively minor construction impacts; operation of the project would have beneficial effects on the Carmel River hydrology and dependent fish and wildlife. [Note: All remaining existing text starting with "however, analysis conducted for the 2000 RDEIR concluded that ." should be deleted].

Response

Thank you for this update. This is not considered to change the outcome of the cumulative effects analysis. The discussion in Chapter 5.3.3 has been modified.

Comment NEPA/CEQA-21

Chapter 5, Section 5.3.3, page 5-13, MPWMD Sand City Desalination Plant. The following text should be added to the end of the existing paragraph:

An administrative draft EIR was prepared by MPWMD and reviewed by its Board in December 2003. At that time, completion of a public Draft EIR was delayed until additional studies on seawater intake and brine discharge technology could be completed. In March 2004, the MPWMD Board determined that it would not pursue the desalination project, pending review of regional desalination projects in Moss Landing that had been proposed. As of June 2006, MPWMD has updated cost information for the desalination project, but is not actively pursuing the project.

Response

Thank you for this update. This is not considered to change the outcome of the cumulative effects analysis. The discussion in Chapter 5.3.3 has been modified.

June 30, 2006 comments from National Marine Fisheries Service (NMFS)

Comment NEPA/CEQA-22

One of CEQA's main objectives is to require agencies to avoid or reduce the environmental effects by implementing feasible alternatives or mitigation measures. One of the purposes of the ESA is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. The Carmel River steelhead run is critical to the recovery of the S-CCC DPS. A proposed project alternative that results in the perpetual adverse modification of designated critical habitat, as well as perpetual take of listed species is inconsistent with CEQA, as well as the ESA and the recovery needs of the S-CCC DPS.

Response

From context, this comment appears to address the operation of sluice gates as part of the Proponent's Proposed Project and Alternative 1 (Dam Notching). Sluice gate operations are described in the revised SOMP (Appendix J). An environmental assessment of sluicing operations and management is provided throughout Chapter 4 of this Final EIR/EIS.

The California Environmental Quality Act (CEQA) requires that, for each significant impact, mitigation measures must be identified and discussed, including any significant side effects of implementing a mitigation measure (CEQA Guidelines 15126). Agencies may not approve projects with significant environmental effects if there are feasible alternatives or mitigation measures that can "substantially lessen" or avoid them (Public Resources Code 21002). Where a decision allows significant effects to occur which are not mitigated to a level that is not significant, it must provide a written statement of "overriding considerations", which gives its reasons to support its decision to allow the effects to occur (Public Resources Code 21002, CEQA Guidelines 15093). This statement must be included in the record of project approval and must be mentioned in the Notice of Determination. This Final EIR/EIS and the CEQA process that is being followed to its certification are consistent with these requirements of CEQA.

Comment NEPA/CEQA-23

NMFS participated in the detailed sediment transport analysis conducted after the August 2000 Draft EIR/EIS was submitted. That Draft EIR/EIS also proposed dam strengthening and sluice gates. NMFS' significant commitment during those sediment transport studies was primarily to ensure dam removal was given adequate examination. NMFS was also establishing a systematic methodology for future analysis *regarding the San Clemente Dam. NMFS expects that level of analysis for the proposed sluicing operations, but the Draft EIR/EIS does not include those results.*

The results of a defendable systematic analysis would include suspended sediment concentrations from the dam to the ocean for a full range of hydrologic conditions. Suspended sediment in the water column, as well as habitat alteration, would be addressed. The Draft EIR/EIS has taken an unacceptable short cut in analyzing a project that proposes to adversely effect – in perpetuity – the most essential steelhead run in the S-CCC DPS. **(Also SED-42)**

Response

A detailed analysis of sediment transport is presented in Chapter 4.2 and in Appendix J (revised SOMP), Appendix M (Sediment Transport Modeling), Appendix N (Summary of Hydraulic and Sediment-transport Analysis of Residual Sediment), and Appendix S (Additional Modeling to Evaluate Sediment Sluicing Options and Compare Downstream Sediment Concentrations for EIR/EIS Alternatives) referenced in this section. The effects of sediment on fish are analyzed in Chapter 4.4. The discussion in each of these sections has been expanded to provide a more detailed analysis. It is not clear what the unacceptable short cut to which this comment refers is.

Comment NEPA/CEQA-24

Work windows are discussed throughout Section 3.0. For instance, page 3-36, 3.2.7 Construction Schedule and Operations states field work in the reservoir area would start on or about April 15th. NMFS and the California Department of Fish and Game have determined the appropriate work windows for instream work for each Alternative (email from NMFS, dated 22 February 2006). For the Proponent's Proposed Project, the work window is June 15 – October 15. Alternative 1: June 15 – October 15; Alternative 2: June 1 – October 31; and Alternative 3: June 1 – October 31. Please adjust the work windows for all projects accordingly.

Response

Thank you for this guidance. The determination of work windows is expected to be decided in permitting the selected alternative, as directed by NMFS and the California Department of Fish and Game (CDFG).

<u>April 5, 2006 letter from Dick Butler/NOAA's NMFS</u>

Comment NEPA/CEQA-25

There are many instances throughout the draft EIR/EIS where the alternatives are compared to the baseline conditions rather than the No Action Alternative (Alternative 4). In a NEPA document, the analysis must compare the effects of an action versus the No Action Alternative. The effects determinations are inconsistent or incorrect, which creates the impression that the Proponent's Preferred Project is beneficial.

Response

CEQA requires a comparison of all alternatives to the baseline (CEQA Guidelines Section 15125(a). The National Environmental Protection Act (NEPA) standard for alternatives analysis has been applied in this Final EIR/EIS, as being more stringent than the CEQA standard. NEPA requires that alternatives be compared to one another, and evaluated against environmental baseline conditions. The No Project (No Action) Alternative comprises the current and projected future environmental baseline, in the absence of the proposed project (action). It includes a new fish ladder and modifications and the OCRD. Table 2.1 summarizes the comparison of alternatives with one another. The environmental evaluation of all alternatives is done against an extended baseline (to the year 2025) as described in Chapter 4 (page 4.2). It is consistent and correct to describe environmental effects in relation to the environmental baseline.

July 3, 2006 letter from Robert W. Floerke / Department of Fish and Game

Comment NEPA / CEQA-26

DFG consultation history: Staff from the Central Coast Region of DFG have for many years provided CAW and DWR with input on various aspects of the management of aquatic resources in the Carmel River watershed. A primary concern has always been the viability of the Carmel River population of the steelhead trout, Oncorhynchus mykiss, which is in the South-Central California Coast (SCCC) Evolutionarily Significant Unit, designated by the National Marine Fisheries Services as Threatened. The steelhead is also a State Species of Special Concern. The California red-legged frog is another State Species of Special Concern, and is listed by the U.S. Fish and Wildlife Service as Threatened. DFGLs concerns as a trustee agency for these and other riparian species in the Carmel River watershed have been largely focused on ensuring adequate instream flows and passage conditions in relation to CAW'S water supply operations in Carmel Valley. This has included an ongoing need to ensure compliance with fish passage necessary over the Dam, by adequate maintenance and improvements of the existing fish ladder, as well as ensuring bypass flows and moderating drawdown regimens at the reservoir. We also provided input on earlier versions of the Draft EIR, prior to the inception of Alternative 3, which has evolved as a middle option between full dam removal and strengthening. In previous years DFG participated in "core group" meetings that dealt specifically with the DSOD order, DFG participation ceased due to staffing limitations. In December 2005, DWR requested DFG re-engagement in the process by reviewing the administrative draft of the DEIRIEIS. In response, DFG staff were redirected towards this effort and provided initial input to DWR, much of which will be repeated in this letter. However, DFG was not subsequently allowed to resume its participation in the core group process.

Response

CDFG comments on the Administrative Draft EIR/EIS were received on March 20, 2006, approximately 50 days after the deadline and a few days before the Draft EIR/EIS was scheduled to be sent to the printer. These comments have been incorporated as much as possible within the time available.

The EIR/EIS core team had an established policy of inviting California responsible agencies to meetings concerning issues where the core team felt it needed their expertise or experience. The core team did not receive a formal request from CDFG to participate and was winding up its meeting schedule by the time CDFG personnel began to informally express interest in attending. As a core team member, the Department of Water Resources (DWR) attempted, but was not successful, in scheduling a special meeting with CDFG during the Draft EIR/EIS comment period. CDFG has been involved in discussion on sluicing and its impacts since the Draft EIR/EIS was issued in April 2006.

Comment NEPA/CEQA-27

Project baseline: The current condition of the watershed, with the Dam and fish ladder present, is arguably the existing baseline as defined in CEQA. An improved ladder cannot possibly be viewed as a potentially adverse effect from a biological perspective. The obvious effect of the Dam on downstream channel morphology, by retaining sediment which leads to channel instability, incision and bank erosion, lack of spawnable gravel below the Dam and possible lack of sediment into the Carmel Lagoon, should be considered as part of the CEQA baseline.

Response

It is correct, as stated, that the current condition of the watershed, with SCD and the existing fish ladder in place, represent the CEQA baseline. The improved ladder is considered a beneficial impact under the Proponent’s Proposed Project and Alternatives 1, 2, and 3. Sediment passage would occur under the Proponent’s Proposed Project and under any of the alternatives, ameliorating historical baseline effects on downstream sediment.

Comment NEPA/CEQA-28

In the SAA process, the sluicing plan would have to be fully developed and mitigated before a SAA could be executed. Until the sluicing impacts are more thoroughly quantified, we cannot provide the range of mitigations that would be sufficient; this will need to be done through the SAA process. In contrast, the impacts of dam removal options are more quantifiable and would require less extensive mitigations. **(Also FI-29, SED-14)**

Response

Thank you for this guidance. It will be considered during project permitting. The Updated SOMP is included as Appendix J and discussed throughout Chapter 4 of this Final EIR/EIS.

Comment NEPA/CEQA-29

The strengthening of the dam within the watershed will require the regulatory agencies to perpetually exert a heightened level of oversight to the dam than what would be necessary if Alternatives 2 or 3 are ultimately selected. All four alternatives will entail impacts to the river during construction or implementation, but the impacts from the sluicing regimen and passage impediment initiated and maintained by the preferred project will continue in perpetuity. Because of this difference in the scope of impacts, DFG will be forced to modulate the impacts for the proposed project over a greater period of time. If there is no ultimate large benefit from the project, we would seek to minimize the temporal impacts to the river corridor and would likely restrict work within the river zone to periods that will most likely be between June 15 and October 15. This may be further restricted by high spring flows or early rains. In contrast, if the net effect of the project is beneficial, i.e. dam removal, it would provide a rationale for an accelerated schedule, with a possibly higher short-term risk to resources that is mitigated by an earlier capture of a significant resource benefit. This could allow completion of a dam removal option in a shorter time frame than the preferred alternative.

Response

Thank you for this guidance. It is not clear what is meant by “DFG will be forced to modulate the impacts for the proposed project over a greater period of time.” The determination of work windows is expected to be decided in permitting the selected alternative, as directed by NMFS and CDFG.

Comment NEPA/CEQA-30

Please be advised this project will result in changes to fish and wildlife resources as described in the California Code of Regulations, Title 14, Section 753.5(d)(l)(A)-(G). An environmental filing fee as required under Fish and Game Code Section 71 14d) should be paid to the Monterey County Clerk on or before filing of the Notice of Determination for this project.

Response

As legally required, since the Lead Agency is a state agency, the fee will be paid at the State Clearinghouse when the Notice of Determination (NOD) is filed.

NOTE: COMMENT NEPA/CEQA 31 WAS RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Comment NEPA/CEQA-31

Roger Williams/Resident of Carmel-by-the-Sea

The issue is dams over the years in California have trapped sediment, which has had a negative impact on beaches. Many of the beaches up and down the state are *diminishing. So I think if the bypass route is used, rather than entombing the sediment forever, a slow impact, as the previous speaker was talking about, over a hundred years of releasing some of that trapped sediment every year during the winter state would help reestablish some of the beaches.* **(Also SED-62)**

Response

The purpose and need of the action that this Final EIR/EIS evaluates does not include improving beaches or the nearshore zone. Note that under all alternatives, all or a substantial portion of the annual sediment load naturally generated in the watershed will soon begin passing the dam site. In addition, a limited amount of gravel injection to the river could be implemented and is discussed briefly under Impact Issue WR-3a (Section 4.2).

June 29, 2006 letter from Duane James/U.S. Environmental Protection Agency

Comment NEPA/CEQA-32

Based on our review, we have rated the document as Environmental Concerns - Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions"). We have some concerns with the proposed retrofit plan and request that additional clarifications be made in the FEIS regarding the long-term impacts and benefits associated with the alternatives. EPA recommends that the FEIS include additional information related to the Clean Water Act (CWA) Section 404(b](l) process and the short and long-term economic and environmental costs and benefits of each alternative. In particular, the FEIS should include an analysis of the projected long-term benefits to the River and the steelhead population from the removal of the dam.

Response

Additional information related to the Clean Water Act (CWA) Section 404(b)(1) process and the Least Environmentally Damaging Practicable Alternative (LEDPA) is included in Table 1-1 and Section 1.5.1. Evaluation of this proposed activity's impacts in the USACE Record of Decision (ROD) will include application of the guidelines promulgated by the Administrator of the U.S. Environmental Protection Agency (EPA) under Section 404(b)(1) of the CWA (33 U.S.C. Section 1344(b)). Fundamental to CWA guidelines is the precept that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern. No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. An alternative is considered practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes.

Analysis of short- and long-term economic and environmental costs and benefits under CWA 404(b)(1) is expected to be completed during the first half of 2008. This analysis will include projected long-term benefits to the river and the steelhead population from the removal of the Dam. Benefits of dam removal are presented in Tables 4.4-10 and 4.4-11 and discussed in Chapter 4.4 under Impact FI-8, FI-9a, FI-9b, FI-12, and FI-13 for Alternatives 2 and 3.

Comment NEPA/CEQA-33

All project alternatives will have impacts to Waters of the U.S. and wetlands and will need a Clean Water Act (CWA), Section 404(b)(l) permit. The CWA, Section 404(b)(l) Guidelines (40 CFR 230.10(a)) require the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). This determination must take into account effects to all resources.

Recommendation: The FEIS should include a summary of the CWA, Section 404(b)(I) permitting process and ensure that the LEDPA will be selected in the Record of Decision (ROD).

Response

The requirement to obtain the Section 404 permit is summarized in Chapter 1 of this Final EIR/EIS, Table 1-1. Response to Comment NEPA/CEQA-32 above explains the timing of the 404 permit (there is no 404(b)(1) permit). The LEDPA will be identified and selected in the ROD.

June 28, 2006 letter from Jim Crenshaw/California Sportfishing Protection Alliance

Comment NEPA/CEQA-34

The Final EIR/EIS should also identify Alternative 3 as the Least Damaging Project Alternative. Alternative 3 removes the barrier to fish passage, maintains red legged frog habitat, and prevents uncontrolled release of accumulated sediment downstream.

Both the Proponent's Proposed Project and the notching alternative would continue to have adverse impacts on fish passage. In addition the sluicing required for both of those alternatives would interfere with use of the fish ladder. Furthermore, both the PPP and the notching alternatives would lead to uncontrolled releases of accumulated sediments in high flow events. Therefore neither of these qualifies as the Least Environmentally Damaging Project Alternative.

Response

The LEDPA cannot be identified in Final EIR/EIS because permitting under CWA 404(b)(1) has not been completed. The CWA 404 permit is expected to be completed during the first half of 2008.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment NEPA/CEQA-35

The impact report determined that all options had the same basic impact. We believe that this is not so and that leaving the dam in place has multiple impacts that would hinder recovery and lead to extinction over time.

Response

This Final EIR/EIS documents differences in impacts among the alternatives. Table 2-1 summarizes the comparative impacts of the Proponent's Proposed Project and analyzed alternatives. The alternatives would allow for dam removal would have benefits that are not realized by the alternatives which leave it in place, but the dam removal alternatives would also pose impacts that the other alternatives do not. The existence of the Dam is not an impact of the project, but a part of the environmental baseline conditions for the EIR/EIS analysis.

June 28, 2006 letter from Bob Baiocchi/Carmel River Steelhead Association

Comment NEPA/CEQA-36

The EIR/EIS is deficient because the document failed to disclose, evaluate, and include the removal of the San Clemente Dam as a reasonable alternative that would be in the public interest and reopen the navigability of the river for fish and boating.

Response

Alternatives 2 and 3 would remove SCD.

Comment NEPA/CEQA-37

CEQA requires mitigation measures that would prevent the dam from obstructing the downstream recruitment of spawning habitat. CEQA does not allow for trade offs.

Response

The existence of the Dam is not an impact of the project, but a part of the environmental baseline conditions for EIR/EIS analysis. CEQA does not require mitigation of existing conditions.

Comment NEPA/CEQA-38

Removal of the San Clemente Dam would prevent the obstruction of the downstream recruitment of spawning gravel for federally protected steelhead trout that would allow steelhead trout to spawn in the lower Camel River. However that reasonable alternative was not disclosed and included in the draft EIR/EIS as an alternative because the draft EIR/EIS placed Cal-American Water Company finances above the protection of the people's public trust steelhead resources. That solution may be applicable with NEPA, *but CEQA requires the protection of the steelhead with no tradeoffs. We reference the provisions of the California Environmental Quality Act and its Guidelines.*

Response

Alternatives 2 and 3 would remove SCD.

Comment NEPA/CEQA-39

The draft EIR/EIS under CEQA must include a Cumulative Impacts Analysis that discloses, evaluates, and mitigates all of the cumulative effects to federally protected Steelhead Trout and their habitat in the Camel River resulting from the San Clemente Dam and all other diversions by Cal-American Water Company.

The draft EIR/EIS does not include a cumulative impacts analysis of the cumulative effects to federally protected steelhead trout and their habitat in the Camel River Watershed resulting from Cal-American's diversions of the state's waters of the Carmel River Watershed (Surface diversions and underflow diversions).

"A draft EIR must discuss "cumulative impacts" when they are significant. And even when they are not deemed significant, document should explain the basis for that conclusion. (Citizens to Preserve the Ojai v. County of Ventura (2d Dist. 1985) 176 Cal.App.3d 421,432 [222 cal.Rptr. 247].)"

""Cumulative Impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." "Individual effects may be changes resulting from a single project or a number of separate project." "The cumulative impacts from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period if time." See CEQA Guidelines. NEPA sometimes equate "cumulative effects" with "synergistic effects." (City of Tenakee Springs v. Clough (9" Cir. 1990) 915 F.2d 1308, 1312; Sierra Club v. Penfold (9th Cir. 1988) 857 F.2d 1307, 1320- 1321; and Natural Resources Defense Council v. Administrator (D.D.C. 1978) 45 1 F.Supp. 1245, 1258.)"

"A legally adequate "cumulative impact analysis" thus is an analysis of a particular project viewed over time and in conjunction with other related past, present, and reasonably foreseeable probable future projects whose impacts might compound or interrelate with those of the project at hand. Such an analysis "assesses cumulative damage as a whole greater than the sum of its parts." (Environmental Protection Information Center v. Johnson (1st Dist. 1985) 170 Cal.App.3d 604, 625 {216 Cal.Rptr. 502].) "Such an analysis is necessary because "' [t]he full environmental impact of a proposed action cannot be gauged in a vacuum. (Whitman v. Board of Supervisors (2d Dist. 1979) 88 Cal.App.3d 397,408 [IS] Cal. Rptr. 8661, quoting Akers v. Resor (W.D.

Tenn. 1978) 443 F.Supp. 1355, 1360.) ' [A]n agency may not..[treat] (sic) a project as an isolated 'single shot' venture in the face of persuasive evidence that it is but one of several substantially similar operations.. .To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster.'" (Whitman, supra, 8 8 Cal.App.3d at 408 [15] Cal. Rptr. 866], quoting Natural Resources Defense Council v. Callaway (2d Cir. 1975) 524 F.2d 79, 88.)"

"Unless cumulative impacts are analyzed, agencies tend to commit resources to a course of action before understanding its long-term impacts. Thus, a proper cumulative analysis must be prepared "before a project gains irreversible momentum." (City of Antioch v. City Council (1st Dist 1 986) 187 Cal.App.3d 1325, 1333 [232 Cal. Rptr. 507], citing Bozung v. Local Agency Formation Commission (1975) 13 Cal.3d 263,282 [l18 Cal. Rptr. 249].)"

"One court has described as follows the danger of approving projects without first preparing adequate cumulative impact analyses:"

" The purpose of this requirement is obvious: consideration of the effects of a project or projects as if no others existed would encourage the piecemeal approval of several projects that, taken together, could overwhelm infrastructure and viral community services. This would effectively defeat CEQA's mandate to review the actual effects of the projects upon the environment. (Las Virgenes Homeowners Federation, Inc. v. County of Los Angeles (2d Dist. 1986) 177 Cal.App.3d 300, 306 [233 Cal Rptr. 761l].)."

"[I]t is vitally important that an EIR avoid minimizing the cumulative impacts. Rather, it must reflect a conscientious effect to provide public agencies and the general public with adequate and relevant detailed information about them. A cumulative impact analysis, which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decision maker's perspective concerning the environmental consequences of a project, the necessity for mitigation measures, and the appropriateness of project approval. An inadequate cumulative impact analysis does not demonstrate to an apprehensive citizenry that the governmental consequences of its action. (1 76 Cal.App.3d at 43 1 [222 Cal. Rptr. 2471, quoting San Franciscans for Reasonable Growth v. City and County of San Francisco ("SFRG 1 ") (1st' Dist. 1984) 151 Cal.App.3d 61, 79 [198 Cal Rptr. 634].)"

The Carmel River Steelhead Association requests the Department of Water Resources to follow the law under CEQA and prepare a Cumulative Impact Analysis and include that cumulative impact analysis in the final EIR/EIS.

Response

Section 5.3 of the EIR/EIS contains a cumulative impact analysis prepared in compliance with the requirements of CEQA and NEPA. Cumulative impacts to steelhead trout are discussed in Section 5.3.4.

June 30, 2006 letter from Mindy McIntyre/Planning and Conservation League Foundation

Comment NEPA/CEQA-40

The DEIR/S states, "The need for the San Clemente Dam Seismic Safety Project is to increase dam safety to meet current standards for withstanding a Maximum Credible Earthquake (MCE) and passing the Probable Maximum Flood (PMF) at the dam" 1 -2). This statement indicates that the paramount objective is to protect human safety, which rerouting the river and removal of the dam accomplishes the best.

Response

The Proponent's Proposed Project and all of the alternatives, except Alternative 4 (No Project/No Action), would meet the purpose and need of the project.

Comment NEPA/CEQA-41

However, it is also very important, under CEQA, that the environment not be irrevocably harmed. Rerouting the river and removing the dam is the Least Environmentally Damaging Preferred Alternative (LEDPA). It will go a long way to restoring the watershed that once existed in the Carmel River Valley, as well as protecting the two species currently covered under the Endangered Species Act, the California red-legged frog and steelhead trout.

Response

The LEDPA cannot be identified in Final EIR/EIS because permitting under Clean Water Act Section 404 has not been completed. The CWA 404 permit is expected to be completed during the first half of 2008.

NOISE

WRITTEN COMMENTS RECEIVED

June 9, 2006 letter from Victoria Kennedy/Sleepy Hollow Homeowners Association

Comment NOI-1

Notwithstanding my comments about the Project, the Sleepy Hollow Homeowners' Association is very concerned about the comment made during the hearing that San Clemente Road, the road through Sleepy Hollow, would be used for deliveries and access for construction workers. This type of road use would cause severe negative impacts to our residents through dust, noise, and safety concerns for our children and families that utilize the roadway for residential transportation and recreate on and near the roadway. Many of our homes are situated directly adjacent to the roadway and would incur increased levels of the negative health, quality of life, and safety issues stated above. Please note that this is a gated community and the level of use of the roadway is minimal and the residents are accustomed to this lack of traffic. The type of use contemplated is in violation of our agreement with the dam owner, California American Water Company, regarding their use of the road.

Response

Potential roadway effects, and the associated mitigations, are addressed in sections 4.7 (Air Quality), 4.8 (Noise), and 4.9 (Traffic and Circulation) of the Final EIR/EIS.

Comment NOI-2

What are the actual activities or measures to control dust and noise?

Response

There are several planned noise mitigation measures that address the generation and abatement of noise during the construction phase of the Proponent's Proposed Project. Please refer to EIR/EIS Section 4.8.3, Issues NO-2 and NO-4 for a description of noise mitigation measures. Measures to control dust are discussed in Section 4.7 Air Quality.

COMMENTS RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Larry Horan/Upper Carmel Valley landowner

Comment NOI-3

(Comment recorded by the consultant after the close of oral testimony and therefore not in the stenographic record): A group of private landowners originally owned the Stone Cabin and the surrounding 1600 acres of land. They donated 1000 acres of the land to the Park District (possibly including the proposed sediment disposal Site 4R), and continue to own the cabin as a remote recreational refuge. The jeep trail that is proposed to be improved for the alternatives that need access above the dam from Cachagua Road was developed to serve (and still serves) the Stone Cabin. The Stone

Cabin remains in current use by the group. The current use as a serene, remote wilderness getaway is considered to be incompatible with the improvement of the road and its use to transport heavy equipment and materials for Alternatives 1, 2, and 3.

Response

Please refer to Section 4.8.3 Impact Issue NO-5 for an analysis of potential noise impacts associated with use of the Jeep Trail. According analysis of noise impacts, the estimated complex terrain attenuated value is less than the estimated background value at the Stone Cabin and therefore it is unlikely that there would be a significant impact on ambient noise from use of the Jeep Trail or the sediment disposal site at the Stone Cabin during day time hours. Construction activities would occur during daytime working hours. However, given the sparsely populated rural nature of the area, it cannot be determined with certainty that the impact will be less than significant. The impact would be localized in the Project Area but the resultant noise levels, at some times, and at some locations, may be above the normally acceptable range and/or more than 5 dBA above background. These would be considered significant and unavoidable; however these instances would be transient and temporary.

Comment NOI-4

The preferred batch plant site should be a location that does not cause visual, dust, and noise impacts to any Sleepy Hollow subdivision residents and/or be closer to the dam. What were the limitations to locating the batch plant closer to the dam? **(Also AQ-14, VIS-1, TE-29, AA-13 and 14)**

Response

The concrete batch plant is a component of the Proponent's Proposed Project, which includes a number of elements necessary to the project. Please refer to EIR/EIS Section 3.2 for information on the batch plant. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to generally near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

RECREATION

COMMENT RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Comment REC-1

Larry Horan/Upper Carmel Valley landowner

(Comment recorded by the consultant after the close of oral testimony and therefore not in the stenographic record): A group of private landowners originally owned the Stone Cabin and the surrounding 1600 acres of land. They donated 1000 acres of the land to the Park District (possibly including the proposed sediment disposal Site 4R), and continue to own the cabin as a remote recreational refuge. The jeep trail that is proposed to be improved for the alternatives that need access above the dam from Cachagua Road was developed to serve (and still serves) the Stone Cabin. The Stone Cabin remains in current use by the group. The current use as a serene, remote wilderness getaway is considered to be incompatible with the improvement of the road and its use to transport heavy equipment and materials for Alternatives 1, 2, and 3. **(Also NOI-3)**

Response

The project has been redesigned so that access to the Stone Cabin would not be obstructed. None of the alternatives would reroute the Carmel River in the area near the Stone Cabin. Potential impacts relating to the Stone Cabin or its users are discussed in Sections 4.12 (Recreation) and 4.13 (Land Use) of this Final EIR/EIS.

WRITTEN COMMENTS RECEIVED

<u>June 27, 2006 letter from Horan, Lloyd, Karachale, Dyer, Schwart, Law and Cook</u>

Comment REC-2

Any of the alternatives explored in the draft EIS/EIR which would utilize the access road to the property from Cachagua Road to the area of the San Clemente Dam, any rerouting of the Carmel River in that area, or any deposition of any of the silt accumulated behind San Clemente Dam would create a situation in which the use of our remaining property and the historic Murphy stone cabin, the use of the Park District's property for scenic and park purposes, or the maintenance of the terms of the scenic conservation easement imposed by us some 36 years ago would be vitiated. **(Also LAND-2)**

Response

The project has been redesigned so that access to the Stone Cabin would not be obstructed. None of the alternatives would reroute the Carmel River in the area near Stone Cabin. Potential impacts relating to the users of Stone Cabin are discussed in Sections 4.12 (Recreation) and 4.13 (Land Use) in this Final EIR/EIS. Impacts to the

Stone Cabin and its users are also discussed in Sections 4.7 (Air Quality), 4.8 (Noise), 4.9 (Traffic and Circulation) and 4.11 (Visual Resources and Aesthetics).

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District (MPRPD)

Comment REC-3

Figure 3.3.4: This map exhibit does not show property boundaries nor does it adequately describe the impact of 1.5M CY of sediment disposal into a public open space park.

Response

This comment has been addressed in Section 4.12, Recreation, in this Final EIR/EIS. Also refer to Figure 4.12-3 in the recreation resources section, which shows a land ownership map of the project area. Section 4.12 also includes a description of recreation impacts associated with sediment disposal on MPRPD-owned land.

Comment REC-4

1. *Pre-project and post-project enhanced photographic imagery depicting what the current and future park boundaries will look like are essential for adequate environmental assessment;*

   (a) Currently, the park has an extended and publicly accessible riverfront to perennial pools and flowing water. What will any new boundary along the park's riverfront look like and how accessible will the new riverfront be to the public?

   (b) What will replace the current riparian vegetation along the park's riverfront boundary if the river course or water levels are changed?

   (c)How will public access be affected and/or maintained if river-frontage is changed? **(Also VIS-7)**

Response

This comment has been addressed in Section 4.12, Recreation, of this Final EIR/EIS. Also refer to response to Comments VIS-3 and VIS-7 and TE-37 regarding the visual aspects and vegetation of the riverfront. Neither the Proponent's Proposed Project nor the alternatives would restrict recreational use of, or access to, MPRPD-owned land. Opportunities for increased recreational use may occur under Alternatives 2 and 3.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment REC-5

The public has a legal right to boat and otherwise recreate on this part of the Carmel River and any attempt to buttress or maintain San Clemente or the old Carmel Dam needs to consider the interference of recreational values on this part of the river.

Response

CAW would not restrict recreational use to MPRPD-owned land **(Also REC-4)**.

SAFETY

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment SA-1

The three most important issues to address are the safety of the dam, a sustainable water supply and the cost of the project. The worst case scenario of environmental degradation would be the "no project alternative followed by an earth quake and dam failure".

Response

Thank you for your comment. Comment noted.

NOTE: COMMENTS SA-2 THROUGH SA-4 CORRESPOND TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

Comment SA-2

Steve Wilpert/Resident of Sleepy Hollow

I still don't get what the purpose of the project is. I see up on the board a very nice presentation, a dam safety project. I'm for dam safety. I'm for people not getting hurt during a hundred-year flow. I'm for people not getting hurt during a maximum credible earthquake. I'm for people not getting hurt when any dam might contribute to damage to peoples' property or people themselves. But I haven't seen anything or heard anything to suggest that the harm that this community is going to experience after a hundred-year storm event and after a maximum credible earthquake is going to be exacerbated by that old dam failing. I just don't get it. I like the people at Camp Stephanie. I don't dislike them. I don't dislike anybody that lives along the Carmel River. But I just – I just don't get it why we're talking about spending so much money for such a little impact relative to the destruction we're going to have around us from such a huge flow of water and such a large earthquake.

Response

It is possible that a MCE or Probable Maximum Flood (PMF) would have much greater effects on human health and safety than would a dam failure associated with such an event. However, it is DWR/DSOD’s mandate to protect the public from harm caused by dam failure. CAW is required by law to provide a solution to deal with the currently unsafe dam.

Comment SA-3

Nikki Nedeff/Resident of Carmel Valley

I think that there needs to be attention paid to the maximum credible earthquake, maximum probable flood impacts on the upstream diversion dam that will reroute the flow of the river through the notch in the ridge.

Response

These criteria were considered in developing the current conceptual design. Final design of the diversion dike design will continue to make use of these criteria.

Comment SA-4

Nikki Nedeff/Resident of Carmel Valley

There also needs to be attention paid to how the face of exposed sediment that is exposed when the dam is taken down, the face of the exposed sediment on the Carmel River side is stabilized. Grout or rip-rap or anything structural will then withstand potential earthquakes or potential erosion if the Carmel River reoccupies its original channel. So I'd just encourage you to pursue those questions in your final impact analysis. Thanks.

Response

Thank you for this comment. Current conceptual design has considered these criteria. Please refer to the figures presenting the design in Section 3.5 of this Final EIR/EIS. Final design will continue to make use of these criteria.

June 28, 2006 letter from Jim Crenshaw/California Sportfishing Protection Alliance

Comment SA-5

It has been 26 years since the DWR's Department of Safety of Dams (DSOD) first began to look into the long-term safety of the San Clemente Dam and 16 years since an engineer hired by Cal-Am determined that the dam could fail in both MCE (Maximum Credible Earthquake) and PMF (Probable Maximum Flood) conditions. Meanwhile, human life, especially the Camp Stephanie community directly downriver, remains in danger from dam failure resulting from an earthquake with a magnitude as low as 5.5.

Response

Since 2002, several interim dam safety measures have been implemented at the direction of the Department of Water Resources, Division of Safety of Dams (DWR/DSOD), to reduce the downstream danger. These include an interim drawdown each winter. This is the lowest elevation that could be maintained under existing conditions. They also would include a monitoring and warning system in the event of an emergency. California American Water (CAW) proposed a dam strengthening alternative which was acceptable to the DSOD in 1993 (see Chapter 1.6 of this Final EIR/EIS for a review of the history of DWR and CAW response to the safety concerns). Concerns raised by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG) over impacts to the federally listed steelhead, numerous studies have been conducted to assess impacts and identify alternatives, including alternatives that would demolish the Dam. This process has taken a number of years and has resulted in a preliminary interest taken by the state of California, through the California Coastal Conservancy, in funding the Carmel River Reroute and Dam Removal (Alternative 3) project under a scenario in which CAW would turn over the project and property surrounding the Dam to a non-profit or governmental entity plus contribute a share of the funding necessary to complete the seismic safety project in compliance with DSOD specifications. DWR has given the parties until December 30, 2007 to determine whether this is a viable option.

June 30, 2006 letter from Mindy McIntyre/Planning and Conservation League Foundation

Comment SA-6

It has been 26 years since the DWR's Department of Safety of Dams (DSOD) first began to look into the long-term safety of the San Clemente Dam and 16 years since an engineer hired by Cal- Am determined that the dam could fail in both MCE (Maximum Credible Earthquake) and PMF (Probable Maximum Flood) conditions. Meanwhile, human life, especially the Camp Stephanie community directly downriver, remains in danger from dam failure resulting from an earthquake with a magnitude as low as 5.5.

Response

See response to Comment SA-5.

Comment SA-7

Nowhere in the Draft EIR/EIS does it guarantee that the dam will survive a MCE with buttressing; that means the homes downriver are still in danger. If human safety is truly the first and foremost concern, buttressing must be looked at very critically, for it fails to fundamentally resolve the problem of an aging and unsafe dam, instead simply prolonging it.

Response

A buttressed dam has been evaluated under a Maximum Credible Earthquake (MCE), and reviewed by DWR/DSOD. It has been determined that this design will survive a MCE. The buttressing design will continue to be refined and reviewed throughout final design.

Comment SA-8

The river reroute/dam removal option will also permanently remove the seismic risk and threat of a large-scale flood, and will achieve the required solution in a much shorter timeframe than the dam buttressing option.

As discussed above, dam buttressing or notching is likely to result in the issuance of a Jeopardy Opinion concerning the California red-legged Frog or steelhead trout, protected species. This would protract the process indefinitely with potential legal challenges requiring lengthy review. Meanwhile, the [dam] would remain, as it is now, dangerous to Camp Stephanie and other residential areas downstream of the dam. It is also likely that other environmental groups will intervene in order to challenge reconsideration of impacts to wildlife and habitat of the Carmel River Watershed that will result with the Proponents Proposed Project, or Alternatives 1 and 2. Therefore river reroute and dam removal is the most expedient solution that will guarantee the flood and seismic risks are permanently eliminated.

If the Lead Agencies choose the Proponents Preferred Project or Alternative 1 or 2, it is likely that the Lead Agencies will be required to address inadequacy of the analysis of these alternatives in the [DEIR/S,] requiring the need to re-circulate the [DEIR/S] that will lead to further indefinite delays. We urge consideration of the first priority - to assure the safety of those living in the Carmel River Valley; the unsafe San Clernente Dam should be dealt with as soon as possible and therefore Alternative 3 is the technically superior project, with the most expedient outcome.

Response

It is not necessarily correct that Alternative 3 Carmel River reroute and dam removal) would be quicker to construct than a dam buttressing project (Proponent's Proposed Project). Based on equal scheduling assumptions, dam buttressing would in fact have the shortest implementation schedule.

It is uncertain whether dam buttressing or notching would result in a jeopardy opinion or not. The Proponent's Proposed Project would preserve existing habitat for California red-legged frogs (CRLF) above the Dam. However, any decision may be challenged and it is not possible to forecast with confidence what the likely schedule effect of conjectural challenges would be.

SEDIMENT

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment SED-1

The concept that dams harm the environment by capturing sediment is about 99 percent wrong. Down stream sedimentation creates far more problems than it solves. Sedimentary buildup will usually lead to flooding and additional erosion caused by flow blockage. As the Grand Canyon is proof sediment usually ends up in the mouth of the river, bay or ocean.

Response

Thank you for your comment. Sediment transport is a natural river function. When interrupted, it can have multiple adverse physical and biological effects.

June 4, 2006 letter from Don Redgwick

Comment SED-2

The loss of capacity of the dam after the Marble Cone Fire and other years of heavy erosion could be an indicator of future erosion and sediment. Sediment seldom settles on the beaches or other preferred areas as some people seem to believe. Water Pollution Control Boards have been known to fine Contractors, Developers and others large sums of money for less than a truck load of dirt washing into a stream. Fish and Game requires a plan to be submitted and approved showing facilities and a program to control erosion. Flood Control Agencies spend millions of dollars annually in maintenance to control erosion and to stabilize river banks.

Response

Comment noted.

Comment SED-3

If the San Clemente Dam did not exist prior to the Marble Cone fire, what would be the estimated damage to Carmel Valley and Carmel Meadows? Would 2.4 million yards or more be in Carmel Bay if the dam was never built or would some of it have been trucked from homes, streets and parks?

Response

The question involves speculation as to the cause of existing conditions that form the environmental baseline for the evaluation of impacts, but are not themselves impacts of the project. As stated in the EIR/EIS the Dam and reservoir currently traps sediment from the upper watershed. The existing trap efficiency is about 35 percent, but would decline as the reservoir continues to fill.

Comment SED-4

The study should include comments on the containment of the sediment and the damage that 2.4 million yards of sediment would have caused during flood years and the benefits or harm that trees, silt and debris can do when not contained.

Response

This comment appears to refer to the theoretical damage that would have occurred if the sediment currently stored in the reservoir had passed downstream. Natural sediment transport is normally beneficial to stream environments. The storage of this sediment is an existing condition, which forms the environmental baseline for evaluation of impacts. It is not an impact of the project. The potential impacts of sediment passing downstream under each of the alternatives are described in Section 4.2 of the EIR/EIS.

June 21, 2006 letter from Carmel Valley Association/Robert Greenwood

Comment SED-5

The mass of sediment behind the dam, accumulated over many years, may contain toxic materials. When this sediment is moved or disturbed during the project, such toxics could contaminate CAW's municipal water supplies. We recommend a program to drill and sample the sediment pile to evaluate the possibility of such contamination.

Response

Samples from the impounded sediments behind San Clemente Dam (SCD) were collected and analyzed to assess the gradation of the sediment and the quality (ENTRIX 2002). The analysis of the quality found traces of Arsenic (As), Barium (Ba), Chromium (Cr), Copper (Cu), Nickel (Ni), and Zinc (Zn). However, none of the water quality parameters analyzed were found to exceed water quality standards. The results of the pore-water water quality analysis is in this Final EIR/EIS, Appendix X.

June 13, 2006 letter from John G. Williams, Ph.D.

Comment SED-6A

For example, in the notching alternative, in Section 3.3, the DEIR states at p. 3-40 that "Accumulated sediment would be removed down to the level of the notch," or 506 ft. However, at p. 3-56, it states that the new surface "would be at about the same grade as the current sediment surface," but lowered by about 19 feet.

Response

The term "grade" refers to the slope of the sediment surface. The slope of the final excavated sediment surface is proposed to be the same as the slope of the current sediment surface through the reservoir, only 19 feet lower. This new sediment surface would extend upstream from the notch in the Dam to the point where it intersects the natural channel bed. Because the sediment surface at the Dam would be lowered by 19 feet, the existing sediment surface grade would intersect the natural channel at a point that is currently covered with sediment. The sediment would be excavated and the natural channel restored from this point of intersection to the current upstream limit of sediment.

Comment SED-6B

Then, a channel shaped to carry approximately the two-year flow would be constructed, and the whole would be revegetated. However, constructing channels is not so simple (e.g., Kondolf et al. 2001), and the DEIR does not even provide relevant information such as what the existing gradient of the stream actually is. Put differently, there is an extensive channel reconstruction element to this alternative, but unlike the elements of the project that would occur at the dam itself, the channel reconstruction is described only vaguely.

Response

In the Carmel River arm, the existing sediment has an average slope of about 0.0009 ft/ft. In the San Clemente arm, the average sediment slope is about 0.0038 ft/ft. These slopes would be used as the approximate slope of the geomorphically stable channel for Alternative 1, Dam Notching. If this alternative is selected, the final characteristics of a geomorphically stable channel would be developed during the design stage. This EIR/EIS describes the expected impacts of a new channel cut through the stored sediment.

The Proponent's Proposed Project, Dam Strengthening, would not involve construction of a new channel. Alternative 1, Dam Notching would involve reconstruction of about 2,000 feet of new channel in the Carmel River and 1,000 feet in the San Clemente Creek arm. Alternatives 2 and 3 would remove the Dam and would involve complete reconstruction of the natural channel through the reservoir (about 7,000 and 3,000 feet in the Carmel River and San Clemente Creek arms, respectively).

Comment SED-6C

In the discussion of the by-pass option (p. 3-81), the DEIR states that "Removal of the reservoir sediment in the San Clemente Creek arm would expose the pre-1921 alluvial deposits in the river channel and floodplain through the historic reservoir inundation zone. A three-stage channel would be provided through selective contouring along San Clemente Creek. The channel the same as is described in Section 3.3." However, information about the pre-1921 alluvial deposits is not provided, nor does Section 3.3 provide an adequate description of the channel that would be provided.

Response

The location and slope of the pre-dam channel bed is described in the "Evaluation of Sediment Sluicing Options Associated with the San Clemente Dam Fish Ladder" (MEI 2007a), but information about the pre-dam alluvial deposits was not available for this EIR/EIS. The size and shape of the final channel would be designed after an alternative is selected for permitting. To design a geomorphologically stable channel, engineers would consider the hydrologic and hydraulic conditions, background sediment contributions to the stream, available cross-section, and channel slope. The designers would start with the estimation of the equilibrium slope of a channel through the impoundment. The channel would be designed and sized with a main channel and overbank areas that would convey a range of flows and the anticipated sediment loads without erosion or deposition. The overbank areas would serve as a floodplain for higher flows. Overall, the channel would emulate a natural stream using the upstream channel as an analog system. The assumed cross-sections for a geomorphologically stable channel that were used in the sediment transport modeling are described in Figure 4.2-10 through Figure 4.2-14 of Section 4.2.1 of this Final EIR/EIS.

Comment SED-7

The sediment transport modeling is questionable. Sediment transport modeling was used to assess various alternatives (p. 4-123). In particular, the option of allowing the river to remove sediments in the notching alternative was rejected based on such modeling (p. 3-47). However, previous work by the engineering consultant used for the EIR, Mussetter Engineering, has been sharply criticized by experts from the United States Geological Survey (Andrews et al. 2002, attached; also available at: http://wwwrcamnl.wr.usgs.gov/sws/Trinity/TrinityReview.pdf).

The issue in question was this. In December 2000, after years of study, the Secretary of the Interior issued a Record of Decision (ROD) proposing a new flow regime in the Trinity River, downstream from a Bureau of Reclamation dam. On behalf of the Sacramento Municipal Utility District (SMUD), Mussetter Engineering produced a critique of a proposed flow regime, and SMUD used this critique in support of a proposal for an alternative flow regime that would have less impact on hydropower production. Essentially, Mussetter Engineering argued, based on sediment transport modeling, that the flow regime proposed by the ROD would reduce the habitat value of the Trinity River for salmon by flushing out spawning gravels. In 2002, The Bureau of Reclamation asked the United States Geological Survey (USGS) to review the issue. The USGS review, by E. D. Andrews, K. M. Nolan, and S. M. Wiele, can fairly be described as blistering, and contains statements such as "The model results displayed in the upper panel of Figure 40 are physically unreasonable" (p. 7, last paragraph). At the least, this history raises questions about the reliability of the sediment transport modeling used in the EIR. The modeling should be reviewed by independent experts before it is relied on to reject or assess alternatives.

Response

This comment references a study conducted for the Trinity River that has little relevance to the Carmel River. The current sediment model has been discussed and accepted by the agencies involved with the project. It is not equitable that another application of sediment modeling raises questions about this application.

Comment SED-8A

The gradient of the sediment in the San Clemente Reservoir may not be at equilibrium. There is an implicit assumption in the DEIR that the slope of the sediment in the reservoir is at equilibrium. However, this may well not be the case, and this could have important consequences for the notching alternative.

Response

Discussion in this Final EIR/EIS does not conclude that the stored sediment is currently in equilibrium. Moreover, the Final EIR/EIS text references that the reservoir would continue to fill (a non-equilibrium condition) over time.

Sediment flowing into the reservoir either continues through the reservoir or deposits in the impoundment zone (the current split is about 65 percent flow through and 35 percent storage, for the Baseline Condition). In addition, the river may also remobilize sediment in the impoundment that was deposited during previous storms, and convey the sediment through the reservoir.

The equilibrium slope of the current impoundment or of a proposed channel can be estimated through analysis of the hydraulics of the river flow, the tributary sediment load, and the sediment composition (gradation). Such an analysis would be performed as part of final channel design to assure a geomorphically stable channel.

Comment SED-8B

As noted in the DEIR, downstream coarsening of the sediment over time can be expected. As this occurs, the channel gradient will need to steepen to adjust to the resulting greater bed resistance. It would be useful to compare the existing gradient in the reservoir sediments with the channel gradient in geomorphically similar situations farther downstream, such as downstream from Sleepy Hollow. If the final gradient can be expected to be greater than the existing gradient, then the proposal for the notching alternative as presented in the DEIR would remove more sediment than necessary, at unnecessary financial and environmental cost.

Response

The existing gradient of the stored reservoir sediment reflects the fact that the area is an impoundment. This condition (impoundment) is not present in the river downstream of the Dam and therefore, one would not expect geomorphically similar conditions downstream. The final gradient of the channel through the stored sediment would be a function of the tributary sediment load, hydraulic conditions, bankfull discharge, and available channel cross-section. The combination of these factors would be considered in the design of the channel.

For the past several years, the water surface of the reservoir has been drawn down as an interim measure for seismic safety. This process has changed the slope of the water near the Dam from horizontal (a lake) to a steeper slope. During a recent site visit, it was observed that the Carmel River has cut a channel through the impounded sediment in response to increased gradient of the water surface. The river formed a channel in response to the hydraulic conditions and found its point of equilibrium.

Comment SED-9

The acceleration of water as it nears the inside notch would create a small area of scour upstream from the dam[1], which would reduce the problem of sedimentation near the fish ladder.

As noted above, the sediment transport modeling should be reviewed, particularly regarding the option of allowing the river to rework sediments in the notching alternative.

Response

Sediment transport modeling has been updated for this Final EIR/EIS. The river currently reworks the sediment each year during the Annual Drawdown for Interim Seismic Safety Measures, required by the Division of Safety Dams (DSOD). The modeling reflects the conditions seen in the reservoir (see Section 4.2.1 of this Final EIR/EIS).

Comment SED-10

The DEIR does not justify removal of as much sediment as is assumed in the notching alternative. For example, it is not clear why sediments could not be left as terraces to one or both sides of the reconstructed channel. Reducing the amount of sediment removed in this alternative would reduce its financial and environmental cost.

Response

This Final EIR/EIS describes the impact that could be caused by the greatest amount of sediment removal for all alternatives. The total volume of sediment to be removed could be reduced during final design. In general, the channel would follow the slope of the existing sediment wedge in the reservoir, contain a bankfull channel, and be geomorphically stable. These design parameters would dictate the amount of sediment to remove. The final channel must have an overbank floodplain and therefore sediment must be removed or the channel would be entrenched.

Comment SED-11

Consider dredging a channel to the fish ladder, rather than flushing: For the alternatives that would leave the dam and require a fish ladder, the EIR should consider using a suction dredge rather than flushing to maintain a channel to the ladder. The slurry could be pumped to a settling pond or dewatering facility on the flat next to the dam, and the dewatered sediment could be removed by truck. Dredging would provide greater control over the operation, and minimize the discharge of sediment into the river.

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[1] This scour just upstream from the dam is a typical feature of dams that are filled with sediment.

Response

The "Sediment Operation and Management Plan for Fish Passage" (SOMP) has been revised to clarify the sediment management issues raised in public comments (see Appendix J). The revised plan presents a toolbox of management options to maintain fish passage as sediment flows into and through the reservoir. Dredging with mechanical equipment or a suction dredge is one option identified in the SOMP to maintain passage through the sediment.

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment SED-12

Carmel River Lagoon. The EIR/EIS should examine the current effects of dam sediment retention on the dynamics of the Carmel River lagoon, and then examine the impacts of sediment releases under the different alternatives.

Response

The current conditions in the lagoon that may result from the presence of the Dam are an existing condition. These are part of the baseline environmental conditions against which project effects are evaluated. They are not impacts of the project. The impacts of sediment releases under the different alternatives are evaluated throughout Section 4.2.

Comment SED-13

Issue FI-8 Upstream Fish Passage. The impacts of the Proponent's Proposed Project and Alternative 1 on upstream fish passage are not adequately described in the document. Both alternatives are described as beneficial to upstream fish passage. However, there will be permanent long-term impacts to upstream fish passage under these alternatives. Specifically the potential delay on fish passage may be significantly underestimated. Page 3-35 of the document acknowledges that "significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone." For this reason, the EIR/EIS anticipates the need for dredging the channel every 3 years. Based on this, it seems that passage could be blocked for significantly longer periods of time than are analyzed in the EIR/EIS if dredging is needed to clear the channel. **(Also FI-15)**

Response

The new fish ladder will create a better situation for upstream fish passage than current conditions. The SOMP (Appendix J) has been revised to provide a greater focus on sediment management. Dredging would be used in the fall to prepare the site to support fish passage. Large storm events would create backwater effects at the Dam and would generate turbulence immediately upstream of the Dam that would maintain passage conditions upstream of the ladder. If an event occurs that renders the site impassible, a plan would be developed to remove sediment and debris from the upstream side of the ladder to restore fish passage as soon as possible. This would be similar to a permitted activity that occurs on the Lower Yuba River at Daguerre Point Dam to maintain passage for Central Valley Chinook salmon and steelhead.

Comment SED-14

Issue FI-9 Sediment Impacts to Downstream Channels from Sluicing, Dredging of Sediment Transport Downstream. The impacts to steelhead from sediment caused by sluicing operations would be significant and permanent. The mitigation discussion states that "sluicing operations would begin with short duration sluices and impacts would be thoroughly evaluated to determine effects on downstream channels, habitats, and fishes." More information needs to be provided about regarding this intended course of action. What will be done to keep the upstream channel clear if short duration sluices are not sufficient to do so? What level or type of downstream impact would trigger a change in the SOMP, given that the impact is already identified as significant? If downstream impacts are such that different course of action is warranted, what would the alternative approach be to dealing with sediment in the reservoir? **(Also FI-17)**

Response

Impacts to downstream channels from sediment management activities are now address in Impact Issue FI-9a. Additional modeling of sediment transport indicated that the impact would be long-term, less than significant for the Proponent's Proposed Project and Alternative 1 and short-term significant, long-term beneficial for Alternatives 2 and 3. Sluicing operations are detailed in the revised SOMP (Appendix J) in the Final EIR/EIS. This will be an adaptive management plan and therefore allows for changes in methods of sediment removal, sluicing durations, periods, and volumes based on prevailing conditions and previous fish data conducted in consultation with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG). Sediment management would be conducted proactively, as a preventative measure rather than as a response to a problem that has been allowed to develop. Operations would involve assessment of the need to remove sediment and reestablish a channel prior to each wet season. During the wet season, any reduction in channel capacity would be evaluated to assess the methods available to clear the channel and maintain fish passage. The toolbox of methods available to maintain channel capacity and to respond to potential downstream impacts is described in the revised SOMP.

Comment SED-15

Appendix J, Sluicing Operations and Maintenance Plan. Based on the information provided in Appendix I, the Sluicing Operations and Maintenance Plan (SOMP) outlined in Appendix J does not seem sufficient to maintain a viable channel from the exit of the fish ladder to the reaches above the reservoir. The impact discussion for Issue FI-9 states that sluicing operations would occur over a 1 to 4 hour event when flow is over 300cfs and increasing. According to Section 3.3 of Appendix I, the incised channel created by each sluicing event could be filled back-in within a few days. Given the unpredictability of stream flows in the river, sluicing will not provide a sufficient *guarantee that there will be an adequate channel for fish passage from the exit of the fish ladder to the reaches above the river. The Proponent's Proposed Project and Alternative 1 must develop a more reliable way to insure fish passage past the ladder.* **(Also FI-18)**

Response

This Final EIR/EIS presents an updated SOMP in Appendix J. The comment misunderstands the function of the SOMP. The SOMP is necessary to keep the upstream exit of the fish ladder open as sediment naturally flows into the reservoir and deposits. It is not needed for the river upstream of the reservoir. Currently, fish are able to pass through the channel formed by the river passing through the sediment upstream of the reservoir.

Comment SED-16

The sluicing operations presented for the Proponent's Proposed Project and the Alternative 1 are untested and lack specificity. In addition, the plan is based on migration records of an already residual run and an idealized world of average hydrology, single storm events and steady state conditions. Real operations, with the vagaries of real-time hydrology, sediment movement, debris and difficulty in access/operation during storm are likely to overwhelm the flexibility of the chosen system. The proponent's project and Alternative 1 need to define an alternate approach that would be used if sluicing operations are not adequate maintain fish passage without significant impacts on fish or downstream reaches. **(Also FI-19)**

Response

The Final EIR/EIS presents an updated SOMP. The revised SOMP (Appendix J) fully recognizes the difference between average conditions and real-time hydrology. The adaptive management program can accommodate such differences. The SOMP presents the average conditions and a real-time example. The average conditions provide a method of evaluating the sluicing over a long-term data record and estimate the potential occurrence and duration of sluicing events. The real-time example shows how the process may work with an actual storm. Sluicing during a flood event is one method available. Dredging during low-flow conditions is a non-flow dependant process to clear the channel.

Comment SED-17

Operations and Maintenance, Proposed Project and Alternative 1. Both the Proponent's Proposed Project and Alternative 1 will require permanent ongoing maintenance of the fish ladder and the sediment behind the dam (through sluicing or other methods) to mitigate for impacts of leaving the dam in place. How will this maintenance be guaranteed? Will there be a maintenance endowment? **(Also FI-20)**

Response

Funding for operation and maintenance of the sluice gate would be provided through the normal budgetary process of the owner and paid by the revenues of the water system. The agencies permitting the project are responsible for ensuring compliance with all permit conditions including this ongoing maintenance.

June 20, 2006 letter from Mark Delaplaine / California Coastal Commission

Comment SED-18

Examination of options for riverine morphology and beach and nearshore nourishment can and should be coordinated with these on-going efforts. The Commission staff will need information on the effects of this project on downstream morphology and coastal processes in order to complete our review and determine whether the proposed action, or alternatives, are consistent with Section 30233 (b) and (d) of the California Coastal Act.

Response

Thank you for your advice concerning the requirements of the Coastal Commission and the Coastal Zone Management Act. The project is located 18 river miles above the mouth of Carmel River. It does not adversely affect coastal zone resources. Existing conditions may be adversely affecting coastal zone resources, but these are not impacts of the project. Alternatives that provide beach nourishment are not within the scope of this EIR/EIS. The 2000 Recirculated Draft Environmental Impact Report (RDEIR [Denise Duffy & Associates 2000]) considered sediment management alternatives that would allow natural transport of accumulated sediment downriver and to the coastal zone. This was found to have unacceptable impacts to fish (spawning) and public safety (flooding due to riverbed aggredation). In preparing this Final EIR/EIS, California American Water (CAW) explored the market potential for the accumulated gravel and sediment, and learned that the cost of removing it would exceed its market value. The cost and impacts (traffic, safety) of excavating and trucking sediment to beaches for nourishment would be similar to those identified in the 2000 RDEIR for sediment removal via truck; these impacts were considered unacceptable and those alternatives were eliminated from consideration in this EIR/EIS.

The reservoir currently has a trapping efficiency of about 35 percent. This means that most of the natural sediment inflow to the reservoir is trapped, and a smaller amount is passed through the reservoir to the river downstream of the Dam. As the remaining volume in the reservoir (about 100 acre-feet [AF]) fills, the trapping efficiency would decrease and more of the natural sediment load would pass downstream. All of the alternatives, including the No Project Alternative, would pass greater sediment loads in the river downstream of the Dam relative to existing conditions, either through sluicing or because the alternatives would allow the full natural sediment load to pass the Dam site. Sediment modeling indicates that these sediments would distribute along the length of river from the Dam to the ocean. Ocean conditions and beach-forming processes were not modeled as part of this Final EIR/EIS, but it is reasonable to expect an increased sediment load to the ocean.

Comment SED-19

Introducing sediment into the river by sluicing, as in the proposed project and alternative 1, could adversely affect steelhead and their habitat by causing abrasion of the fish, decreased dissolved oxygen, disturbance of streambeds and filling of the interstitial spaces between spawning gravel. Where the sluicing operations are described in the Draft EIR/EIS as mitigation for "short-term, significant and unavoidable" effects, it would appear that the mitigation itself could possibly cause long-term changes in the amount and type of sediment transported from the upper watershed to the lower Carmel River, changes in the sediment composition in the river and changes in the amount of sediment stored in the river below SCD. The sluicing operations proposed require further study to determine their efficiency and long-term effects, particularly with regard to the part of the river that is in the coastal zone. **(Also FI-21)**

Response

Sediment would not be unnaturally introduced into the river by sluicing; sediment transport is a natural feature of the watershed and the suspended sediment concentration would increase as river flow increases. As noted in the response to Comment SED-18, all of the alternatives would pass sediment downstream, including the No Project Alternative. The sediment load transported past the Dam would be controlled by the remaining space in the reservoir. Under the Alternatives 2 and 3, dam removal would lead to downstream transport of the natural sediment load. Alternative 1 and the Proponent's Proposed Project would pass sediment in a more concentrated period associated with sluicing (see the updated SOMP, Appendix J). Once the reservoir fills with sediment, a large portion of the natural sediment load would pass downstream.

June 6, 2006 letter from John W. Fischer

Comment SED-20

David Zaches raised the question about possible toxins in the sediment proposed for use in the old river channel. The bottom layers of sediment have been there for many years; who knows what was used on the land during the 1920's and 30s? Have core samples been taken to better understand what may be there?

Response

Samples from the impounded sediments behind SCD were collected and analyzed to assess the gradation of the sediment and the quality (ENTRIX 2002). The analysis of the quality found traces of Arsenic (As), Barium (Ba), Chromium (Cr), Copper (Cu), Nickel (Ni), and Zinc (Zn). However, none of the water quality parameters analyzed were found to exceed water quality standards. The results of the pore-water water quality analysis is found in the draft EIR/EIS, Appendix H.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment SED-21

Table 2.1, WR-2 through WR-5. This table does not describe ongoing stream degradation (incision into alluvial deposits) downstream of San Clemente Dam due to retention of sediment load within the reservoir. MPWMD notes that the Mussetter studies of sediment transport in the river under various alternatives set an artificial barrier (for modeling purposes) that did not reflect the potential for incision.

Response

Any ongoing degradation of the stream channel is part of baseline environmental conditions against which the alternatives are evaluated. It is not an impact of the project.

Comment SED-22

MPWMD research in the early 1980's showed that the river had incised into floodplain deposits by up to 13 feet along much of the river since the reservoir was built. Recent surveys along the river indicate that this trend has not halted and the rate of degradation is estimated to be about one foot per decade, which has contributed to bank destabilization and undermining of infrastructure across and adjacent to the river. The dam thickening and dam notching alternatives are not likely to significantly slow or reverse this process, as most of the sediment load will be retained upstream of the existing dam location for several decades. The reroute and removal alternatives are likely to slow or halt the degradation process as the sediment load to the lower river would be increased substantially. The differences to downstream bank stability and infrastructure stability from each alternative should be described.

Response

Continuing or reversing ongoing degradation of the downstream channel is not evaluated in the Final EIR/EIS because it is part of baseline environmental conditions against which the alternatives are evaluated. Existing conditions would not be impacts of the project.

Given that there is only 100 AF of storage remaining in the reservoir (mostly in the San Clemente Creek arm) and an annual sediment influx of about 16.5 AF, the reservoir would not continue to trap most of the natural sediment load for several decades. Sediment modeling indicates that the trapping efficiency of the reservoir would decrease over time. The benefits of Alternatives 2 and 3 to the river are described in throughout Section 4.2. It is not clear what is meant by “infrastructure stability” in this comment.

Comment SED-23

Page 2-2, Paragraph 2: The statement, “Two high-level outlets equipped with sluice gates would be installed to control and limit sediment releases…”, appears to conflict with the description of one mid- and one high-level outlet on page 3-26 and does not match the proposed limited operation of sluice gates during the winter period (see also comment on Page 3-18). The FEIR/EIS should fully evaluate how operation of proposed gates would control and limit sediment releases and include an evaluation of the timing of sediment releases based on MPWMD’s record of reconstructed unimpaired streamflow at San Clemente Dam.

Response

The design of the Proponent’s Proposed Project and Alternative 1 has been revised in the Final EIR/EIS to consolidate all sluicing in a single gate (see Sections 2.1.1, 3.2.4 and 3.3.4). Figures 3.2-5 and 3.2-6 show the revised design.

The timing of sediment releases was evaluated through sediment transport modeling (Appendix S, MEI 2006 and 2007) and the Final EIR/EIS has been updated to incorporate this work (see Section 4.2 and the revised SOMP, Appendix J).

Comment SED-24

Page 2-5, Paragraph 4: Under Description of No Project: Conclusion. “The existing drawdown ports in the dam and the existing fish bypass facility would both likely remain operational until the reservoir fills with sediment.” At the beginning of the winter of 2005 to 2006, sediment in the mainstem was within about 20 feet of the easterly port opening. It is likely that use of the ports will be in jeopardy well before the entire reservoir fills with sediment because the bulk of the remaining reservoir storage is on the San Clemente Creek side of the reservoir and is filling much more slowly than the mainstem side. The FEIR/S should evaluate whether the existing ports will be used and how in the No Project setting.

Response

Under Alternative 4 (No Project), if no sediment management action is taken the existing ports would become non-operational as sediment accumulates. As the commenter has pointed out, the filling may occur sooner in the Carmel River arm and therefore the ports would be unusable before the entire reservoir is filled. However, as noted in the summary description of Alternative 4 presented in Draft EIR/EIS Section 2.1.5, "minor sediment removal may occur to allow the Dam to maintain the existing surface water supply intake serving the upper Carmel Valley Village area."

Comment SED-25

Page 3-5, Paragraph 1: Under Sediment Management Alternatives, the FEIR/S should fully evaluate the long-term impacts associated with trapping gravel and cobble with each alternative. The FEIR/S should fully evaluate options for stockpiling and releasing gravel and cobble into the river channel below the project area as mitigation for trapping of coarse bedload.

Response

Trapping of gravel and cobble in the reservoir is an existing condition. It is not an impact of the project and does not require mitigation.

As the reservoir fills, the amount of bedload, including sand, gravel, and cobble that passes through the reservoir to the downstream river would increase. Therefore, the amount of coarse bedload historically trapped in the reservoir would decrease and more of this size fraction would become available to the lower river. The option of stockpiling gravel and cobble for release downstream is described in the revised SOMP (Appendix J).

Comment SED-26

Pages 3-25 and 3-26: The text briefly describes operation of dual high-level ports, but the modeling completed by Mussetter Engineering Inc. only examined the impacts and scenario of operating one of the ports. If the proposed sluice gates are shown correctly in Fig. 3.2-6, then the potential impacts from sluicing at each of the proposed levels should be reevaluated and effects such as headcutting in the reservoir sediments and release of fine material to downstream reaches should be identified. The FEIR/S should fully evaluate the timing, duration, and magnitude of sediment releases to the areas downstream of San Clemente Dam and the impacts to aquatic resources resulting from the discharge of sediment.

Response

The design of the Proponent's Proposed Project and Alternative 1 has been revised in the Final EIR/EIS to consolidate all sluicing in a single gate (see Sections 2.1.1, 3.2.4 and 3.3.4). Figures 3.2-5 and 3.2-6 show the revised design.

The Final EIR/EIS has been updated to evaluate the release of sediment to the downstream river as simulated using sediment transport modeling and described in Section 4.2 of the EIR/EIS and the revised SOMP (Appendix J). Sediment management by sluicing or other methods would maintain passage through the channel immediately upstream of the fish ladder. Therefore, a headcut is not expected to form in the channel further upstream of the Dam. Sediment would be released to the lower river under all of the alternatives. Under Alternatives 2 and 3, most, or all, of the natural sediment load would pass the dam site to the lower river. Under the Proponent's Proposed Project and Alternative 1, the majority of the natural sediment load would pass through to the lower river and a smaller percent would be retained in the impoundment. The sediment transport modeling estimated that the current reservoir trap efficiency of 35 percent would decline to 22 percent after the reservoir fills (the 2030 baseline condition).

Comment SED-27

The FEIR/S should fully evaluate how the ports would be operated in conjunction or separately, and the impacts of the operation on sediment mobilization, passage and deposition in the river below the dam should be evaluated and described. While a brief description of sluice gate operations is provided, the proposed schedule has not been combined with the reconstructed record of unimpaired flows to provide a full description of the frequency and duration of operation and how this will affect migration of adults and juvenile fish.

Response

The design of the Proponent's Proposed Project and Alternative 1 has been revised in the Final EIR/EIS to consolidate all sluicing in a single gate (see Sections 2.1.1, 3.2.4 and 3.3.4). Figures 3.2-5, 3.2-6 and 4.2-3 show the revised design.

The operation of the sluice gates is an adaptive management process, responding to flows, sediment deposition, and fish passage requirements. While an examination of the unimpaired average daily flow is helpful in identifying the potential opportunities for sluicing, it does not identify the actual sluicing pattern. Please refer to the revised SOMP (Appendix J) for more detail on the frequency and duration of sediment management operations, and to Section4.4 of this Final EIR/EIS for effects to migrating fish.

Comment SED-28a

Page 3-35, Paragraph 3: Last Sentence, "Dredging upstream of the fish ladder would occur on average every three years, where significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone (using the proposed sluiceway next to the fish ladder exit)." The FEIR/S should provide detailed analysis and review of the studies that led to an average of every three years and clarify the frequency of dredging, which is not clear. Is this one day of dredging every three years, or multiple days every three years?

Response

The Final EIR/EIS presents an updated SOMP (Appendix J) and the evaluation of sediment sluicing options are in Appendix S (MEI 2007a and MEI 2007b). Please refer to this update for information regarding proposed sediment management.

Comment SED-28b

What happens in years when sustained high flows result in rapid refilling of the area between the ladder exit and the sluiceway opening?

Response

As described in the updated Section 4.2 of the Final EIR/EIS, sediment transport modeling indicates that high flow periods would carry sediment through the reservoir or deposit it in the upstream portion of the remnant pool. The low-flow condition would present the greatest opportunity for depositing sediment near the fish ladder, not the high-flow condition. The sediment front would not directly contact the fish ladder, even during high flows. A remnant pool would remain in front of the fish ladder, which would be sufficient for fish to leave the ladder and make their way upstream above the Dam, as discussed in this Final EIR/EIS Sections 4.2 and 4.4.

Comment SED-28C

Does dredging include maintaining the San Clemente Creek channel? The FEIR/S should fully evaluate operation and maintenance of channels leading from both San Clemente Creek and the mainstem to the fishway.

Response

Dredging would be applied to both the Carmel River and San Clemente Creek arms of the reservoir and in the remnant pool upstream of the fish ladder. This Final EIR/EIS (Sections 4.2 and 4.4) and the revised SOMP (Appendix J) describe and evaluate how fish passage will be maintained in both arms.

Comment SED-29A

Page 3-40, Paragraph 1: "Accumulated sediment behind the dam would be removed down to the level of the notch." The portion that is coarse, including coarse sand, gravel, cobble and boulder should be sorted and remain in the reconstructed channel and floodplain for habitat restoration.

Response

Thank you for pointing this out. The restored channel would utilize the available material for creation of a stable channel. Currently, the gradation of the sediment in the reservoir ranges from sand to boulders.

Comment SED-29B

In addition, removal of all material down to the level of the notch may result in an unstable or undesirable channel configuration through the remainder of the deposit. For the FEIR/S, a plan view, cross-sections, and a profile of the remaining reservoir deposits that show a geomorphically stable channel should be provided.

Response

Final design is not provided in this Final EIR/EIS. However, a typical cross-section is presented in Figures 4.2-20 and 4.2-21 of the Final EIR/EIS. The final channel cross-section and plan view would be determined in the design of the channel if this alternative is selected. The removal of stored sediment down to the notch would include excavation and creation of a geomorphically stable channel upstream of the Dam. That is, excavation would remove excess sediments and the design channel would be constructed within the excavated area. The finished channel would consist of a bankfull channel with an adjacent floodplain.

Comment SED-30

Page 3-41, Paragraph 1: "Notching San Clemente Dam to approximately elevation 506 in the area of the existing spillway bays…" The lower portion of the dam notch appears to be significantly wider than a channel that would be excavated through the sediment remaining upstream of the dam. The FEIR/S should show the transition (plan view, cross-sections, profile) between channels in the reservoir sediments, modified dam, and channel downstream. Does the configuration of the modified dam encourage the mobilization of sediment from behind the notched dam? **(Also AA-38)**

Response

Final design is not provided in this Final EIR/EIS, however, a typical cross-section is presented in Figures 4.2-10 and 4.2-11 of the Final EIR/EIS. The final channel cross-section and plan view would be determined in the design of the channel. The mobilization of sediment is discussed in Section 4.2 of this Final EIR/EIS. While it is true that the spillway is wider than the upstream channel, the channel would not directly contact the spillway. The channel through the sediment upstream of the Dam would empty into the remnant pool discussed in this Final EIR/EIS. This pool would be in contact with the spillway notch and would provide the transition between the geomorphologically stable channel and the spillway.

Comment SED-31

Page 3-47, Paragraph 1: "Previous sediment transport modeling studies determined that removing or notching the dam and letting the river flush the sediments downstream in an uncontrolled manner would pose unacceptable risks for sediment accumulation and flooding in downstream reaches of the river." MEI (2005) documents the quantity of sediment above elevation 506 and the amount of sediment that would build up in the river channel as a result of notching (120 to 140 AF at the end of the 41-year simulation (Figure 2.3, MEI [2005]). Considering this relatively small quantity of accumulated sediment, the FEIR/S should fully evaluate whether removal and storage of 930 AF of sediment is actually needed to mitigate for the long-term deposition of 120 to 140 AF in the river channel and whether the risk could be reduced to baseline conditions (No Project) by removing and storing significantly less material.

Response

This 120 to 140 AF accumulation would occur after removal of the 930 AF of stored sediment; the 930 AF left would augment accumulation of sediment in place. Previous studies indicated that flushing the total amount of sediment downstream would not be practicable. Section 2.2 outlines the alternatives considered and eliminated.

Comment SED-32

Page 3-56, Paragraph 3: "Dredging upstream of the fish ladder would occur on average every three years, where significant storm events might cause excessive build up and clogging of the upstream channel that cannot be cleared by sluicing alone (using the proposed sluiceway next to the fish ladder exit)." Where are impacts and mitigations from the dredging described? What information was used to determine the frequency of dredging?

Response

Please refer to updated evaluations of sediment management in Sections 4.2 and 4.4 in this Final EIR/EIS, and the updated SOMP (Appendix J). Chapter 3 of the Final EIR/EIS describes the alternatives; please refer to Sections 4.2 (Hydrology and Water Resources), 4.3 (Water Quality), and 4.4 (Fisheries) for the evaluation of impacts and statements of mitigation. In the Draft EIR/EIS, the frequency of dredging was described on page 3-56 as a means of framing the typical need for channel clearing. This Final EIR/EIS explains the actual need for dredging, which would be conducted and monitored proactively as needed (see revised SOMP, Appendix J).

Dredging would cause a short-term impact associated with increased turbidity. However, as described in the revised SOMP (Appendix J), dredging and other actions needed to clear the entrance to the fish ladder would occur before the start of the wet season when fish are typically not migrating through the impoundment. Therefore, this impact would be less than significant (Impact Issue FI-9b).

Comment SED-33

Page 3-80, Paragraph 1: "The channel profile…includes a diversion sill at the channel upstream El. 530 to minimize downstream sediment transport and a slightly steeper slope than the natural geometry." What portion of the gravel, cobble and boulders stored upstream of this location in the mainstem would be mobilized and pass downstream? Would a sill limit future recruitment of beneficial substrate (material coarser than sand) and for how long? How would dynamic equilibrium be established with a sill in place?

Response

The sill described in the alternative refers to a hard point at the upstream end of the constructed bypass at the junction with the Carmel River. Depending on the parent material underlying the hill that would be excavated between the Carmel River and San Clemente Creek for the bypass, a natural sill may be available if there is bedrock present. Such a hard point would not limit upstream gravel recruitment. However, the stored sediment at this end of the reservoir is about 30 feet deep and could erode without the presence of a hardpoint.

The description referenced in the comment is modified to remove the phrase *to minimize downstream sediment transport.* The presence of a hard point at the upstream end would help maintain the design channel slope but it is not intended to minimize sediment transport. Sediment stored in the Carmel River channel upstream of this point would be available for transport downstream.

Comment SED-34

The FEIR/S should fully evaluate effects on spawning and rearing habitat in the reach below the diversion sill and the time period before natural recruitment of gravel begins to pass this location.

Response

The impacts to spawning and rearing habitat for each alternative were presented in Table 4.4-10 and discussed in Fisheries Section 4.4 under the Impact Issue FI-9a of the Final EIR/EIS.

Table 4.4-11 has been updated in the Final EIR/EIS to more clearly spell out the differences between the alternatives.

Comment SED-35

If the reroute alternative is the selected project, mitigation measures should include removal and storage of gravel and cobble in the old inundation zone of San Clemente Reservoir to be placed into the diversion channel.

Response

Comment noted. These measures will be considered in final design of the diversion bypass.

Comment SED-36

Page 4-17, fourth paragraph. "The distribution of sediment downstream of the dam as a result of sluice gate operations was not modeled for the Proposed Project or Alternative 1 but MEI stated that downstream impacts under the Proposed Project with the implementation of the sluice gate would be similar to impacts simulated for Alternative 1 (Dam Notching) (MEI pers. comm. March 2006)." Appendix I states "… that quantitative sluicing modeling was performed for the Proposed Project." Please clarify and resolve these statements.

Response

In response to this, and other comments, an additional evaluation of the effects of sluicing, based on sediment transport analyses prepared by MEI (2007a and 2007b), was conducted. Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for the additional information.

Comment SED-37

Page 4-25, bottom paragraph. "Sluicing would transport gravels as well as fine sediments downstream. The composition of the sediment loads would be similar under the Proponent's Proposed Project, Alternative 1 and Alternative 3. An increase in the transport of coarse sediment would occur, and would be beneficial for downstream fish and riparian habitats."

Sluicing under the PPP and Alternative 1 is proposed at flows of 300 to 700 cfs and fine material will continue toward, and presumably down, the fish ladder at flows of less than 50 cfs. Under both Alternative 2 and 3, sediment would be transported according to the available stream power, with no restrictions or artificial barriers. How can the composition of sediment loads to the downstream reaches under the PPP, Alternative 1, and Alternative 3 be similar when sluicing operations cease at flows greater than 700 cfs while sediment will continue to be routed through the bypass at flows up to the PMF?

Response

The downstream sediment loading for the Proponent's Proposed Project, Alternative 1, and Alternative 3 are similar because each would allow sediment storage upstream of the dam site. With the Proponent's Proposed Project and Alternative 1, the sediment would be stored upstream of the SCD. With Alternative 3, the sediment would be stored in the floodplain of the restored channel and upstream of the bypass sill. For large flows under the Proponent's Proposed Project and Alternative 1, a portion of the sediment would flow through the reservoir and over the spillway to the lower river. The modeling simulations indicated that the trap efficiency would decline to about 22 percent for the Proponent's Proposed Project and 10 percent for Alternative 1. Under these efficiencies, the majority of the sediment load would flow over the Dam and downstream. Alternative 3 would have a trap efficiency of 14 percent and 11 percent for the wet and dry year hydrology, respectively. These efficiencies are similar to the simulated efficiencies for Alternative 1 (see Table 4.2-4 of this Final EIR/EIS).

Comment SED-38

Although no definitive estimate is given of how long it would take for sediment to prograde to the fish ladder after several sluicing operations have been completed, it is apparent that flows in the 30 to 50 cfs range have the ability to cause sediment deposits to prograde rapidly toward the fish ladder after a sluicing event. These flows occur between 40 percent and 50 percent of the time during the period December 1 to May 31 (Figure 5, Appendix I) or between 72 and 90 days per year, on average. There would appear to be numerous opportunities for sediment to move toward the fish ladder, while the number of days for optimum sluicing conditions is much lower at 13 to 27 (i.e., *between 300 and 600 cfs as flow is rising or between 7 percent and 15 percent of the time).*

The analysis in Appendix I and the operations proposal in Appendix J does not address the low flow condition (30 to 50 cfs) where sediments rapidly prograde to the fish ladder in as little as five days with no storms on the horizon to maintain the ladder in a sediment-free state.

Response

The issue of low-flow movement of sediment toward the fish ladder is addressed in Section 4.2 of the Final EIR/EIS. The recommended treatment is to maintain the water surface elevation in the remnant pool at the spillway elevation. This would be accomplished by controlling the flow through the fish ladder.

June 15, 2006 letter from Pam Krone-Davis / RisingLeaf Watershed Art

Comment SED-39

We feel that the sediment and the area behind the dam is now being looked upon as a liability, but that it should instead be looked upon as an asset.

Response

Thank you for your comment. The commenter's intent in characterizing the sediment as an asset is not clear.

Comment SED-40

What is the best use of the sediment behind the dam for the long-term ecology and human use? Is the silt best returned to the ocean by a many year process to re-sand the beaches? Is it best to let the silt remain for an ecological purpose, i.e. as a habitat, as a base for growing a meadow or woodlands?

Response

Sections 3.3.4 and 3.4.4 of this Final EIR/EIS explain how sediment would be excavated and disposed of at Site 4R under Alternatives 1 and 2. Section 3.5.4 describes how it would be stabilized in place under Alternative 3. Although there may be many beneficial uses for the sediment, alternatives that provide beach nourishment or explore other uses of the sediment are not within the scope of this EIR/EIS.

June 30, 2006 letter from Dick Butler / National Marine Fisheries Service (NMFS)

Comment SED-41

NMFS believes the use of sluice gates as proposed in the Proponent's Proposed Project and Alternative 1 is a fatal project flaw.

Response

Thank you for your comment. This letter does not explain further how the sluice gates comprise a fatal flaw. Other comments from NMFS bearing on the issue are given below.

June 30, 2006 comments from National Marine Fisheries Service

Comment SED-42

NMFS participated in the detailed sediment transport analysis conducted after the August 2000 Draft EIR/EIS was submitted. That Draft EIR/EIS also proposed dam strengthening and sluice gates. NMFS' significant commitment during those sediment transport studies was primarily to ensure dam removal was given adequate examination. NMFS was also establishing a systematic methodology for future analysis regarding the San Clemente Dam. NMFS expects that level of analysis for the proposed sluicing operations, but the Draft EIR/EIS does not include those results.

The results of a defendable systematic analysis would include suspended sediment concentrations from the dam to the ocean for a full range of hydrologic conditions. Suspended sediment in the water column, as well as habitat alteration, would be addressed. The Draft EIR/EIS has taken an unacceptable short cut in analyzing a project that proposes to adversely effect – in perpetuity – the most essential steelhead run in the S-CCC DPS. **(Also NEPA/CEQA-23)**

Response

In response to this, and other comments, an additional evaluation of the effects of sluicing, based on sediment transport analyses prepared by MEI (2007a and 2007b), was conducted. Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for the additional information.

Comment SED-43A

The Proponent's Proposed Project and Alternative 1 will require the San Clemente Dam to continue to store sediment. Stored sediment in the reservoir will continue to be a steelhead passage impediment above the ladder.

Response

Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. The SOMP, which has been revised in response to this and other comments, is intended to manage the sediment upstream of the fish ladder to provide fish passage.

Comment SED-43B

The flaws within the Sluicing Operations and Maintenance Plan are that actual sediment sluicing operations are likely to vary considerably, depending on the sediment delivery events to the reservoir and sediment deposition patterns in the reservoir. With the *continued filling of the reservoir with sediment, NMFS expects there will be a braided channel near the upper end of the reservoir that will further impair steelhead passage.*

Response

Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The upper end of the reservoir has a channel that has naturally formed and is armored with gravel and lined with a riparian corridor. This riparian corridor has now extended further downstream into the reservoir (see Section 4.2.1 of this Final EIR/EIS). A braided channel is not expected to form at the upstream end of the reservoir.

Comment SED-44

The Draft EIR/EIS states sluicing is expected to occur two-to-three times per year based on the number of flow events that occur over the winter and the length of the (steelhead) migration season, while the Sluicing Operations and Maintenance Plan states sluicing would occur over several hours once or twice a year, yet Appendix I states that aggradation would prograde near the fish ladder inlet in 5 to 20 days, depending on stream flow. NMFS infers from Appendix I that sluicing may be required more frequently than one-to-three times per year. Therefore, based on the information in Appendix I, it is unclear how sluicing as described in the Draft EIR/EIS and the Sluicing Operations and Maintenance Plan meets the basic objective of sediment sluicing: control sediment build-up in the river channel in the reservoir immediately above the San Clemente Dam to facilitate adequate steelhead passage opportunities through the fish ladder.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The description of the frequency of sluicing or other sediment management activities has been clarified in the revised SOMP. The SOMP is now an adaptive management plan which would be carried out in consultation with fisheries agencies. The number and frequency of sluicing events needed would be determined based on monitoring and would be conducted proactively whenever possible. Modeled simulations suggest that a single two-hour sluice would keep the remnant pool open for passage through the wet season.

Comment SED-45

The Mediterranean climate of the Carmel River Valley is prone to seasonal, prolonged and severe droughts. Wildfire and flooding are also part of the Carmel River watershed processes. The Carmel River watershed generates and stores sediment during normal or low-flow years and the river depends upon high flows for extremely high transport rates during wet years. Therefore, the Draft EIR/EIS use of average hydrologic conditions when analyzing the downstream effects of sediment sluicing and for the design of the Sluicing Operations and Maintenance Plan is inappropriate. NMFS is *concerned how the Sluicing Operations and Maintenance Plan will be implemented in dry and wet years.*

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. All hydrologic year types were used in the sediment transport modeling and the assessment of sluicing operations. In wet or dry years, sluicing would occur in response to fish passage needs based on the criteria established in the revised SOMP.

Comment SED-46

Although the Sluicing Operations and Maintenance Plan includes a Proposed Sluicing Decision Tree, the decision-making processes of how often to sluice and the determination of whether a sluicing event was successful have not been adequately described. For instance, the criteria of whether flows that are increasing are likely to exceed 300 cubic feet per second (cfs) have not been described. The criteria for determining whether "storm precipitation predicted to be significant" have not been described. Also lacking are the real-time methodologies and criteria for measuring and monitoring the incision goal.

Response

Please refer to the revised SOMP (Appendix J), for updated information addressing this comment. Additional information has been provided in the revised SOMP to clarify when and for how long sediment maintenance activities would occur. The criteria for determining when optimal flows are likely to occur are described in the revised SOMP, and would be employed as part of an adaptive management plan which would be carried out in consultation with fisheries agencies.

Comment SED-47

NMFS has determined the Proposed Sluicing Decision Tree in the Sluicing Operations and Maintenance Plan is too simplistic and does not account for all the unforeseen and unpredictable events that can occur each year. Each step in the Decision Tree asks questions that are difficult, if not impossible, to answer accurately. **(Also FI-57)**

Response

Please refer to the revised SOMP (Appendix J), for updated information addressing this comment. The decision tree presents the general progress of an adaptive management plan for sediment management to maintain fish passage upstream of the Dam which would be carried out in consultation with fisheries agencies. Additional text has been added to the revised SOMP to clarify the procedures when following the decision tree diagram.

Comment SED-47a

Is sediment delta passage a problem? How will passage problems be determined? When will it be determined when sluicing is to occur? Making a determination before the winter migration period may be inaccurate due to changing conditions behind the reservoir once high flows begin. Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to initiate sluicing. Since steelhead tend to migrate on the descending limb of a storm, how feasible and safe is it to place crews out on the reservoir to measure channel dimensions during storm events? **(Also FI-57a)**

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The revised SOMP describes the criteria needed to trigger sediment management activities. The SOMP anticipates the need for fish passage every year and therefore proposes methods to assure that the channel is clear before the start of the wet season. Sediment management would not be anticipated to be needed during every storm. Safety is not anticipated to become an issue constraining the ability to implement the SOMP. The trigger mechanism for sediment management is not the flow depth and width as suggested in the comment. If there is a measurable channel cross-section that can convey the winter flows, then fish passage is already present. The need for sediment management would occur near the entrance to the fish ladder.

Comment SED-47b

If sediment delta passage is a problem, but increasing flows are predicted not to exceed 300 cfs, sluicing will not occur. However, passage has already been determined to be impacted. How will fish pass through the blocked sediment delta during their migration before a sluice event has been performed? These delays need to be addressed. **(Also FI-57b)**

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The revised SOMP clarifies the other tools available for sediment management if sluicing is not an option and provides a toolbox of options to control sediment in front of the fish ladder before a problem develops.

Comment SED-47c

Is it peak migration season? Peak migration season is generally between February and March, however, it depends on the hydrologic cycle as to when the majority of fish migrate. **(Also FI-57c)**

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. Sediment management is not anticipated to be needed in every year or every migration period.

Comment SED-47d

Will a passage problem potentially develop during the next storm event? How will this be determined? It is unknown how large or small the next storm event will be and how much sediment will be carried into the reservoir. **(Also FI-57d)**

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. Development of a geomorphically stable channel upstream of the Dam would include determining sediment transport relationships for the design channel to use as a predictive tool to forecast sediment inflows for different flow events. Also, data collected through the sediment management process would be used to adjust future actions. The sediment management program would be an adaptive management process that would use real-time measurements, historic data, and an understanding of the physical processes to maintain fish passage out of the fish ladder to the upstream reaches of the river. All of these factors would be input into decisions that would be made concerning the channel size to achieve before going into the wet season.

Comment SED-47e

It has already been determined that passage is a problem in the first step. But if a significant storm event is not predicted, sluicing will not occur and blocked passage will continue to delay migration. **(Also FI-57e)**

Response

Storm prediction, especially for large events, is not an uncertain practice in which a sediment-producing event would be missed. However, the plan calls for entering the wet season ready for a range of sediment inflows that may occur. Also, as noted in the response to Comment 47b, other tools are available for sediment management if sluicing is not an option. The revised SOMP (Appendix J) provides a toolbox of options to control sediment in front of the fish ladder before a problem develops.

Comment SED-47f

Have 20 or more fish ascended the ladder in the past 2 days? Per our April 5, 2006, letter, NMFS believes the decision whether 20 or more fish have ascended the ladder is an arbitrary number. Please clarify how this number was determined to be a defining point to sluice or not. **(Also FI-57f)**

Response

We have eliminated this standard from the revised SOMP. The standard was developed based on an analysis of daily ladder counts at SCD from 1993 to 2004. The fish passage data indicate that when daily steelhead counts reached at least 20 fish, a series of days followed where counts were equal or higher. The objective of this standard was to avoid sluicing when potentially large numbers of adults were in the river downstream of SCD. Please refer to the revised SOMP.

Comment SED-47g

If this number of fish has ascended the ladder, sluicing will not occur even though a passage problem potentially will occur during the next storm event. This is a large number of steelhead to be trapped in the sediment delta without being able to move upstream. The impact of delay to these fish needs to be addressed. **(Also FI-57g, SED 47f))**

Response

We have removed this standard from the protocols. Please refer to the revised SOMP. Fish passage would be managed proactively using three tools, sluicing, dredging and trap and truck.

Comment SED-47h

Increasing flows likely to exceed 300 cfs? Future hydrologic conditions are very difficult to predict. Basing management decisions (when sluicing is to occur) on unpredictable occurrences is unacceptable. **(Also FI-57h)**

Response

Flow forecasting is used throughout California to predict reservoir releases, flood stage, and water supplies. Records are available for the Carmel River basin that would be used for flow forecasting including historic rainfall, streamflow, and meteorological conditions. Storms would be tracked using satellite imagery and rainfall and streamflows would be tracked in real-time. The MPWMD has good data on rainfall and streamflow relationships. Real time rainfall would be integrated into the predictions and validated with real-time flow data from gaging sites installed on the Carmel River in the watershed upstream of LPD and downstream of the confluence with Cachagua Creek. These stream gage data would be used to document flow conditions upstream of the SCD and the storm and rainfall data would predict if flows are expected to increase or decrease. These records would be used to build a predictive forecasting tool.

More importantly, the revised SOMP (Appendix J) is a proactive tool that does not require managers to wait until problems occur before responding. The intent of the plan is to start each migration season with fish passage and maintain passage throughout the year.

Sediment deposition would occur throughout the impoundment, and some of the deposition may occur near the entrance to the fish ladder. However, sediment management is structured to allow for sediment movement without resulting in closure of the ladder. As demonstrated at Daguere Dam on the Yuba River, sediment can flow over the Dam without closing the fish ladders.

Comment SED-47i

Storm precipitation predicted to be significant? Please refer to comment above. Although predicting storm events is becoming easier, storm intensity is unknown until the storm is actually occurring. **(Also FI-57i)**

Response

Please refer to response to Comment SED-47h.

Comment SED-47j

Is flow still increasing past 300 cfs? How long does it need to keep increasing past 300 cfs? This is unpredictable. **(Also FI-57j)**

Response

It is not necessary to predict how long or how far a storm will increase to initiate implementation of sediment management measures under the revised SOMP. Once flows pass 300 cfs, actions may begin. The comment suggests that sediment management is flow-based, however management actions would be undertaken whenever sediment has built up to the point that it may impede fish passage. Proper dry season management would assure that fish passage is present and that the anticipated wet season sediment deposition can occur without eliminating passage. The 300 to 800 cfs is a suggested range for sluicing, if it is needed. The SOMP does not depend on a set duration past 300 cfs to continue the actions. The modeling assumed 300 cfa for two-hours.

Please refer to response to Comment SED-47h regarding the unpredictability of storms.

Comment SED-47k

Continue sluicing until time limit, incision goal, or flow limit is reached. What is the time limit for sluicing? Please clarify how channel depth and width within the reservoir will be measured during the high flow season in order to determine that enough sediment has been sluiced to provide for passage. What is the flow limit? **(Also FI-57k)**

Response

The revised SOMP presents a toolbox of management actions to maintain fish passage at the entrance to the ladder. These tools are not time-dependant but rather depend on sediment inflow and deposition during the wet season and the subsequent need to remove a blockage that may have formed. Assessing the presence of sediment near the fish ladder during the wet season is addressed in the revised SOMP (Appendix J).

Comment SED-47l

If flow is not increasing past 300 cfs, abort, re-open fish ladder. How many aborted sluicing events will occur causing unnecessary delay to fish migration throughout the season due to the inability to predict hydrologic events to induce sluicing? **(Also FI-57l)**

Response

Regarding predictability, see response to Comment SED-47h. The objective of the revised SOMP is to manage sediment in the dry season to avoid aborted sluicing events causing unnecessary delays to fish migration. Please refer to this Final EIR/EIS Section 4.4 for a discussion of delays in migration.

Comment SED-48

Referring to page 2-38, NMFS expects sluicing will have long-term (not short-term) significant and unavoidable effects on suspended sediments and riverine sediment storage. Sluicing may have effects for a short time during the season, but sluicing, and its effects, will occur every year in perpetuity. Thus, NMFS expects long-term effects.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. Sluicing effects will continue over the long term, but are considered less than significant. At a given moment, the outflow sediment pattern may be different than the inflow pattern because of temporary storage and subsequent sluicing of this material. Modeling of the sluice event showed that the sediment released to the lower river would dissipate rapidly to background conditions (please refer to Section 4.2 of this Final EIR/EIS).

Comment SED-49

Referring to pages 4-34, 4-87, 4-137, 4-139 and page 8 in Appendix I: There is confusion as to the actual amount of sediment released, the duration period of a sluicing event, and the number times annually sluicing would occur. Page 4-34 states sluicing would occur for 2 to 4 hours to release 2 to 4 AF; page 4-87 states as much as 4.5 AF will be released over a 3 to 8 hour period and would occur once or twice a year; page 4-137 states 2 to 3 AF will be released over 1 to 4 hours; page 4-139 states sluicing will occur 2 to 3 times per year; and page 8 of Appendix I states 4.5 AF would be released over 8 hours. Appendix I (page 9) also states sediment would redeposit near the fish ladder depending on flow, in 5 to 20 days, requiring sluicing to begin again. The Final EIR/EIS should analyze the correct figures and be consistent throughout the document.

Response

Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. The revised SOMP clarifies and provides additional information regarding the theoretical number of sluicing events based on historic flow. A two-hour sluice event at 300 cfs would release about 2.4 AF of sediment.

June 28, 2006 letter from Jim Crenshaw / California Sportfishing Protection Alliance

Comment SED-50a

The technical design for "sluice gates" required for both the Proponent's Proposed Project (PPP) and Alternative 1, is inherently flawed for several reasons. First, relying on the sluice gates as the primary method of sediment management will lead to significant unintended consequences caused by ongoing release of the sediments to prevent future build-up of sediment above the dam structure.

Response

It is not clear what the technical design flaw is referenced in the comment. The sluice gate concept was developed by a professional engineer registered in California and sluice gates are present in other reservoirs and canals in California.

Please refer to the revised SOMP (Appendix J), for updates addressing this comment. The SOMP does not rely entirely on sluicing. Sluicing of sediment is one of several methods to control sediment that may collect at the upstream opening of the fish ladder. It is an adaptive management plan that would provide the flexibility of implementing other sediment management techniques if sluicing is not possible due to flow regimes or fish migration. This approach would minimize unintended consequences.

Sediment transport is a natural feature of any watershed and is controlled by the hydraulic characteristics of the river at different flows. The ongoing release of sediments would occur under any of the alternatives, including the No Project alternative, as noted in the response to comment SED-18.

Comment SED-50b

The continuous release of sediment will result in impacts to water quality, will continue to cause degradation of habitat downstream of the dam site, and will assure that present trends in scouring just below the dam structure will also continue to occur.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. The downstream release of sediment stored near the fish ladder would temporarily increase sediment loads to the lower reaches of the river. This process adds sediment to the river, contrary to the historic depletion of downstream sediment. Modeling indicates that the downstream increase in sediment load would be of short duration and limited aerial extent. The planned release of sediment would not increase scour.

April 5, 2006 letter from Dick Butler / NOAA's NMFS

Comment SED-51

The Mussetter Report indicates sluicing would need to occur every 5 to 20 days in order to achieve sediment continuity, while the O and M Plan indicates sluicing will only occur once or twice a year. On average 16.5 AF of sediment is delivered to the reservoir each year. However, sediment delivery events are, on occasion, the result of significant stochastic events (i.e., as a result of the Marble Cone fire in the head waters of the Carmel River an estimated total of 800 to 1000 AF of sediment was deposited behind San Clemente dam). The buttressing alternative (without sluice gates) model reported an average of 12.2 AF of sediment passing over the dam (when run for 41 years into the future). The remaining sediment (4.3 AF) would continue to build up behind the dam. This is likely why the O and M Plan only plans to sluice 4 AF of sediment each year. However, sluicing can potentially dump 9.5 to 10 AF in 24 hours, which equates to approximately 60 percent of 16.5 AF and 80 percent of the 12.2 AF passing over the dam if buttressed. Therefore, 6.5 AF will accumulate in the reservoir under the O and M Plan and 4.3 AF will accumulate under the buttressing alternative (without sluice gates). Consequently, NMFS believes the estimates in the O and M Plan are incorrectly based on the need to sluice 4.3 AF annually from the reservoir and as a result, they plan to release too little sediment to maintain fish passage to the upper river. Over time, the proposed sluicing will be inadequate to handle incoming sediment loads and there are no contingency plans for stochastic sediment delivery events.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. Because other techniques are available to remove sediment from the entrance of the fish ladder, the frequency of sluicing may reduce further from the estimates described in the revised SOMP that were based on the historical hydrology.

It is not clear why the commenter believes that too little sediment would be released to maintain fish passage. The SOMP is not based on a need to sluice 4.3 AF of sediment or any other specific amount. The purpose of the SOMP is to maintain fish passage from the fish ladder through the remnant pool to the upstream channel and it provides methods to control sediment proactively. The numerical methods used in developing the plan suggest that the sediment can be removed and the procedures described in the plan would be adaptive and change according to data collected from previous years. The quantity of sediment to be managed in any year would vary depending on the hydrologic conditions during the previous wet season and the amount of storage in the remnant pool. This amount can vary from 0 AF to 2.4 AF (the quantity of sediment released from a two-hour sluice at 300 cfs). Modeling results indicate that a sluice event could keep the remnant pool open under wet-year and dry-year conditions by controlling the water surface elevation in the pool.

"Stochastic events" may refer to large sediment inflows from soil erosion after a fire or other land disturbance, landslides, or mass wasting. Such an inflow occurred following the Marble Cone fire and resulted in a rapid filling of the reservoir (800 to 1,000 AF of sediment as stated in the comment). This sediment inflow was several times larger than the annual background sediment load. Elevated sediment inflow remained for several years after the fire. Modeling of a dam removal alternative conducted for the RDEIR (Denise Duffy & Associates, Inc. 2000) assumed that the Dam would be removed and the stored sediment would be left in place for the river to convey downstream. This would produce a situation similar to the sediment influx following a large fire or landslide. The results of that modeling indicated that significant impacts (to fish and flooding) would occur if the stored sediment currently in the reservoir were left in place and the river allowed to convey that sediment downstream. If the Dam were left in place, SCD would retain from 9 percent to 22 percent of the sediment generated from such a stochastic event, reducing the sediment impact to the river.

Comment SED-52

NMFS is concerned that the O and M Plan lacks a comprehensive analysis and provides no assurances for abnormal conditions or even conditions 5 years from now. There are no contingency plans for drought or above average rainfall events or for episodic sediment delivery (i.e., wildfire and resulting sediment delivery which is a fairly predictable occurrence in the chaparral vegetation community in California). All reasonably expected conditions (wet years, dry years) needed to be realistically evaluated in terms of the totality of their potential impacts. The EIR/EIS needs to analyze the effects that will occur between the uppermost point of the reservoir incision channel to the ocean. There is also uncertainty about who will make the decision to sluice, which needs to be clearly vetted. NMFS also expects mechanical problems with the sluice gates at some point in the next 100 years to create conditions that cause the fish ladder to be disconnected from the reservoir thus a contingency plan will need to be developed for this circumstance.

Response

Please refer to response to comment SED-51 for a description of sediment flows from large events such as fire.

The potential for fire or other upper watershed perturbations may occur regardless of the alternative selected and is the same for all alternatives. However, the potential for hillslope failure would probably be greater in the current impoundment area if the Dam were removed exposing hillslopes that have been under water and sediment for 86 years. Alternatives 1, 2, and 3 would pose greater risks of large sediment releases and impacts to the Carmel River than would the Proponent's Proposed Project.

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The revised SOMP describes how the decision to sluice would be made and addresses the decision-making process for responding to mechanical failures of the sluice gates or unforeseen events. The sluice gates may be operated manually under emergency conditions.

Comment SED-53

Page 3, second paragraph, is where 'one or two sluicing events per year for several hours' is proposed, and demonstrates a significant inconsistency between the O and M Plan and the Mussetter Report.

Response

Please refer to this revised SOMP (Appendix J), for updated information addressing this comment. The revised SOMP provides a description of the types of sediment management activities and the frequency of the activities. Appendix S discusses modeled sluicing in general terms for the purposes of determining if sediment can be removed from the reservoir through a gate and how far upstream the effects of sluicing would be felt. It did not determine the final operating conditions for sluicing.

Comment SED-54

Page 7, last paragraph: NMFS is extremely concerned by the language used in this section. To indicate that "(i)t (sic) is not possible to predict the suspended sediment load or turbidity levels from the modeling data" is unwarranted because the figures provided in the Mussetter Report were based on these data. Statements such as this call into question the analyses used, and interpretations of results, here and elsewhere in the EIR/EIS.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The MEI report was used to assess sediment transport under the various project alternatives and includes suspended sediment concentrations (MEI 2007b).

Comment SED-55

Sediment and Turbidity section: This section needs to include an analysis of sediment pulse routing downstream and an analysis of such pulses on fish and habitat. Without these analyses, NMFS has little confidence in any interpretations provided in the EIR/EIS. For example, the additive effects of sediment pulses were not considered. Pulses of sediment can accumulate in low gradient sections of stream and create adverse cumulative effects beyond the individual releases.

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updated information addressing this comment. The sediment transport modeling analyzed the movement of sediment in the lower Carmel River for the alternatives.

It is not clear what is meant by “the additive effects” of sediment pulses. The modeling uses a 41-year hydrologic record for the simulations and therefore covers many types of water years (wet, dry, floods, drought). The movement of sediment downstream through a long-term, diverse hydrologic record is addressed in the modeling.

Sediment released through a sluicing event would not be transported as a cohesive unit nor would it travel downstream as a unified “pulse”. Instead, sediment released through a sluicing event would disperse rapidly downstream (see Section 4.2 of this Final EIR/EIS for a discussion of modeling results).

The Carmel River would transport sediment based on the transport capacity of the river. If sediment is released through a sluicing event, it would combine with the background sediment load that is flowing over the Dam, increasing the total sediment load that must be transported by the river. If the total sediment load exceeds the river’s transport capacity at the current flow, the excess would drop out along the river. Or, more likely, it would never leave the plunge pool. If the combined sediment load is less than the transport capacity, the river would pick up sediment through erosion of the bed and banks downstream of the Dam (as is currently occurring). These conditions were simulated in the sediment transport modeling described in Section 4.2 of this Final EIR/EIS.

Comment SED-56

In Alternative 4, sluicing seems to be part of this alternative, but it is not addressed in the same fashion as the Proponent’s Preferred Project or Alternative 1. It should be addressed in the same fashion and the effects determination should be the same for both. There are several instances where the effects between the No Action Alternative and the Proponent’s Preferred Project are the same in their description, but different under the effects determination. **(Also FI-98)**

Response

In the Draft EIR/EIS, sediment management processes, including sluicing, were considered part of Alternative 4 (No Project). These were removed from Alternative 4 in this Final EIR/EIS to ensure that the No Project Alternative conforms to NEPA and CEQA criteria, as well as the NOP the Final EIR/EIS Section 3.6).

July 3, 2006 letter from Robert Floerke/California Department of Fish and Game

Comment SED-57

As presented in Appendix J, sluicing operations are untested and lack specificity. They are based on migration records and behavioral observations of an already residual run and do not attempt to model the population recovery that the resource agencies believe should be a primary objective of the project. They do offer an interesting projection based on admittedly the most accessible, rather than effective, data collection methods (e.g. the use of the Robles Del Rio gage 5 miles downstream of the dam rather than the Sleepy Hollow gage). While the plan strives to identify permutations that would minimize the concurrence of sluicing and migration, the complexity of variables appropriately identified in the "Proposed Sluicing Decision Tree" (Figure 3) belies the inherent difficulty in juxtaposing the need to remove sediment from the reservoir and improve fish passage. The draft plan appears to fail to consider in detail predictable outliers to watershed conditions experienced from 1994 to 2005, such as fire, drought or prolonged heavier flows, which would alter debris loading, sediment particle-size distributions and vegetative encroachment in the reservoir. The adaptive management aspect of the plan appears to be traditional dredging that would occur at the upstream end of the fish ladder "on average every three years." If heavy storms and high flows are prevalent, this dredging would be precluded, making historically productive wet years the most impacted.

The experience of the last two decades with maintenance issues at the fish ladder amply illustrate the difficulties in achieving resource management priorities particularly during storm events. We are confident that CAW will do their best to comply with all aspects of the Sluicing Operations and Maintenance Plan that is still to be developed, but are concerned that the full implications of the can be fully understood so must be evaluated as an unknown. By design, sluicing will need to happen more or less concurrently with the adult migration of steelhead in the Carmel River. The document correctly identifies the impacts of the sluicing to fisheries and water quality as significant and unavoidable (Table 2.1, Impacts FI-9 and WQ-14). **(Also FI-101)**

Response

The project need is to provide safety and recovery of fish populations is not within the scope of this EIR/EIS. All alternatives affect fish, and each includes mitigation measures necessary to maintain fish passage and mitigate significant impacts.

Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing other parts of this comment. The process of releasing sediment past a dam either through an orifice or over a spillway is not untested. An orifice release of sediment is commonly used at dams with hydroelectric facilities to keep the penstocks and turbines free of sediment. Dams such as Daguerre Point Dam on the Yuba River and Sunol Dam on Alameda Creek are filled with sediment and the sediment inflow currently passes over the Dam to the downstream river. Daguerre Dam Point has two active fish ladders and sediment is periodically dredged from the upstream end of the ladders to maintain fish passage. Sluicing of sediment at the Robles Diversion Dam on the Ventura River is proposed as part of the Matilija Dam Removal Project as a means of keeping the diversion dam free of sediment.

Under the SOMP, sediment management would be employed to keep the area at the entrance to the fish ladder free of sediment that may otherwise restrict the movement of fish in or out of the ladder. The revised SOMP would manage sediment primarily before the wet season and therefore sediment management activities should not occur when fish are present.

Please refer to the response to comment SED-51, above, for a description of the response to events such as fire. The revised SOMP describes the toolbox of methods for sediment management during different year types. It also describes the need to establish the fish passage conditions prior to the onset of the wet season, thereby reducing the chance that sediment management activities would coincide with adult migration.

NOTE: COMMENTS SED-58 THROUGH SED-65 CORRESPONDS TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

Comment SED-58

Jonas Minton/Planning and Conservation League Environmental Advocacy Organization

There are a few impacts that we think have not yet been addressed. The first is some of the problems with the dam strengthening and notching that we don't think are fully evaluated, and that includes the potential for sediment scour from the silted-in reservoir in a high-flow event, and that could mobilize; that is to say, carry down a lot of sediment to the downstream areas impacting both fish and residents.

Response

The effect of the Dam on the river is an existing condition; it is not an impact of the project. Transport of sediment downstream during a high flow event is not affected by the project; under the No Project Alternative, these conditions would occur. Over the long term, sediment movement past the Dam under the Proponent’s Proposed Project (dam strengthening) and Alternative 1 (Dam Notching) would approach the sediment movement under the two dam removal alternatives. That is, it would approach the level of sediment inflow. The potential for downstream impacts is addressed in impact statements WR-2a, WR-2b, WR-4a, WR-5, and WR-6.

Comment SED-59

Jonas Minton/Planning and Conservation League Environmental Advocacy Organization

We think that additional attention needs to be placed on the difficulties of sluicing from either the dam strengthening alternative or the notching alternative. How do you sluice at the same time you maintain fish passage? The time that you want to sluice is when the fish want to out-migrate. **(Also FI-A)**

Response

Please refer to Sections 4.2 and 4.4 of this Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. The revised SOMP describes how sluicing would occur while maintaining fish passage. The goal of sediment management is to maintain fish passage and proposes to accomplish it proactively, rather than waiting until a problem develops before responding.

Comment SED-60

William Look/California Trout

It appeared to me that looking at the river holistically, some attention ought to be made to recharging downstream gravels.

Response

The issue of recharging downstream gravel is addressed in Section 4.2 of this Final EIR/EIS through analysis of the sediment passing the Dam under the alternatives. The total amount of sediment stored in the lower river is summarized as part of this analysis. The effect of the Dam on the river is an existing condition; it is not an impact of the project. Also refer to response to Comments NEPA/CEQA-9 and NEPA/CEQA-10 for more information on replenishing sediment supply to downstream beaches.

Comment SED-61

Charles Franklin/Resident

What are the appropriate compensatory sediment flows. I mean you have been stealing gravel out of my backyard for a hundred years. Over how long a period of time, how much gravel should you be giving me back to kind of put us back to where we were a hundred years ago?

Response

The effect of the Dam on the river is an existing condition; it is not an impact of the project.

Comment SED-62

Roger Williams/Resident of Carmel-by-the-Sea

The issue is dams over the years in California have trapped sediment, which has had a negative impact on beaches. Many of the beaches up and down the state are diminishing. So I think if the bypass route is used, rather than entombing the sediment forever, a slow impact, as the previous speaker was talking about, over a hundred years of releasing some of that trapped sediment every year during the winter state would help reestablish some of the beaches. **(Also NEPA/CEQA-31)**

Response

Thank you for your comment. The effect of the Dam on the river is an existing condition; it is not an impact of the project. Investigating ways to replenish sediment supply to the downstream beaches is beyond the scope of this project. Also refer to response to Comments NEPA/CEQA-9 and NEPA/CEQA-10 for more information on replenishing sediment supply to downstream beaches.

Comment SED-63

Frank Emerson/Volunteer with Carmel River Steelhead Association

I really appreciated Mr. Williams' comment that over time we could recycle that cobble, because gravel injection is one of the mitigations suggested by the fisheries agencies. So there is more and more obviously apparent than that option to me.

Response

Thank you for your comment. The effect of the Dam on the river is an existing condition; it is not an impact of the project. Investigating ways to replenish gravel supply to the downstream reaches is beyond the scope of this project. Also refer to response to Comments NEPA/CEQA-9 and NEPA/CEQA-10 for more information on replenishing sediment supply to downstream beaches.

Comment SED-64

Rex Keyes/Resident of Salinas

My suggestion is gradual release of the sediment behind the dam. You can do that during a trial period, like this next winter. Release some of the sediment during high flow rates, which should deposit evenly downstream all the way to the ocean. And in the last 20 years we've had a lot of heavy rains. You've had a lot of sediment coming down, minor landslides occurring in the Carmel River, and this probably wouldn't be any more harmful than what occurs naturally. At the end of the winter you could measure the impacts and, if it's pretty successful, each year afterwards release more and more sediment until the dam is restored to what its normal operations used to be.

Response

As described in Final EIR/EIS Section 3.1, the RDEIR (Denise Duffy & Associates, Inc. 2000) evaluated an alternative that would have released sediment slowly over a 60 to 100 year period. This alternative was considered and eliminated due to its long-term effects on fish and water quality, due to its potential effects on flooding, and because the ability to control releases was not demonstrated. SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. The Dam continues to serve that original function.

Comment SED-65

Roy Thomas/Carmel River Steelhead Association

I am also well aware, as I'm sure you are too, of the years of starving of the lower river for gravel, and I support the concept of sorting and continually supplying sediment; i.e., sand, gravel and cobble to the river to maintain not only the height of the river and the beaches, but to help prevent bank erosion, which apparently that does, which you don't have down in sizing of the river.

Response

The effect of the Dam on the river is an existing condition; it is not an impact of the project. Investigating ways to replenish sand, gravel and cobble to the lower river is beyond the scope of this project. Also refer to response to Comments NEPA/CEQA-9 and NEPA/CEQA-10 for more information on replenishing sediment supply to downstream beaches.

Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report

Comment SED-66

The EIR mentioned that there might be a temptation to reduce the flow to the fish ladder thereby reducing the need for more frequent sluicing. This would have a negative effect on fish passage. Large sediment sluiced to the plunge pool may pile up and block access to the fish ladder. This possibility was not examined.

Response

Please refer to Sections 4.2 and 4.4 of the Final EIR/EIS, and the revised SOMP (Appendix J), for updates addressing this comment. The flow through the fish ladder would be maintained to facilitate the movement of steelhead through the ladder. The point of sluicing on the rising limb of a hydrograph is to ensure that a buildup of sediment does not persist at the bottom of the plunge pool. No buildup of sediment in the plunge pool sufficient to block the entrance to the fish ladder is predicted to occur. The revised SOMP employs a variety of means to remove sediment and maintain the fish ladder.

Comment SED-67

Sediment removed from San Clemente should be available for sorting and reintroduction into the Carmel River for river habitat, bank stabilization, and beach nourishment. Sediment storage that allows for mitigation of the long-term damage caused by the dam should be considered in all options.

Response

Sections 3.3.4 and 3.4.4 of this Final EIR/EIS explain how sediment would be excavated and disposed of at Site 4R under Alternatives 1 and 2. Section 3.5.4 describes how it would be stabilized in place under Alternative 3. Although there may be many beneficial uses for the sediment, alternatives that provide beach nourishment or explore other uses of the sediment are not within the scope of this EIR/EIS. Also refer to response to Comments NEPA/CEQA-9 and NEPA/CEQA-10 for more information on replenishing sediment supply to downstream beaches.

The effect of the Dam on the river is an existing condition; it is not an impact of the project.

June 28, 2006 letter from Bob Baiocchi / Carmel River Steelhead Association

Comment SED-68

Sluicing sediment downstream in the Carmel River adversely affects water quality, steelhead habitat, macro invertebrate habitat, other aquatic resources, et al. California-American Water Company must comply with state water quality statutes in California like every other citizen and party. The sluicing of sediment from San Clemente Reservoir and Dam into the Camel River must be prohibited at all times by the US Army Corps of Engineers, State Regional Water Quality Control Board, State Water Resources Control Board, Department of Fish and Game, NOAA Fisheries et al. Cal-American Water Company must remove all sediment by mechanical methodologies to protect the federally protected steelhead trout and their habitat, aquatic environment and water quality of the Carmel River below the San Clemente Dam to the Pacific Ocean, including the Carmel River Lagoon.

Response

CAW will at all times comply with pertinent laws and regulations, and with all permit conditions placed on the selected alternative by the resource agencies.

Comment SED-69

It is well known that dams prevent the downstream recruitment of spawning gravels for downstream spawning of resident and anadromous fisheries. In this case the San Clemente Dam is preventing the downstream recruitment of spawning gravel in a significant large portion of the streambed of the Carmel River that has adverse impacts *to spawning habitat of federally protected steelhead trout species in the lower Carmel River.* **(Also FI-116)**

Response

The effect of the Dam on the river is an existing condition; it is not an impact of the project.

Comment SED-70

The draft EIR/EIS must include a Steelhead Trout Gravel Recruitment Plan for the lower Carmel River below San Clemente Dam in the event the removal of the dam is not ordered by any regulatory state and federal agency. **(Also FI-117)**

Response

The effect of the existing dam on sediment delivery to the downstream reaches is part of the baseline environmental condition. It is not an impact of the project. SCD nearly full of sediment and will soon be passing sediment downstream. For that reason, all alternatives, including the Proponent's Proposed Project and the No Project Alternative (Alternative 4) would result in sediment being transported past the Dam within the next 6 to 10 years.

June 30, 2006 letter from Mindy McIntyre/Planning and Conservation League Foundation

Comment SED-71

The technical design for "sluice gates" required for both the Proponents Proposed Project (PPP) and Alternative 1, is inherently flawed for several reasons. First, relying on the sluice gates as the primary method of sediment management will lead to significant unintended consequences caused by ongoing release of the sediments to prevent future build-up of sediment above the dam structure. The continuous release of sediment will result in impacts to water quality, will continue to cause degradation of habitat downstream of the dam site, and will assure that present trends in scouring just below the dam structure will also continue to occur. **(Also FI-119)**

Response

Please refer to response to Comment SED-50a and SED-50b.

Comment SED-72

It is very possible, if not likely, that they will be ineffective or fail to reduce the silt buildup behind the dam to an acceptable level.

Response

Comment noted. Sediment is not unnaturally introduced into the river by sluicing; sediment transport is a natural feature of the watershed. The revised SOMP is designed to maintain passage at the fish ladder.

Comment SED-73

Complete sediment removal remains a large problem when considering the dam buttressing and notching alternatives; it is thought by many that the sluice gates will not force larger pieces of sediment downstream, leaving their entire effect on sediment removal to be negligible, failing to restore the necessary variable elements of normal sediment flow including gravels and cobbles essential for wildlife stream habitat restoration.

Response

The effect of SCD on the river is an existing condition; it is not an impact of the project. Currently, San Clemente Reservoir has a 35 percent sediment trap efficiency (35 percent of the incoming sediment load is retained). This is anticipated to decline to 22 percent after the reservoir fills with sediment. Complete sediment removal is not proposed under the Proponent's Proposed Project (dam strengthening, or buttressing) or Alternative 1 (dam notching). Therefore, the reservoir does not now nor would have complete sediment removal. Sediment transport modeling results indicate that at first finer material would dominate the sluiced sediment, but as sluicing continues, the gravels located upstream of the fish ladder would be transported downstream.

TERRESTRIAL

WRITTEN COMMENTS RECEIVED

May 24, 2006 letter from Don Redgwick

Comment TE-1

A dam will support wild life and migrating birds.

Response

Thank you for your comment. Comment noted.

May 24, 2006 letter from Don Redgwick

Comment TE-2

None of the options will protect the habitat of the Red Legged Frog completely, but the habitat can be moved and recreated without harm to the frogs. Enlarging the lake by removing the silt will enhance the fish and bird habitat. **(Also FI-1)**

Response

Thank you for your comment. Comment noted. The concern is that "moving" habitat would mean eliminating existing habitat, which always has the potential to result in impacts to the species present. Over the long-term, all of the action alternatives will maintain or increase the amount of habitat for the CRLF. The effects of the alternatives on the CRLF and birds are discussed more fully in Section 4.5 (Vegetation and Wildlife).

Comment TE-3

The program to protect the Red Legged Frog and the Steelhead should be adequate for its purpose, but should not impact a common sense approach that recognizes the cost, water resource, disruption to neighbors and other environmental issues. **(Also FI-2)**

Response

Thank you for your comment. Comment noted.

June 4, 2006 letter from Don Redgwick

Comment TE-4

If the realignment is permanent doesn't that significantly reduce the dam safety and steelhead issues and allow the dam to remain for the benefit of frog, bird, lake fish, and other wildlife habitat?

Conversely if the Carmel River is rerouted on a permanent basis and the San Clemente Dam is left in place with or without a buttress, would that provide a superior habitat for frogs, birds, lake fish and other wild life? **(Also AA-7 and FI-3)**

Response

If selected, the Carmel River Reroute and Dam Removal (Alternative 3) would be permanent. All of the action alternatives would meet dam safety standards. An analysis of potential impacts (including beneficial ones) to fish and wildlife is provided in sections 4.4 (Fisheries) and 4.5 (Vegetation and Wildlife). A summary of potential impacts is provided in Section 2.3 and in Table 2.1. Please also refer to responses to comments AA-7 and FI-3 which address similar issues.

Comment TE-5

If the dam is removed and the sediment is grouted, will that make a satisfactory habitat for the Red Legged Frog? Will a grout be used to stabilize the sediment? If a grout is utilized for containment will that provide a suitable habitat for frogs and other wildlife? **(Also AA-7)**

Response

Grout will be used to stabilize the exposed face of the sediment, similar to a retaining wall. Native vegetation providing wildlife habitat could establish on the sediment plain behind this face. **(Also TE-7)**

June 6, 2006 letter from John W. Fischer

Comment TE-6

To make red legged frog habitat, will it be similar to wetlands, even with the grouting? What are the chances that, even if the sediment is thoroughly mixed before spreading, toxin levels will not affect any frogs which takes up residence there?

Response

We are not aware of any published research that indicates that set grout would produce toxins that would affect frogs. **(Also TE-5 and TE-7)**

June 13, 2006 letter from John G. Williams, Ph.D.

Comment TE-7

The DEIR does not adequately address the main long-term differences among the alternatives. The reinforcing and notching alternatives will leave a large amount of alluvial riparian habitat upstream from the dam. The removal and by-pass alternatives will not, but will result instead in more canyon habitat and upland habitat. There are real trade-offs between these, but the DEIR does not present the long-term consequences of the alternatives clearly enough to allow an informed choice among them. Presenting such an analysis would require some thought and effort, but it does not seem impossible. Generally, the analysis could be based on evaluations of habitats in the basin that are similar to the expected final results of the alternatives. For example, the channel upstream from the San Clemente Reservoir could be taken as a proxy for the habitat that would be restored by the dam removal alternative. For the reinforcing and *notching alternatives, analysis could be based on existing alluvial habitat in the upper valley, or from a projection of the developmental trajectory of the habitat that now exists in the filled portions of the reservoir.*

Response

The cutoff beneath the diversion dike will be placed for maintaining the foundation stability of the dike; however, the diversion dam for the reroute alternative (Alternative 3) is permeable. The intention is to allow seepage that will maintain a high water table in the area downstream of the diversion, so that habitat for riparian species such as the CRLF will persist. We agree that there are tradeoffs between alternatives. Table 2.1 provides a summary of these impacts for comparison. **(Also TE-31, AA-43, and WET-5)**

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment TE-8

Depending on the findings of the hydrology and water resources impact analysis, additional impacts may need to be analyzed including impacts to riparian habitat along San Clemente Creek as a result of channel bed or bank erosion caused by changes in hydrology.

Response

Sediment will be removed from the channel of San Clemente Creek up to the bypass confluence, which will result in the removal of riparian vegetation in this reach of San Clemente Creek. Impacts to riparian habitat along San Clemente Creek that could result from the construction of Alternative 3 are discussed in Section 4.5.3. **(Also HY-2 and HY-3**)

Comment TE-9

Depending on the findings of the hydrology and water resources impact analysis, additional impacts may need to be analyzed including impacts to the wetland and riparian habitats if the groundwater elevation drops along the reach of the Carmel River that is to be abandoned.

Response

The diversion dike for Alternative 3 has been designed to be permeable. In conjunction with the slope stabilization design described in Section 3.5, this dike design is intended to maintain groundwater elevations in the abandoned reach of the Carmel River.

Comment TE-10

Section 4.5 Vegetation and Wildlife, All impact discussions. The determination of impact significance should include a temporal element as it does in the other impact *discussions. That is, impacts that are temporary, lasting through part or all of the construction period, should be differentiated from those that will extend beyond the construction period.*

Response

Impacts that apply to multiple alternatives have the same timeframes. In this Final EIR/EIS, the temporal element for all impact issues, and in all sections in Chapter 4, would be either short-term or long-term. The temporal element has been identified for each impact issue and each alternative. They are also summarized in Summary Chapter 2.0 Table 21.

Comment TE-11

Issue VE-4: Indirect Effects on Native Vegetation. The fifth paragraph of the mitigation section on page 4-194 addresses revegetation of cut slopes, fill areas, etc. It states that, "If non-natives are included in the seed mix, these would be species known not to be invasive or persistent." Non-natives should not be included in the seed mix under any conditions.

Response

As indicated in Section 4.5.3, non-native species are preferred for revegetation. However, native materials are not always available in the quantities needed for a project. The availability of seed can be affected by non-project events that result in a high demand for local native seed.

Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover would be removed outside the roadway would be revegetated with an appropriate seed mix. This seed mix would be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and would contain native species that are indigenous to the project area. If insufficient native seed is available, non-natives may be included in the seed mix. Such non-native species would be species known not to be invasive or persistent. The seed mix would contain native species known to compete well against invasive non-native species.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment TE-12

Page 4-211, first paragraph. "Construction activities could result in loss of 663 acres of oak woodlands protected by the Monterey County Oak Protection Ordinance in the area mapped in 2005." However, Table 4.5-1 states that only 66.4 acres of oak woodlands may be affected by dam removal.

Response

Thank you for drawing our attention to this discrepancy. The 663 acres expressed in the Draft EIR/EIS was incorrect. However, in response to comments on the Draft EIR/EIS, we also revised the footprint of the sediment disposal site, reducing the actual amount of oak woodlands potentially impacted under Alternative 2 (Dam Removal) to 26.3 acres as shown in Table 4.5-1 in this Final EIR/EIS.

Comment TE-13

Page 4-211, fourth paragraph. "The acreage of vegetation cover type that would be lost as a result of Alternative 2 implementation is provided in Table 4.5-1. The total acreage of vegetation that would be lost in the area mapped in 2005 is 131 acres." However, Table 4.5-1 shows that the total vegetation that may be affected is 140.4 acres. Are these numbers supposed to match?

Response

In the Draft EIR/EIS, the affected acreages shown in Table 4.5-1 included open water, which gave an incorrect impression of the number of potentially affected acres. In the Final EIR/EIS, the acres discussed in the text, as well as the acreage depicted in Table 4.5-1 do not include open water. Some of the numbers of potentially affected acres have also been recalculated based upon the need to revise the footprint of the sediment disposal site in response to another comment. The total number of acres of vegetation that would potentially be affected under Alternative 2 would be 61.4 acres (excluding open water) as referenced in Section 4.5-3.

Comment TE-14

What guidelines and/or conditions are proposed to ensure replacement of riparian vegetation and other mitigation associated with the construction of the Tularcitos Access Road?

Response

As discussed in Section 4.5.3, the riparian forest would be revegetated at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below SCD at the plunge pool staging area and access road, as well as any riparian species disturbed at the site of the right abutment wall, and any loss of riparian vegetation at the Tularcitos Access Route site.

Comment TE-15

If the re-route alternative is selected, demolished dam debris should be covered with native material to give the area a more natural look and provide a medium for vegetation to establish.

Response

As described in Section 3.5 (Alternative 3), demolished dam debris retained at the Project site would be incorporated into the sediment disposal site. Topsoil that had been separately stock-piled would be spread over the surface, and the site would be revegetated with native plants and trees obtained from the site vicinity.

June 15, 2006 letter from Pam Krone-Davis / RisingLeaf Watershed Art

Comment TE-16

What is the best use of the area behind the dam? Could it become a flood plain? Could it become a meadow? Could it become a marshy area and habitat for birds, frogs, etc? What is the best use of this area both from an ecological point of view and from a human use point of view?

Response

There are likely to be ecological trade-offs with each alternative. For example, see response to Comments TE-5, TE-7, TE-9, TE-31, TE-32, and TE-33.

Comment TE-17

How could trees and vegetation be planted and used to stabilize the sediment? What natural plants and trees could stabilize the sediment and at the same time provide the best habitat for red-legged frogs or for migrating and local birds?

Response

Vegetation alone would not be adequate to stabilize the sediment for Alternative 3. For additional information regarding vegetation, see responses to Comment TE-7 and TE-15. Issue GS-4 (Soil Erosion) in Section 4.1.3 discusses the Best Management Practices that would be implemented to stabilize the sediment.

June 30, 2006 letter from Patricia Sanderson Port / U.S. Fish and Wildlife Service

Comment TE-18

Page 4-173, Paragraph 4: The DEIR/EIS indicates that habitat loss is not a threat to California red-legged frog populations in central California. We respectfully disagree with this assertion. The recovery plan for the subspecies (Service 2002) refers to habitat loss and alteration as primary factors that have negatively affected the subspecies throughout its range.

Response

This comment has been addressed by citing the USFWS recovery plan for this species in Section 4.5.1 of this Final EIR/EIS.

Comment TE-19

Page 4-174, Paragraph 1: The discussion of interactions between California red-legged frogs and bullfrogs (Rana catesbeiana) presented in the DEIR/EIS is not accurate in the context of the proposed project area. The Barry (1999) reference cited in the DEIR/EIS relates to Butte County, which is at least 200 miles from the project area and is not along the California coast.

Response

We are aware of sites at which CRLFs and bullfrogs appear to co-occur in seemingly stable numbers in several areas of San Mateo, Marin, Contra Costa, and Sonoma Counties. While those sites are not near Monterey County, many of them share similar climatic and hydrologic regimes. Both species occur along the Carmel River, and evidence presented by Hayes and Jennings (1988) strongly suggests that they have coexisted for more than 100 years. At sites in Marin and San Mateo counties, bullfrogs were observed to decline to near-extirpation when aquatic and riparian habitat was allowed to revert from agricultural use to a near wild condition, and red-legged frogs became the dominant frog species. Ecological theory holds that exotic species are never as well adapted to undisturbed habitat as are natives. A corollary is that exotics do best in disturbed habitat, such as San Clemente Reservoir and the river downstream of the Dam. In our experience, if habitat is sufficiently disturbed, native species may depart regardless of interactions with exotics.

Section 4.5.1 of the Final EIR/EIS has been revised to address this comment.

Comment TE-20

The Department is unaware of any locations in or near Monterey County where "California red-legged frogs and bullfrogs co-occur in stable relative numbers," as stated in the DEIR/EIS (Page 4-174, paragraph 1).

Response

Refer to response to comment TE-19. Section 4.5.1 of this Final EIR/EIS has been revised to address this comment.

Comment TE-21

California red-legged frogs and bullfrogs have never been documented to co-occur in stable relative numbers in the Carmel River watershed, and proliferation of bullfrog populations along the central California coast (e.g., Monterey County) are a substantial threat to the persistence of the California red-legged frog in this area.

Response

Refer to response to comment TE-19. Section 4.5.1 of the Final EIR/EIS has been revised to address this comment.

Comment TE-22

California red-legged frogs have been found on many occasions in the stomachs of bullfrogs that were collected in the project area.

Response

Page 4.5.1of the Final EIR/EIS has been revised to address this comment.

Comment TE-23

*The DEIR/EIS states "Surveys during the annual San Clemente Reservoir drawdowns found California red-legged frogs and bullfrogs co-occurring throughout San Clemente Reservoir" (*Section 4.5.1*).*

Response

Refer to response to comment TE-19.

Comment TE-24

According to survey data submitted to the Service, the number of bullfrogs detected in San Clemente Reservoir, over the referenced time period, has increased dramatically, while the number of California red-legged frogs detected by surveyors has substantially declined. These trends indicate that bullfrogs are gradually out-competing and displacing California red-legged frogs from San Clemente Reservoir.

Response

Text in Section 4.5.1 of this Final EIR/EIS has been revised to reflect this comment.

Survey data collected from 2003 to 2006 indicates that for both species, numbers fluctuate and shift among locations, possibly as a result of management activities. Bullfrogs consistently outnumber CRLFs at the reservoir pool where specific habitat conditions favor that species. CRLFs are doing well upstream and downstream; and bullfrogs are less numerous than native species downstream.

Comment TE-25

Page 4-174, Paragraph 4: The DEIR/EIS states "pond habitat within the Carmel River arm occurs up to the upstream end of the reservoir sediment bed, but spawning pools outside of the river channel are absent further upstream" (page 4-174, paragraph 4). However, systematic annual California red-legged frog surveys conducted between 2002 and 2006 have consistently documented California red-legged frog reproduction in side-channel and off-channel pools up to 1.5 miles upstream of San Clemente Reservoir.

Response

Thank you for the clarification. The cited text has been revised in the Final EIR/EIS.

Comment TE-26

Pages 4-174 and 4-175: The DEIR/EIS uses 1997 survey data to support the conclusion of absence of California red-legged frogs from several reaches of the Carmel River in the project area (e.g., page 4-174, paragraph 3; page 4-174, paragraph 5; page 4-175, paragraph 1).

Response

Text in the Final EIR/EIS has been added to include the most recent survey information available.

Comment TE-27

The 1997 survey data is outdated; please include updated information in the final EIR/EIS. For example, the DEIR/EIS states that no California red-legged frogs were found in lower Tularcitos Creek during surveys in 1997 (Page 4-175, paragraph 1). However, an adult California red-legged frog was observed in Tularcitos Creek downstream of San Clemente Drive in 2000.

Response

Refer to comment response TE-26. Text in Section 4.5.1 of the Final EIR/EIS has been revised.

Comment TE-28

Page 4-188: In its evaluation of effects of each alternative on wildlife species, the DEIR/EIS does not identify effects of the proposed project (i.e., dam thickening) on movement and dispersal of California red-legged frogs from upstream and downstream of the project area.

Please include the following information in the FEIR/EIS.

Dispersal of individual California red-legged frogs plays an important role in metapopulation dynamics and therefore, the persistence of populations. While California red-legged frogs can pass many obstacles, and do not require a particular type of habitat for dispersal, a potential dispersal route connecting aquatic habitat sites must be free of barriers (i.e., a physical or biological features that prevents frogs from dispersing beyond the feature) and of sufficient width.

California red-legged frogs spend considerable time resting and feeding in riparian and wetland vegetation when it is present. Most of the time, when they are not in the water or making overland excursions, individual California red-legged frogs can be found within two or three hops of the water, resting secretively and feeding on land underneath a canopy provided by herbaceous plants and a variety of moisture-loving softwoods such as willows.

Therefore, it is reasonable to conclude that moisture and cover provided by the riparian plant community provide suitable foraging habitat and may facilitate dispersal.

Designating or creating movement corridors for California red-legged frogs is problematic. However, when an obvious corridor exists between two occupied sites, California red-legged frogs are likely to use the route (Bulger et. al 2003). An example of such an obvious corridor is the riparian zone along the Carmel River upstream and downstream of the San Clemente Dam.

For a species such as the California red-legged frog to disperse beyond the San Clemente Dam (i.e., upstream or downstream), an individual must ascend or descend extremely steep slopes on either river bank adjacent to either dam abutment. Even in the unlikely event that an individual California red-legged frog is able to negotiate this slope, its exposure to predation is greatly increased during this movement.

Although dispersal of individual California red-legged frogs in the project area has not been rigorously studied, it is reasonable to conclude that a structure such as the San Clemente Dam poses a substantial barrier to dispersal. If the dam is stabilized and reinforced in place as described in the proposed project in the DEIR/EIS, it is very likely that the dam will perpetually remain an obstacle to dispersing California red-legged frogs.

Response

SCD was built within a steep, confined reach of the river valley. Although dispersal of individual CRLFs in the project area has not been rigorously studied, SCD may pose a barrier to dispersal. Revised text in Section 4.5.1 has been included in this Final EIR/EIS. We agree that alternatives that include dam removal may provide a beneficial impact to CRLF dispersement beyond SCD.

Comment TE-29

Page 4-197: In its analysis of effects of constructing and operating the concrete batch plant, the DEIR/EIS does not recognize any potential impacts to the CRLF. However, California red-legged frogs are known to occur in the Carmel River immediately adjacent to the proposed site for the concrete batch plant.

California red-legged frogs could be directly and indirectly impacted by construction and use of a concrete batch plant in this location. Constructing the concrete plant could result in destruction of upland habitat for the California red-legged frog, and any inadvertent spill of materials could lead to contamination of the Carmel River downstream of the project area

By choosing a different location of the concrete batch plant, or selecting an alternative that does not necessitate use of a concrete batch plant, the likelihood of these adverse effects on the California red-legged frog and its habitat could be reduced or eliminated

Response

Text in Section 4.5.1 of the Final EIR/EIS has been revised to address the comment.

Only one of the analyzed project alternatives requires the use of a concrete batch plant, the other four (including the No Project Alternative) do not. The batch plant itself is only a component of the Proponent's Proposed Project, which includes a number of additional elements necessary to the project. Please refer to this Final EIR/EIS Section 4.7.3, Issue AQ-4 for information on the batch plant. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to generally near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2, and diesel fine particulate (PM_{10}). **(Also AQ-14, AA-13, AA-14, NOI-4, and VIS-1)**

Comment TE-30

Pages 4-197 through 4-199: In its analysis of effects of creating the new Tularcitos Access Road, the DEIR/EIS does not recognize any potential impacts to the California red-legged frog. However, California red-legged frogs are known to occur in Tularcitos Creek and the Carmel River in the vicinity of the proposed new road alignment.

California red-legged frogs could be directly and indirectly impacted by construction, use, and existence of this new, permanent access road. Constructing this new access road would result in destruction of aquatic and upland habitat, alteration of Tularcitos Creek and Carmel River floodplains, and increased sedimentation of Tularcitos Creek and Carmel River downstream of the project area.

Tularcitos Creek is already known to be a primary contributor of sediment to the Carmel River. Construction in the riparian corridor and floodplain of Tularcitos Creek would likely increase its contribution of sediment to the Carmel River. This increased sediment load could, in turn, further degrade habitat for the California red-legged frog downstream of the project area. By using the existing paved access road (San Clemente Drive), which is owned by Cal-Am, the likelihood of these adverse effects on the California red-legged frog and its habitat could be reduced or eliminated.

Response

The most recent survey information available for California red-legged frog has been added to this Final EIR/EIS. Effects on special-status wildlife and their habitat would be mitigated through preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation with regulatory agencies based on the survey results. In this Final EIR/EIS, additional text has been added to the mitigation section of Issue WI-6: Tularcitos Access Road Improvements that addresses this comment.

This Final EIR/EIS explains the potential for the Tularcitos Access Road to have impacts on terrestrial resources. It will be used only for the Proponent's Proposed Project, while Alternatives 1, 2, and 3 will use existing access below the Dam (following San Clemente Drive). This choice was made in part due to the greater potential impacts on terrestrial biology of the Tularcitos route. (In the Draft EIR/EIS, the discussion in Section 3.1.1, Access Alternatives, incorrectly stated that Tularcitos Road would be used for Alternative 1; the discussion is revised as above).

See Section 4.5.3 Issue WI-6: Tularcitos Access Road Improvements for a discussion of potential effects to special-status species, including CRLF. This section begins with "Construction of the new Tularcitos Access Route could affect Monterey dusky-footed wood rat, coast horned lizard, pallid bat, CRLF, …" and goes on to say "Damage to aquatic habitat could result from erosion and other sediment and rubble discharge into the Carmel River and possibly Tularcitos Creek." Mitigation measures in the SWPPP (Appendix K) and Protection Measures for Special Status Species (Appendix V) address erosion protection and this concern for CRLF and other aquatic species.

Comment TE-31

Page 4-199: The DEIR/EIS concludes that maintaining the San Clemente Reservoir pool at an elevation of 525 feet would be beneficial to the California red-legged frog. However, as noted previously, biologists have documented a steep decline in the number of California red-legged frogs and a sharp increase in the population of bullfrogs while the reservoir has been maintained at this elevation since 2003.

As long as San Clemente Reservoir provides breeding habitat for bullfrogs, increased numbers of bullfrogs at this site and dispersal of the juvenile bullfrogs produced here pose a considerable threat to California red-legged frogs.

Emigration of bullfrogs from San Clemente Reservoir to aquatic habitat surrounding the reservoir is likely resulting in large numbers of bullfrogs encroaching on aquatic habitats that formerly supported a larger proportion of California red-legged frogs.

The thousands of bullfrogs reproducing at, and dispersing from, San Clemente Reservoir likely out-compete, displace, and predate California red-legged frogs within and near the project area. Therefore, if the reservoir would be allowed to remain in place, substantial efforts to eradicate bullfrogs from the project area will be necessary to minimize these adverse impacts to the California red-legged frog population in the area.

Without permanently ponded water, bullfrog reproduction is severely impaired. Therefore, elimination of the reservoir (e.g., through the dam removal alternative or the dam removal and river reroute alternative) would remove breeding habitat for bullfrogs.

In addition, returning the reach of the Carmel River in the project area to a free-flowing state would allow the river to seasonally create off-channel breeding habitat for California red-legged frogs in this area while reducing the likelihood of re-establishment of bullfrog reproduction.

Response

Comment noted. In this Final EIR/EIS, additional text regarding a monitoring program and a bullfrog eradication program has been added to Section 4.5.3, mitigation for Issue WI-10: Reservoir Drawdown or Elimination without Sediment Removal in Section 4.5.3. Additional information is also located in the Protection Measures for Special-Status Species (Appendix V).

Data have only been available since 2003, and therefore it is too soon to say whether there has been a steep decline or increase in the respective species numbers. The data indicate that in each year since 2003 there have been larger numbers of bullfrogs than CRLFs in the reservoir. Evidence developed since 2003 supports the premise that CRLFs have found refuge in, and naturally recruited to, upstream habitats, and that simultaneously management has reduced the number of bullfrogs in that setting, further bolstering CRLFs there.

Under existing, baseline conditions, habitat for both bullfrog and CRLF is present in the reservoir, and interactions between the two species likely occur We acknowledge that an increase in ponded frog habitat within the reservoir may benefit the bullfrog population, which has the potential to negatively impact the CRLF population, but insufficient data are available to determine long-term trends or causal factors. We also acknowledge that the potential for returning the Carmel River to a free-flowing state would benefit CRLF to a greater extent than bullfrog, particularly if the change results in reduced population of crayfish. Consultation with the USFWS under the ESA will be required during permitting to develop a detailed monitoring program and a habitat conservation plan **(Also TE-19, TE-20, TE-21, TE-22, TE-23, and TE-24).**

Comment TE-32

The Department supports the Corps' commitment to designing future monitoring and enhancement efforts to minimize impacts of the San Clemente Dam Seismic Safety Project on the California red-legged frog. We recommend that control and monitoring of non-native predators (e.g., bullfrogs, crayfish (Pacifasticus leniusculus), and centrarchid fishes) be emphasized in the final EIR/EIS, in order to minimize adverse impacts of the project on California red-legged frogs and other aquatic species.

Response

Thank you for your comment. Future monitoring and enhancement efforts will be addressed with the USFWS during the ESA permitting process.

July 3, 2006 letter from Robert W. Floerke / Department of Fish and Game

Comment TE-33

Herptile habitat within the San Clemente Reservoir will be impacted by any of the four alternatives, and adverse effects on habitat and populations will be expected for California red-legged frogs, western pond turtles and Coast Range newts (all are California State Species of Special Concern). The mitigation regimen proposed for these impacts (Table 2.1) would be acceptable for SAA purposes if dam removal is implemented. It needs to be noted that, if retained, the reservoir habitat represents a management challenge relative to these species, since it will need to exist in a state of perpetual disturbance due to the requirements of sluicing, dredging and bullfrog control. Although there will be a short-term series of population reductions and habitat impacts during dam removal operations, DFG considers these to be sufficiently mitigated by the long-term benefit of riverine restoration with dam removal. Alternatively (in the case of dam retention), loss of known acreages of breeding habitat for California red-legged frogs will need to be mitigated in-kind above and beyond the avoidance and translocation plans currently proposed, as conditions to be determined in the SAA process.

Response

Thank you for your comment. Please refer to response to Comment TE-31. Consultation will be conducted with the CDFG during permitting and while a monitoring program is developed.

NOTE: COMMENTS TE-34 CORRESPONDS TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District

Comment Received at May 23, 2006 Public Hearing

Comment TE-34

Nikki Nedeff/Resident of Carmel Valley

Removing the sediment from the San Clement side and placing it on the Carmel side still has some issues in my mind. Most importantly, will that habitat which will be lost, the wonderful riparian habitat, habitat for red-legged frog and juvenile steelhead, will that habitat be replaced by upland habitat with the addition of more sediment?

Response

The design of the diversion dam for the re-route alternative (Alternative 3) is permeable. The intention is to allow seepage that will maintain a high water table in the area downstream of the diversion, so that habitat for riparian species such as the CRLF will persist. **(Also AA-43, FI-108, TE-9, TE-31, TE-32, TE-33, and WET-5)**

Comment TE-35

The document provides a cursory description of Site 4R preparation but is inadequate for proper review as there are no details as to how vegetation "clearing and grubbing ill take place, and how and where the "stripping and stockpiling of organic soils" will occur. **(Also AA-72)**

Response

Clearing and grubbing means clearing and rooting of trees, bushes, shrubs, etc. via common mechanical equipment removal methods (e.g., chainsaws, excavators, and bulldozers). Stripping of organic soils is also achieved via bulldozers and excavators. Stockpiling will occur on the sediment disposal construction site, where the organic soils stockpile footprint will occupy a small area adjacent to construction and sediment placement operations.

Comment TE-36

The document states that the site will be "winterized" at the end of each construction season but fails to adequately describe the impacts of introducing non-native stabilizing material into the park and any mitigation measures to remove the weeds proposed for introduction. Non-native vegetation is also proposed for introduction to the site for the final topsoil re-placement. **(Also TE-11 and AA-74)**

Response

No introduction of non-native plants is proposed in the discussion of "winterizing" or in the final topsoil replacement in Chapter 3, Project Description. Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover would be removed outside the roadway would be revegetated with an appropriate seed mix. This seed mix would be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and would contain native species that are indigenous to the project area. However, native materials are not always available in the quantities needed for a project. The availability of seed can be affected by non-project events that result in a high demand for local native seed. If insufficient native seed is available, non-natives may be included in the seed mix. Such non-native species would be species known not to be invasive or persistent.

<u>Carmel River Steelhead Association Comments on San Clemente Environmental Impact Report</u>

Comment TE-37

The frogs that inhabit the San Clemente flood plain have taken advantage of a man made situation. One can build new depressions in the stored sediment and line them with Hypolon, thus maintaining some of this flood plain frog habitat.

Response

Thank you for your comment. Comment noted.

TRAFFIC

WRITTEN COMMENTS RECEIVED

June 9, 2006 letter from Victoria Kennedy/Sleepy Hollow Homeowners Association

Comment TR-1

Notwithstanding my comments about the Project, the Sleepy Hollow Homeowners' Association is very concerned about the comment made during the hearing that San Clemente Road, the road through Sleepy Hollow, would be used for deliveries and access for construction workers. This type of road use would cause severe negative impacts to our residents through dust, noise, and safety concerns for our children and families that utilize the roadway for residential transportation and recreate on and near the roadway. Many of our homes are situated directly adjacent to the roadway and would incur increased levels of the negative health, quality of life, and safety issues stated above. Please note that this is a gated community and the level of use of the roadway is minimal and the residents are accustomed to this lack of traffic. The type of use contemplated is in violation of our agreement with the dam owner, California American Water Company, regarding their use of the road.

Response

Thank you for your comment. Comment noted. See Section 4.7 Air Quality for a discussion of dust, Section 4.8 for a discussion of noise and Section 4.9 (TC-3) for a discussion of road safety.

Under the Proponent's Proposed Project, San Clemente Drive would not be used for access after the new Tularcitos Access Route is built (construction would take about six months). The new Tularcitos Access Route would be utilized to access the Dam during the rest of the construction period and for ongoing operations after completion of the construction. For project Alternative 1 (Dam Notching), Alternative 2 (Dam Removal), and Alternative 3 (Dam Removal and Carmel Valley River Re-Route) primary access to the project would be provided via Cachagua Road. Access via San Clemente Drive would be used by construction workers, and occasionally for supplies or equipment (about 5 percent of project trips for such uses). These alternatives would use San Clemente Drive for initial mobilization of equipment needed below the Sam at the beginning of the project and demobilization of this equipment at the end of the project. It would also be used to provide access below the Dam for construction workers, and occasionally during the project for trucks carrying supplies or equipment. This access route was selected over the Tularcitos Access Route to avoid potential impacts on terrestrial biology. More than 75 percent of the traffic associated with these alternatives is associated with work above the Dam (e.g., construction of the reroute, sediment removal, and dam removal). Periods of mobilization and demobilization using the San Clemente Drive Access Route are expected to occur over a period of several weeks and involve 15 to 30 trips with heavy equipment during that period. CAW is unaware of any agreement with the Sleepy Hollow Homeowners Association regarding use of the road.

Comment TR-2

All the alternatives presented to date would likely require an extraordinary number of vehicles to use San Clemente Road for deliveries and construction worker access. It would also likely require construction vehicles such as concrete trucks to use the roadway and an existing bridge that is not constructed for this frequency or type of use over an extended period of time. The road will very likely prematurely fail and require complete reconstruction during the time frame of construction of the dam work.

Response

Please see response to Comment TR-1 for a discussion of the use of San Clemente Drive for the project and project alternatives. If San Clemente Drive is used for project access, trucks using San Clemente Drive would be required to comply with the weight limitations of the bridge structure on San Clemente Drive. The single-lane bridge has been rated for 20-ton single unit truck loads and 30-ton ready-mix concrete truck loads and would not require modifications for construction operations associated with project Alternatives 1, 2, and 3. In addition, if any damage to the San Clemente Drive pavement occurred, which is not anticipated, it would be repaired after completion of the project.

Comment TR-3

The use of this road for construction purposes of any kind is totally unacceptable to the Sleepy Hollow residents. Any project alternative must require that all vehicle traffic be prohibited from using Sleepy Hollow roads. Our association is requesting that any proposed dam project would use either the Cachagua Access Route for all construction traffic, or include the construction of the Tularcitos Road access proposed (or equivalent alternate access) in the Draft EIR/EIS for the dam's seismic safety project, to be used for all deliveries and construction worker access.

Response

Thank you for your comment. Comment noted. Please see response to Comment TR-1 for a discussion of the use of the road through Sleepy Hollow. Efforts have been made to minimize use of San Clemente Drive though Sleepy Hollow and most traffic would use either the new Tularcitos Road (for the Proponent's Proposed Project) or the Cachagua Access Route (for the other action alternatives).

May 23 Community Meeting Questions from Victoria Kennedy / Sleepy Hollow Homeowners Association

Comment TR-4

Will any traffic due to this project use any road within the Sleepy Hollow Homeowners' Association boundary?

Response

Please see response to Comment TR-1 for a discussion of the use of San Clemente Drive for the Proponent's Proposed Project and the project alternatives.

Comment TR-5

Is the Tularcitos Route, the vehicle route that all project vehicles will use?

Response

For the Proponent's Proposed Project, all vehicles would use the Tularcitos Access Route for project access after the new Tularcitos Access Route is built (which would take about six months). Please see response to Comment TR-1 for an explanation of the use of San Clemente Drive for the Proponent's Proposed Project and the project alternatives.

Comment TR-6

If there is a problem with project impacts such as noise, start times, dust, traffic control deficiencies, what will be the remedy, besides merely a phone number and person's name to call? **(Also AQ-2)**

Response

The project Applicant would be required to implement the mitigation measures included in this environmental document. The Applicant would be responsible for ensuring that the mitigation measures are implemented. Agencies and local government issuing permits would enforce compliance with permit conditions. Construction monitoring would be conducted to assure that permit requirements, resource protection measures, and mitigation measures are followed. The owner's contracts would embody pertinent requirements, and the applicant would require contractors to comply with the terms of their contracts. TC-1 for each alternative includes a Traffic Coordination and Communication Plan developed in coordination with the County of Monterey Planning and Building Department, including an on-site field office for a resident Traffic/Transportation Coordinator.

Comment TR-7

Who will determine after the project is completed, what and how much repair to Carmel Valley Road or any other public or private roads will occur due to the project's activities?

Response

Repairs to public roads would be coordinated with Monterey County Public Works staff. Repairs to private roads would be coordinated with the owners of the road. Prior to commencing work, a visual assessment of existing pavements would be performed, including a video log of the pavements to document existing, pre-project conditions. Following completion of the project, a visual assessment and a comparison to pre-project pavement conditions would be performed to determine where pavement repairs are necessary.

Comment TR-8

Will Monterey County simply accept the traffic impact fee imposed upon the project (equivalent vehicle trips) as satisfying the road repair mitigation measure?

Response

No, the mitigation for the project requires that the project Applicant repair any roadway damage to pre-project conditions immediately after construction is complete.

Comment TR-9

The EIR/EIS states that there will be flagmen. The document does not state how, when, or where the flagmen will be used. Please provide information as to how, when, and where flagmen ill be used. Any place on public roads?

Response

Under the Proponent's Proposed Project, flagging personnel would be posted to direct traffic at the Carmel Valley Road/Tularcitos Access Road intersection during periods when double-trailer trucks are used. Should one of the project alternatives be implemented, flagmen would be used on Carmel Valley Road at Cachagua Road and San Clemente Drive anytime double-trailer trucks are entering and exiting the project. Flagmen would also be used on the dam access roads during periods of heavy truck operations on-site.

June 20, 2006 letter from Mark Delaplaine/California Coastal Commission

Comment TR-10

The proposed construction and improvement of roads for the project and for the alternatives does not include road design that results in the least storm run-off for the life of the road. We would like to see a plan for road design that incorporates those elements that will most effectively allow for the least run-off, and the least concentrated run-off. Access road improvements are assumed to be in service for the life of the dam or the sediment storage areas, and the mitigation should include plans for the same time period, not just for construction.

Response

Detailed road design would be included in final project design, once an alternative is selected. When the final design plans for the on-site roadways are prepared, the roads would be designed to minimize the storm run-off for the life of the road. Erosion control strategies and mitigation are discussed in Section 4.3-3 Water Quality.

June 20, 2006 letter from Jean Getchell / Monterey Bay Unified Air Pollution Control District

Comment TR-11

Project-Generated Traffic. There is no information concerning the number and type of vehicles to be used in the project, or the daily traffic schedule.

Response

Project traffic generation estimates and estimates for the project alternatives are provided in Tables 4.9-4, 4.9-5, 4.9-6, 4.9-8, and 4.9-9. Traffic generated by the project would vary during the project. Please see Chapter 3 of this final EIR/EIS for a description of the construction activities associated with the project and each of the project alternatives.

June 14, 2006 letter from Linda Agerbak

Comment TR-12

For ALL alternatives, I am concerned about the 3 or 4 year increase in traffic on Carmel Valley Road and in Carmel Valley Village, with attendant danger of accidents, plus wear and tear to roads and pavements. Money must be budgeted to restore the roads once the project is completed. And before construction begins, a traffic light must be installed at the dangerous intersection of Laureles Grade and Carmel Valley Road, assuming that traffic will increase there.

Response

Thank you for your comment. Mitigation is included that requires the project Applicant to repair any pavement damage to Carmel Valley Road east of Carmel Valley Village attributable to the project. Recent analysis of the Carmel Valley Road/Laureles Grade intersection indicates that it operates at an overall Level of Service (LOS). Operation during the AM and PM peak hours with LOS E operations on the southbound Laureles Grade approach (*Draft Revised Environmental Impact Report for the September Ranch Subdivision Project*, Michael Brandman Associates 2004). The Proponent's Proposed Project would add traffic to the intersection, but the level of service would not change with construction of the project. Intersection volumes currently meet the Caltrans peak hour traffic signal warrant; therefore, a signal would not be required to manage the increase in traffic volume at that intersection. The project Applicant would contribute fair share fees through the payment of Carmel Valley Master Plan Traffic Impact Fees for the signalization of the Carmel Valley Road/Laureles Grade intersection, as discussed in Section 4.9.3.

COMMENTS RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Victoria Kennedy/Sleepy Hollow Homeowners Association

Comment TR-13

The first is regarding all the alternatives. Why can't you use the Tularcitos route for all of them?

Response

The Tularcitos Access Route is proposed as part of the Proponent’s Proposed Project, because this alternative requires all construction access to be made below the Dam. The Tularcitos Access Route was developed to avoid major traffic impacts to the Sleepy Hollow community. All of the other project alternatives have primary access above the Dam, via Cachagua Road. For these alternatives, only construction worker access and limited deliveries are required below the Dam. These would not have the same scale of impact to San Clemente Drive as the full construction access that would be required for the Proponent’s Proposed Project. Therefore, the Tularcitos Access Route is not proposed to accommodate this relatively small impact.

Comment TR-14

You have mentioned tonight that there's going to be deliveries and construction workers using the Sleepy Hollow access, and I would like to know how many construction workers a day we're talking about, and how many deliveries approximately? And why can't you use the Tularcitos route for these and not Sleepy Hollow?

Response

Thank you for your comment. Section 4.9 of this Final EIR/EIS provides a description of the construction crews that would be used during the project. Tables 4.9-4, 4.9-5, 4.9-6, 4.9-8, and 4.9-9 provide estimates of the number of vehicle trips that would be generated by the project and the project alternatives. Please see response to Comment TR-13 regarding the choice of Tularcitos Road and response to Comment TR-1 regarding the choice of access routes under the various alternatives.

Comment TR-15

Who will determine after the project is completed what and how much repair to Carmel Valley Road or any other public or private roads will occur due to the project's activities?

Response

Refer to comment response TR-7.

Comment TR-16

Will Monterey County simply accept this traffic impact fee imposed upon the project, the equivalent vehicle trips as satisfying the road repair mitigation measure?

Response

Refer to comment response TR-8.

Comment TR-17

And the EIR/EIS states that there will be flagmen. The document does not state how, when or where the flagmen will be used. Can you please provide information as to how, when and where the flagmen will be used -- any place on the public roads?

Response

Refer to comment response TR-12.

VISUAL IMPACTS

WRITTEN COMMENTS RECEIVED

<u>May 23 Community Meeting Questions from Victoria Kennedy/Sleepy Hollow Homeowners Association</u>

Comment VIS-1

The preferred batch plant site should be a location that does not cause visual, dust, and noise impacts to any Sleepy Hollow subdivision residents and/or be closer to the dam. What were the limitations to locating the batch plant closer to the dam? **(Also AA-13, AA-14, and NOI-4)**

Response

The concrete batch plant is a component of the Proponent's Proposed Project, which includes a number of elements necessary to the project. Please refer to Section 3.2 in this Final EIR/EIS for information on the batch plant. The batch plant requires a level area approximately 5 acres (about 218,000 square feet) in size with good road access in order to move in/out the larger pieces of batch plant equipment and aggregate materials. This limits possible sites for the batch plant to near Carmel Valley Road, and not up the canyon closer to the Dam due to mountainous terrain and narrow, winding access roads. There is a smaller site closer to the Dam, but it would not be large enough for large trucks to turn around. Thus, it is not technically feasible to locate the batch plant closer to the Dam. Also, the proximity of electric power lines may avoid the use of diesel generators for batch plant operation, thus avoiding emissions of NO_X, CO, ROC, SO_2 , and diesel fine particulate (PM_{10}).

Comment VIS-2

Page 2-29, does not state any visual impacts to Sleepy Hollow but the batch plant will be seen by at least the homeowners of two residences in this subdivision. Why isn't the batch plant visual impact addressed in Table 2-1?

Response

This comment has been addressed in rewriting the evaluation of impacts and mitigation in Section 4.11, Aesthetics, and is summarized in Table 2-1 as VIS-3. Site visits indicated that the batch plant would not visible from the subdivision streets. While it is possible that the some of the homeowners in the subdivision could see the batch plant from their residences, the batch plant would be a temporary structure and would be removed within one year of its construction. The distance of the batch plant from the Sleepy Hollow Subdivision is approximately 2,500 feet. This distance, coupled with obstructions from vegetation, would lessen the batch plant visual impacts to Sleepy Hollow residents. However, it is uncertain that the impacts would be reduced to a less than significant level. Visual impacts would be short-term and construction-related. No long-term visual effects would occur as a result of the batch plant to Sleepy Hollow homeowners.

July 3, 2006 letter from Tim Jensen / Monterey Peninsula Regional Park District (MPRPD)

Comment VIS-3

Viewshed: The Draft: EIR/EIS states "None of the alternatives will have a significant impact on the environment." However, there is no evidence in the document to make such a finding. And there is no information in the document for public review and comment. The entire treatment of public viewshed and aesthetics is inadequate.

The Proposed Project and Alternatives 1, 2, and 3 include property owned by The Park District that will be environmentally altered but there is no adequate description of the visual impact or any visual exhibits of pre-project and enhanced post-project images of the impact sites. Necessary images to adequately assess pre-project and post-project viewshed/visual impacts from within the open space park by park visitors include, but are not necessarily limited to: River front views; Standing water locations and conditions; Road-cuts and corridors; Sediment disposal site; River front access.

Response

This comment has been addressed in rewriting the evaluation of impacts and mitigation in this Final EIR/EIS, Section 4.11, Aesthetics (see especially VQ-5), and in rewriting Section 5.3.3, Cumulative Impacts. In addition, the Land Ownership Map (see Figure 4.13-1 in Section 4.13, Land Use and Figure 4.12-3 in Section 4.12, Recreation) depicts the locations of property in the Project Area that is either owned by the Monterey Peninsula Regional Park District (MPRPD) or conveyed under easement to the MPRPD. Potential visual impacts to future park users are likely to be less than significant or beneficial. The Proponent's Proposed Project will not affect the visual landscape in the vicinity of the lands managed by the MPRPD, including the access roads. The roads would be improved as part of Alternatives 1, 2, and 3, but would still be dirt roads. Therefore, there would be no visual impact as a result of the road improvements. Alternatives 1, 2, and 3 would restore part or all of the Carmel River/San Clemente Creek in these reaches to a free-flowing stream, which would have a beneficial aesthetic effect. Under the Proponent's Proposed Project and in other sections of the river, there would be no change. With the removal of the sediment, the long-term visual effects to the riverfront would therefore be either less than significant or beneficial for future park users.

During construction, private landowners of the Stone Cabin would have views of the sediment disposal site adjacent to the Jeep Trail and the sediment conveyor overcrossing, which would be above the Jeep Trail. A relatively small segment of the sediment disposal site would be visible to the landowners traveling on the Jeep Trail for a short duration of travel time. The sediment conveyor overcrossing, together with the sediment pile, would substantially degrade the existing visual character or quality of the site and its surroundings during construction. This would be a short-term impact. Under CEQA, this would be a significant and unavoidable impact. After construction, the sediment disposal site would be vegetated, causing it to blend with the surroundings, and the sediment conveyor overcrossing would be removed.

Comment VIS-4

The document presumes to leave the road improvements behind but does not describe any environmental impacts associated with doing so, which would be aesthetic and visual and significant compared to what is there now. Given that the property is an open space park, the cursory information provided is inadequate for effective environmental review.

Response

Park users were not included in the impact assessment because the MPRPD owned land in the Project Area is currently not open to the public. This comment has been addressed in the revised text of this Final EIR/EIS, Section 5.3.3, Cumulative Impacts (Please refer to the response to Comment VIS-3 for the visual impact assessment to private landowners in the Project Area).

Comment VIS-5

Wetlands: All the proposed projects include environmental impacts to existing wetlands. The Park District is concerned about potential short and long-term impacts to existing wetlands from the perspective of public access and viewshed. The document does not adequately address the impact of changing wetland conditions on public perception, view, and access and therefore the document cannot be adequately reviewed for environmental impacts associated with changed public aesthetics and viewshed. Textual descriptions of pre and post project conditions are needed for adequate review and comment on the aesthetic perspective to changing wetland conditions.

Response

Regarding effects on wetlands, please refer to responses to Comments TE-7, TE-9 and TE-39. This issue has been addressed in Section 4.6 Wetlands and in the revised Section 5.3.3, Cumulative Impacts, in this Final EIR/EIS. This response addresses wetlands within public access and viewshed only. Under the Proponent's Proposed Project, wetlands in these areas will not be affected. Under Alternative 1, sediment excavation would remove some wetlands areas, which would reestablish over time. Under Alternative 2, all wetlands would be removed most would reestablish over time. The by-pass alternative design (Alternative 3) is intended to allow sufficient groundwater seepage to maintain a high water table and support habitat for wetland-dependent species such as the California red-legged frog, once the construction is completed. Therefore, there would be no long-term visual effects on wetlands under Alternative 3.

Comment VIS-6

Pre-project and post-project enhanced photographic imagery depicting what the current and future park boundaries will look like are essential for adequate environmental assessment. Currently, the park has an extended and publicly accessible riverfront to perennial pools and flowing water. What will any new boundary along the park's riverfront look like and how accessible will the new riverfront be to the public? What will replace the current riparian vegetation along the park's riverfront boundary if the river course or water levels are changed? How will public access be affected and/or maintained if river-frontage is changed? **(Also REC-4, TE-37)**

Response

This comment has been addressed in rewriting the evaluation of impacts and mitigation in this Final EIR/EIS, Section 4.11, Aesthetics, and in revised Section 5.3.3, Cumulative Impacts **(Also VIS-3)**.

WATER QUALITY

WRITTEN COMMENTS RECEIVED

June 20, 2006 letter from Mark Delaplaine / California Coastal Commission

Comment WQ-1

Regarding issue WQ-16, Sediment Disposal, on page 4-94, mitigation includes annual monitoring of the sediment pile by CAW at the end of the rainy season in order to observe erosion problems. The sediment piles should be monitored occasionally throughout the rainy season so that erosion problems can be mitigated before maximum impact.

Response

As discussed in the Storm Water Pollution and Prevention Plan (SWPPP, Appendix K) temporary sediment barriers would be utilized around all sediment stock piles and disposal areas. Temporary sediment barriers are designed to reduce the velocity of water flow and intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to limit sediment transport out of the construction area. Additional monitoring during the rainy season would provide opportunities for adaptive management in the event that conditions at the sediment disposal area suggest an imminent problem related to stormwater runoff. Provisions for additional monitoring during the rainy season are included in the SWPPP (Appendix K).

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District

Comment WQ-2

Page 2-38, Para 3: Summary statement under Water Quality. "Sluicing under the PPP and Alternative 1 would lead to significant increases in turbidity in Carmel River below the dam and would not be mitigable." This statement should be modified to describe which flow components increase turbidity (suspended and bedload sediment?). It's unclear from the qualifier used ("mitigable") what impacts cannot be mitigated. This determination is necessary to realistically evaluate potential impacts to rearing and spawning habitat in the river downstream of San Clemente Dam.

Response

Chapter 2 of this Final EIR/EIS identifies the increases in turbidity associated with the Proponent's Proposed Project and Alternative 1 and concludes that these increases would be significant and unavoidable. Please refer to the revised Hydrology Section 4.2 for a description of flow conditions under which sluicing would occur. Please refer to the discussion under Issue WQ-13 (Section 4.3.3 of this Final EIR/EIS) and under Issues

WR-2, WR-3, WR-6, and WR-9 (Section 4.2.3 of this Final EIR/EIS) for further detail on impacts and mitigation related to sluicing.

No best management practices have been identified that could eliminate the turbidity resultant from sluicing. Thus, the impact is considered unavoidable.

Comment WQ-3

Page 3-21, 2nd bullet under Para 3: No standards are provided for turbidity levels that may be too high to release. The FEIR/S should provide standards and a specific, detailed description of how the project construction and operations schedule would be modified to mitigate for increased turbidities. Has the possibility of filtering turbid water through the Carmel Valley filter plant and then injecting clear water into the river been considered?

Response

Appropriate turbidity standards will be discussed during permitting with the Regional Water Quality Control Board (RWQCB), NOAA Fisheries, and CDFG that will clarify the water quality standard to which the project will be managed. Turbidity will be monitored daily, and discharges from zones where control is possible (e.g., settling basins) will be stopped until criteria are met. Measures to minimize and mitigate turbidity resultant from project actions (e.g., return of bypassed flows) are included in the SWPPP (Appendix K). These measures would be expected to minimize turbidity effects from all sources except sluicing (Issue WQ-13) and the reservoir drawdown (Issue WQ-9) to less than significant. The prospect of filtering turbid water through the Carmel Valley filter plant was not considered. The Carmel Valley Filter Plant (CVFP) uses pressure filters, which rely on the water intake being located above the plant at the reservoir. The turbidity inputs would likely occur downstream of the Dam, so there would be no route to convey the higher turbidity water into the plant through the existing filter plant intake. Even if a large pumping station and new intake were constructed to deliver high turbidity river water to the pressure filters, the turbidity loading on the filters would greatly exceed the design capacity of the plant. However, a mobile filter plant may be used to treat water prior to release back into the river.

Comment WQ-4

Page 3-23, Para 2: A turbidity standard needs to be presented that will protect downstream areas from impacts. Because construction is proposed during low flow periods, the effect of turbid water being released to downstream areas can persist for several miles downstream from a release point.

Response

Refer to comment response WQ-3.

June 22, 2006 letter from David Zaches

Comment WQ-5

There are hundreds of thousands of cubic yards of sediments behind the dam which have been in place, unmoved for 30, 50 and even 85 years. Toxics could be concentrated. If the alternatives to either notch the dam or demolish and remove it are chosen, sediments will be moved with shovels and bulldozers and will be greatly disturbed and dislocated. Any potential toxics could escape into the Carmel River channel and affect the Cal Am water supply as well as riverbed and ponds, wetlands and the Lagoon which the river creates.

The greatest disturbance would occur if the dam is removed. The plan is to re-channel the River into the San Clemente Creek channel. The portion of this channel which is also behind the dam is filled with sediments similar to those in the adjacent Carmel River channel behind the dam. They potentially could contain similar toxics and if they do, the toxics could also wash down the Carmel River channel, harming the watershed down the channel.

I'd like to request that core samples of the sediments of the River and Creek channels behind the dam be made to ascertain whether there are toxics, of what type and quantity, and what risk they might pose to the Carmel River channel downstream and the drinking water supply, under each possible alternative for dam safety retrofit or removal.

Response

Samples from the impounded sediments behind San Clemente Dam (SCD) were collected and analyzed to assess the gradation of the sediment and the quality (ENTRIX 2002). The analysis of the quality found traces of Arsenic (As), Barium (Ba), Chromium (Cr), Copper (Cu), Nickel (Ni), and Zinc (Zn). However, none of the water quality parameters analyzed were found to exceed water quality standards. The results of the pore-water water quality analysis are found in this Final EIR/EIS, Appendix Q.

June 30, 2006 comments from National Marine Fisheries Service (NMFS)

Comment WQ-6

Referring to page 2-39, NMFS recommends adding "long-term" while describing significant unavoidable impacts to water quality and fish. **(Also FI-65)**

Response

Downstream impacts from sluicing would be temporary due to the fine sediment that would be transported initially. Over time, the sediments would become coarser and would be beneficial over the long-term.

Comment WQ-7

Referring to page 4-88 (Issue WQ-15: Operations/Post-Project Conditions), NMFS agrees summer water quality conditions in the reservoir would be better than during drawdowns. However, water quality conditions in the reservoir due to long-term winter sluicing operations needs to be included and analyzed. Issue WQ-13 addresses water quality below the reservoir from sluicing, but not conditions in the reservoir.

Response

In approximately 6 to 10 years only a remnant pool would remain behind SCD under the Proponent's Proposed Project or Alternative 1. Under both options the reservoir would be filled with sediment. Instead, there would be a river channel very similar to what exists between about 2,500 to 5,000 feet upstream of the SCD today. Sediment sluicing is more fully discussed in the revised Section 4.2 and 4.3 and SOMP (Appendix J) and would affect about 500 feet of channel in close proximity to the Dam. Potential water quality impacts would include increased suspended sediment and turbidity extending from the upstream extent of the influence of sluicing and progressively increasing toward the Dam. Such impacts would only be short-term and would only occur during sluicing events. These water quality impacts would cease once sluicing stops and water quality would return to background conditions. Sluicing would only occur during the rising limb of a hydrograph and at flows between 300 and 800 cfs. Therefore, background conditions would typically consist of some level of turbidity and suspended sediment.

Comment WQ-8

Referring to page 4-93, in the paragraph before Issue WQ-2: is this supposed to be Alternative 3? Also on Pg 4-94 under Issue WQ-14, it states "…the extent of potential impacts would be greater under Alternative 2." Is this also supposed to state Alternative 3?

Response

Yes. It appears that a formatting error collapsed the subheading for Alternative 3 within the first italicized paragraph on page 4-93. The discussion of impacts under Alternative 3 begins with the second paragraph of italicized text on page 4-93. The error has been corrected in the Final EIR/EIS report.

COMMENT RECEIVED AT MAY 23, 2006 PUBLIC HEARING

Comment WQ-9

Dave Zaches/Resident of Carmel Valley

The other thing is the toxics, the pollutants, the chemicals which have been inserted into the Carmel River area behind the dam, below the dam. We're all drinking that water. And I haven't heard anyone really address to my satisfaction, and I can't understand *what's in the report frankly. It's very, very complex, and I don't know whether one part per million is okay or one part per billion is okay. But I hope a lot of attention will be given to that in the rerouting of the river way or the, you know, so-called encapsulation or trapping of the sediments and the toxics and pollutants. When that river gets to flowing, it rolls big boulders down the stream. It's a very powerful force. So I hope that whichever alternative comes up, it will consider that.*

Response

Thank you for your comment. Comment noted. It is not clear whether a particular pollutant of concern is intended in this comment. Refer to response to Comment WQ-5 regarding toxics that may be released from the sediment stored above the Dam.

WATER RESOURCES

WRITTEN COMMENTS RECEIVED

June 29, 2006 letter from David A. Berger/Monterey Peninsula Water Management District

Comment WAT-1

Page 3-12, Para 1: "The reservoir and Carmel Valley [Filter Plant] CVFP are also the primary water source for unincorporated Carmel Valley Village during the winter. Currently, the reservoir serves as a point of diversion to serve the Peninsula..." The FEIR/S text should be corrected to reflect operations as regulated by NOAA Fisheries and the State Water Resources Control Board. These agencies have limited the diversions at San Clemente Dam to zero and allow only limited diversions from the river from Russell Well field during low-flow season.

Response

Diversions at San Clemente Dam (SCD) are not limited to zero, as this commenter acknowledges in Comment WAT-4 below. Section 3.2.3 has been updated in the Final EIR/EIS to respond to this comment.

Comment WAT-2

Page 3-15, Para 4: Under Carmel Valley [Filter Plant], the description for FEIR/S should be revised to reflect comment 3-12, Para 1 above.

Response

Section 3.2.3 has been updated in this Final EIR/EIS to respond to the referenced comment (WAT-1). However the bearing of this requested revision on the EIR/EIS description of the Carmel Valley Filter Plant (CVFP) is not clear.

Comment WAT-3

Page 3-44, Para 1: "the point of diversion would need to be replaced at a 525-foot elevation in the immediate vicinity of San Clemente Reservoir to avoid extensive improvements to the existing filter plant." Currently, Cal-Am is able to divert 1.4 cfs to the CV Filter Plant through the Russell Well field, without any improvements and the loss of pressure from San Clemente Dam. The FEIR/S should fully review the need for moving the diversion point upstream 6,000 feet and should describe potential impacts on habitat at the point of diversion and in the reach(s) affected by diversion. Alternatives to moving the diversion should be fully evaluated. These comments apply to other alternatives, including the No Project. **(Also NEPA/CEQA-19)**

Response

A purpose and objective of the project is to "maintain a California American Water (CAW) point of diversion on the Carmel River to support existing water supply facilities, water rights and services" (see Section 1.4 of this Final EIR/EIS). All alternatives that include dam notching or removal would require replacement of the point of diversion to gravity feed the system that is currently provided by SCD. The Russell Well fields are at an elevation lower than the base of SCD and therefore cannot provide gravity feed to the CVFP. Pumping from the Russell Well field would entail additional impacts as compared to the existing gravity feed system. To maintain the head provided at the existing point of diversion (the Dam), it would be necessary to relocate the diversion point approximately 6,000 feet upstream. This feature is common to all dam removal alternatives. Evaluation of the effects of relocating the diversion upstream can be found in Sections 4.2 and 4.4 of the EIR/EIS.

Note that, as described in Sections 2.2 and 3.1.2 of this Final EIR/EIS, alternatives to replace the CAW water diversion point at San Clemente Reservoir were also evaluated.

Comment WAT-4

Page 3-44, Para 2: "The screened intake would need to be constructed and maintained approximately 6,000 to 6,500 feet upstream of the dam." The FEIR/S should describe Cal-Am's current right to divert flow at San Clemente Dam and whether Cal-Am needs to apply to the State Water Resources Control Board for a modification to move its point of diversion. Currently, Cal-Am is limited to direct diversion of 1,100 AF at San Clemente Dam. This is equivalent to a continuous direct diversion rate of ~3.1 cfs over a typical 180-day, six-month long dry season. If more than 1,100 AF is proposed for diversion at San Clemente Dam, Cal-Am would also need to modify its water right to increase the quantity of water diverted. This comment applies to all of the alternatives, except the No Project.

Response

Section 3.2.3 has been updated in this Final EIR/EIS to respond to this comment. Operations in terms of the timing and amounts of flow diverted and water supplied from CAW facilities would not change as a result of implementing any of these alternatives.

Alternatives 1, 2, and 3 would require moving the CAW point of diversion at SCD. The State Water Resources Control Board (SWRCB) issues permits for surface water diversions. If the point of diversion were to be moved, CAW (as the Applicant) will file an application (and all required supporting information) with the SWRCB.

Comment WAT-5

Pages 3-72, Para 4: statements regarding moving the diversion point at San Clemente Dam and maintaining a maximum diversion rate of 16 cfs from a new diversion point upstream of rerouted dam should have the same review, evaluation and potential *actions by the SWRCB, as notching alternative. The FEIR/S should address similar issues as per comments on page 3-44, Para 1 & 2.*

Response

Evaluation of the effects of relocating the diversion upstream is in Sections 4.2 and 4.4 of this Final EIR/EIS. The SWRCB issues permits to divert surface water. If the selected alternative requires a new point of diversion, CAW (the Applicant) would file an application (and all required supporting information) with the SWRCB.

May 24, 2006 letter from Don Redgwick

Comment WAT-6

Water storage can offset the use of energy used to produce water by reverse osmosis (the cost of energy has become an important political issue).

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

Comment WAT-7

The use of rubber dams in the Carmel River could be a means of diverting water to underground storage. Rubber dams are filled with water to weigh them down. If the water level behind them is allowed to get to high, they can float or slide downstream. Rubber dams are specialized tools that are only good for specific conditions.

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

May 25, 2006 letter from Anthony G. Davi, Sr.

Comment WAT-8

I am writing to you regarding the proposal relating to the San Clemente Dam in Carmel Valley, California. As you know, the Monterey Peninsula and surrounding areas has *inadequate water storage facilities, that the State of California has mandated this problem be resolved and that California American Water Company reduce its pumping from the Carmel River, which is and has been our primary source of water for hundreds of years. The San Clemente Dams original water capacity was 2,000 acre-feet and now is only 100 acre-feet. The Dam's retrofitting and refilling to 2,000 acre-feet would go a very long way to solving the excess pumping and our water dilemma. Our problem, as I understand it, is not the availability of water it is the ability to store excess water, which now flows to the sea. Although the cost may be high, the need is even higher. The Monterey Water Management District was formed several decades ago for the purpose of developing a solution to the water problem. They have spent hundreds of millions of dollars on programs, studies, and water conservation policies; however, they have been unsuccessful in developing a serious storage source. Environmentalists have successfully blocked every plan for long-term storage that has been proposed. While I support protecting the environment, I also believe that the needs of the public should be equally protected. The Monterey Peninsula Water District probably has one of the highest water rates in the country and I understand substantial increases will be forthcoming. The San Clemente Dam is an opportunity to create a major water storage facility. This is an existing facility the community has accepted and to retrofit the dam, I believe, should be given very serious consideration.*

While rerouting the river for the fish and preserving the frogs habitat is important, it is equally important and the responsibility of the State of California to provide leadership to help resolve this storage problem. Remember it was the State of California that mandated the reduction in pumping from the Carmel River that resulted in a water problem for the community being served.

For example, currently there are numerous owners of lots of record in the district that are unable to obtain water for their properties. So lot owners continue to pay property taxes without the use of their property. Also changes of use in the commercial properties that result in increased water use are prohibited. Commercial property owners experience longer vacancy periods and businesses have limited expansion opportunities.

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

NOTE: COMMENTS WAT-9 THROUGH WAT-12 CORRESPOND TO MAY 23, 2006 PUBLIC HEARING TESTIMONY

Comment WAT-9

Roy Kaminski

It seems to me that the dam serves a purpose with head and it also serves a purpose of having water available in case we have a major fire catastrophe. So I should think that having water in a location, maybe only 50 or 100 acre feet, would be of some service.

Response

Thank you for your comment. SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which this Final EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

Comment WAT-10

Roy Kaminski

That [dam removal and restoring a free-flowing river] probably would eliminate the need for a desal plant in Moss Landing. If we had the river running 24 hours a day, 7 days a week, 365 days a year, I think that might solve our water problem.

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

Comment WAT-11

Dave Zaches/Resident of Carmel Valley

If the river is rerouted, why don't we have some sort of water storage there, even a small one, for wildlife, fish, etc.?

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

Comment WAT-12

Rex Keyes/Resident of Salinas

I don't think we had a dam built in California in the last 50 years and having this increased water supply to the Monterey Peninsula would be a great value.

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action evaluated in this Final EIR/EIS is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

June 27, 2006 letter from Steven A. Hillyard

Comment WAT-13

The EIR/EIS considers five alternatives including two that interest me. First, it considers removing silt in preparation for removing the dam. Second, it considers strengthening the dam. Since both are feasible, this means that the dam continues to be a technically viable water storage facility with a current status of being burdened by extensive deferred maintenance. Because the EIS/EIR fails to consider this alternative, it is deficient.

Y*our agencies can take notice of the fact that the Monterey Peninsula has a very urgent water storage need. Further, you can assume that additional water storage or desalinization facilities will be built to meet this need. The current debate over the desalination plants planned for Moss Landing is credible evidence of the validity of these assumptions.*

There are very significant environmental impacts associated with the alternatives to using San Clemente Dam for meeting at least a portion of the Peninsula's water needs. Those associated with the desalination project, including operational impacts such as the discharge of green house gasses associated with powering the process, are the most glaring.

Because San Clemente Dam is a viable storage facility, the alternative "uses" that call for it to be taken out of service are burdened with the external environmental impacts associated with replacing its storage capacity. To make an informed decision in the *permitting process, decision makers should be informed of these impacts. To facilitate that, the EIS/EIR should consider the rehabilitation alternative.* **(Also AA-64)**

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. The purpose and need of the action which the EIR/EIS evaluates is to provide safety, not to alter or improve the water system. Therefore, the EIR/EIS does not consider alternatives for water supply or water storage. Where an alternative affects the operation of the water system, it includes those elements necessary to maintain the essential functions of the water system.

June 28, 2006 letter from Bob Baiocchi / Carmel River Steelhead Association

Comment WAT-14

The water right permit(s) that allows Cal-American to store and divert water from San Clemente Dam and Reservoir must be cancelled or amended by the State Water Resources Control Board because San Clemente Dam is not being operated as it has in the past because of the failure of the dam to store the state's water. The California State Water Resources Control Board is the authority in water rights matters and not the Department of Water Resources, the Army Corp of Engineers, or Cal-American Water Company. This water rights matter must be disclosed, discussed, and mitigated in the final EIR/EIS.

Response

SCD was not originally constructed for water storage, but to provide a point of diversion on the Carmel River and head for gravity feed into the water system. It is not a water storage project. It continues to operate in compliance with water rights issued by SWRCB. If the selected alternative requires relocation of the point of diversion, CAW (the Applicant) would file an application (and all required supporting information) with the SWRCB.

WETLANDS

WRITTEN COMMENTS RECEIVED

June 30, 2006 letter from Trish Chapman/California Coastal Conservancy

Comment WET-1

Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S. The mitigation for this impact states that lost acreage would be replaced through either or both of two options: 1) restoration of other wetlands at a 3:1 ratio; and/or 2) conservation of existing wetlands at a 1:1 ratio. If only option 2 is used, it would result in a net loss of wetlands which would not be sufficient mitigation to make the impact less than significant. The mitigation should be structured so there is no net loss of wetland acreage. It is unlikely that created or restored wetlands will function at as high a level as the existing wetlands that will be permanently lost. Therefore, conservation of existing wetlands may be suitable as a way to augment wetlands loss that is also mitigated through creation or restoration of wetlands in order to make up for the functional loss. But it is not sufficient as mitigation on its own.

Response

See Appendix U for a Botanical Resources Management Plan which includes provisions for restoration, mitigation, and monitoring wetlands and Other Waters of the U.S. affected by the Proponent's Proposed Project. Lost acreage would be replaced in either or both of two options. Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 3:1 ratio, grading as necessary and placing cuttings or seedlings in appropriate habitat under the supervision of a qualified botanist. Seedlings would be from Carmel Valley area populations. Replacement plantings would be monitored for at least five years. Seedlings would be replanted as necessary to ensure long-term survival. Restoration sites would be monitored for five years. Performance criteria would be agreed with the Corps and the California Department of Fish and Game (CDFG) which have regulatory authority over the measures in the Botanical Plan, but will include cover criteria for native vegetation (ranging from 50 to 75 percent) and survival criteria for woody vegetation that is planted. Restoration sites may be conducted at sites in lands along the Carmel River owned by the project proponent or on appropriate streams elsewhere in the watershed. Restoration sites would be conserved in perpetuity. Appendix U, the Botanical Resources Management Plan provides details of the mitigation and monitoring for all botanical resources including wetlands.

Comment WET-2

Alternatives 1 and 3, Issue WET-1: Permanent Loss of Wetlands and Other Waters of the U.S. It is not clear how loss of Other Waters of the U.S. would be mitigated.

Response

See response to Comment WET-1. Mitigation options for Other Waters of the U.S. include stream channel improvements or funding of channel improvement projects.

June 29, 2006 letter from David A. Berger / Monterey Peninsula Water Management District (MPRPD)

Comment WET-3

Page 2-36, Table 2.4: The tabulation of acreages under Other Waters of the U.S. appears to underestimate the extent of waters affected by alternatives. For example, under Alternative 2 the total area of waters listed for the Carmel River, San Clemente Creek, and Reservoir Pool is 10.9 acres, including 6.8 acres for the reservoir pool, leaving 4.1 acres for the Carmel River and San Clemente Creek. The length of stream affected by existing San Clemente Reservoir is ~7,250 feet in the mainstem and ~ 2,500 feet in San Clemente Creek. Based on the combined lengths, the average stream width of Other Waters is purportedly ~18 feet, yet this seems well under actual measurements of stream widths in the affected waters. For example, measurements of average stream width at two sites in the inundation zone show that stream width varies from 18 to 34 feet, and these measurements were made during the lowest flow periods in 2004 and 2005. The source of possible error(s) is beyond the scope of this review, but the FEIR/S should reevaluate methods, standards and analysis used to develop areas of both Other Waters and Jurisdictional types and validate estimates with measurements in the field.

Response

The acreages were determined using standard mapping methods, including evaluation of the location of Ordinary High Water Mark (OHWM) indicators such as driftlines. These indicators were carefully evaluated, because the winter of 2004/2005 was a high-flow year, and driftlines, sediment deposits, and other such indicators could have been present in areas outside the (OHWM). Some upstream survey work was conducted in early 2006 when flows were high.

Observations in 2005 and 2006 indicated that there are changes from earlier conditions, both those that prevailed before the water level was lowered and those that prevailed after wetland delineations were conducted in 1994 and 1997 following the reduction in water level. For example, some areas previously flooded by the reservoir are no longer flooded and what were side channels now show no evidence of inundation by the river. The impact analysis is based on conditions which includes the reduction in the maximum and minimum water elevations from interim drawdowns as part of the baseline conditions. The final numbers will be determined through the USACE 404 process.

Comment WET-4

Page 2-36, Table 2.4: The characterization of impacts for Alternative 4 (No Project), No direct impacts, ignores continuing impacts of the interim drawdown project on Jurisdictional and Other Waters of the U.S. In this regard, the Final EIR/S should fully address potential impacts of the Drawdown Project.

Response

The impact analysis is based on conditions which include the reduction in the maximum and minimum water elevations, from interim drawdowns, as part of the baseline conditions.

Comment WET-5

Page 3-80, Para 3: "The 200-foot wide by 3-foot thick by 40-foot deep soil cement cutoff wall will be constructed to bedrock to prevent undermining and seepage of river flows below the diversion dike." How will a high phreatic water surface be maintained in the old sediment layers immediately upstream of San Clemente Dam, which is described on page 3-75 Para 3 as a project goal? The FEIR/S should fully evaluate how the existing wetlands will be maintained given the lack of seepage past the diversion dike and the 550 foot elevation of the proposed sediment disposal area. Based on the distribution of habitat types in the existing inundation zone, it is more reasonable that the higher elevation of new sediments in the disposal zone and lack of seepage from the old river channel will severely limit distribution of phreatic zones and reduce wetland coverage in the project area. This should be fully evaluated in the FEIR/S and adjustments made to estimates of jurisdictional wetlands. **(Also AA-43)**

Response

The cutoff beneath the diversion dike will be placed for maintaining the foundation stability of the dike; however, the dike itself will be permeable. The intention is to allow seepage that will maintain a high water table in the area downstream of the diversion, so that habitat for riparian species will persist.

Appendix F

ACCESS ROUTE SCREENING

APPENDIX F

ACCESS ROUTE SCREENING

1.1 INTRODUCTION & APPROACH

As part of the San Clemente Dam Seismic Safety EIR/EIS, a preliminary screening analysis was conducted for the potential major access routes to and from San Clemente Dam. The purpose of the screening analysis was to choose preferred access route(s) for use with the dam Alternatives in the EIR/EIS.

The access routes were screened using impact criteria. The relative impacts of the access Alternatives were determined by (1) the impacts of traffic over them (e.g., safety, air quality, noise, etc.) and (2) the comparative impacts of the routes themselves (e.g., effects on habitat). The screening analysis used these criteria: traffic and safety, air quality, noise, effects on roads and bridges, stream crossings and effects on terrestrial biology.

The criteria were used to assess low, medium, high truck traffic volumes over each of the four Alternative access routes (Sleepy Hollow, SHHA, Tularcitos, and Cachagua). These traffic volumes were established to bracket the range of possible impacts for the various dam Alternatives paired with sediment transport and disposal options. Corresponding traffic volumes were defined based the on number of truck trips of given weight. This approach was used to assure that the "high" traffic volume captures the expected traffic that would be generated by full removal of all the sediment behind the dam. The high, medium and low truck volume categories were defined as follows:

- Low: 10 loads (20 total trips, 10 inbound/10 outbound)
- Medium: 210 loads (420 total trips, 210 inbound/210 outbound)
- High: 415 loads (830 total trips, 415 inbound/415 outbound)

The “low” truck traffic volume corresponds to trucking activity associated with construction mobilization, access road improvements and hauling construction material for dam re-construction. The “high” truck traffic volume corresponds to trucking activity associated with sediment disposal via truck. For example, hauling sediment by truck to Site 4R would generate about 415 loads per day with a production rate of 500 cubic yards per hour. The “medium” truck traffic volume corresponds to moderate level of trucking activity and was set about mid-way between the low and high truck volume levels.

The access route screening does not replace a traffic analysis of the dam Alternatives in the EIR/EIS, but was conducted only to choose among the major routes. Each dam Alternative differs in terms of the kinds and numbers of trips required (e.g., for construction heavy equipment, construction materials, debris removal, sediment removal, construction workers). The EIS/EIR contains a traffic element that analyzes the kinds and numbers of trips and multiple routes that vary with the dam Alternatives and subcomponents.

The preliminary access route screening analysis used existing information from the RDEIR and other sources wherever possible. However, the RDEIR generally lacks detail for comparison of impacts among Alternatives, including Alternative access routes.

1.2 ACCESS ROUTE ALTERNATIVES

Four potential major access routes were considered (Figure F-1):

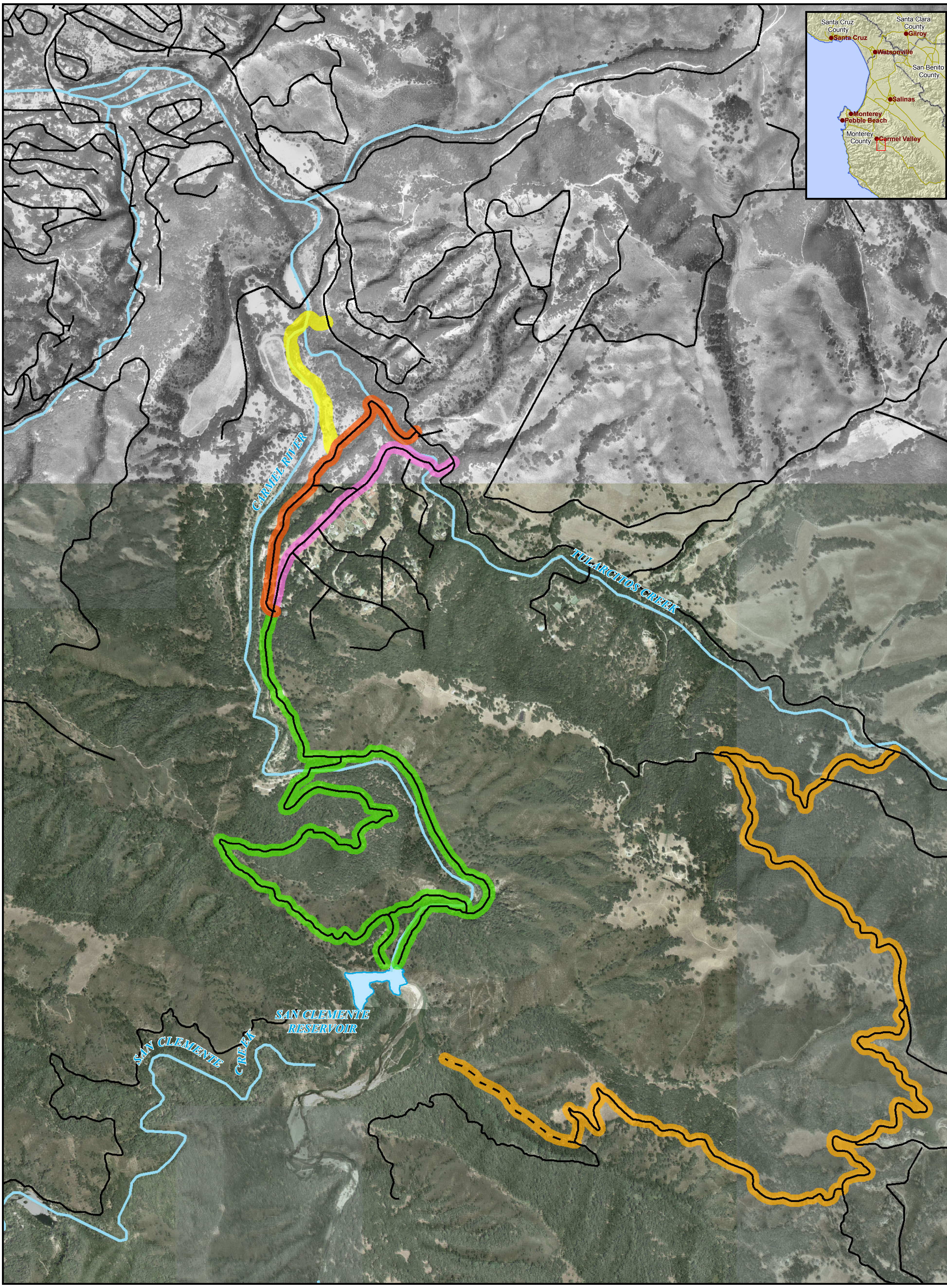
SLEEPY HOLLOW ROUTE

This access route following San Clemente Drive and Center Court Place through the Sleepy Hollow Subdivision was originally proposed and analyzed in the 2000 RDEIR. San Clemente Dam and the filter plant are currently accessed from Carmel Valley Road via San Clemente Drive, a gated private road. San Clemente Drive is a paved hard-surfaced road between Carmel Valley Road and a locked gate that prevents public access to the reservoir. From the locked gate on CAW property, the dam access road is a one-lane unpaved road with turnouts to the lower and upper dam roads. The low road provides access to the base of the dam and the high access road provides access to the top of the dam. Low road access to the base of the dam is currently impassible and would require improvements to repair washouts.

The revised Sleepy Hollow access route proposes access via San Clemente Drive to Center Court Place, a paved one-lane roadway, and would remove San Clemente Dam traffic from the segment of San Clemente Drive south of Center Court Place. From Center Court Place, the route would continue on an existing dirt road to and past the filter plant to San Clemente Drive, south of the Sleepy Hollow subdivision. At this point, the route connects with existing access roads to the dam. For purposes of comparison, impacts from this road are assumed to include a 20-foot width at the Carmel Valley Road end, and a 15-foot width for the remainder.

Sleepy Hollow Homeowner's Association (SHHA) Route

This access route Alternative was proposed by the Sleepy Hollow Homeowners Association and briefly analyzed as a CEQA Alternative in the 2000 RDEIR. The portion of the access route between the dam and the filter plant would be as described for the Sleepy Hollow Route. Access to Carmel Valley Road would be provided via a new route that would intersect Carmel Valley Road about 2,800 feet west of San Clemente Drive. From Carmel Valley Road, the access road would drop down from Camel Valley Road on a slope about 70 feet in height to a 14 foot wide bridge over Tularcitos Creek. It would continue across the level flood plain along Carmel River and eventually intersect the existing dirt road to the filter plant.



Legend

Access Routes

- Cachugua / 4R
- Sleepy Hollow
- Tularcitos
- Sleepy Hollow / Tularcitos*
- SHHA
- Stream
- Reservoir
- Existing Road
- Proposed Road

Note: Carmel River Reroute not included in screening - not part of report.

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR

Figure F-1

Access Route Screening

0 0.15 0.3 0.6 Miles

N

C:\GIS\entrix\3018605\map\SC_AccessRoutes_17ill1_03.mxd 10/3/2005 1:01:49 PM Mukhtyar

For the screening analysis, impacts from this route are assumed to include a 22-foot width at the Carmel Valley Road end, and a 15-foot width for the remainder. This route also includes construction of a new crossing of the Carmel River.

TULARCITOS ROUTE

This route was also briefly analyzed as a CEQA Alternative in the 2000 RDEIR. This route uses the same roads as described for the SHHA Route and the Sleepy Hollow Route between the filter plant and the dam. North of the filter plant, a connection to Carmel Valley Road is provided via a new route that intersects Carmel Valley Road about 750 feet west of San Clemente Drive. The access road intersection with Carmel Valley Road would occur at an existing intersection with a private driveway serving several residential lots on the north side of Carmel Valley Road. Immediately south of Carmel Valley Road, the new access road would cross Tularcitos Creek via a new single lane bridge that would be 14 feet wide. At the creek crossing, the road would turn west for about 800 feet, then turn south and continue in an approximate north-south alignment to the water filter plant. For the screening analysis, impacts from this route are assumed to include a 22-foot width at the Carmel Valley Road end, and a 15-foot width for the remainder. This route also includes construction of a new crossing of the Carmel River.

Cachagua Access Route

This access route presents a new concept that has not been mapped or analyzed. This route includes Cachagua Road from Carmel Valley Road to the jeep trail, the jeep trail to sediment disposal Site 4R, and conveyor belt access to the San Clemente Reservoir from Site 4R. Cachagua Road is a two-lane rural winding road that provides access to the Cachagua area of Monterey County. It intersects Carmel Valley Road about 2 miles east of San Clemente Drive. Cachagua Road is generally 18 to 20 feet wide, although there are sections that are narrower. The jeep trail that will provide access from Cachagua Road to Site 4R intersects Cachagua Road about 3 miles south of Carmel Valley Road. For the screening analysis, potential impacts to Cachagua Road are estimated for a 30-foot width, to include impacts to either or both sides of the road. Potential impacts to the jeep trail and the new road are estimated for a 20-foot width.

1.3 FIELD RECONNAISSANCE & EVALUATION

On March 22 and 23, 2005, ENTRIX conducted field reconnaissance to inspect the four potential access routes. Table F-1 provides a summary evaluation of the environmental constraints. Each row of the table presents the criteria used in environmental constraints analysis; the table columns present each of the sites evaluated.

Table F-1: Summary of access route screening environmental constraints analysis

Criteria	Access Routes			
	Cachagua	**SHHA**	**Sleepy Hollow**	**Tularcitos**
Air Quality Background: NO_x 266 µg/day CO 4257 µg/day PM_{10} 57 µg/day	Air emissions: NO_x 0.53 lb/day CO 0.13 lb/day PM_{10} 20 lb/day Maximum pollutant concentrations: NO_x 0.34 µg/day CO 0.08 µg/day PM_{10} 5.1 µg/day	Air emissions: NO_x 0.43 lb/day CO 0.10 lb/day PM_{10} 16 lb/day Maximum pollutant concentrations: NO_x 0.27 µg/day CO 0.06 µg/day PM_{10} 4.1 µg/day	Air emissions: NO_x 0.43 lb/day CO 0.10 lb/day PM_{10} 16 lb/day Maximum pollutant concentrations: NO_x 0.27 µg/day CO 0.06 µg/day PM_{10} 4.1 µg/day	Air emissions: NO_x 0.41 lb/day CO 0.09 lb/day PM_{10} 15 lb/day Maximum pollutant concentrations: NO_x 0.27 µg/day CO 0.06 µg/day PM_{10} 4.1 µg/day
Noise Background: 37 dBA @ 100 m	Attenuated noise levels 67 dBA @ 150 M	Attenuated noise levels 67 dBA @ 150 M	Attenuated noise levels 75 dBA @ 150 M	Attenuated noise levels 75 dBA @ 150 M
Stream Crossings & Aquatic Biology	No crossings. No steelhead impacts.	Three: two stream crossings at existing bridge and concrete ford on the Carmel River, and one new crossing at Tularcitos Creek. Potential steelhead impacts, possible benefit in replacing the ford.	Three stream crossings at existing bridges and concrete ford: two on the Carmel River and one at Tularcitos Creek. Potential steelhead impacts, possible benefit in replacing the ford.	Three stream crossings: two at existing bridge and concrete ford on the Carmel River and one new crossing at Tularcitos Creek. Potential steelhead impacts, possible benefit in replacing the ford.
Roads, Bridges Traffic & Safety	Cachagua Road has poor geometrics. Poor sight distance exists at the Carmel Valley Road/Cachagua Road intersection and at the Cachagua Road/Jeep Trail/Dam Access Road intersection. Potential impact to Cachagua Road pavement condition. Cachagua Road motor vehicle, pedestrian, and bicycle safety would be impacted by construction-related traffic.	Adds a new intersection to Carmel Valley Road. No impacts on communities and safety.	Potential impacts to San Clemente Drive and Center Court Place pavements. Quality of life impact to residents of Sleepy Hollow, a community located immediately adjacent to sections of San Clemente Drive used for dam access. San Clemente Drive motor vehicle, pedestrian, bicycle safety impacted.	Adds a new intersection approach to Carmel Valley Road, at an existing intersection of a private residential access road and Carmel Valley Road. Minimal impacts on communities and safety and to traffic operations on the existing residential access road approach to Carmel Valley Road at the Carmel Valley Road/Tularcitos Access Road intersection.

Table F-1: Summary of access route screening environmental constraints analysis

Criteria	Access Routes			
	Cachagua	**SHHA**	**Sleepy Hollow**	**Tularcitos**
Terrestrial Biology	Habitat impacts: 6.58 acres if Cachagua Road is widened; 3.23 acres if not Sensitive habitat impacts: 1.15 acres of blue oak and riparian vegetation if Cachagua Road is widened; 0.07 acres if not. Potential sensitive species (based on habitats; no previous surveys conducted for this route): California tiger salamander (FT, CSC), Carmel Valley malacothrix (CNPS 1B), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Limited potential habitat for California red-legged frog (FT, CSC), southwestern pond turtle (CSC).	Habitat impacts: 2.50 acres Sensitive habitat impacts: 1.1 acres of blue oak and riparian vegetation. Potential sensitive species (based on habitats and some field observations): California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Carmel Valley malacothrix (CNPS 1B), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Woodrats are known to occupy the area along Tularcitos Creek.	Habitat impacts: 1.68 acres Sensitive habitat impacts: 0.22 acres of blue oak and riparian vegetation. Potential sensitive species (based on potential habitats and earlier surveys): California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Cooper's hawk (CSC), yellow warbler (CSC), Monterey dusky-footed woodrat (CSC); and virgate eriastrum.	Habitat impacts: 2.23 acres Sensitive habitat impacts: 0.68 acres of blue oak and riparian vegetation. Potential sensitive species (based on potential habitats and earlier surveys): California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Woodrats are known to occupy the area along Tularcitos Creek.

SLEEPY HOLLOW ROUTE

Air Quality & Noise

The proposed access road section in the vicinity of the residential zone is approximately one mile (1600 meters) in length and the nearest residential receptor for air quality and noise impacts is approximately 200 feet (60 meters) from the access road section. To simulate a line source, the road section was subdivided into 8 x 80 meter segments for a maximum aspect ratio of 10 to 1. A detailed methodology is contained in the appendix to this report. Estimated impacts are as follows:

Air emissions from project activity:

- NO_x 0.43 lb/day
- CO 0.10 lb/day
- PM_{10} 16 lb/day

Maximum incremental pollutant concentrations over background:

- NO_x 0.27 µg/m^3
- CO 0.06 µg/m^3
- PM_{10} 4.1 µg/m^3

Attenuated noise levels from project activity:

- 75 dBA @ 60 meters

Aquatic Biology & Stream Crossings

There are three stream crossings along this route, at existing bridges and the concrete ford on the Carmel River. Two of them are on the Carmel River and one is at Tularcitos Creek. These have the potential to affect steelhead. There may be a possible benefit to steelhead in replacing the concrete ford.

Terrestrial Biology

A total of 1.68 acres are potentially affected by this Alternative, including 0.22 acre of sensitive habitat (Table F-2). (Acreages of the existing roads have been subtracted from the potentially affected vegetation acreages.) For comparison, habitat miles traversed by each Alternative are shown in Table F-3.

Table F-2: San Clemente Dam Alternate Access Routes Vegetation Types Potentially Affected (Acres)

Vegetation Type	Total Sensitive Habitat (blue oak & riparian)	TOTAL	California Annual Grassland	Coast Live Oak	Blue Oak- Coast Live Oak Mix	Blue Oak	California Sycamore Riparian - Coast Live Oak Forest	California Sycamore Savanna	California Sycamore Forest	Central Coast Cottonwood-sycamore Riparian Forest	Narrow leaf Willow	Mixed Riparian	Blacksage	California Sagebrush - Blacksage	Chamise	Chamise - Blacksage	Mixed Scrub	Developed	Ruderal
Cachagua/Site 4	1.15	6.58	0.63	3.72	0.29	0.82						0.04		0.17	0.67	0.08	0.13	0.02	0.02
Cachagua	1.09	3.35		1.71	0.26	0.82									0.40	0.00	0.13	0.02	0.02
Site 4	0.07	3.23	0.63	2.01	0.03							0.04		0.17	0.26	0.08			
SHHA	1.10	2.50	0.20	0.73			0.02	0.05	0.12	0.70	0.21		0.12	0.10	0.12	0.07			0.07
Sleepy Hollow (San Clemente Drive)	0.22	1.68	0.24	0.83			0.00		0.12	0.10			0.12	0.07	0.12	0.07			0.01
Tularcitos	0.68	2.23	0.02	1.06			0.09		0.12	0.48			0.12	0.10	0.12	0.07			0.07

Table F-3. San Clemente Dam Alternate Access Routes Vegetation Types Traversed (Miles)

Vegetation Type	Total Sensitive Habitat (blue oak & riparian)	TOTAL	California Annual Grassland	Coast Live Oak Forest	Blue Oak- Coast Live Oak Mix	Blue Oak	California Sycamore Riparian - Coast Live Oak Forest	California Sycamore Savanna	California Sycamore Forest	Central Coast Cottonwood-sycamore Riparian Forest	Narrow leaf Willow	Mixed Riparian	Blacksage	California Sagebrush - Blacksage	Chamise	Chamise - Blacksage	Mixed Scrub	Developed	Ruderal
Cachagua/Site 4	0.96	4.65	0.50	2.29	0.24	0.70						0.02			0.56	0.21	0.11	0.02	
Cachagua	0.94	3.09		1.54	0.24	0.70									0.34	0.14	0.11	0.02	
Site 4	0.02	1.56	0.50	0.75								0.02			0.22	0.07			
Tularcitos	1.12	5.42	0.08	2.34			0.04	0.00	0.52	0.57			0.46	0.40	0.49	0.28			0.25
SHHA	1.29	5.60	0.23	2.20			0.01	0.02	0.52	0.63	0.10		0.46	0.40	0.49	0.28			0.25
Sleepy Hollow (San Clemente Drive)	0.93	5.31	0.60	2.20					0.52	0.41			0.46	0.29	0.49	0.28			0.05
Tularcitos	1.12	5.42	0.08	2.34			0.04	0.00	0.52	0.57			0.46	0.40	0.49	0.28			0.25

Special-status terrestrial species potentially impacted on this Alternative include California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC).[1]

Traffic & Safety

Tables F-4 and F-5 describe the access routes and summarize their deficiencies, potential impacts, and potential mitigation measures. High-volume truck traffic would have a substantial quality of life impact on residents of Sleepy Hollow, a community accessed from Carmel Valley Road via San Clemente Drive. San Clemente Drive and Center Court Place roadway geometrics are marginal and motor vehicle, pedestrian, bicycle safety on these routes would be impacted. There may be potential impacts to San Clemente Drive and Center Court Place pavements. Sections of this route could be widened, including existing segments of the dam access roads located south of Sleepy Hollow. Traffic control measures would be required during periods of concentrated truck traffic on segments where only one-way traffic operations are possible. San Clemente Drive and Center Court Place should not be used for moderate or high volume truck operations due to the traffic related impacts to the quality of life of the residents of Sleepy Hollow.

SLEEPY HOLLOW HOMEOWERS ASSOCIATION ROUTE

Air Quality & Noise

The proposed access road section in the vicinity of the residential zone is approximately one mile (1600 meters) in length and the nearest residential receptor for air quality and noise impacts is approximately 500 feet (150 meters) from the access road section. To simulate a line source, the road section was subdivided into 8 x 80 meter segments for a maximum aspect ratio of 10 to 1. A detailed methodology is contained in the appendix to this report. Estimated impacts are as follows:

Estimated emissions from project activity:

- NO_x 0.43 lb/day
- CO 0.10 lb/day
- PM_{10} 16 lb/day

[1] FT = federally listed as threatened
CSC = California state species of concern
CNPS 1B = categorized by the California Native Plant Society as Plants rare or endangered in California and elsewhere.

Table F-4: Description of Alternative San Clemente Dam Access Routes

ACCESS ROUTE	ROUTE SEGMENT		ROAD TYPE	APPROXIMATE LENGTH	DAILY TRAFFIC VOLUME	DESIGN CHARACTERISTICS: EXISTING: LANES	WIDTH (FEET)	SHOULDERS	SURFACE	FUTURE WITH PROJECT: LANES	WIDTH (FEET)	SHOULDERS	SURFACE
1. Cachagua													
	Carmel Valley Road	SHHA - Cachagua Rd	Public-Rural Highway	2.5 miles	1200-2100	2	20 to 24	Minimal	Asphalt Conc.	2	20 to 24	Minimal	Asphalt Conc.
	Cachagua Road	Carmel Valley Rd - Proposed Access Road	Public - Rural Collector	3.0 miles	760	2	16 to 24	Minimal	Asphalt Conc.	2	16 to 24	Minimal	Asphalt Conc.
	New Access Road	Cachagua Rd - Dam	Private - Dam Access	1.2 miles	-	Jeep Trail			Dirt	2	25	0	Gravel
	New Access Road	Cachagua Rd - Dam	Private - Dam Access	0.6 miles	-	N/A	N/A	N/A	N/A	2	25	0	Gravel
2. SHHA													
	SHHA Access Road	Carmel Valley Rd - San Clemente Dr.	Private - Dam Access	1.0 miles	-	N/A	N/A	N/A	N/A	2	22	0	Gravel
		Dam Access Road											
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	1-2	Minimum	0	Dirt	1-2	Minimum	0	Dirt
							for 1-way traffic				for 1-way traffic		
3. Sleepy Hollow													
	Carmel Valley Road	SHHA - San Clemente Dr.	Public-Rural Highway	0.6 miles	2100	2	20 to 24	Minimal	Asphalt Conc.	2	20 to 24	Minimal	Asphalt Conc.
	San Clemente Drive	Carmel Valley Road - Center Court Place	Private -Residential	0.4 miles	130-230	2	18	Minimal	Asphalt Conc.	2	18	Minimal	Asphalt Conc.
	Center Court Place	San Clemente Dr. - San Clemente Dr.	Private -Residential	1.0 miles	Minimal	1	12	0	Asphalt Conc./Dirt	1-2	12-22	0	Asphalt Conc./Gravel
		Dam Access Road											
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	1-2	Minimum	0	Dirt	1-2	Minimum	0	Dirt
							for 1-way traffic				for 1-way traffic		
4. Tularcitos													
	Carmel Valley Road	SHHA - Tularcitos Access Rd.	Public-Rural Highway	0.5 miles	2100	2	20 to 24	Minimal	Minimal	2	20 to 24	Minimal	Asphalt Conc.
	Tularcitos Access Road	Carmel Valley Rd - San Clemente Dr.	Private - Dam Access	1.1 miles		N/A	N/A	N/A	N/A	2	22	0	Gravel
		Dam Access Road											
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	1-2	Minimum	0	Dirt	1-2	Minimum	0	Dirt
							for 1-way traffic				for 1-way traffic		

1 Future design based upon designs prepared and/or proposed in conjunction with previous San Clemente Dam Seismic Retrofit planning and design studies.
2 Description of the access route begins at the Carmel Valley Road/SHHA Access Road intersection.
3 SHHA: Sleepy Hollow Homeowners Association.

Table F-5: Summary of Deficiencies, Potential Impacts and Mitigation for Access Routes

ACCESS ROUTE	DEFICIENCIES/POTENTIAL IMPACTS	POTENTIAL MITIGATION MEASURES
1. Cachagua	1. Deficient sight distance at the CVR/Cachagua Rd I/S.	1. Minor widening of Carmel Valley Road and/or re-grade the embankment located on the south side of CVR east of Cachagua Rd.
	2. Deficient sight distance at the Cachagua/New Dam Access Rd I/S.	2. Re-grade the embankment located on the east side of Cachagua Rd north of the existing jeep trail to improve sight distance.
	3. Poor horizontal alignment at several locations on Cachagua Rd.	3. Minor widening where possible; limit trucks on Cachagua Rd to single unit trucks with truck escort.
	4. Inadequate width for two-way travel by trucks.	4. Minor widening where possible; otherwise limit trucks on Cachagua Rd to single unit trucks with escort.
	5. Potential for pavement damage to Cachagua Rd.	5. Pavement maintenance as required and possible overlay.
	6. Adds construction related traffic to a rural collector road with poor geometrics increasing the potential for collisions.	6. No direct mitigation possible other than implementation of No. 3 above.
	7. Cachagua Road is not suitable for medium and high truck volume conditions.	
2. SHHA	1. Adds a new intersection to CVR.	1. Design the CVR/SHHA intersection to meet Caltrans and County of Monterey design standards including standards for sight distances. This will require the access road be located in the center of a moderate bend in CVR, at the location of three existing trees. Minor re-grading of the embankment located on the north side of CVR east of the access road will be required.
	2. The proposed design includes a single lane bridge over Tularcitos Creek and two horizontal curves immediately south of CVR.	2. This proposed design is marginal for low volume truck haul and dam access conditions. Traffic control may be necessary during active construction periods. Under medium and high truck volume conditions, widening to allow two-way operations is recommended.
	3. Route maintains existing dam access roads south of San Clemente Drive.	3. Significant improvement of the dam access roads is not anticipated.
	4. This route could potentially be used as an alternative to the Tularcitos Access Road for sediment disposal truck haul trips to Site 6R.	4. Widening to allow two-way operations is recommended if the road is used for the hauling of dam sediment. Also, left turn channelization and a right turn acceleration lane should be provided at the CVR/SHHA intersection with medium and high truck volume conditions.
3. Sleepy Hollow	1. Adds construction traffic to a private road used to access a residential subdivision.	1. No mitigation possible.
	2. Marginal roadway geometrics including widths, shoulders, sight distances and facilities for pedestrians and bicyclists.	2. Minor widening where possible. Traffic control and truck escort required during low truck volume construction activities. Construction of a separate path for pedestrians and bicyclists recommended including a pedestrian/bicyclist bridge over Tularcitos Creek.
	3. Route maintains existing dam access roads south of San Clemente Drive.	3. Significant improvement of the dam access roads is not anticipated.
	4. Potential for pavement damage to San Clemente Drive and Center Court Place.	5. Pavement maintenance as required and possible overlay.

Table F-5: Summary of Deficiencies, Potential Impacts and Mitigation for Access Routes

ACCESS ROUTE	DEFICIENCIES/POTENTIAL IMPACTS	POTENTIAL MITIGATION MEASURES
	5. This access is not suitable for medium and high truck volume conditions.	
4. Tularcitos	1. Adds a new intersection approach leg to CVR, but at the location of an existing intersection.	1. Design the CVR/SHHA intersection to meet Caltrans and County of Monterey design standards.
	2. The proposed design includes a single lane bridge over Tularcitos Creek and two horizontal curves immediately south of CVR.	2. This proposed design is marginal for low volume truck and dam access conditions. Traffic control may be necessary during active construction periods. Under high volume conditions, including sediment haul operations to Site 6R, widening to allow two-way operations is recommended.
	3. Route maintains existing dam access roads south of San Clemente Drive.	3. Significant improvement of the dam access roads is not anticipated.

Notes:
CVR: Carmel Valley Road.

Maximum incremental pollutant concentrations over background:

- NO_x 0.27 µg/m^3
- CO 0.06 µg/m^3
- PM_{10} 4.1 µg/m^3

Attenuated noise levels from project activity:

- 67 dBA @ 150 meters

Aquatic Biology & Stream Crossings

This access route has three stream crossings. Two occur at the existing bridge and concrete ford on the Carmel River, and one new crossing would be constructed at Tularcitos Creek. These have the potential to affect steelhead. There may be a possible benefit to steelhead in replacing the concrete ford.

Terrestrial Biology

A total of 2.5 acres are potentially affected by this Alternative, including 1.10 acres of sensitive habitat (Table F-2). (Acreages of the existing roads have been subtracted from the potentially affected vegetation acreages.) For comparison, habitat miles traversed by each Alternative are shown in Table F-3.

Special-status terrestrial species potentially impacted on this Alternative include California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Cooper’s hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Monterey dusky-footed woodrat nests have been reported from this reach of Tularcitos Creek.

Traffic & Safety

Tables C-4 and C-5 describe the access routes and summarize their deficiencies, potential impacts, and potential mitigation measures. This access route adds a new intersection to Carmel Valley Road. The intersection would need to be designed to appropriate County of Monterey design standards. Under low construction traffic conditions, left and right turn channelization would probably not be required at the Carmel Valley/SHHA Access Route intersection, although the intersection should be designed to serve the turning requirements of large trucks that will use the intersection. Under moderate and high traffic volume conditions, left turn and right turn channelization would be required at the intersection. The SHHA route would use only private roads south of Carmel Valley Road. Therefore, potential traffic related impacts to existing residential streets and residential quality of life would be avoided. Traffic control measures would be required during periods of concentrated truck traffic on segments where only one-way traffic operations are possible. This would primarily occur on sections of the existing dam access roads located south of Sleepy Hollow.

TULARCITOS ROUTE

Air Quality & Noise

The proposed access road section in the vicinity of the residential zone is approximately 0.95 mile (1520 meters) in length and the nearest residential receptor for air quality and noise impacts is approximately 200 feet (60 meters) from the access road section. To simulate a line source, the road section was subdivided into 8 x 80 meter segments for a maximum aspect ratio of 10 to 1. A detailed methodology is contained in the appendix to this report. Estimated impacts are as follows:

Air emissions from project activity:

- NO_x 0.41 lb/day
- CO 0.09 lb/day
- PM_{10} 15 lb/day

Maximum incremental pollutant concentrations over background:

- NO_x 0.27 µg/m^3
- CO 0.06 µg/m^3
- PM_{10} 4.1 µg/m^3

Attenuated noise levels from project activity:

- 75 dBA @ 60 meters

Aquatic Biology & Stream Crossings

This access route has three stream crossings. Two occur at the existing bridge and concrete ford on the Carmel River, and one new crossing would be constructed at

Tularcitos Creek. These have the potential to affect steelhead. There may be a possible benefit to steelhead in replacing the concrete ford.

TERRESTRIAL BIOLOGY

A total of 12.23 acres are potentially affected by this Alternative, including 0.68 acre of sensitive habitat (Table F-2). (Acreages of the existing roads have been subtracted from the potentially affected vegetation acreages.) For comparison, habitat miles traversed by each Alternative are shown in Table F-3.

Special-status terrestrial species potentially impacted on this Alternative include California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Monterey dusky-footed woodrat nests have been reported from this reach of Tularcitos Creek.

Traffic & Safety

Tables F-4 and F-5 describe the access routes and summarize their deficiencies, potential impacts, and potential mitigation measures. This access route adds a new intersection approach to Carmel Valley Road, at an existing intersection of a private residential access road and Carmel Valley Road. The intersection would need to be designed to meet County of Monterey intersection design standards. As with the SHHA route, this route would use private roads between Carmel Valley Road and the dam. Therefore, there would be no traffic related impacts to the quality of life of any residential development. The impact to traffic turning between Carmel Valley Road and the existing residential access road/driveway located on the north side of Carmel Valley Road at the intersection of the Tularcitos Access Route with Carmel Valley Road should be minimal under low volume construction traffic conditions. There would be sufficient capacity at the intersection to serve the low volume construction traffic as well as the traffic generated by the residential development served by the residential access road/driveway. Under moderate and high traffic volume conditions, left turn and right turn channelization would be required at the intersection.

CACHAGUA ROUTE

Air Quality & Noise

The proposed access road section in the vicinity of the residential zone is approximately 1.25 miles (2000 meters) in length and the nearest residential receptor for air quality and noise impacts is approximately 500 feet (150 meters) from the access road section. To simulate a line source, the road section was subdivided into 8 x 80 meter segments for a maximum aspect ratio of 10 to 1. A detailed methodology is contained in the appendix to this report. Estimated impacts are as follows:

Air emissions from project activity:

- NO_x 0.53 lb/day
- CO 0.13 lb/day
- PM_{10} 20 lb/day

Maximum incremental pollutant concentrations over background:

- NO_x 0.34 µg/m^3
- CO 0.08 µg/m^3
- PM_{10} 5.1 µg/m^3

Attenuated noise levels from project activity:

- 67 dBA @ 150 meters

Aquatic Biology & Stream Crossings

This access route has no stream crossings. No steelhead impacts are expected.

Terrestrial Biology

A total of 6.58 acres are potentially affected by this Alternative, including 1.15 acres of sensitive habitat (Table F-2). However, most of this sensitive habitat is blue oak woodland along Cachagua Road. If road improvements along this road are limited in extent, then much of this acreage may not be affected by the project. The affected acreage from Cachagua Road to the reservoir includes 0.07 acre of sensitive habitats in a total affected acreage of 3.23 acres. (Acreages of the existing roads have been subtracted from the potentially affected vegetation acreages.) For comparison, habitat miles traversed by each Alternative are shown in Table F-3.

Special-status terrestrial species potentially impacted on this Alternative include California tiger salamander (FT, CSC), California red-legged frog (FT, CSC), southwestern pond turtle (CSC), Carmel Valley malacothrix (CNPS 1B), Cooper's hawk (CSC), yellow warbler (CSC), and Monterey dusky-footed woodrat (CSC). Although habitats for the California red-legged frog and western pond turtle are limited on this route, it may provide more potential habitat for the California tiger salamander than the other routes. Unlike the other Alternatives, no focused wildlife surveys have been conducted on this route.

TRAFFIC & SAFETY

Tables F-4 and F-5 describe the access routes and summarize their deficiencies, potential impacts, and potential mitigation measures. Cachagua Road has poor horizontal and vertical alignments. Cachagua Road is 18 to 20 feet in width, with some sections as narrow as 16 feet. Sight distance at some locations on Cachagua Road is limited due to horizontal and vertical curvatures. Cachagua Road motor vehicle, pedestrian, and bicycle safety would be impacted by construction-related traffic. Traffic control will be required at locations where two-way traffic cannot be provided and road widening is not feasible. Sight distance is restricted at the Carmel Valley Road/ Cachagua Road intersection and at the Cachagua Road/Jeep Trail/Dam Access Road intersection. Embankment re-grading may be required at these locations to improve sight distance. Construction related trucking operations may damage the Cachagua Road pavement. Under moderate and high levels of construction truck traffic, impacts to the Cachaqua Road pavement structure very likely would be significant. An extensive traffic control plan and extensive roadway improvements would be required if Cachagua Road were to be used by moderate and high levels of construction traffic.

1.4 RANKING

Table F-6 provides a comparative ranking of the access route Alternatives. Each row of the table presents the criteria used in environmental constraints analysis; the table columns present each of the routes evaluated. Each of the four route Alternatives routes are ranked (1-4) for each of the criteria. In addition, the table notes whether the constraints of the route Alternative are considered “low”, “medium”, or “high.”

- “Low” constraints are considered not to present important environmental concerns.
- “Medium” constraints are considered to present environmental concerns of some importance, which may require mitigation.
- “High” constraints are considered to present important environmental concerns, and to require mitigation.

The ranking does not imply anything about the constraints an access route may have. Ranking simply distinguishes among the four routes on an ordinal scale. For example, two routes may have the same level of constraints but one may be ranked above the other. At the bottom of the table, the simple sum of ranking scores is given, and the Core Team decision (to eliminate or select the Alternative) is explained.

Air Quality

The Monterey Bay Unified Air Pollution Control District (MBUAPCD, District) is responsible for air monitoring, permitting, enforcement, long-range air quality planning, regulatory development, education and public information activities related to air pollution. Ambient air quality background data was obtained from the District for use in the screening analysis.

Table F-6: Access route screening environmental constraints ranking

Ranking	Access Route			
	Cachagua	**SHHA**	**Sleepy Hollow**	**Tularcitos**
Air Quality	2. Medium constraints (PM_{10} maximum concentration is 9% of background)	1. Medium-low constraints (PM_{10} maximum concentration is 7% of background)	1. Medium-low constraints (PM_{10} maximum concentration is 7% of background)	1. Medium-low constraints (PM_{10} maximum concentration is 7% of background)
Noise	1. Medium-high constraints (dBA is 181% of background)	1. Medium-high constraints (dBA is 181% of background)	2. High constraints (dBA is 202% of background)	2. High constraints (dBA is 202% of background)
Roads & Bridges	3. High constraints (Potential impacts to pavement structure.)	1. Low constraints (New access road avoids use of existing public and private residential roads for dam access.)	2. High constraints (Potential impacts to pavement structure.)	1. Low constraints (New access road avoids use of existing public and private residential roads for dam access.)
Traffic & Safety	3. High constraints (Adds construction traffic to a rural road with poor roadway design features.)	1. Low constraints (New access road avoids use of existing public and private residential roads for dam access.)	2. High Constraints (Adds construction traffic to a private residential road with minimum roadway design features including no facilities for pedestrians and bicyclists and a one-lane bridge.)	1. Low Constraints (New access road avoids use of existing public and private residential roads for dam access.)
Terrestrial Biology & Stream Crossings	3. High constraints (more undisturbed habitat and habitat for sensitive species)	4. High constraints (most undisturbed riparian habitat and habitat for sensitive species)	1. Low constraints (least potentially affected habitat acreage and sensitive species)	2. Medium constraints (potentially affected habitat and sensitive species)
Outcome of Ranking & Selection	12 points (required to support the Site 4R sediment transport and disposal selection for those dam alternatives that move sediment)	8 points (eliminated due to terrestrial impacts)	8 points (eliminated for alternatives with heavy traffic requirements due to traffic, roads, and safety impacts, but retained for the dam removal alternative)	7 points (selected for the dam thickening, dam notching and Carmel River reroute alternatives)

The proximity of the Sleepy Hollow and Tularcitos routes to the nearest receptor is about 60 meters, while the SHHA and Cachagua routes nearest-receptor proximity is about 150 meters, judging by maps and aerial photos. The residential sections of the Sleepy Hollow, Tularcitos, and SHHA routes are all about one mile (1600 meters) in overall length, while the Cachagua route is slightly longer, about 1.25 miles (2000 meters). Since the SHHA route combines a shorter emitting distance (1600 meters) and a longer receptor distance (150 meters), it has the apparent lowest air quality impact among the four Alternatives, on a Gaussian basis. This is also true for simple noise attenuation.

Ambient air quality background levels used for all of the routes are as follows (MBUAPCD air monitoring station name, year, averaging time):

- NO_x 266 µg/m^3 (Salinas #3, 2004, max 1-hour)
- CO 4257 µg/m^3 (Salinas Natividad Road #2, 1996, max 1-hour)
- PM_{10} 57 µg/m^3 (Carmel Valley-Ford Road, 1999, max 24-hour)

1 – Sleepy Hollow Route, SHHA Route, and Tularcitos Route

Rationale: This rating is based on the result that each of these routes have the same estimated ground level pollutant concentration increment for criteria pollutants (NO_X, CO, PM_{10}). The estimated PM_{10} maximum concentration increment is about 7% of background in all three cases. All other pollutant impacts are small compared to background.

2 – Cachagua Route

Rationale: This route has a marginally greater estimated PM_{10} concentration increment, about 9% of background. Estimated ground level pollutant concentration increments for criteria pollutants (NO_X, CO, PM_{10}) are also slightly higher, but still small compared to background.

Noise

During the construction phase of the dam retrofit, haul truck traffic noise level will vary depending on the quantities and frequency of trucks which operate at any particular time. A maximum noise level for typical trucks in decibels (dBA) was correlated from industrial hygiene and noise measurement reference tables for characteristic industrial noise sources at reference distances.

Noise background in the residential zone:

- 37 dBA @ 100 m (RDEIR Table 4.7-2, 1997)

1 – Cachagua and SHHA Routes

Rationale: These routes both increase noise levels to 180% of background, from 37 to 67 dBA for a receptor distance of 500 feet (150 meters).

2 – Sleepy Hollow and Tularcitos Routes

Rationale: These routes have marginally greater noise impacts, about 200% of background, from 37 to 75 dBA for a receptor distance of 200 feet (60 meters).

Aquatic Biology & Stream Crossings

1 – Cachagua Route

Rationale: This route has no stream crossings and no steelhead impacts.

2 – SHHA Route, Sleepy Hollow Route and Tularcitos Route

Rationale: These routes each have two existing stream crossings, a new crossing at Tularcitos Creek, and potential steelhead impacts.

Terrestrial Biology

1 – Sleepy Hollow Route

Rationale: This Alternative has the lowest total acreage of potentially affected habitat, and the lowest acreage of sensitive habitat (unless impacts from the Cachagua Road Alternative are limited to the off-road section).

2 – Tularcitos Route

Rationale: Based on the acreage of habitat potentially affected, this Alternative is rated second.

3 – Cachagua Route

Rationale: Most potential impacts to blue oaks along Cachagua Road can be avoided if roadwork is limited, and the extent of sensitive habitat between Cachagua Road and the reservoir is small. The probable lack of impacts to sensitive habitats on this section partly offsets the acreage of undisturbed wildlife habitat potentially affected. Therefore, this Alternative is rated third.

4 – SHHA Route

Rationale: This access route has the largest acreage of potentially affected sensitive habitat (assuming that impacts to all or most of the blue oaks adjacent Cachagua Road would be avoided), and the second largest acreage of total habitat affected.

Traffic & Safety

Table C-7 presents a summary impact rating and ranking of the access routes for traffic concerns.

1 – SHHA and Tularcitos Routes

Rationale: These routes both have low constraints for traffic and safety. They both entail new access roads that would be private roads. The use of existing public and private residential roads for dam access would be avoided.

Table F-7: Traffic Ranking of San Clemente Dam Alternative Access Routes

ACCESS ROUTE	ROUTE SEGMENT		ROAD TYPE	APPROXIMATE LENGTH	DAILY TRAFFIC VOLUME	IMPACT RATING: IMPACT TO RESIDENTIAL DEVELOPMENT: DIRECT	IMPACT RATING: IMPACT TO RESIDENTIAL DEVELOPMENT: INDIRECT	IMPACT RATING: ROADWAY GEOMETRICS	IMPACT RATING: PAVEMENT IMPACTS	ACCESS ROUTE RATING (RATING x SEGMENT LENGTH): IMPACT TO RESIDENTIAL DEVELOPMENT: DIRECT	ACCESS ROUTE RATING (RATING x SEGMENT LENGTH): IMPACT TO RESIDENTIAL DEVELOPMENT: INDIRECT	ACCESS ROUTE RATING (RATING x SEGMENT LENGTH): ROADWAY GEOMETRICS	ACCESS ROUTE RATING (RATING x SEGMENT LENGTH): PAVEMENT IMPACTS	TOTAL SCORE
1. Cachagua														
	Carmel Valley Road	SHHA Access - Cachagua Rd	Public-Rural Highway	2.5 miles	1200-2100	0	0	2	2	0	0	5	5	10
	Cachagua Road	Carmel Valley Rd - Proposed Access Road	Public - Rural Collector	3.0 miles	760	0	5	5	4	0	15	15	12	42
	New Access Road	Cachagua Rd - Dam	Private - Dam Access	1.2 miles	-	0	0	0	1	0	0	0	1	1
	New Access Road	Cachagua Rd - Dam	Private - Dam Access	0.6 miles	-	0	0	0	1	0	0	0	1	1
										0	15	20	19	54
2. SHHA														
	SHHA Access Road	Carmel Valley Rd - San Clemente Dr. Dam Access Road	Private - Dam Access	1.0 miles	-	0	0	1	1	0	0	1	1	2
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	0	0	5	1	0	0	15	3	18
										0	0	16	4	20
3. Sleepy Hollow														
	Carmel Valley Road	SHHA Access - San Clemente Dr.	Public-Rural Highway	0.6 miles	2100	0	0	2	2	0	0	1	1	2
	San Clemente Drive	Carmel Valley Road - Center Court Place	Private -Residential	0.4 miles	130-230	5	5	4	4	2	2	2	2	7
	Center Court Place	San Clemente Dr. - End	Private -Residential	0.2 miles	Minimal	5	5	4	3	1	1	1	1	3
	New Access Road	End of Center Court Place to Dam Access Road	Private - Dam Access	0.5 miles	-	0	0	0	1	0	0	0	1	1
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	0	0	5	1	0	0	15	3	18
										3	3	19	7	32
4. Tularcitos														
	Carmel Valley Road	SHHA Access - Tularcitos Access Rd.	Public-Rural Highway	0.5 miles	2100	0	0	2	2	0	0	1	1	2
	Tularcitos Access Road	Carmel Valley Rd - San Clemente Dr. Dam Access Road	Private - Dam Access	1.1 miles		0	0	1	1	0	0	1	1	2
	Dam Access Road	San Clemente Dr - Dam	Private - Dam Access	2.0-3.0 miles	-	0	0	5	1	0	0	15	3	18
										0	0	17	5	22

Notes:

1. A high score indicates traffic related environmental impacts and constraints are high; a low score indicates that traffic related environmental impacts and constraints are low.
2. Rating Scale:
   0 = No impacts anticipated.
   1 = Very low level impacts; impacts can be mitigated.
   2 = Low level impacts; impacts can be mitigated.\
   3 = Moderate level impacts; impacts can be mitigated
   4 = High level/significant impacts; impacts can be mitigated.
   5 = High level/significant impacts; impacts probably can not be mitigated.
3. Direct Residential Impact: Alternative adds construction related traffic to a local or collector road with residential homes directly fronting onto and accessed from the segment.
4. Indirect Residential Impact: Alternative adds construction related traffic to a segment of a local residential or collector road.
5. Ratings based on a low volume of truck traffic.

2 – Sleepy Hollow Route

Rationale: This route has high constraints. It would add traffic to a rural residential road with poor roadway design features traversing a residential community.

3 – Cachagua Route

Rationale: This route has high constraints. It would add traffic to a rural road, 3 miles in length, with poor roadway design features.

Appendix G

SAN CLEMENTE DAM SCREENING OF SEDIMENT DISPOSAL SITES

DRAFT – PRELIMINARY

M E M O R A N D U M

MWH
MONTGOMERY WATSON HARZA

To:	John Klein and Fred Feizollahi (Cal-Am Water) Dave Gutierrez (DSOD), Jeremy Pratt (Entrix)	**Date:**	March 10, 2005
From:	Alberto Pujol and Dan Wade	**Ref.:**	1004231.010106
Subject:	San Clemente Dam Screening of Sediment Disposal Sites		

BACKGROUND

San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards of sediment (MEI, 2003). The sediment consists of sandy gravel, gravelly sand, sand, silty sand, and sandy silt. The finer-grained sediment is located nearest to the dam in both arms of the reservoir, and the coarser (more gravelly) materials are encountered in the upper reaches of the Carmel River arm of the reservoir.

MWH was asked to perform a screening analysis of potential sediment disposal sites. The purpose of the screening analysis is to provide engineering input to the alternatives analysis being performed by Entrix for the EIR/EIS and to recommend selection (based on engineering considerations) of a potential sediment disposal site for use with the dam removal alternative and a potential sediment disposal site (the same or a different one) for use with the dam notching alternative. Under a separate scope Entrix will perform environmental reviews of the sites and develop the appropriate mitigation measures.

The required sediment disposal capacity for the dam removal alternative is approximately 2.5 million cubic yards. For the dam notching alternative, the estimated volume of sediment to be removed is approximately 1.5 million cubic yards (MEI, 2005).

This draft memorandum presents the results of the screening analysis. The presentation is organized as follows:

- Potential sediment disposal sites are described.
- Potential sediment excavation methods are summarized.
- Reasonable sediment removal rates and the resulting schedule for removal of sediments are outlined.
- Potential sediment transport modes are described.
- Potential power supply sources for sediment transport are discussed.
- Typical activities related to sediment disposal site preparation and construction operations are described.

- Land ownership considerations are briefly summarized.
- Comparative sediment disposal cost estimates are summarized.
- An assessment is made of the various sediment disposal alternatives.

POTENTIAL SEDIMENT DISPOSAL SITES

Previous studies by DWR identified potential sediment disposal Sites 1, 2A through 2E, 3, 4, 5 and 6 (DWR, 2002). For this assessment the following potential sites were evaluated:

- The site near the Carmel Valley Filter Plant (referred to as Site 1 in previous project documentation), in combination with a site across the Carmel River from the Filter Plant if additional capacity is required. This latter site (Site 2A) is occupied by the Stone Pine horse track, horse stables, and a barn.
- A typical upstream canyon site in the vicinity of the site previously designated as Site 4.
- An off-site disposal site within Chupines Ranch in the vicinity of the site previously designated as Site 6.

The general locations of these sites are shown on Figure 1. A brief site visit of the four sites was performed on February 8, 2005. A summary description of each site is provided below:

Site 1

Site 1, located approximately 2,400 feet northeast of the Carmel Valley Filter Plant, appears to be predominantly formed by an alluvial terrace just south of the confluence of the Carmel River and Tularcitos Creek. The site is bound by the Carmel River to the west and by a narrow rocky knoll along the northeast side that separates the site from the Tularcitos Creek channel. The site area is relatively level, with ground at elevations 340 to 345 feet approximately. During our visit, we visually estimated the ground surface to be approximately 8 feet above the Carmel River water level. On its southeast side, the sediment pile would abut a higher terrace, with ground at elevations 405 to 410 feet approximately, where an estate and tennis courts are located.

Existing access to Site 1 is via San Clemente Drive and the Carmel Valley Filter Plant. A dirt road along the western edge of the site provides access to two Cal-Am wells. While it appears that the wells would not be within the footprint of the sediment fill, a power line and miscellaneous piping would need to be relocated.

Use of Site 1 as a sediment disposal or transfer site would require construction of a new access road between the site and Carmel Valley Road. The new road would cross Tularcitos Creek over a new bridge and intersect Carmel Valley Road about 800 feet west of San Clemente Drive. The road would tentatively consist of a 22-foot-wide graded section with a 3-foot drainage ditch, and surfaced with 6 inches of Class II base rock.

A plan of Site 1 is shown on Figure 2, and a capacity curve is shown on Figure 3. The footprint area is approximately 20 acres. The maximum practical level of the sediment pile is estimated to be at approximately elevation 400 feet, resulting in a maximum capacity of about 1.2 million cubic yards of sediment. This maximum practical level is predicated on the top of the sediment pile being only a few feet below the terrain where the aforementioned estate is located.

Site 2A

Site 2A is located approximately 2,800 north of the Carmel Valley Filter Plant, on the west side of the Carmel River and across the river from Site 1. The sediment pile would occupy a level area that may also be an alluvial terrace deposit. The site lies at elevations 340 to 345 feet approximately. At its north and south ends, the site is bound by two flat promontories that jut into the river valley. The northern promontory is developed and is relatively level at elevation 390 to 395 feet. The southern promontory lies predominantly at elevation 425 feet approximately. Along the west side, the sediment pile would abut a steep slope that crests at about elevation 490 feet.

Site 2A contains four horse stables, a barn, a horse track, and a looping dirt road. These facilities would need to be removed and could potentially be relocated to the top of the sediment pile at the completion of sediment placement operations.

Existing access to Site 2A is via a gated entrance. Placement of sediment at Site 2A would require the construction of a suspended span across the Carmel River, between Sites 1 and 2A. The span would support the sediment delivery equipment, whether conveyor belt or pipelines. The existing driveway could conceivably be used to provide access for construction personnel and for the equipment in site preparation activities.

A plan of Site 2A is shown on Figure 2, and a capacity curve is shown on Figure 3. The footprint area is approximately 17 acres. The maximum practical level of the sediment pile is estimated to be at approximately elevation 425 feet. At this elevation, the top of the pile would create a reasonably level surface at the same level as the southern promontory and present the potential for re-establishing the horse stables and horse track at the higher elevation. As outlined, the pile has a maximum capacity of about 1.3 million cubic yards of sediment.

The toe-to-toe distance between the two sediment piles at Sites 1 and 2A is approximately 420 feet. Hydraulic modeling of the Carmel River and Tularcitos Creek during selected flow events would need to be performed to verify that the sediment piles at Sites 1 and 2A would not significantly impact hydraulic conditions upstream or downstream of the sites. Just downstream of the sediment piles and of the confluence with Tularcitos Creek, the Carmel River narrows down to less than 250 feet. It is believed that this relatively narrow gorge would control flood water levels in this area and that the sediment piles would not have a significant impact on flood water levels downstream of the site. During extreme flood events, the sediment piles might cause a minor rise in flood water levels in the immediate vicinity of the sediment piles (upstream of the gorge). This effect would have to be evaluated by hydraulic modeling.

Site 4R

Site 4R is located in a relatively steep, undeveloped, forested ravine approximately 3,500 feet east of San Clemente Reservoir. This ravine is located immediately south of another ravine where Site 4 was located during previous sediment disposal studies (DWR, 2002). Site 4R is preferred over Site 4 because of the following reasons:

- The previously identified Site 4 is located in a very narrow, forested ravine that carries a significant seasonal stream and with very steep side slopes between the site and the reservoir.

- The ravine where Site 4R is located does not appear to flow other than during storm events and is somewhat wider and the hillside slopes between the reservoir and Site 4R are flatter and more accessible than those leading to Site 4.

Based on observations made during the February 8 site visit, the location for this potential sediment pile site was thus relocated from Site 4 to Site 4R.

Existing access to the ravine where Site 4R would be located is via a jeep trail that begins at the Cachagua Grade. The jeep trail would need to be improved significantly to enable the mobilization of construction equipment to the site and the reservoir.

A plan of Site 4R is shown on Figure 4, and a capacity curve is shown on Figure 5. As shown on Figure 5, the maximum capacity of the site is undetermined but is well in excess of the estimated required volume of 2.5 million cubic yards. The toe of the sediment pile would be located at approximately elevation 920 feet. The top of the sediment pile would be at about elevation 1,150 feet for complete dam removal or at about elevation 1,110 feet for a dam notching alternative. The footprint area of the sediment pile would be approximately 23 acres. The watershed area tributary to the sediment pile site is approximately 252 acres.

Site 6R

Site 6R is located in a relatively steep, undeveloped, ravine approximately 2.1 miles northeast of Carmel Valley Road on the Chupines Creek valley. This ravine is located immediately west of where Site 6 was located during previous sediment disposal studies. Site 6R is preferred over Site 6 because of the following reasons:

- Site 6 was located across Chupines Creek, a significant permanent stream with a drainage area of approximately 14 square miles, and would require major water diversion works. Site 6R, on the other hand, occupies a small box canyon that does not appear to flow other than during storm events.

- During our February 8 site visit, the landowner, Mr. Bob Wilson, indicated potential willingness to dedicate the Site 6R box canyon to sediment disposal but expressed adamant opposition to the use of Site 6.

Based on observations made during the February 8 site visit, the location for this potential sediment pile site was thus relocated from Site 6 to Site 6R.

Existing access to the ravine where Site 6R would be located is via a dirt road that begins at Carmel Valley Road and serves Chupines Ranch. This road would need to be improved to enable the mobilization of construction equipment to the site.

A plan of Site 6R is shown on Figure 6, and a capacity curve is shown on Figure 7. As shown on Figure 7, the maximum capacity of the site is undetermined but exceeds the estimated required volume of 2.5 million cubic yards. The toe of the sediment pile would be located at approximately elevation 800 feet. The top of the sediment pile would be at about elevation 1,020 feet for complete dam removal or at about elevation 965 feet for a dam notching alternative. The footprint area of the sediment pile would be approximately 23 acres. The watershed area tributary to the sediment pile site is approximately 118 acres.

Other Sites Previously Identified

Other potential sediment disposal sites identified in a previous mapping study (DWR, 2002) include those referred to as Sites 2B through 2E, 3 and 5. These sites were only briefly considered and dismissed from further evaluation for purposes of this screening study. Sites 2B through 2E appear on the map to be small and of limited (and insufficient) capacity. Site 3 is located on a box canyon upstream of the dam and is thus somewhat comparable to Site 4R. However, Site 3 is much farther from the reservoir and at a much higher elevation than Site 4R. Therefore, other factors being equal, disposal of sediment at Site 3 would be significantly costlier than at Site 4R. Lastly, during our site visit we observed the area depicted as Site 5. This area consists of a steep slope overlooking Carmel River and appears to be unsuitable for sediment storage. Therefore, Site 5 was dismissed from consideration as well.

In a separate memorandum, MWH evaluated the potential for commercial (off-site) use of the sediment from San Clemente Reservoir (MWH, 2005). It was concluded that a feasible approach for cost effective development of mineral resources in the sediment now stored in the reservoir does not exist at this time. While the sediment could be processed into products that have commercial value, this value is significantly and completely offset by the incremental processing and transportation costs involved. Therefore, it was concluded that there is not a positive benefit-cost ratio for selling the sediment based on current market conditions.

SEDIMENT EXCAVATION METHODS

Sediment excavation methods considered for this analysis include (1) mechanical excavation using conventional earthmoving equipment, and (2) hydraulic dredging using a suction dredge. These are described below.

Mechanical Excavation

Excavation of sediment above the water table would likely be performed using self-loading scrapers or similar self-propelled excavating equipment. The scrapers would transport the material to a centralized stockpile area within the reservoir area, where the material would be allowed to drain further. The exact location of the centralized stockpile area would depend on the final destination of the sediment. If the sediment is to be disposed at either Site 1/2A or 6R, the stockpile area would be adjacent to the right abutment of the dam; from there, the material would be loaded to a conveyor as conceptually shown on Appendix D of Entrix (2004). On the other hand, if the material is to be disposed at Site 4R, the stockpile would be located at the mouth of the ravine where Site 4R is located; from there, the material would be loaded onto trucks or a conveyor for transport to Site 4R.

Both the Carmel River and the San Clemente Creek would be diverted around the active areas of excavation during the construction season. It is assumed that a sheetpile cutoff would be used to divert each stream. The Carmel River would be diverted via a 36-inch pipeline with capacity for about 50 cubic feet per second (cfs). The San Clemente Creek would be diverted via an 18-inch pipeline. The pipelines would discharge to the existing low-level outlet works or existing drawdown ports at San Clemente Dam. Prior to commencing excavation operations, the reservoir water surface would be drawn down by gravity to the invert of the drawdown ports at elevation 514 feet and then further lowered by pumping to the lowest level possible, i.e., approximately elevation 495 feet. Water would be discharged to the river either by pumping into the outlet works or the drawdown ports.

Water originating from local precipitation, springs, and/or seepage through the river diversion structures would seep into the construction area bound on the upstream end by the diversion structures and on the downstream end by the dam. Excavation operations would be managed to promote pre-drainage of the sediments ahead of the excavation. As the level of the sediment is lowered, drainage trenches would be excavated draining to low points, from where water would be removed. Water within the construction area would be turbid due to the earthmoving operations. The reservoir itself would be used as a desilting basin during the construction season. Excess water from within the reservoir would need to be treated to remove turbidity and would be discharged to the river.

Pre-drainage would likely become ineffective in the silt deposits that exist below about elevation 486 feet within 600 to 900 feet of the dam (see Figures 3.5a and 3.5.b in Mussetter, 2003). These materials would need to be mucked out using large hydraulic excavators, draglines, or clamshells working from firm ground. As described above, the excavated material would be placed in a drying/staging area in the immediate vicinity of the point of excavation, from where it would be excavated again and either loaded onto trucks or transported to the conveyor loading facility.

At the end of the construction season, the initial storms that exceed the diversion capacity would fill the reservoir, after which time the diversion pipe would be disconnected and the river flow through the reservoir re-established.

For the second and subsequent construction seasons, before re-starting the sediment excavation operation, the water level in the reservoir would need to be drawn down again. This seasonal initial dewatering activity is assumed to be needed regardless of the sediment disposal site selected and is therefore not considered a discriminatory factor with regard to the screening of sediment disposal sites.

Hydraulic Excavation

Hydraulic dredging would be accomplished using a portable dredge similar to an Ellicott 1170 Series “Dragon” model (see Ellicott product information at www.dredge.com), discharging to an 18-inch-diameter slurry pipeline. Portability of the dredge is necessary due to the constrained site access conditions, which limit the size of the dredge that can be used. The dredge would be mounted on a barge, with a cutter head and a dredge pump powered by a diesel motor. For this dredge size, total diesel power requirements at the barge are about 1,800 HP. The barge would move around the reservoir by using winches and anchors. A minimum operating draft of 4 feet of water would be needed.

A typical hydraulic dredge operation produces slurry with about 20 percent of solids by weight. In order to achieve reasonable sediment removal rates (discussed in the next section), this solids concentration implies an average water demand for sediment transport of over 20 cfs, which would not be available during the majority of the construction season. Therefore, water recycling is assumed to be required in order to make slurry transport a technically feasible option. Water recycling would involve (1) lining the sediment disposal site with a membrane to minimize water losses, (2) decanting water from the slurry at the disposal site by appropriate design and operation of the disposal cell, (3) installing and operating a water return pump station and pipeline from the sediment disposal site to the reservoir, and (4) possibly using a desilting basin immediately adjacent to the reservoir to reduce the turbidity of the recycled water prior to returning it to the reservoir.

Both the Carmel River and the San Clemente Creek would be diverted around the active areas of excavation during the construction season. It is assumed that a sheetpile cutoff would be used to divert each stream. The Carmel River would be diverted via a 36-inch pipeline with capacity for about 50 cfs. The San Clemente Creek would be diverted via an 18-inch pipeline. The pipelines would discharge to the existing low-level outlet works or existing drawdown ports at San Clemente Dam. Prior to commencing excavation operations, the reservoir water surface would be drawn down by gravity to just below the invert of the spillway at elevation 525 feet. The dredge would then be launched from a staging area near the dam. Dredging would progress from the dam toward upstream. Maximum digging depth would be in the order of 40 feet. Based on the available reservoir profile, it appears that the barge could only travel to about one mile upstream of the dam. The sediment accumulated between the one-mile station and the very tail end of the reservoir (about one-half mile farther upstream) would need to be pushed by earthmoving equipment to the one-mile station to place it within reach of the barge.

The removal of sediment from the reservoir would gradually increase the reservoir volume and tend to gradually lower the reservoir level as the construction season proceeds. The volumes to be dredged each season would need to be carefully planned based in part on the anticipated trend in reservoir water level during the construction season. Water within the construction area, bound on the upstream end by the diversion structures and on the downstream end by the dam, would be turbid due to the dredging and water recycling operations. The reservoir itself would be used as a desilting basin during the construction season.

At the end of the first construction season, the initial storms that exceed the diversion capacity would fill the reservoir, after which time the diversion pipe would be disconnected and the river flow through the reservoir re-established.

At the beginning of the second season, the reservoir level would again be drawn down to the crest of the overflow spillway. Taking advantage of the initially high reservoir level, the barge would travel as far upstream as possible to dredge the materials from the upper end of the reservoir.

During the last season, the water level in the reservoir would need to be drawn down to about elevation 500 feet to enable removal of sediments at the very bottom of the reservoir, within 2,000 feet of the dam and below elevation 470 feet. Excess water from the reservoir would need to be treated to remove turbidity and would be discharged to the river.

SCHEDULE AND PRODUCTION RATES

Two schedule approaches were considered:

(1) Base Case: For purposes of comparing alternatives in this study, it was assumed that construction work in San Clemente Reservoir would only occur in low-flow months when the Carmel River could be diverted around the active construction area. It was assumed that construction work in the stream would not occur during the winter high flows and steelhead adult migration season.
(2) Accelerated Construction: For the case of hydraulic dredging, a brief evaluation was made of the potential schedule and cost savings involved in continuing with sediment removal operations during winter.

These approaches are described below.

Base Case

For purposes of comparing alternatives, it was assumed that field work in the reservoir area would start on or about April 15. Installation of dewatering facilities would take about one month, with closure of the cofferdams on or about May 15. Fish rescue and drawdown of the reservoir would continue until about May 31. Actual sediment removal operations would take place during a five-month period from June through October. Removal of cofferdams and demobilization of in-stream construction operations would occur in November. Allowing for holidays and a few days of bad weather, it is assumed that there would be 100 working days of actual production operations.

We assumed that earthmoving operations using heavy mobile equipment (trucks, dozers, loaders) could not be conducted at night in the areas near Sleepy Hollow and/or Stone Pine developments, i.e, that there could not be night work in Sites 1, 2A, or truck traffic originating at Site 1. Accordingly, work hours were assumed to be as follows depending on the disposal site and transport mode used:

- Site 4R (assuming any sediment transportation mode) and Site 6R (assuming either conveyor or pipeline transport): Two 10-hour shifts, five days per week.

- Sites 1/2A (assuming any sediment transportation mode), and Site 6R (assuming truck haul): One 11-hour shift, five days per week.

For computation of actual production, it was assumed that each shift would have one unproductive hour, that is, the 10-hour shifts would have nine hours of actual production and the 11-hour shifts would have 10 hours of actual production.

Excavation and transport rates were assumed to be as follows:

- Slurry and conveyor transport modes: The design of the equipment would provide a peak capacity of 700 cubic yards per hour. An average sustained rate of 500 cubic yards per hour is assumed for purposes of calculating seasonal production.

- Truck transportation: An average production of 500 cubic yards per hour is assumed for truck haul.

The assumed schedule and production rates for a two-shift operation result in an estimated sediment removal rate of about 900,000 cubic yards per season and a three-season sediment removal program for complete dam removal, or a two-season sediment removal program for the dam notching alternative. If only one shift is allowed, the estimated sediment removal rate is only 500,000 cubic yards per season. In this case, five seasons would be required to complete the sediment removal operation for complete dam removal. Three seasons would be required to complete the sediment removal operation for the dam notching alternative using one shift.

These durations do not include the construction time required before and after sediment removal operations. Before beginning construction operations, one season would be needed to mobilize, construct access improvements, install the conveyor or slurry pipeline system, and begin preparation of the sediment disposal site. Likewise, at the conclusion of sediment removal operations, additional time would be needed to remove the dam, reconstruct the river channel, and revegetate the reservoir area.

Accelerated Construction

For the case of hydraulic dredging, a brief evaluation was made of the potential cost and schedule savings involved in continuing with sediment removal operations during winter. This evaluation was only made for disposal Site 4R. The same work hours and production rates described above were assumed for the late spring and summer period of river low-flows. During the high-flow winter months, the average production was decreased to 400 cubic yards per hour due to greater anticipated difficulty in operating the barge in high river flows. Due to shorter daylight hours, work hours were assumed to be a single shift, 11 hours per day, five days per week. Winter months were assumed to have 18 working days to account for poor weather and non-work days. Based on these assumptions, a continuous sediment removal period of approximately 17 months (June through October) was estimated to be required to complete the sediment removal operation for the dam removal alternative. Thus, it appears that the total construction period could be shortened by one year by continuing to remove sediment through one winter.

The 17-month duration would not include the construction time required before and after sediment removal operations. Before beginning construction operations, one season would be needed to mobilize, construct access improvements, install the slurry pipeline system, and begin preparation of the sediment disposal site. Likewise, at the conclusion of sediment removal operations, additional time would be needed to remove the dam, reconstruct the river channel, and revegetate the reservoir area.

TRANSPORT MODES

Transport by truck and conveyor was evaluated in combination with mechanical excavation. Transport by slurry pipeline was considered in combination with hydraulic dredging. These three transport modes are briefly described below.

Truck Transport

Sites 1 and 2A: Truck transport to Sites 1 and 2A was evaluated and rejected as being impractical. The access roads linking Site 1 to San Clemente Dam are shown on Figure 2. A profile of the round trip from the dam to Site 1 and back to the dam along the loop of existing access roads is shown on Figure 8. The distance is about 6 miles. The roads are typically narrow and cut across very steep terrain, making it impractical to improve them significantly in terms of width and grade. Due to the narrow road width, small trucks would need to be used. A truck cycle to Site 1 is estimated to take between 45 minutes and one hour including loading and unloading. About forty to fifty ten-yard trucks would need to be in operation at any one time to sustain a production rate of 500 cubic yards per hour. Use of this size fleet is not practical given that segments of the road are one-lane-wide but are required to provide service in both directions under controlled traffic restrictions.

Site 4R: Truck transport to Site 4R is considered potentially feasible. A new access road from the reservoir to the site would be constructed along the approximate alignment shown on Figure 4. In addition the Jeep Trail between the site and Cachagua Grade would be improved to provide access to the site and reservoir. Profiles of the access roads and a typical cross-section are shown on Figure 9. The road would consist of a 25-foot-wide graded section with a 3-foot drainage ditch, and surfaced with 6 inches of Class II base rock. The 25-foot road width would provide clearance for two-way traffic of 22-cubic-yard off-road articulated haulers. A truck cycle to Site 4R is estimated to take about fifteen minutes including loading and unloading.

Nine trucks would be needed in operation at any one time to sustain a production rate of 500 cubic yards per hour, with an additional two trucks in maintenance and/or stand-by. Two large front-end loaders working the stockpile at the reservoir would load the trucks.

Site 6R: Truck transport to Site 6R is considered technically feasible but may be impractical due to environmental (primarily traffic- and noise-related) considerations and landowner concerns. A conveyor system (as described below) would be used to transport sediment from the dam to a surge stockpile located at Site 1, where a large front-end loader would load 22-ton highway-legal bottom-dump trucks. A new access road would be constructed from Site 1 to Carmel Valley Road. The new road would start at the stockpile area, cross Tularcitos Creek over a new bridge, and intersect Carmel Valley Road about 800 feet west of San Clemente Drive. The road would consist of a 22-foot-wide graded section with a 3-foot drainage ditch, and surfaced with 6 inches of Class II base rock. After traveling on this road, trucks would enter Carmel Valley Road and travel along it for a distance of about one mile, after which they would exit the highway via a left turn onto the existing Chupines Ranch dirt road. This road would need to be improved to the same dimensions and characteristics described above for a distance of approximately 2.1 miles between Carmel Valley Road and Site 6R. The road alignment is shown on Figure 6. An approximate profile is shown on Figure 10. A truck cycle from Site 1 to Site 6R is estimated to cover the approximate 6.5-mile-long round trip in about thirty minutes including loading and unloading. About twenty-three bottom-dump trucks would be needed in operation at any one time to sustain a production rate of 500 cubic yards per hour, with an additional four or five trucks in maintenance or stand-by.

Conveyor Transport

Sites 1 and 2A: A conceptual design of a 36-inch belt-conveyor system to transport sediment from San Clemente Dam to Site 1 is shown on Drawings D-1, D-4 and D-5 in Appendix D of Entrix (2004). An opening would be cut through the dam and a chute fastened to the downstream face near the right abutment. The chute would discharge to a hopper/feeder installed at the toe of the dam adjacent to the existing 30-inch pipeline. Sediment would be excavated, transported to the dam, and fed to the conveyor via the opening in the dam, chute, and hopper/feeder system. The approximate route of the overland conveyor is shown on Figure 2 and a profile is illustrated on Figure 11. The conveyor would approximately follow the alignment of the existing plunge pool road and San Clemente Drive and would be supported on a steel frame and founded on railroad ties, concrete footings, or concrete piers at about 10-foot spacing. Estimated length of overland conveyor is 13,000 feet from the dam to Site 1. A traveling stacker conveyor would be used to discharge the sediment to a stockpile in Site 1. The steep and winding alignment requires numerous individual conveyor sections, powered by individual motors and connected together. Electric power connections would need to be provided for each conveyor section. Estimated power needs would be 4,200 HP on an operating basis.

A temporary bridge span would need to be constructed to carry the belt conveyor over the Carmel River to Site 2A.

Site 4R: The excavated sediment would be transported to a central stockpile in the reservoir near the mouth of the ravine where Site 4R is located. A gravity-feed reclaim tunnel system would be used to feed the sediment to a 3,500-foot-long, 36-inch overland belt-conveyor system that would transport the sediment to the site. A traveling stacker conveyor would be used to discharge the sediment to a stockpile at the disposal site. A 20-foot-wide access road would be constructed between the reservoir and the disposal site. The belt conveyor would be installed along the road, which would also be used for operation and maintenance. Estimated power needs for the conveyor are 1,850 HP on an operating basis. The approximate routing and profile of the road and conveyor are shown on Figures 4 and 9, respectively.

Site 6R: The conveyor system to transport sediment to Site 6R would be an extension of that described above for Site 1. The approximate conveyor route is shown on Figure 6, and a profile is shown on Figure 12. Instead of ending at Site 1, the conveyor would continue eastward and across Tularcitos Creek along the new access road. It would then run between Carmel Valley Road and Tularcitos Creek for about one mile, would cross the highway via a culvert or overhead structure, and would continue overland to Site 6R through the Chupines Ranch as outlined on Figure 6. Estimated length of overland conveyor is approximately 30,000 feet from the dam to Site 6R. A 20-foot-wide access road would be constructed between Carmel Valley Road and the disposal site. The belt conveyor would be installed along the road, which would also be used for operation and maintenance. A traveling stacker conveyor would be used to discharge the sediment to a stockpile in Site 6R. Estimated power needs would be 11,200 HP on an operating basis.

Hydraulic Transport

For simplicity, hydraulic slurry transport was assumed to be used in combination with hydraulic dredging, although a combination of hydraulic dredging and conveyor or truck transport would also be possible.

The dredge would deliver slurry with about 20% solids by weight and estimated slurry density of about 72 pounds per cubic foot. For excavation rates of 500 to 700 cubic yards of sediment per hour, the slurry flow rates would range from 26 to 37 cubic feet per second (cfs). The slurry needs to flow at a relatively high velocity to avoid settling of the sand and gravel particles. However, the high flow velocities result in high head losses and power demand. For the projected slurry conditions, the minimum, or settling, velocity was estimated to be 15 feet per second. Therefore, an 18-inch inside-diameter pipeline is estimated to be required. The flow velocity through this pipe at the maximum discharge of 700 cubic yards per hour is estimated at 21 feet per second. For cost estimating purposes, a 24-inch outside-diameter HDPE pipe with Dimension Ratio (DR) of 9 was selected. This pipe has a 3-inch wall thickness and can sustain an operating pressure of up to 200 psi. Head losses were estimated to range from 0.04 to over 0.06 feet per foot of pipe. HDPE pipe offers high resistance to abrasion, low friction coefficient, and higher flexibility during construction than other pipe materials. HDPE pipes are assembled with butt-fused joints and can be laid above ground if properly anchored or snaked to allow for expansion and contraction due to temperature changes.

Typical pumping distance form the dredge will be from ½ mile to one mile depending on the material, flow velocity, and gradient. Pumping over longer distances and to higher elevations is accomplished by adding in-line booster pumps to the discharge line. Special pumps that have hard-metal casings and impellers and large flow passages are required due to the large particle sizes and abrasive nature of the slurry. Such pumps are typically used in gravel quarry and tunnel mucking operations. See, for instance, product literature by Weir Minerals on Warman Heavy Duty Dredge & Gravel Pumps at www.weirminerals.com.

Recycled water would be returned from the sediment disposal site to the reservoir via a separate pipeline. For cost estimating purposes an HDPE pipe of the same diameter and wall thickness as the slurry pipe has been assumed. A desilting basin would be constructed at the discharge point of the pipeline to San Clemente Reservoir. The basin would consist of a flat area surrounded by a perimeter formed by dozed sediments. Water discharged to the basin would filter through the perimeter dike and return to the reservoir. Silt deposits in the desilting basin would be dredged periodically.

Site-specific considerations for hydraulic transport are summarized below.

Sites 1 and 2A: The plan and profile of the slurry pipeline are approximately shown on Figures 2 and 11. The slurry pipeline would follow the alignment of the existing pipeline, except that the slurry pipe would need to be routed over the top of the east abutment of the dam and down the rock slope until it reaches the existing steel pipe. Where possible the pipe would be placed on the ground and anchored with piles of rock to prevent excessive snaking due to temperature changes. Where this is not possible the pipe would be anchored to the slope or fastened to the existing concrete supports for the 30-inch steel pipeline. Thrust blocks or anchors would also need to be provided at sharp changes in direction. Estimated pipeline length is 13,000 feet from the dam to Site 1. It is estimated that two booster stations would be required along the route, each with two 18GH Warman Gravel Pumps (or similar) in series. Each booster station would have installed power of 2,000 HP. A 1,200 HP pump station would be required to pump the recycled water back to the dam. Total estimated power needs would be 5,200 HP on an operating basis. For this site it has been assumed that the existing steel pipeline could be used to return recycled water to the reservoir. A recycle pump station and pipeline would be provided from Site 1 to an assumed connection point just south of the filter plant.

A temporary bridge would need to be constructed to carry the two pipelines over the Carmel River to Site 2A.

Site 4R: The approximate routing and profile of pipelines and service road to Site 4R are shown on Figures 4 and 9, respectively. As for the case of conveyor transport, a 20-foot-wide access road would be constructed between the reservoir and the disposal site. The slurry and reclaim water pipelines would be installed along the road, which would also be used for operation and maintenance. It is estimated that two booster stations would be required along the slurry pipeline route to provide a lift of up to 600 feet in elevation differential plus over 100 feet in head loss. Each booster station would be equipped with two 18GH Warman Gravel Pumps (or similar) in series. Each booster station would have installed power of 2,000 HP. A 100 HP pump station would be required to pump the recycled water back to the dam. Total estimated power needs would thus be 4,100 HP on an operating basis.

Site 6R: The slurry pipeline system to transport sediment to Site 6R would be an extension of that described above for Site 1. The approximate pipeline route is shown on Figure 6, and a profile is shown on Figure 12. Instead of ending at Site 1, the pipeline would continue eastward and across Tularcitos Creek along the new access road. It would then run between Carmel Valley Road and Tularcitos Creek for about one mile, would cross the highway via a culvert or overhead structure, and would continue overland to Site 6R through the Chupines Ranch as outlined on Figure 6. Estimated length of slurry pipeline is 30,000 feet from the dam to Site 6R. A 20-foot-wide access road would be constructed between Carmel Valley Road and the disposal site. The slurry and reclaim water pipelines would be installed along the road, which would also be used for operation and maintenance. It is estimated that seven booster stations would be required along the slurry pipeline route to provide a lift of up to 750 feet in elevation differential plus up to1,900 feet in head loss. Each booster station would be equipped with two 18GH Warman Gravel Pumps (or similar) in series. Each booster station would have installed power of 2,000 HP. A 100 HP pump station would be required to pump the recycled water back to the dam. Total estimated power needs would thus be 14,100 HP on an operating basis.

POWER SUPPLY CONSIDERATIONS

The following information has been developed based on verbal communications with personnel from Pacific Gas & Electric Company (PG&E) and should be considered preliminary. The existing electrical service to San Clemente Dam is supplied by an existing PG&E 60-kilovolt (kV) transmission line originating in Salinas. The 60-kV transmission line enters Carmel Valley from Laureles Grade via Highway 68 and provides power to the Laureles substation in Carmel Valley, located near Carmel Valley Road approximately 2 miles northwest of the San Clemente Drive and Carmel Valley Road intersection. The 60-kV transmission line then continues from the Laureles substation southeast along Carmel Valley Road until it turns south towards San Clemente Dam, following along San Clemente Drive until the Sleepy Hollow fish rearing facility intersection (High Road). From there, the 60-kV transmission line continues due West past Sleepy Hollow, away from the project area. A 12-kV 3-phase pole line branches from the Sleepy Hollow intersection to provide power to San Clemente Dam, terminating outside an onsite structure above the left abutment of the dam. Pole mounted transformers provide 3-phase service to the dam itself (e.g. lights, instrumentation) and a nearby Cal-Am owned residence.

Construction power requirements are governed by the power needs for the conveyor or slurry pumping systems. Smaller additional loads would be imposed by dewatering requirements, construction office trailers, equipment maintenance shop, and night lighting. Based on preliminary discussions with PG&E, the configuration of the existing PG&E 60-kV and 12-kV power lines would not be able to handle the total load demand for any of the conveyor or slurry alternatives. Significant modifications to PG&E's transmission and distribution facilities would be required, as described in Appendix A. Based on conceptual power system evaluations, it is believed that the most efficient way of supplying the needed power would be to use one or more diesel-power generator sets. Therefore, the cost estimates assume that diesel generators would be used. The generators would run in a primary mode (full-time) and would be equipped with secondary reduction catalytic devices and add-on particulate filters to meet local air quality demands.

DESIGN CONCEPTS FOR SEDIMENT DISPOSAL SITE

The preparation and development of the sediment disposal site and the procedures for sediment placement would be different depending on whether the sediment arrives relatively dry (via truck or conveyor) or in slurry form. These two conditions are discussed separately below.

Sediment Disposal Site Design Concepts for Dry Delivery of Sediment

Site preparation would include the removal of existing facilities and utilities (in the case of Sites 1 and 2A), clearing and grubbing of trees and vegetation from the sediment pile footprint, and stripping and stockpiling of organic soils for use in subsequent restoration and revegetation of the site.

Upon delivery of sediment to the site, the sediment would be spread by means of bulldozers into thin, nearly horizontal lifts. Each lift would be compacted using bulldozers or vibratory compactors. The sediment pile would be constructed with a side slope as required for stability, which has been assumed to average 2-3/4 horizontal to 1 vertical for the purpose of performing site capacity calculations. Debris from dam removal would be placed on selected areas to provide long-term erosion protection. Such areas include the toe of the pile for Sites 1 and 2A, and the groins along the contact between the pile and the hillside abutments at Sites 4R and 6R.

At the conclusion of each construction season, the site would need to be winterized. This would involve (1) providing interim drainage and diversion of ravine flows, (2) stabilizing sloping sediment surfaces and other disturbed areas by installing erosion protection features such as erosion mats or straw mulch and wattles, and (3) providing sediment collection features such as silt fences, straw bales, and sediment traps along the toe of the pile and other disturbed areas.

Once placement of sediment and concrete debris has been completed, the topsoil from the temporary stripping stockpile would be spread over the sediment pile and the area would be revegetated with native plants and trees obtained from the site vicinity. Typical sections for sediment piles at Sites 1, 4R and 6R are shown on Figures 13, 14, and 15, respectively.

Sediment Disposal Site Design Concepts for Slurry Delivery of Sediment

As in the case of dry delivery of sediment, disposal site preparation would include the removal of existing facilities and utilities (in the case of Sites 1 and 2A), clearing and grubbing of trees and vegetation from the sediment pile footprint, and stripping and stockpiling of organic soils for use in subsequent restoration and revegetation of the site. Additional features that would be required for a slurry disposal site are anticipated to be the following:

- Sites 1, 2A and 6R would need to be lined with a liner to minimize slurry water losses. A geomembrane such as PVC or HDPE would be provided to cover the entire footprint of the sediment pile. The liner would need to be protected against puncture by placement of nonwoven geotextiles on both sides of the liner or similar protection. A textured membrane may need to be provided to ensure slope stability. A liner would not be needed for Site 4R because the site is just upstream of San Clemente Reservoir and seepage from this site would return to the reservoir.

- A "starter" containment dike would be constructed to provide initial containment for the slurry. The dike material could be local borrow, or soil from required excavations such as for the access road. A lined toe ditch would be constructed along the downstream toe of the starter dike to allow collection and recycling of the seepage water that passes through the dike.

- A water recycling pump station would need to be installed at the decant pond which would form at the tail end of the disposal site. The pump station would include a portable overflow box to collect the water and a skid-mounted pump connected to the 24-inch-diameter recycled water pipeline. Only a relatively small motor, on the order of 100 HP, would be required to pump the recycled water from Sites 4R and 6R because of their high elevation relative to that of San Clemente Reservoir. A much larger motor, on the order of 1,000 HP, would be needed to pump water to the reservoir from Sites 1 and 2A.

Slurry delivery would begin once the impervious liner, "starter" dike, and recycle pump station and pipeline are in place. The slurry would be pumped to the disposal site and would discharge into the impoundment formed by the "starter" containment dike. The solids would deposit near the pipe outlet and would form a beach that slopes downward away from the pipe. The coarsest materials (coarse sand and gravel) would deposit closest to the pipe, the finer sand would deposit farther, and the silt would be carried farther by the water and deposit in the "decant" pond on the opposite end of the impoundment, where the recycle pump station would be located. Depending on the detention time provided by the decant pond, some of the finer silt particles may remain suspended in the recycle water and be pumped back to the reservoir. A bulldozer or rubber-tired tractor would be used to continuously travel over the rising beach to manage the discharge piping and the sediment deposition and to compact the deposited sediment to a specified level of compaction. In addition, on a periodic basis (such as weekly), a dozer would be used to construct a containment dike raise, extend and raise the discharge pipe, and lift and relocate the overflow box, recycle pump and water return pipeline.

At the conclusion of each construction season, the site would need to be winterized. This would involve (1) providing interim drainage and diversion of ravine flows, (2) stabilizing sloping sediment surfaces and other disturbed areas by installing erosion protection features such as erosion mats or straw mulch and wattles, and (3) providing sediment collection features such as silt fences, straw bales, and sediment traps along the toe of the pile and other disturbed areas.

At the conclusion of the sediment disposal operation, debris from dam removal would be placed in selected areas to provide long-term erosion protection. Such areas may include the toe of the pile for Sites 1 and 2A, and the groins along the contact between the pile and the hillside abutments at Sites 4R and 6R. Once placement of sediment and concrete debris has been completed, the topsoil from the temporary stockpile would be spread over the sediment pile, and the area would be revegetated with native plants and trees obtained from the site vicinity. Typical sections for sediment piles at Sites 1 and 2A, 4R and 6R are shown on Figures 13, 14, and 15, respectively.

LAND OWNERSHIP CONSIDERATIONS

The property where Site 1 is located is owned by California American Water Company. Cal-Am has expressed tentative willingness to allow use of the site as a sediment disposal site.

The property where Site 2A is located is owned by California American Water Company, but it is leased to the operators of the Stone Pine horse stables. The terms and conditions of the lease are not known. The western and northern edges of Site 2A may encroach on property owned by G. and N. Hentschel.

The property where Site 4R is located is owned by the Monterey Peninsula Regional Park District, which in the past has expressed tentative support for sediment disposal at Garland Ranch, another District-owned property (Moffatt & Nichol, 1996). There has been no contact with the District regarding the potential use of Site 4R as sediment disposal site.

The property where Site 6R is located is owned by W. Wilson et al., which in the past have expressed tentative support for sediment disposal at this site (Pers. Comm., 2005).

COMPARATIVE OPINIONS OF PROBABLE CONSTRUCTION COST FOR SEDIMENT DISPOSAL

Conceptual-level, comparative opinions of probable construction cost were developed for the various sediment disposal sites alternatives described above using HCSS Heavy Civil estimating software. The conceptual estimated costs for the dam removal alternative (2.5 million cubic yards of sediment) are summarized in Table 1, and the conceptual estimated costs for the dam notching alternative (1.5 million cubic yards of sediment) are summarized in Table 2. The opinions of probable cost presented in Tables 1 and 2 include a contingency of 25 percent to account for pricing variations, to incorporate additional potential construction costs related to design development, and to cover approximations in estimating. Also included are allowances for “non-construction” project costs, including land use easements, permitting, environmental compliance and mitigation, design engineering, Owner’s administrative costs, and construction engineering and administration.

The opinions of probable construction cost are based on the sediment removal and disposal concepts described in this memorandum, the volume of sediment to be removed estimated by Mussetter (MEI, 2003 and 2005), the cost estimate prepared by Entrix for environmental permitting and steelhead and CRLF mitigation activities (Entrix, 2004), and MWH’s evaluation of the major construction items appropriate to complete the work. In addition, the estimated costs are based on the following:

- Labor rates and fringes are from January 2005 Davis-Bacon rates for Monterey County. Labor costs are based on 5 days per week, 10 hours per shift. Payroll tax and workers compensation insurance are set at 38%.

- Equipment rates are drawn from estimator's equipment history information.

- Material costs are based on typical costs for similar work. Construction water is assumed available on site.

- The crews developed for use in these estimates are derived from experience for similar work.

- An assumed royalty has been included to address land use/land easement costs at an assumed rate of $0.25 per ton for use of Sites 2A, 4R, and 6R, including any required access corridors. Use of Site 1 and the access roads between Site 1 and the dam has been assumed to be free of land use/land easement costs.

- Order-of-magnitude cost allowances have been included to address the cost of certain items associated with the dam removal project that are the same regardless of which disposal site and excavation method is selected. Specifically, these items include (1) the removal of the dam structure, (2) the restoration of the reaches of Carmel River and San Clemente Creek now occupied by reservoir sediments, and (3) the construction of an alternative water diversion facility to replace San Clemente Dam in Cal-Am's system. These order-of-magnitude cost allowances will be refined once the sediment disposal site is selected and the cost estimates for the dam removal and dam notching alternatives are refined.

- Direct construction costs are based on 1st-quarter 2005 dollars. Escalation to the mid point of the construction period has been included for each alternative at an assumed average construction inflation rate of 5%.

- Project financing costs are excluded.

- No costs have been added for damage or lost time due to the potential for overtopping of the stream diversion system and work site.

- The cost for those permitting and mitigation measures associated with steelhead and CRLF that were described by Entrix (2004) are included. Additional measures that may be required by regulatory agencies are not included.

- If further restrictions on the construction schedule are imposed based on environmental issues not described above, the construction schedule may need to be extended. This would result in additional mobilization, dewatering and winterization costs that are not included in the current estimate.

- Weather conditions could also impact the construction schedule. If the construction program occurs during a wet cycle and spring flows remain high for an extended period at the beginning of the construction season, or if significant storms occur in early fall, construction delays could occur that would increase the number of construction seasons. This would result in additional mobilization, dewatering and winterization costs that are not included in the current estimate.

- Disposal costs associated with removal of the conveyor equipment and slurry pipelines are assumed to equal the salvage value. Estimated costs have not been reduced in anticipation of cost recovery of used conveyance equipment.

- Average unit weight of the sand/gravel sediments is assumed to be 105 pounds per cubic foot. In-situ moisture content at the time of transport is assumed to be on the order of 20%.

It should be emphasized that the opinions of probable construction cost have been prepared at a conceptual level for the primary purpose of comparing alternatives. The cost of the selected alternative will change up or down as the design is defined in more detail and as it evolves in response to the evolving needs of the project's stakeholders. Furthermore, the estimate of costs shown and any resulting conclusions on the project financial, economic feasibility, or funding requirements, have been prepared from guidance in the project evaluation and implementation from the information available at the time the estimate was prepared. The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, and other variable factors. Accordingly, the final project costs may vary from the estimate. Project feasibility, benefit/cost analysis, risk and funding must be carefully reviewed prior to making specific funding decisions and establishment of the project budget.

For the alternative involving hydraulic dredging with slurry transport and disposal at Site 4R, a brief evaluation was made of the potential schedule and cost savings involved in continuing with sediment removal operations during winter. For this option, sediment removal would continue uninterruptedly over two summers and one winter instead of three summer seasons separated by two demobilizations. Potential savings of $1 to $1.5 million were estimated in mobilization, dewatering, and contractor indirect costs. When the corresponding reductions in contingency, construction management, administration, and escalation are factored in, the total savings could amount to $3 to $4 million. However, the effect of this approach on the cost of environmental permitting and steelhead mitigation is unknown and could significantly offset these potential savings.

ASSESSMENT OF SEDIMENT DISPOSAL ALTERNATIVES

Advantages and disadvantages of the sediment disposal alternatives described above are summarized in Table 3. It should be noted that environmental reviews of the sediment disposal sites have not been performed, and mitigation measures for potential environmental impacts at these sites have not been developed nor included in the comparative cost estimates. These activities are not part of the scope of this screening study, but will be conducted by Entrix as part of the EIR/EIS preparation.

All sediment disposal sites evaluated in this study are considered to be technically feasible. However, the complexity and cost of sediment disposal operations are directly, and strongly, proportional to the distance between San Clemente Reservoir and the sediment disposal site. The assessment of the sites below herein applies equally to the dam removal and dam notching alternatives.

Site 4R: Site 4R is closest to the reservoir and is by far the most advantageous site of those considered, environmental considerations notwithstanding. While the site is significantly higher in elevation than the reservoir, transport costs and energy consumption associated with sediment disposal operations would still be lowest for this site. Required power supply upgrades appear to be manageable. The site is more remote and therefore the interface between construction operations and the public would be reduced. Sediment removal could proceed in two shifts, thus resulting in a shorter schedule than at Sites 1 and 2A. Site 4R has ample capacity to store all sediment. Access would be from Cachagua Grade; improvements to San Clemente Drive would not be required. The one significant disadvantage of Site 4R is that it is not owned by Cal-Am and, therefore, use of the site and access easements would need to be negotiated with the Monterey Peninsula Regional Park District, the current owner of the land where the site is located.

Both sediment excavation alternatives (mechanical and hydraulic dredging) and all three transport alternatives (truck, conveyor, slurry) are considered feasible for Site 4R. Transport by either conveyor or slurry pipeline appears to have a cost advantage over trucking. Transport by conveyor appears to be the simplest alternative and would entail less power usage and lower emissions than either slurry or trucking.

Sites 1 and 2A: Sites 1 and 2A in combination have a capacity that is barely sufficient for the total volume required for dam removal. Site 1 alone does not have enough capacity to store the sediment volume required for either the dam removal alternative or the dam notching alternative.

While the sites are slightly lower in elevation than the reservoir, the required power supply, transport costs and energy consumption associated with sediment disposal operations would be greater for these sites than for Site 4R due to the significantly greater distance between the reservoir and the disposal sites. Proximity of these sites to the Sleepy Hollow and Stone Pine developments would constrain construction operations due to traffic, noise, and emissions impacts. It is dubious that two shifts would be possible. Thus, the sediment removal schedule would likely be lengthened, potentially by as much as two years for the dam removal alternative. Access to the reservoir would be via a new access road over Tularcitos Creek and San Clemente Drive. Improvements to San Clemente Drive between the Carmel Valley Filter Plant and the dam would be required. Site 1 is owned by Cal-Am and could readily be placed into use. Although also owned by Cal-Am, Site 2A has been leased to a third party and has been developed for use as a horse track, horse stables, barn and related facilities.

Both sediment excavation methods (mechanical and hydraulic dredging) and two transport modes (slurry, conveyor) are considered feasible for Sites 1 and 2A. Transport by truck is not considered feasible due to the tortuous route, narrow roads and steep terrain. Slurry transport appears to have a slight cost advantage over conveyor but would involve additional features at the disposal site to recycle the water decanted from the slurry, which would be returned to the reservoir via a separate pump station and pipeline. Transport by conveyor would also be feasible. A temporary bridge would be needed over Carmel River between Sites 1 and 2A to deliver sediment to Site 2A whether a conveyor or slurry pipeline is used.

Site 6R: Site 6R is an undeveloped ravine in the Chupines Ranch property owned by the Wilson family. Although Site 6R has ample capacity, it appears to be the least desirable of those considered. Because of the large distance from the reservoir to the site and the site's significantly higher elevation than the reservoir, the transport costs, power supply upgrades, and energy consumption associated with sediment disposal operations would be by far the greatest for this site. The power demand needed to operate either conveyors or a slurry pipeline would require the replacement of a PG&E transmission line from Carmel Valley to Salinas or the installation of approximately seven large mobile diesel-operated generator sets, at a significant cost.

Both sediment excavation alternatives (mechanical and hydraulic dredging) and three transport alternatives (conveyor, slurry, and conveyor to Site 1 followed by truck transport from Site 1 to Site 6R) are considered potentially feasible for Site 6R. Transport by truck between San Clemente Dam and Site 1 is not considered feasible due to the tortuous route, narrow roads and steep terrain. Transport by conveyor to Site 1 followed by truck transport from Site 1 to Site 6R appears to have a slight cost advantage over the slurry and conveyor transport options. Slurry transport also would be feasible but would involve additional features at the disposal site to recycle the water decanted from the slurry, which would be returned to the reservoir via a separate pump station and pipeline. The conveyor or slurry pipeline route would run from San Clemente Dam to Site 1. From there, the conveyor or slurry pipeline would run between Carmel Valley Road and Tularcitos Creek, cross Carmel Valley Road in a culvert, and follow a new service road corridor across the Chupines Ranch property to Site 6R. Truck access would be via Carmel Valley Road and an existing dirt road, which would need to be widened to permit two-way haulage. Access to San Clemente Reservoir would be via a new access road over Tularcitos Creek and San Clemente Drive. Improvements to San Clemente Drive between the Carmel Valley Filter Plant and the dam would be required.

A two-shift operation was assumed for the conveyor and slurry pipeline transport alternatives. However, it is dubious that two shifts would be possible if the material is deposited via conveyor at Site 1 and loaded to trucks. The proximity of Site 1 to the Sleepy Hollow and Stone Pine developments would constrain construction operations due to traffic, noise, and emissions impacts. Thus, the sediment removal schedule would likely be lengthened, potentially by as much as two years for the dam removal alternative. Additionally, heavy truck traffic would occur on the segment of Carmel Valley Road between the proposed access road to the filter plant and the Chupines Ranch driveway.

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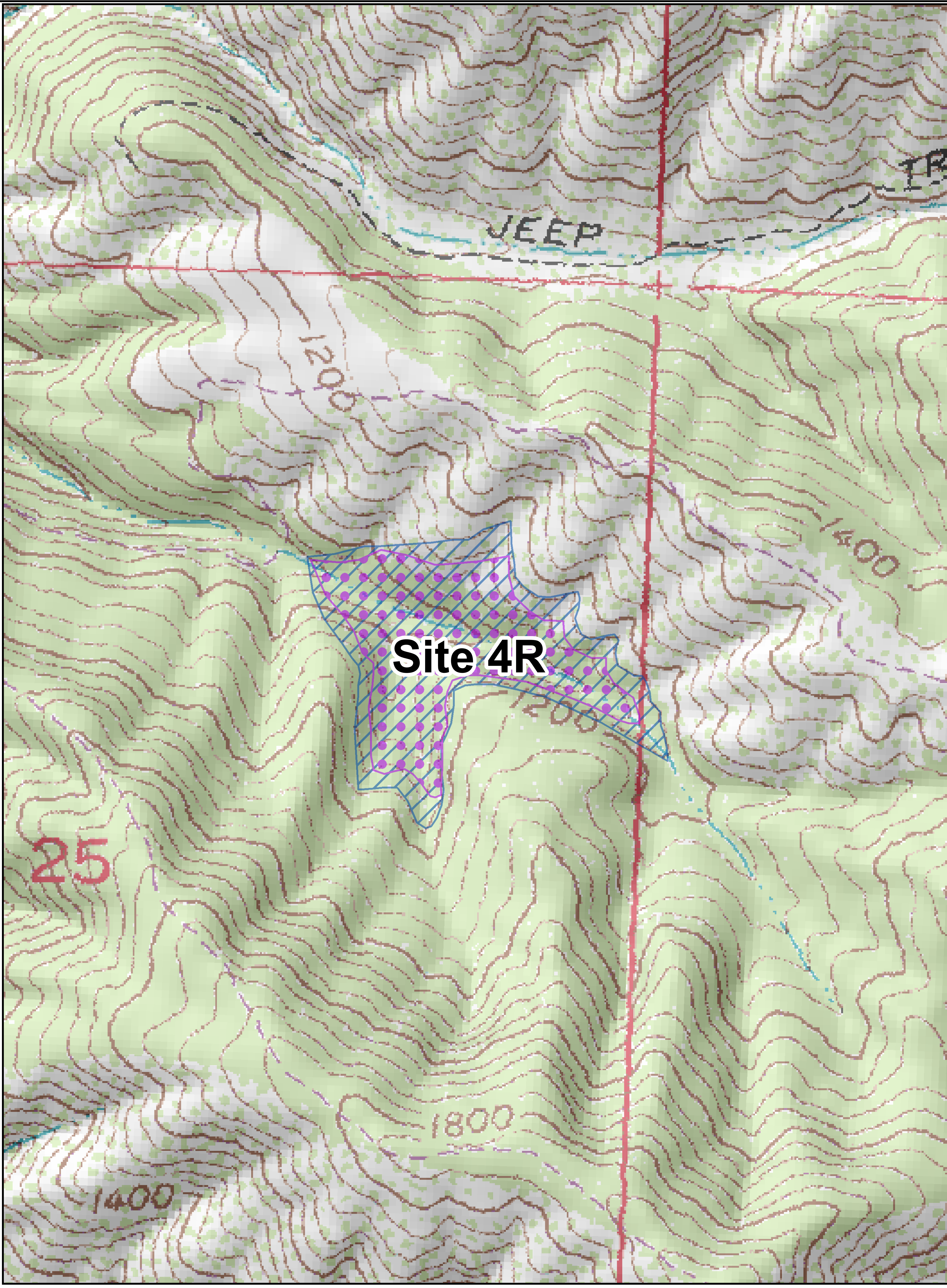
APPENDICES



Legend
Sediment Disposal Site
Alternative 1
Alternative 2

Projection: California State Plane, Zone IV
Datum: NAD 83 Units: Feet

San Clemente Dam EIS/EIR
Appendix G
Local Vicinity Map

N

0 100 200 400
Meters

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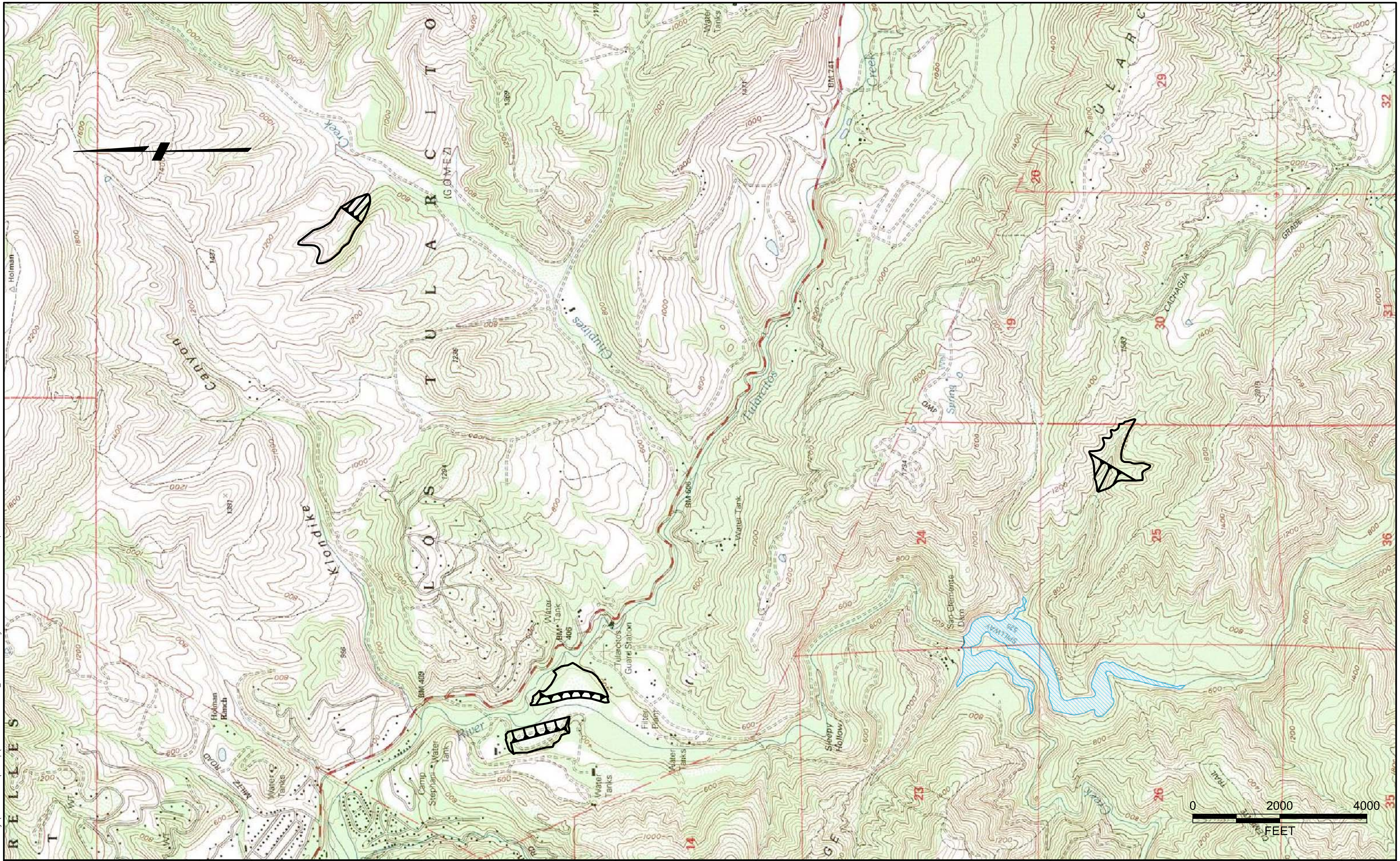

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Walnut Creek
California

CALIFORNIA AMERICAN WATER

SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
SEDIMENT DISPOSAL SITES LOCATION MAP

FIGURE 1

XREF: BDR
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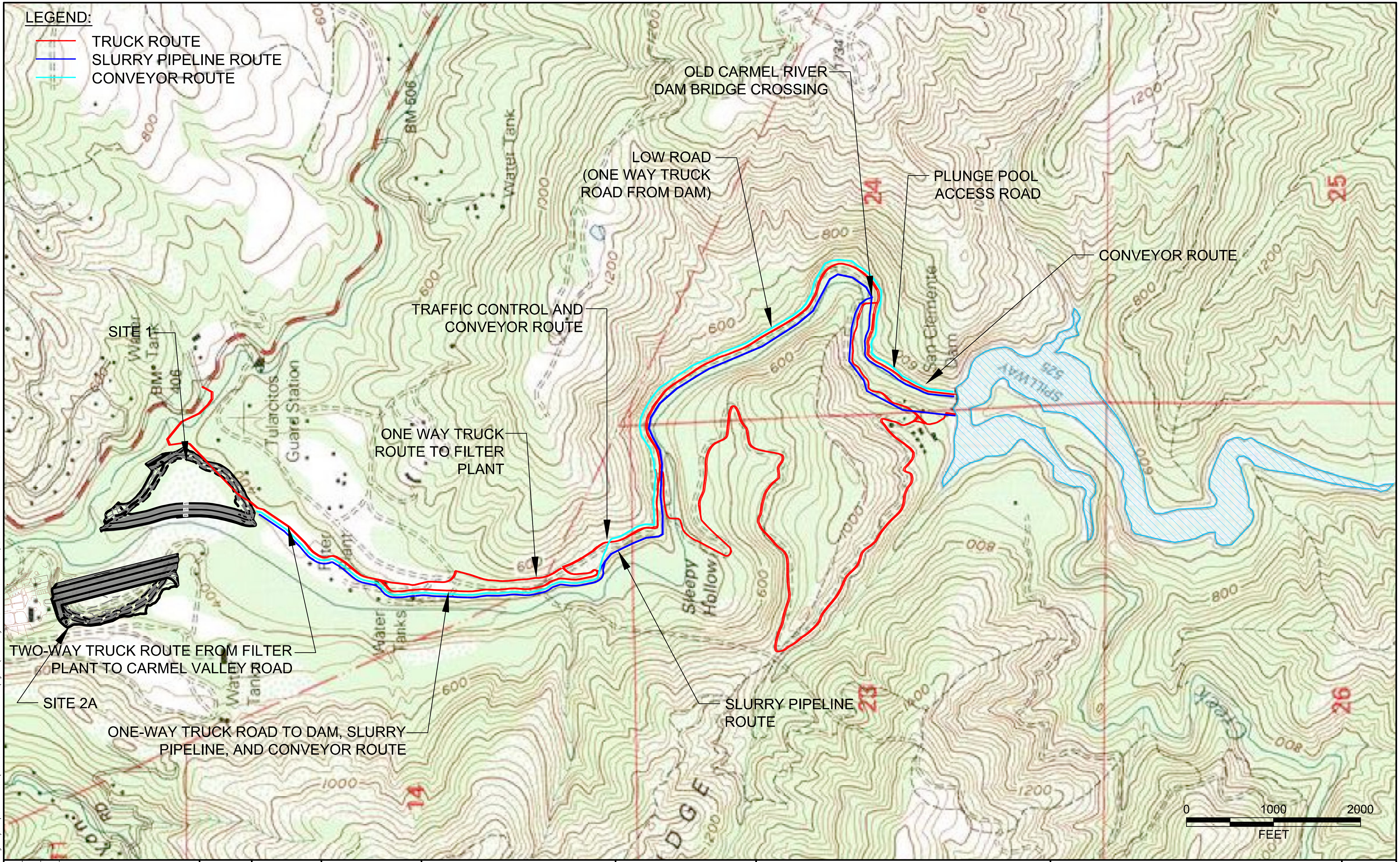

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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PLAN OF SEDIMENT DISPOSAL SITES 1 AND 2A

FIGURE 2

XREF: X-TOPO CONTOURS CAL-AM BDR
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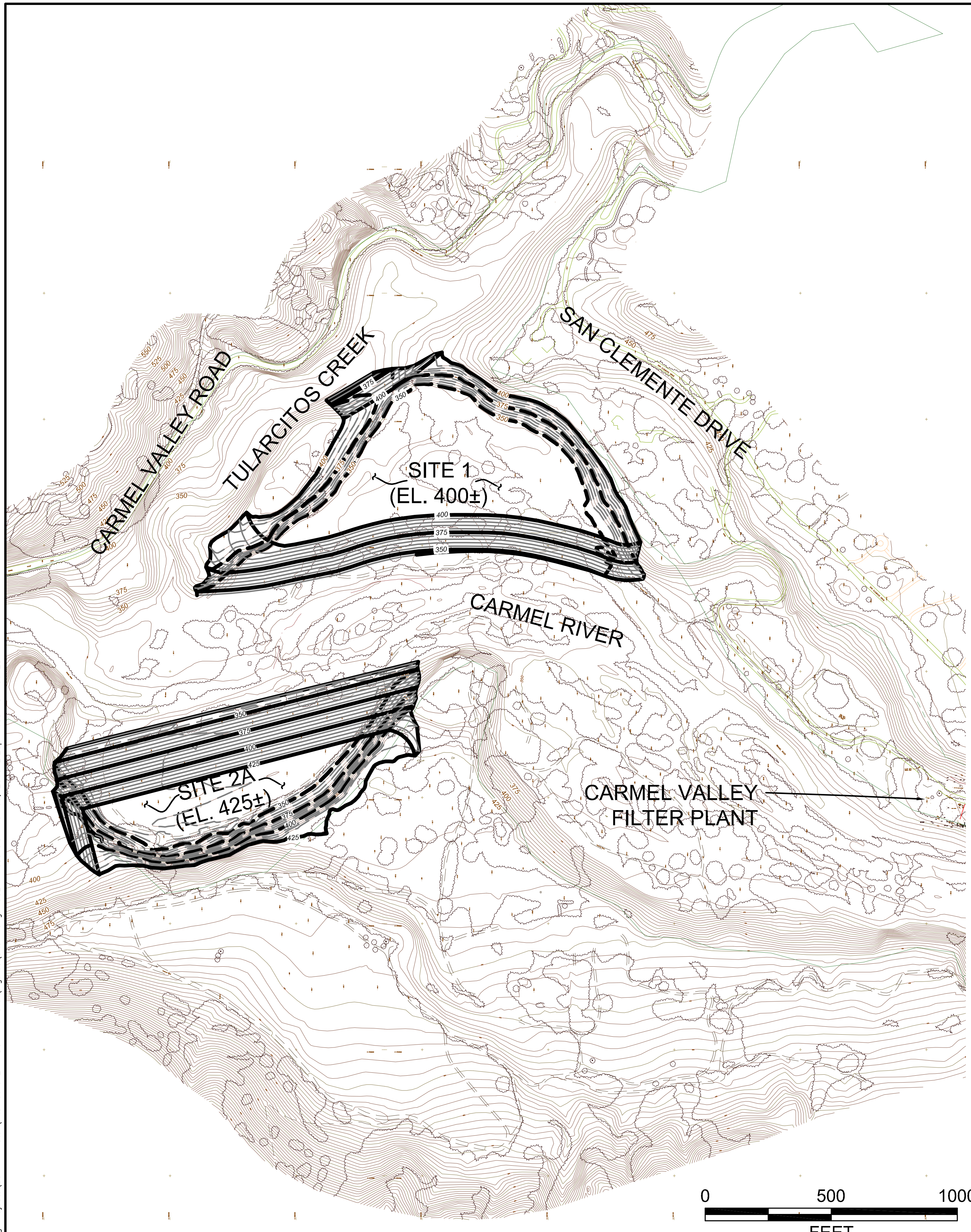
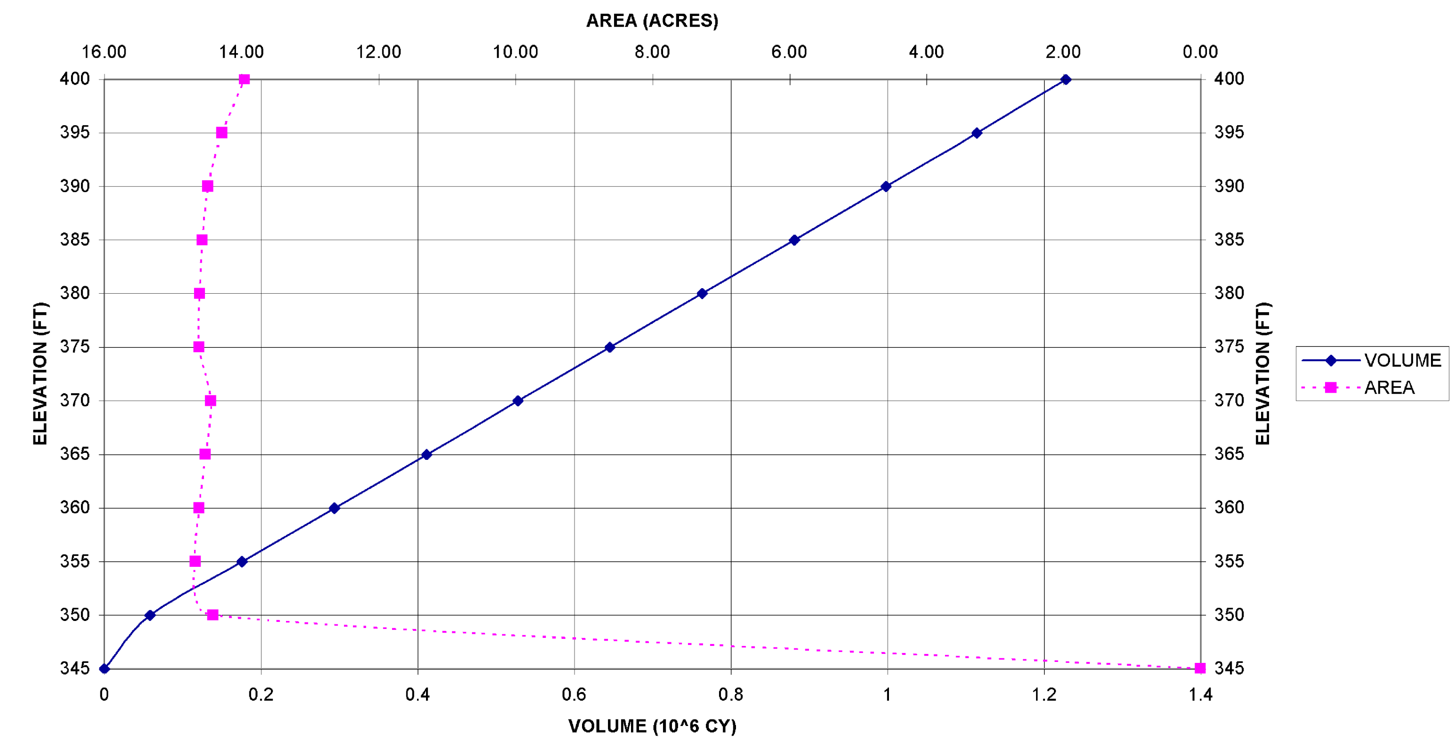
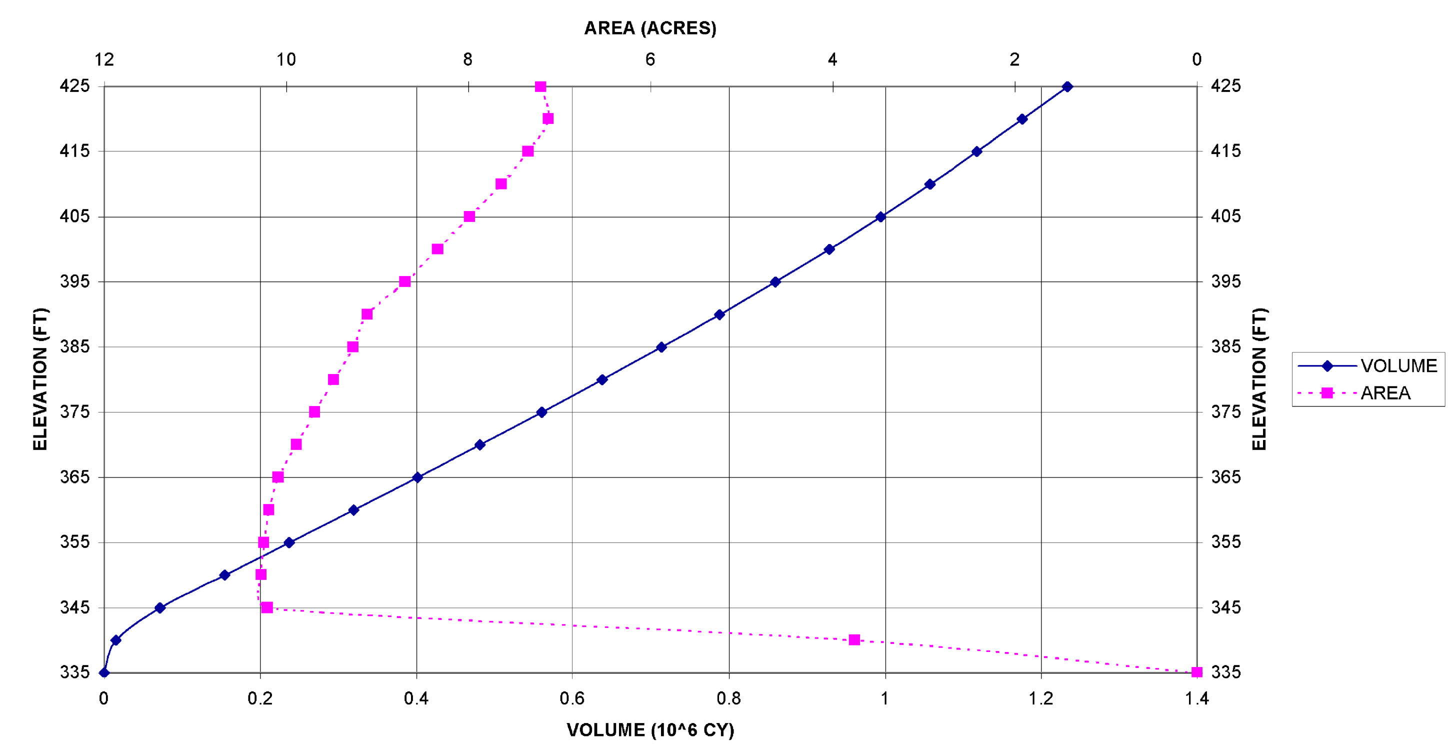


SITE 1



SITE 2A



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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
AREA–CAPACITY CURVES OF DISPOSAL SITES 1 & 2A

FIGURE 3

XREF: X-TOPO CONTOURS CAL-AM BDR
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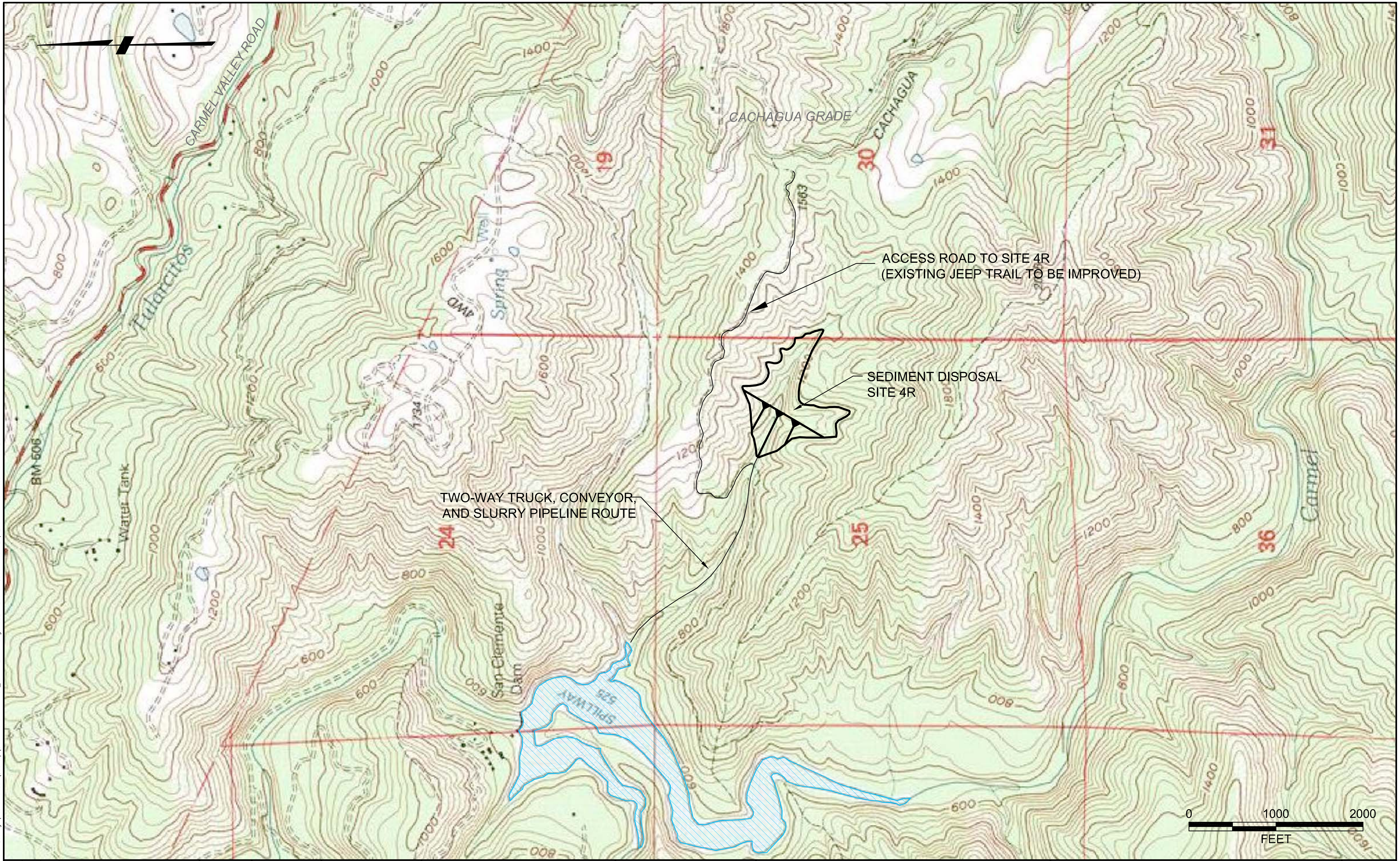

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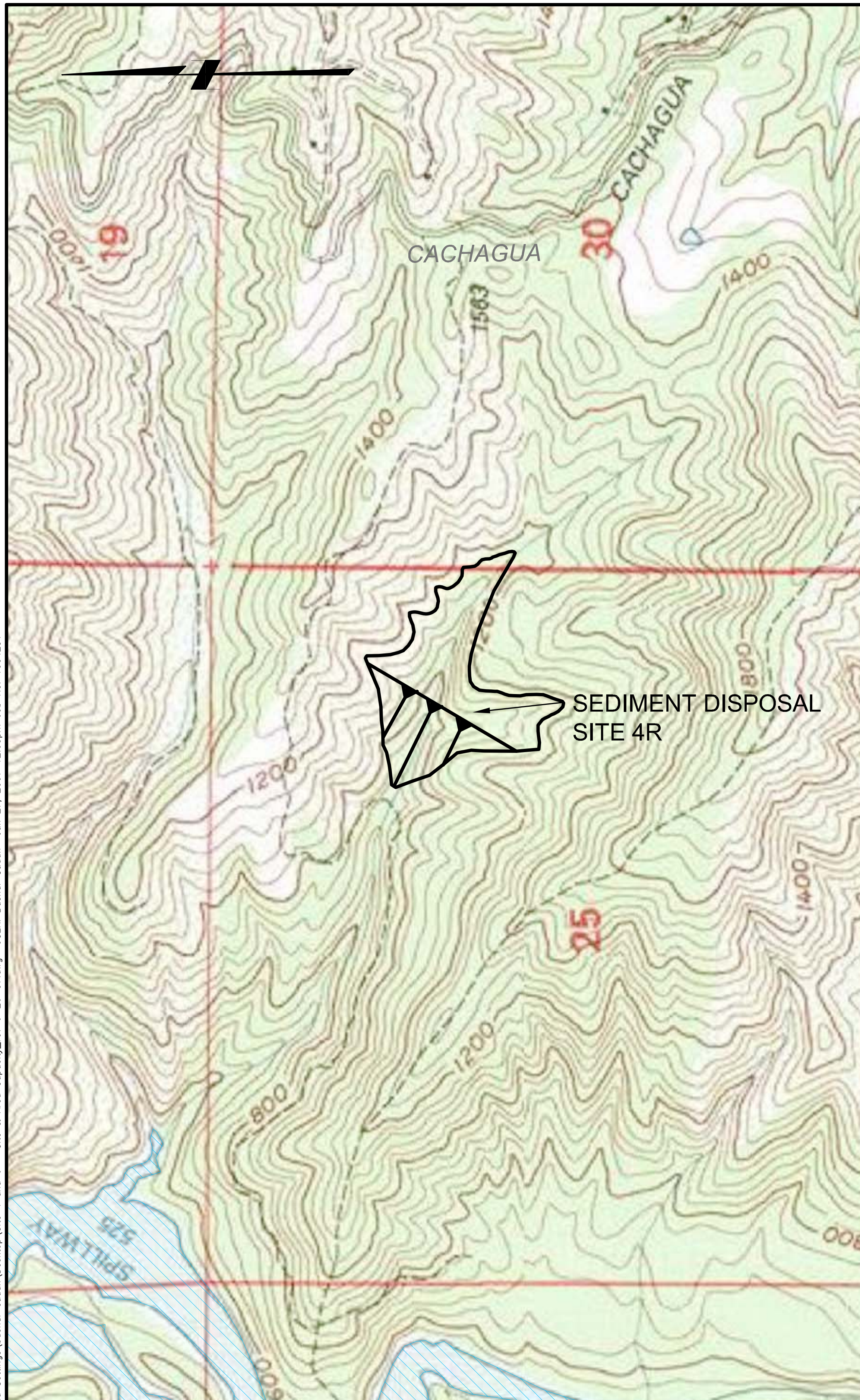
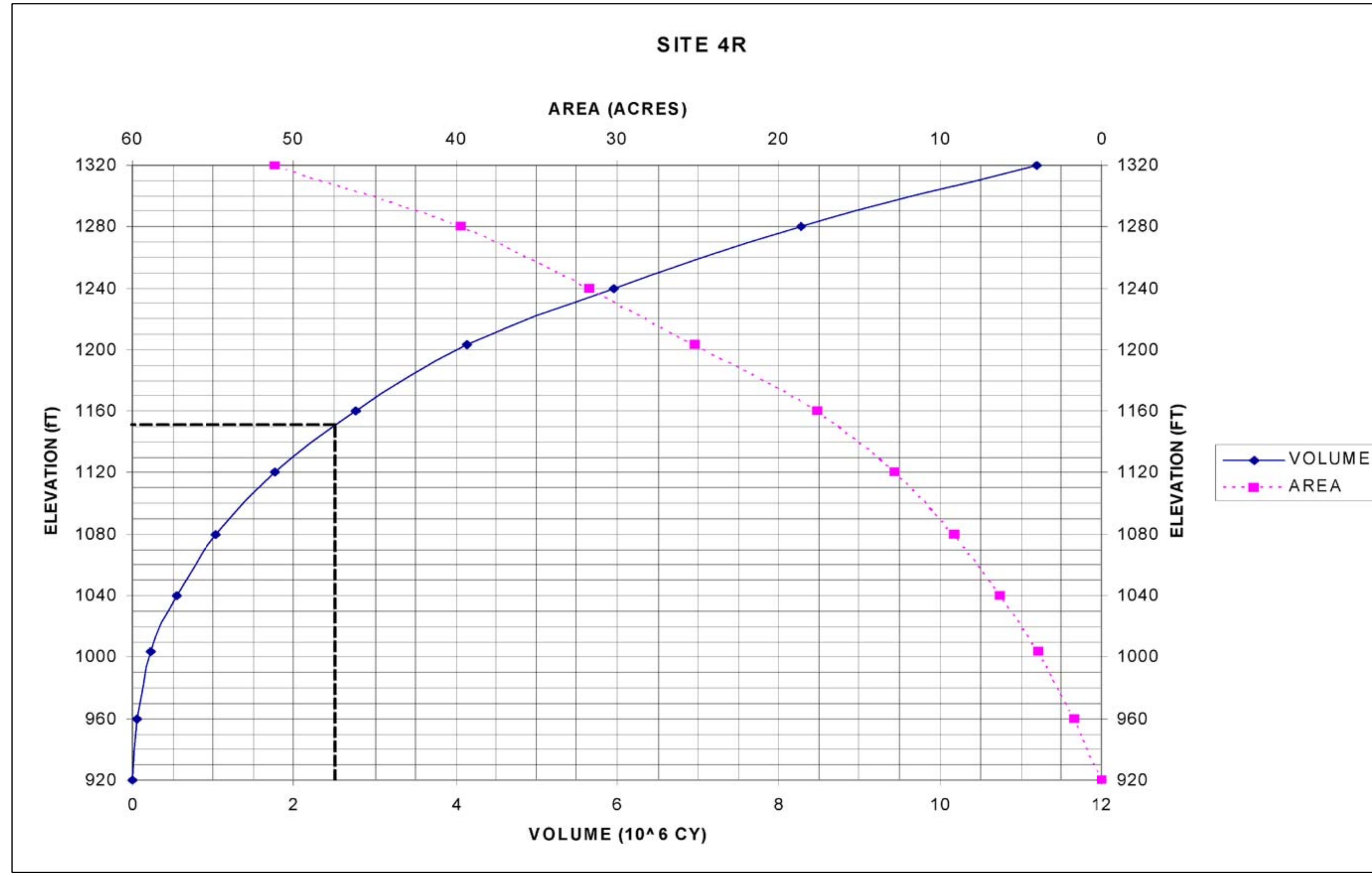
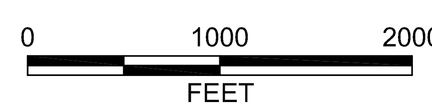
SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
PLAN OF SEDIMENT DISPOSAL SITE 4R

FIGURE 4







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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
AREA–CAPACITY CURVES OF SEDIMENT DISPOSAL SITE 4R

FIGURE 5

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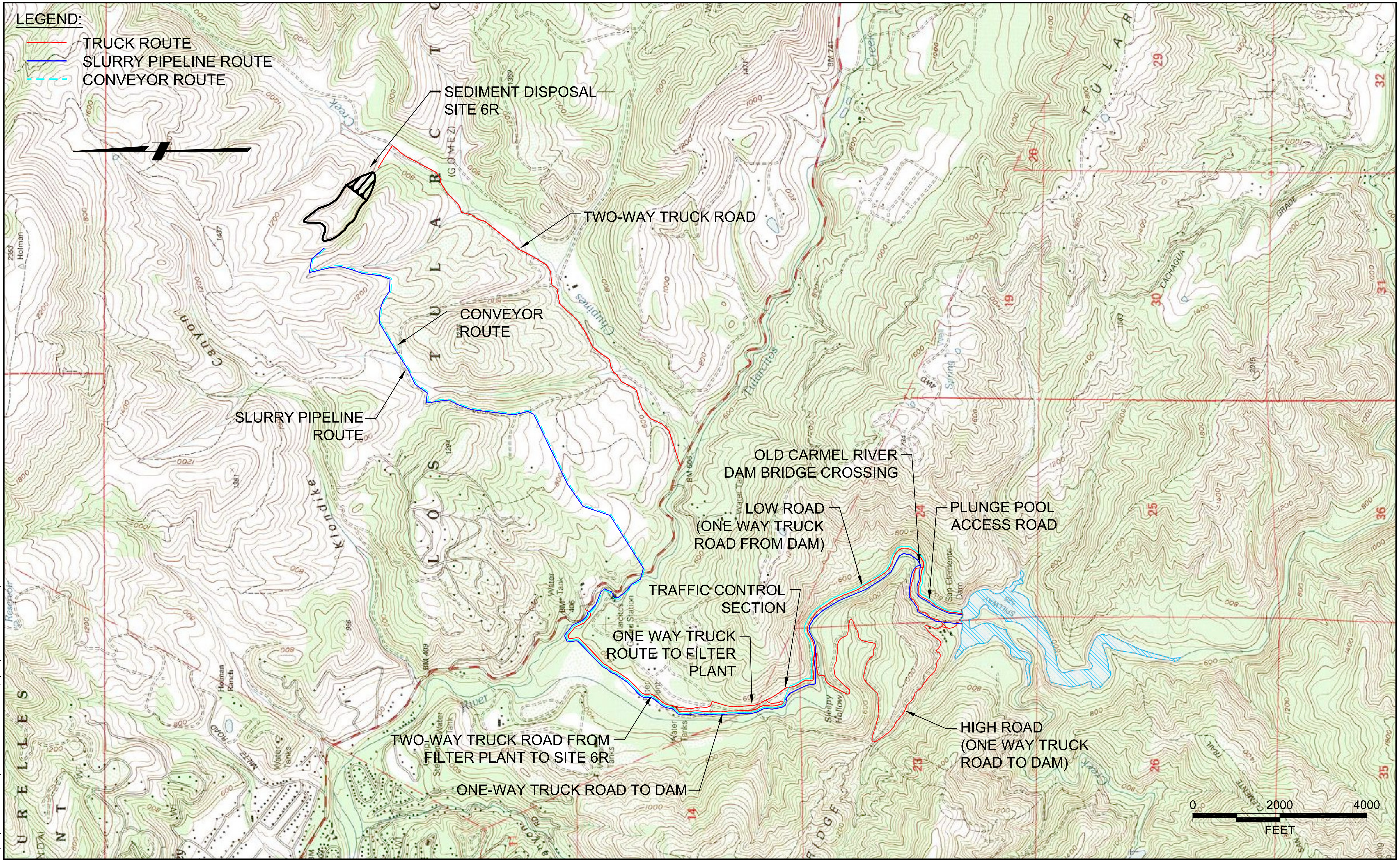

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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PLAN OF SEDIMENT DISPOSAL SITE 6R

FIGURE 6

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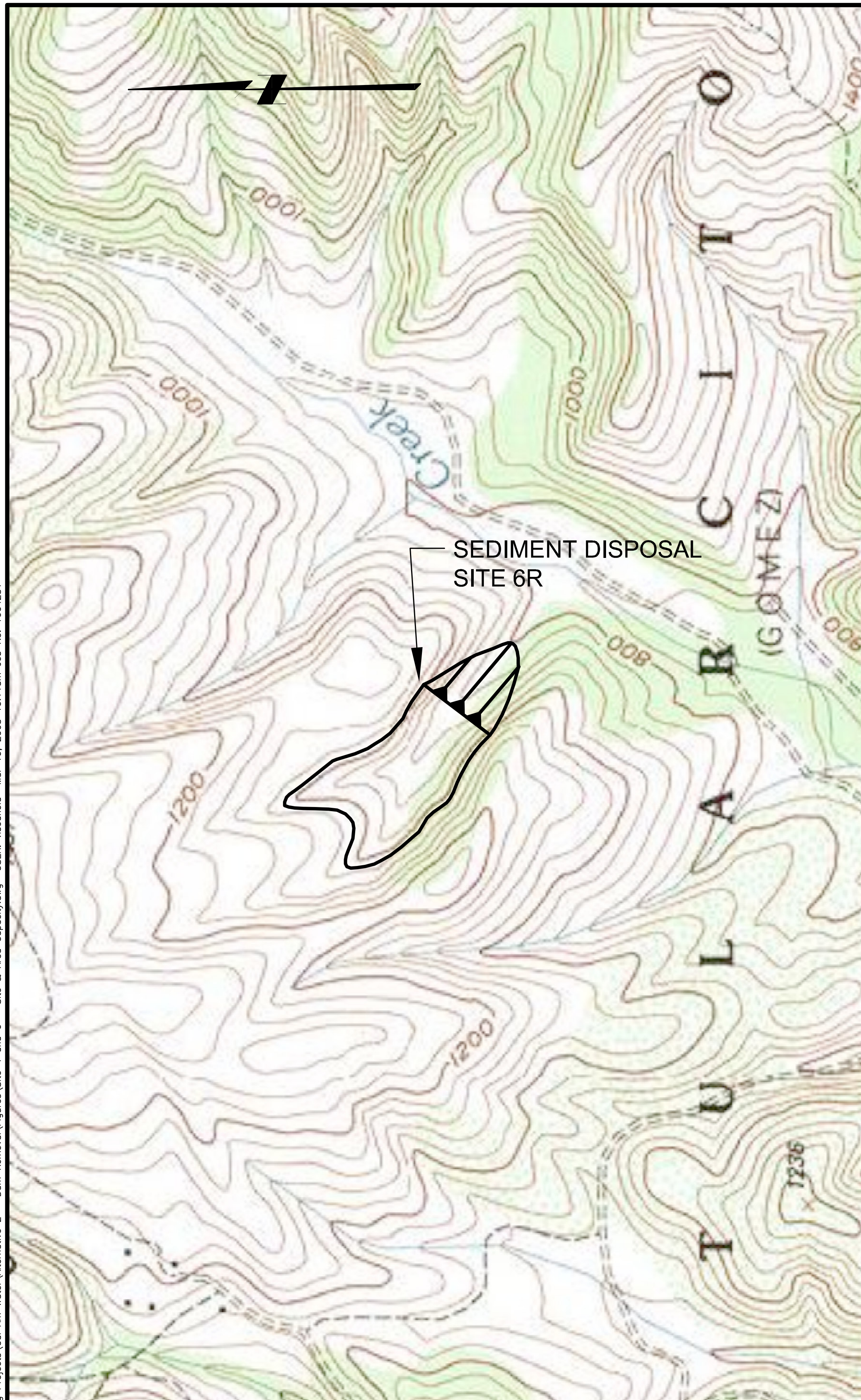

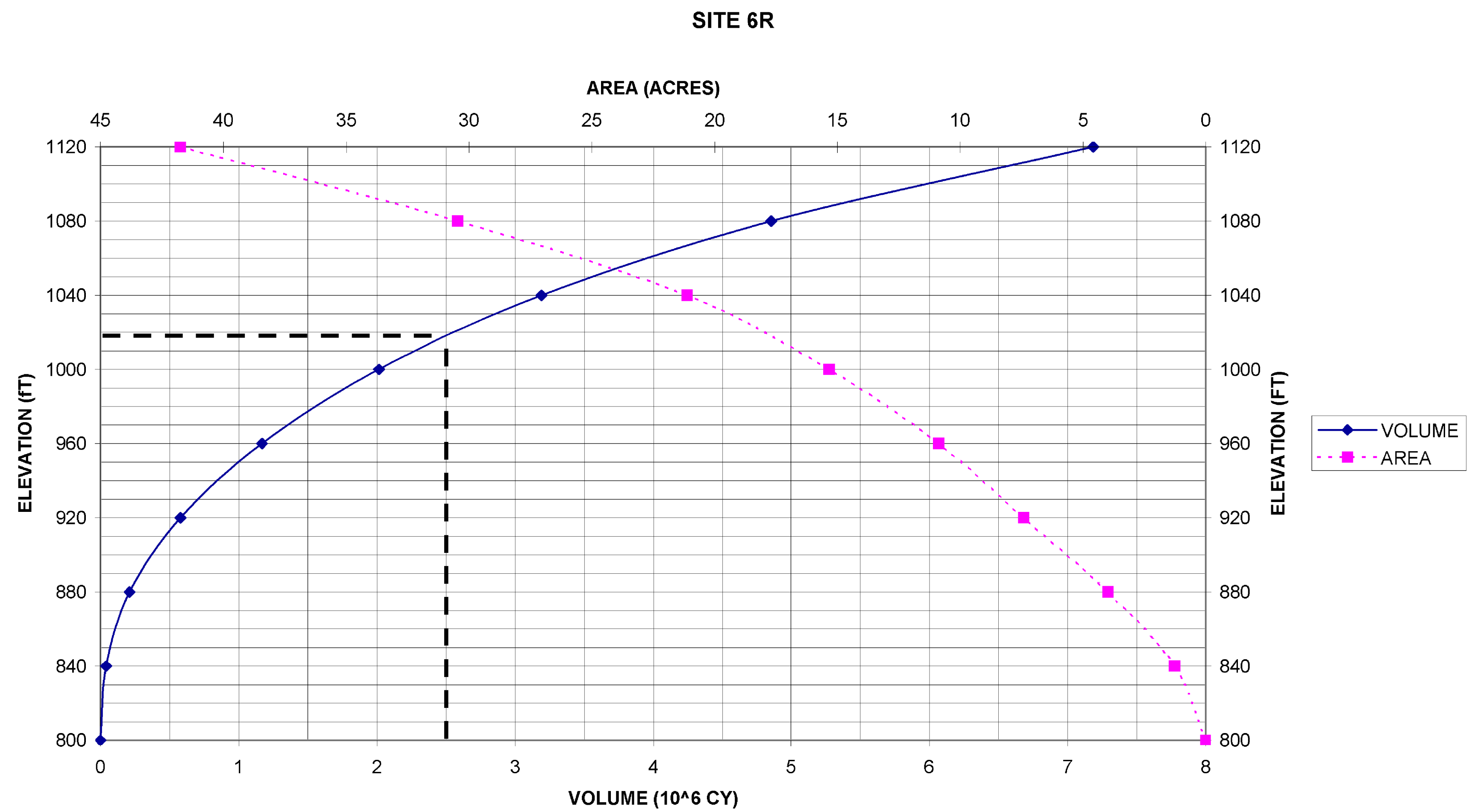

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CALIFORNIA AMERICAN WATER
SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
AREA–CAPACITY CURVES OF SEDIMENT DISPOSAL SITE 6R

FIGURE 7

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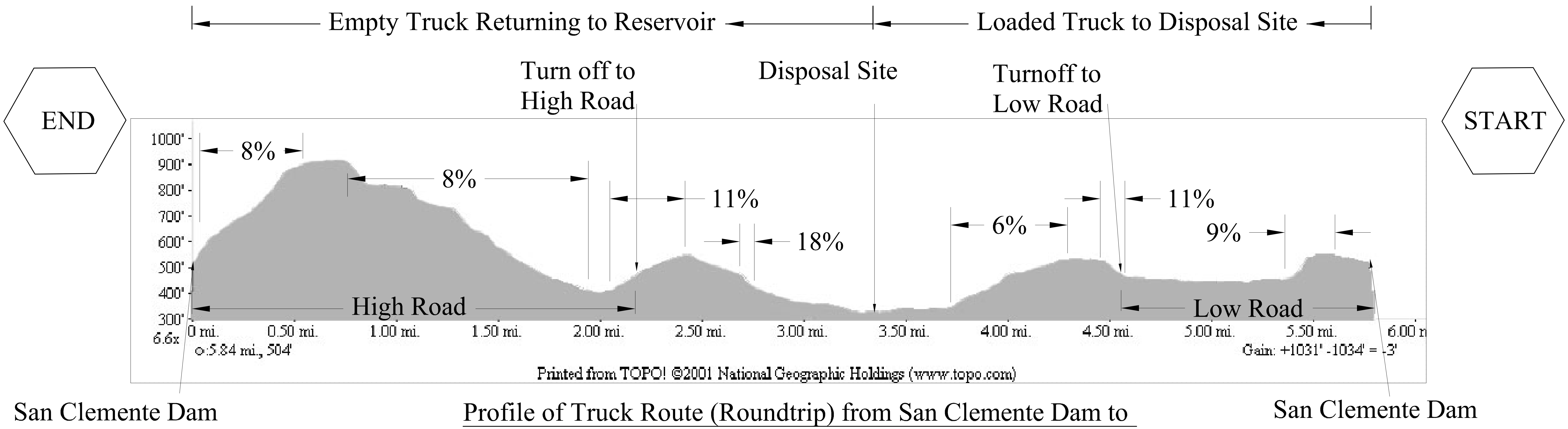

Profile of Truck Route (Roundtrip) from San Clemente Dam to Sediment Disposal Site 1 and Back to San Clemente Dam

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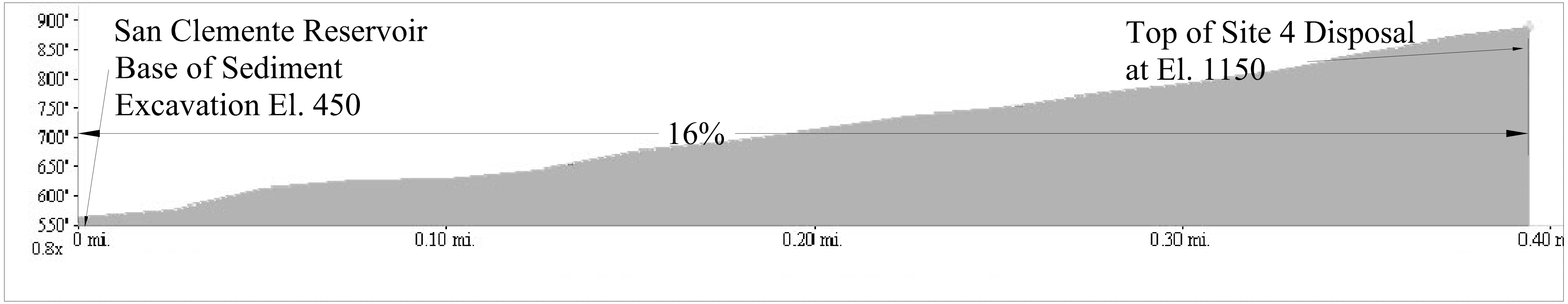
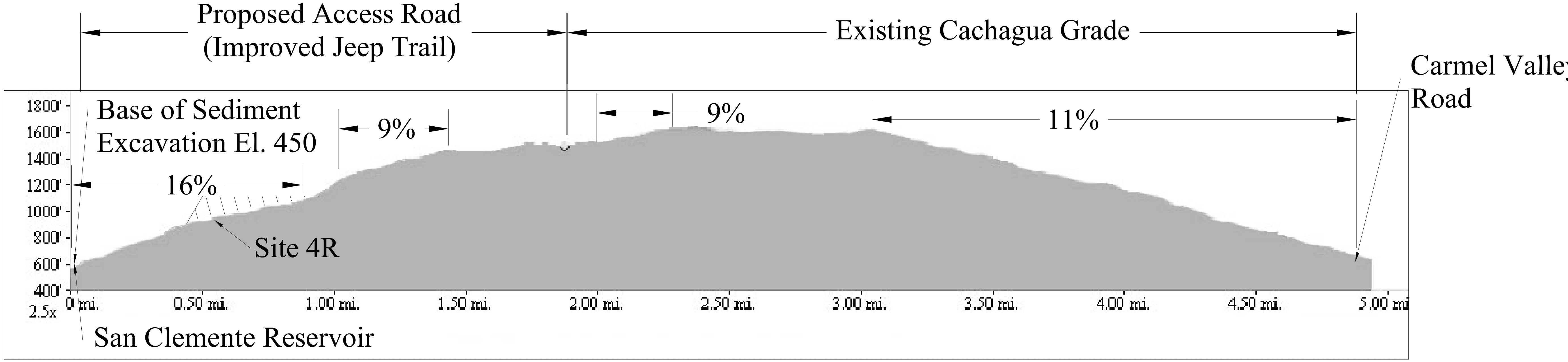
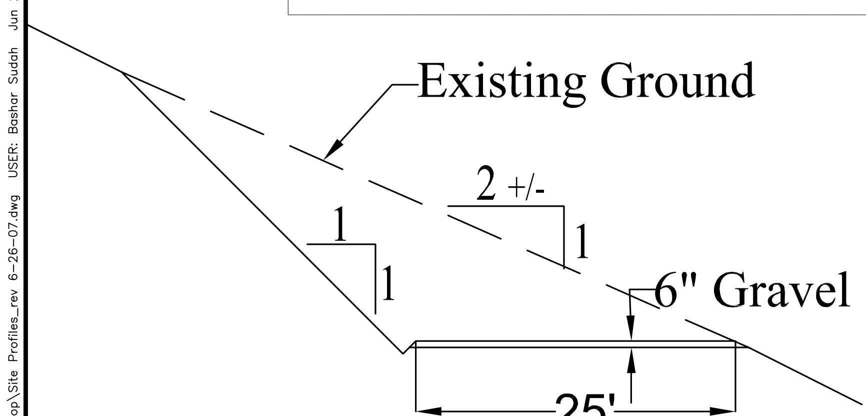


Profile of Truck/Slurry/Conveyor Route Between San Clement Reservoir and Site 4R



Profile of Access Road to Site 4R via Cachagua Grade



Typical Haul Road Section to Site 4R

Scale: 1" = 15'

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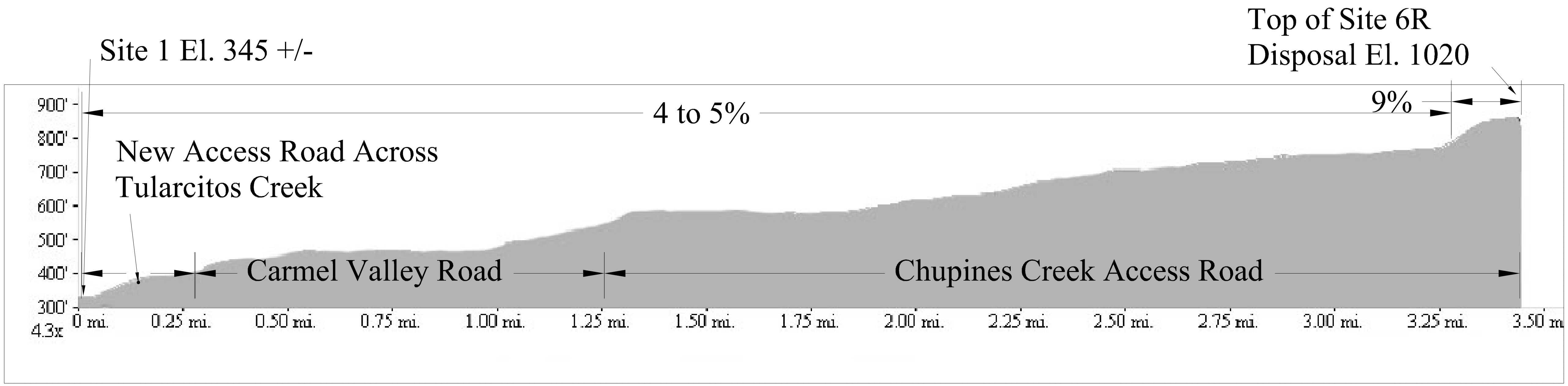
CALIFORNIA AMERICAN WATER
SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PROFILES: SITE 4R TRUCK/SLURRY/CONVEYOR ROUTE

FIGURE 9



Profile of Truck Route from Site 1 to Site 6R - Truck Route via Carmel Valley Road

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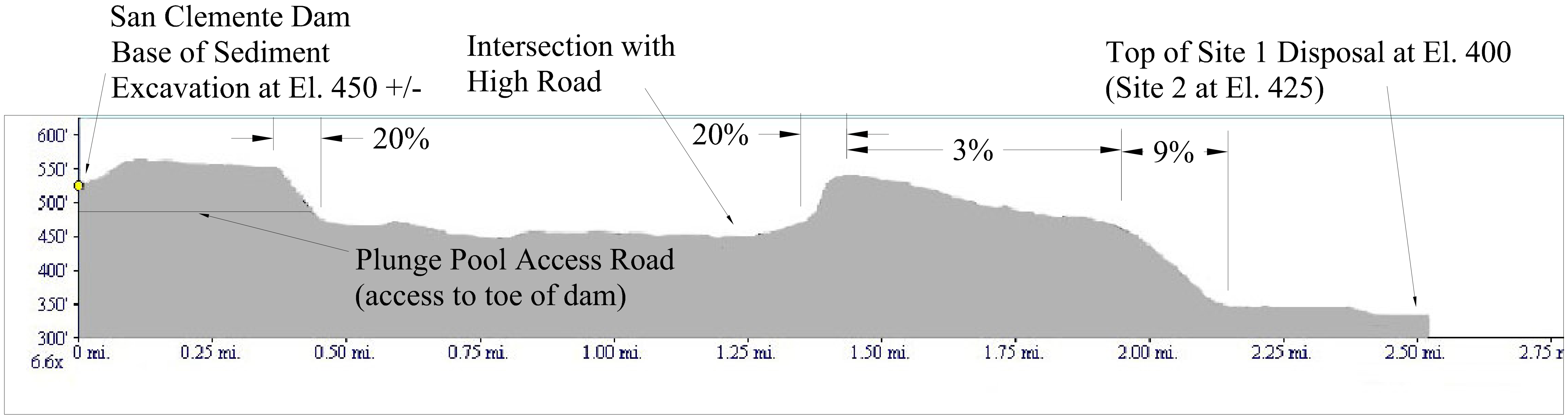
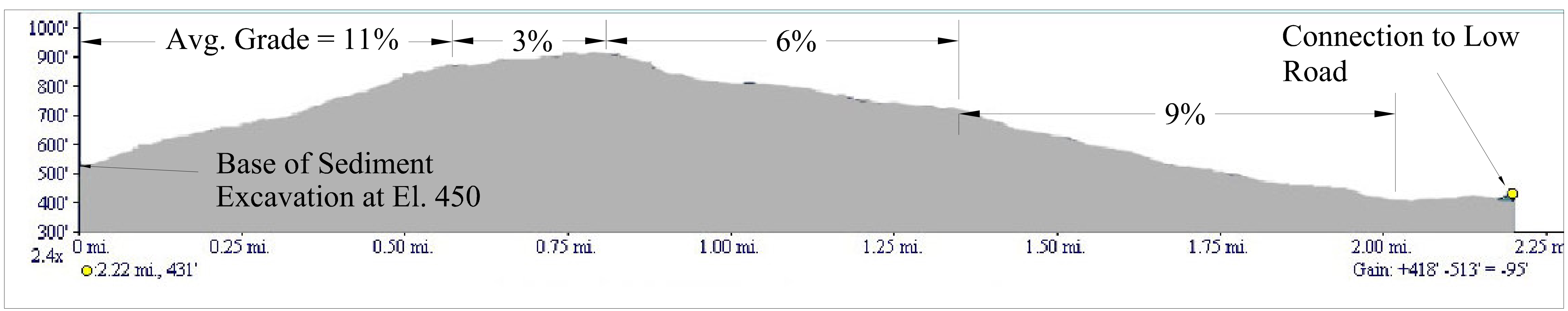


Site 1 Profile - Conveyor/Slurry Route (via Plunge Pool Access Road, San Clemente Drive, and Pipeline Access Road



Site 1 Profile - High Road

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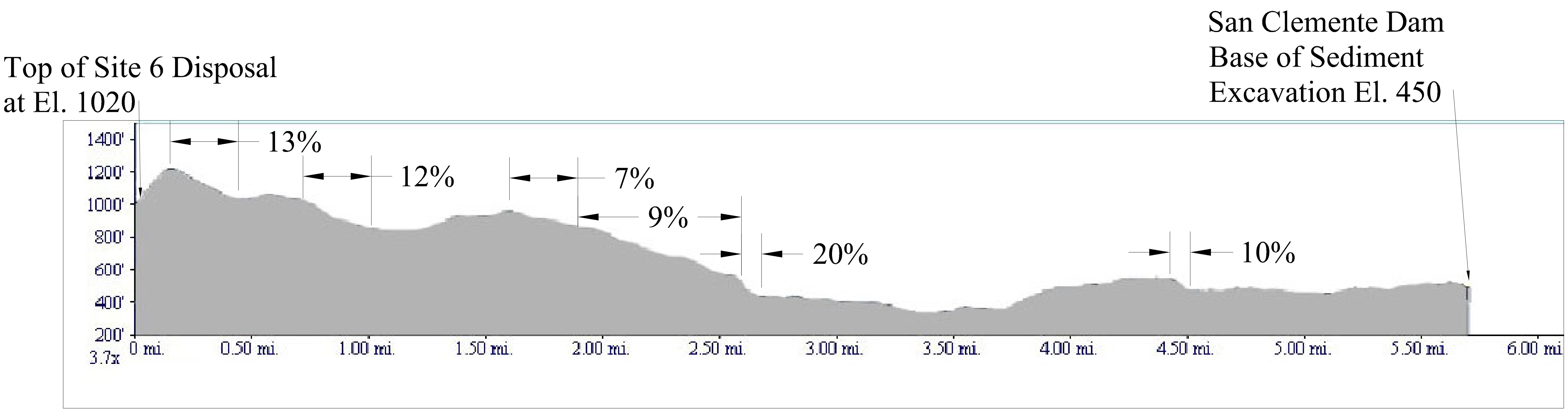
SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PROFILE OF CONVEYOR/SLURRY ROUTE TO SITE 1

FIGURE 11



Profile of Conveyor/Slurry Route to Site 6R

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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PROFILE OF CONVEYOR/SLURRY ROUTE TO SITE 6R

FIGURE 12

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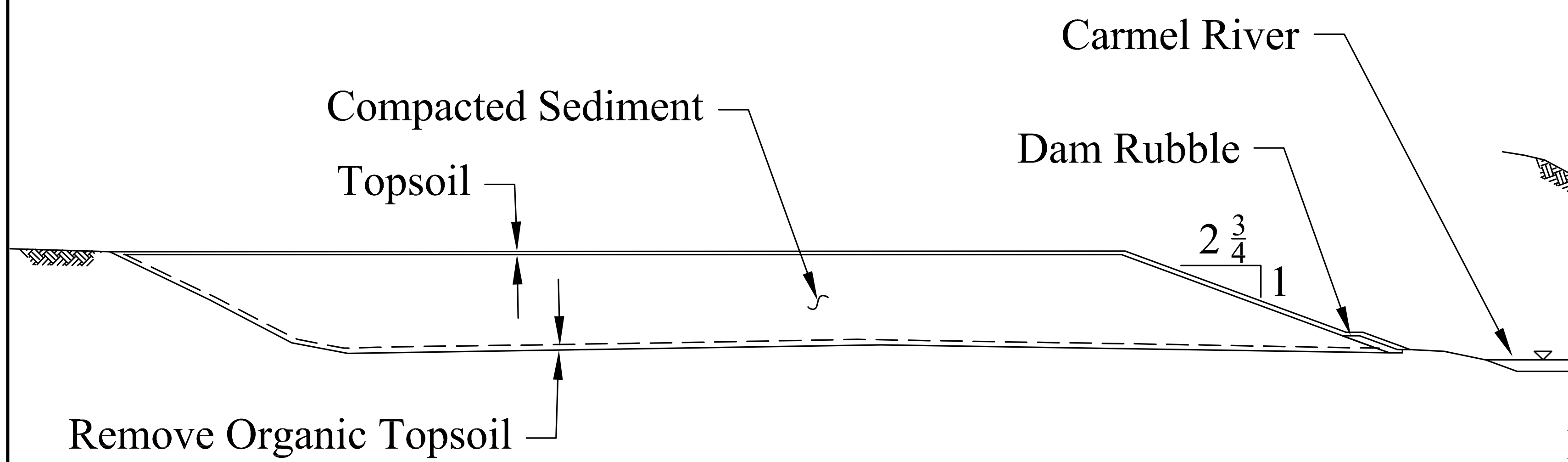
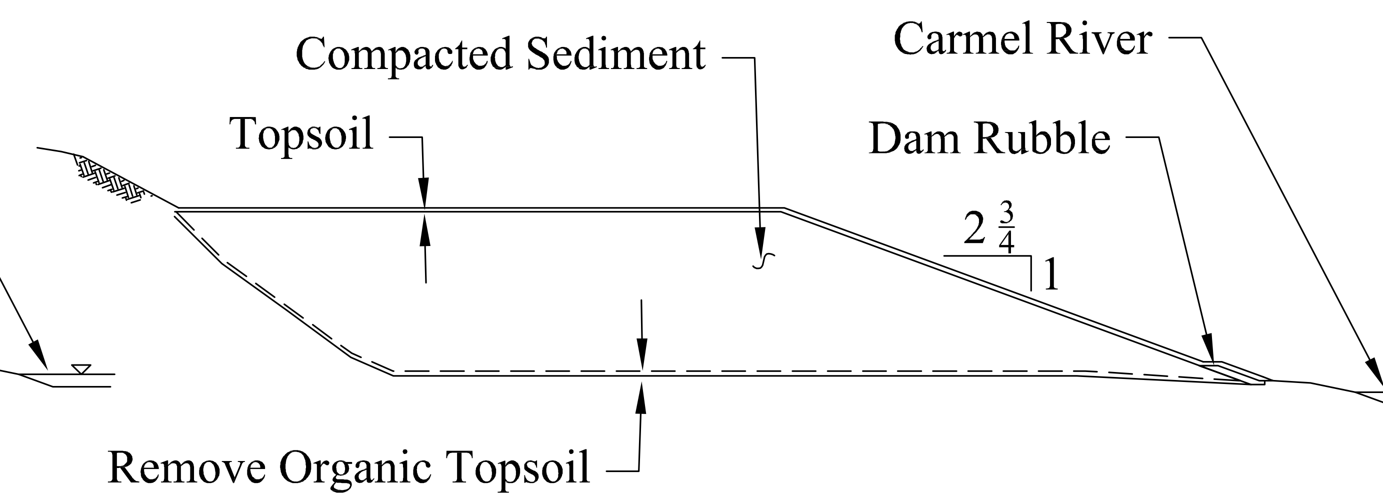
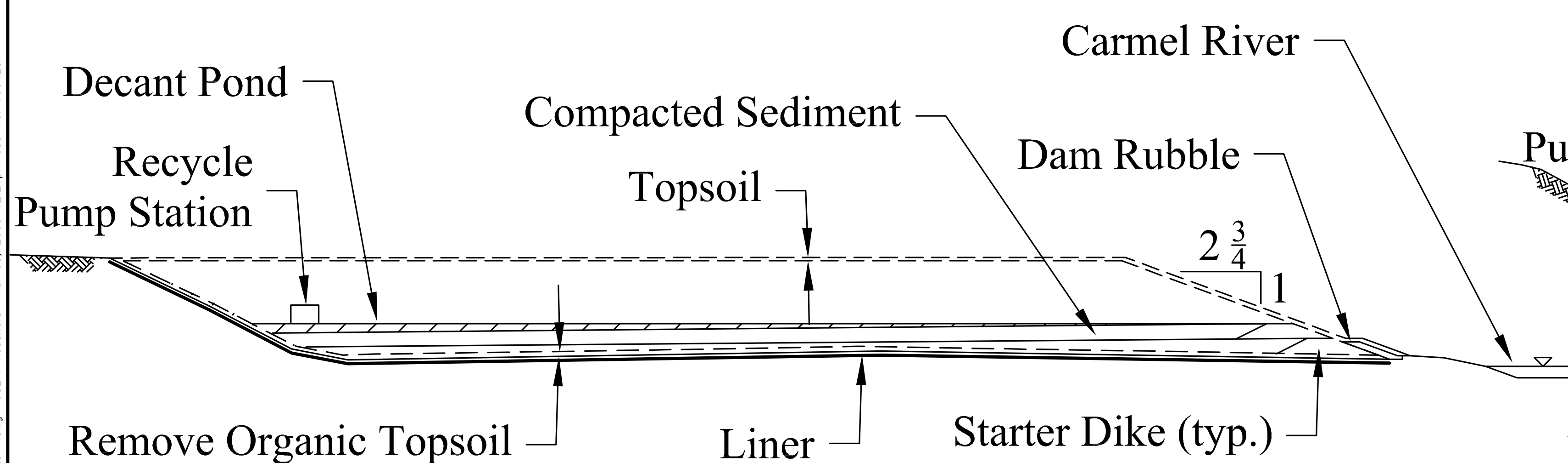


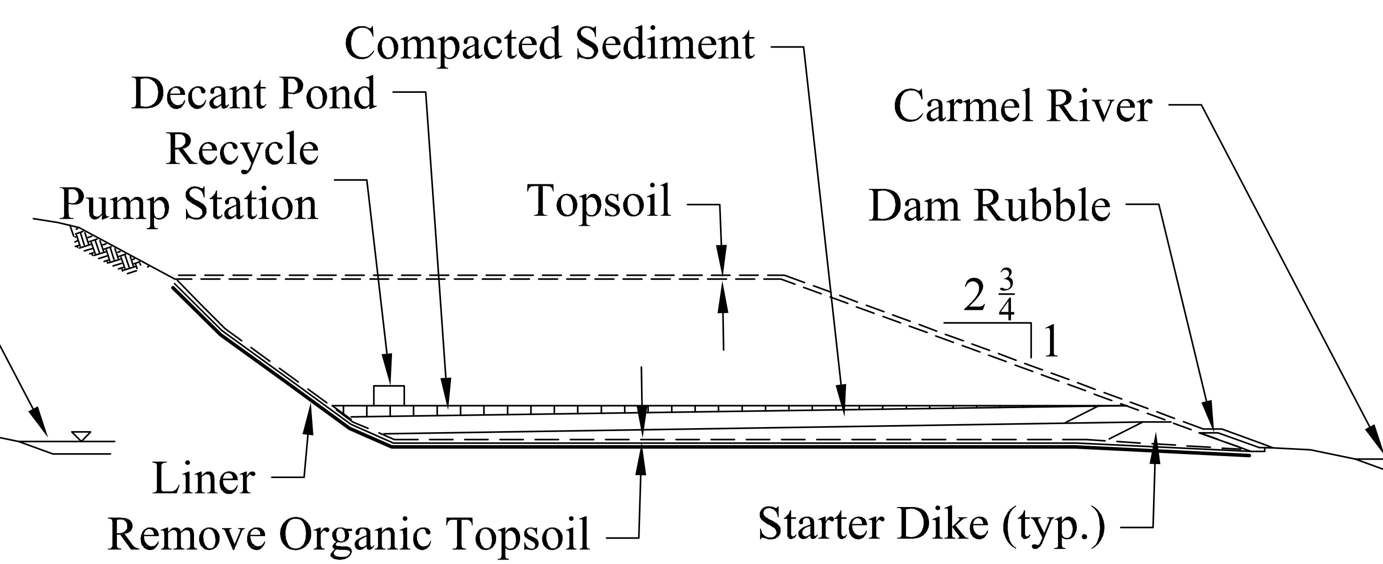
Site 1 Cross Section - Compacted Sediment
(Conveyor Delivery)



Site 2A Cross Section - Compacted Sediment
(Conveyor Delivery)



Site 1 Cross Section - Compacted Sediment
(Slurry Delivery)



Site 2A Cross Section - Compacted Sediment
(Slurry Delivery)

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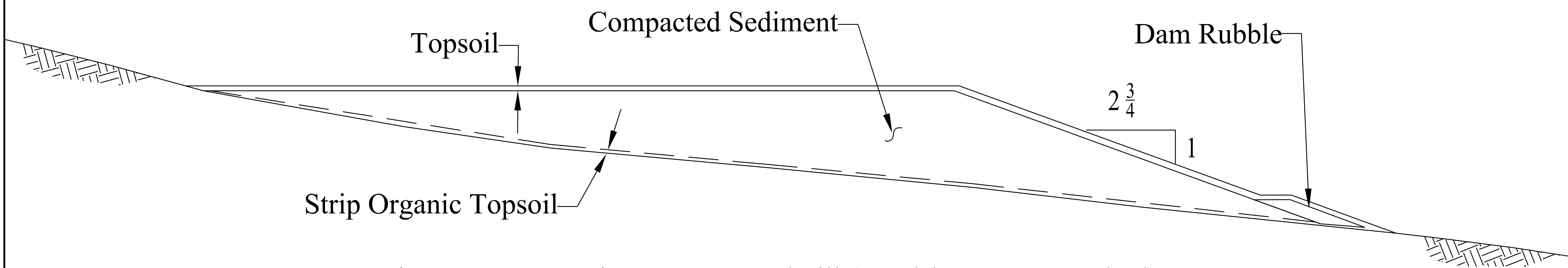
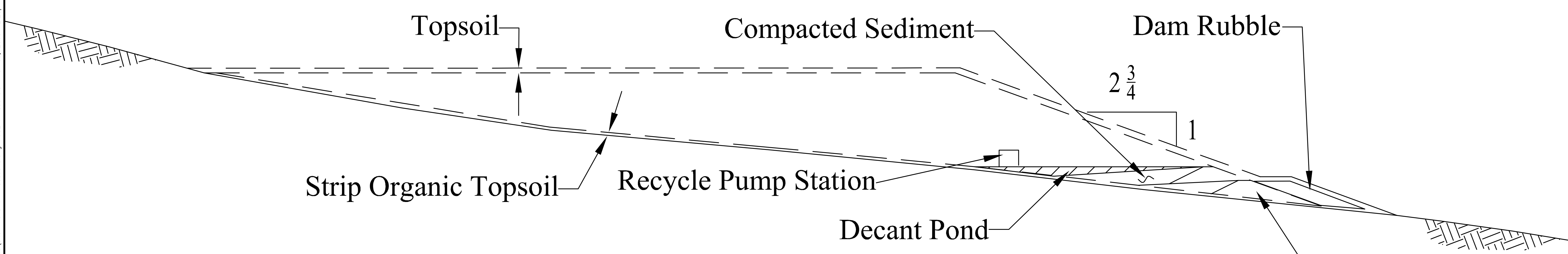
SAN CLEMENTE DAM
SEISMIC SAFETY EIR/EIS PROJECT
SEDIMENT DISPOSAL SITES 1 AND 2A CROSS SECTIONS

FIGURE 13



Site 4R Cross Section - Compacted Fill (Truck/Conveyor Method)



Site 4R Cross Section - Compacted Fill (Slurry Method)

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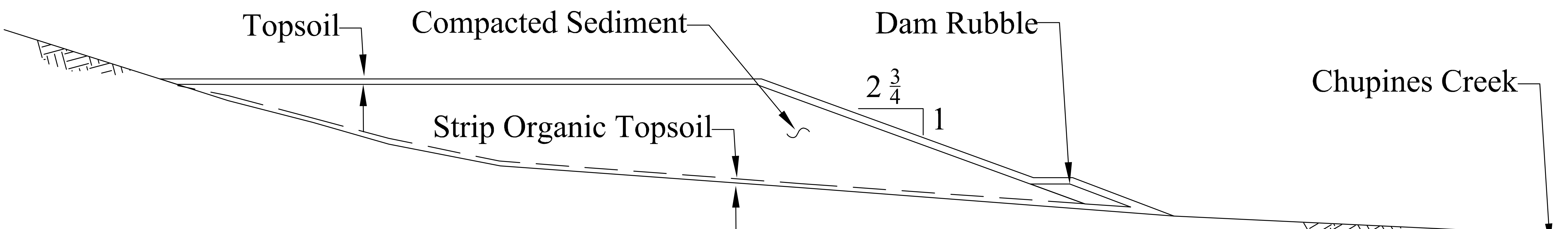
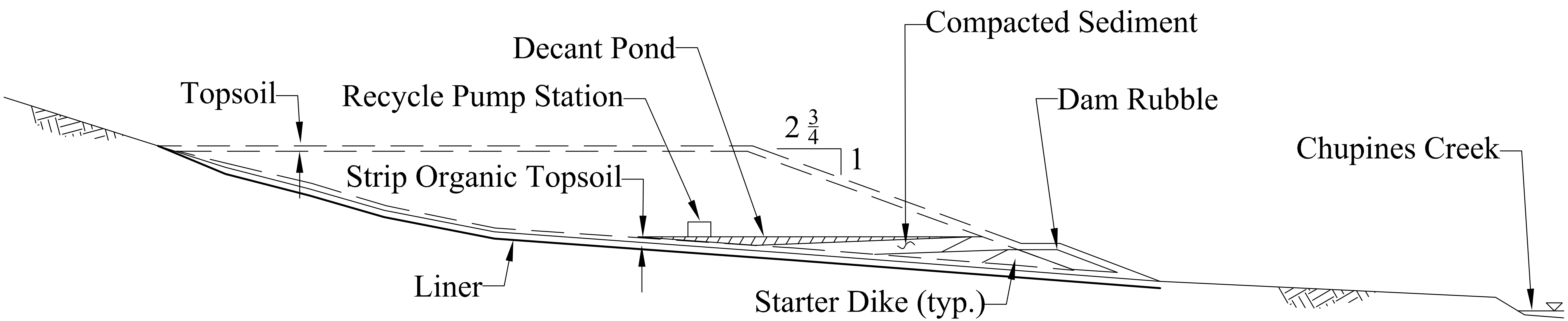


Site 6 Cross Section - Compacted Fill (Truck/Conveyor Delivery)



Site 6 Cross Section - Compacted Fill (Slurry Delivery)

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SEISMIC RETROFIT EIR/EIS PROJECT
SEDIMENT DISPOSAL SITE 6R CROSS SECTION

FIGURE 15

Appendix H

SEDIMENT TRANSPORT & DISPOSAL ENVIRONMENTAL CONSTRAINTS ANALYSIS

APPENDIX H

SEDIMENT TRANSPORT & DISPOSAL ENVIRONMENTAL CONSTRAINTS ANALYSIS

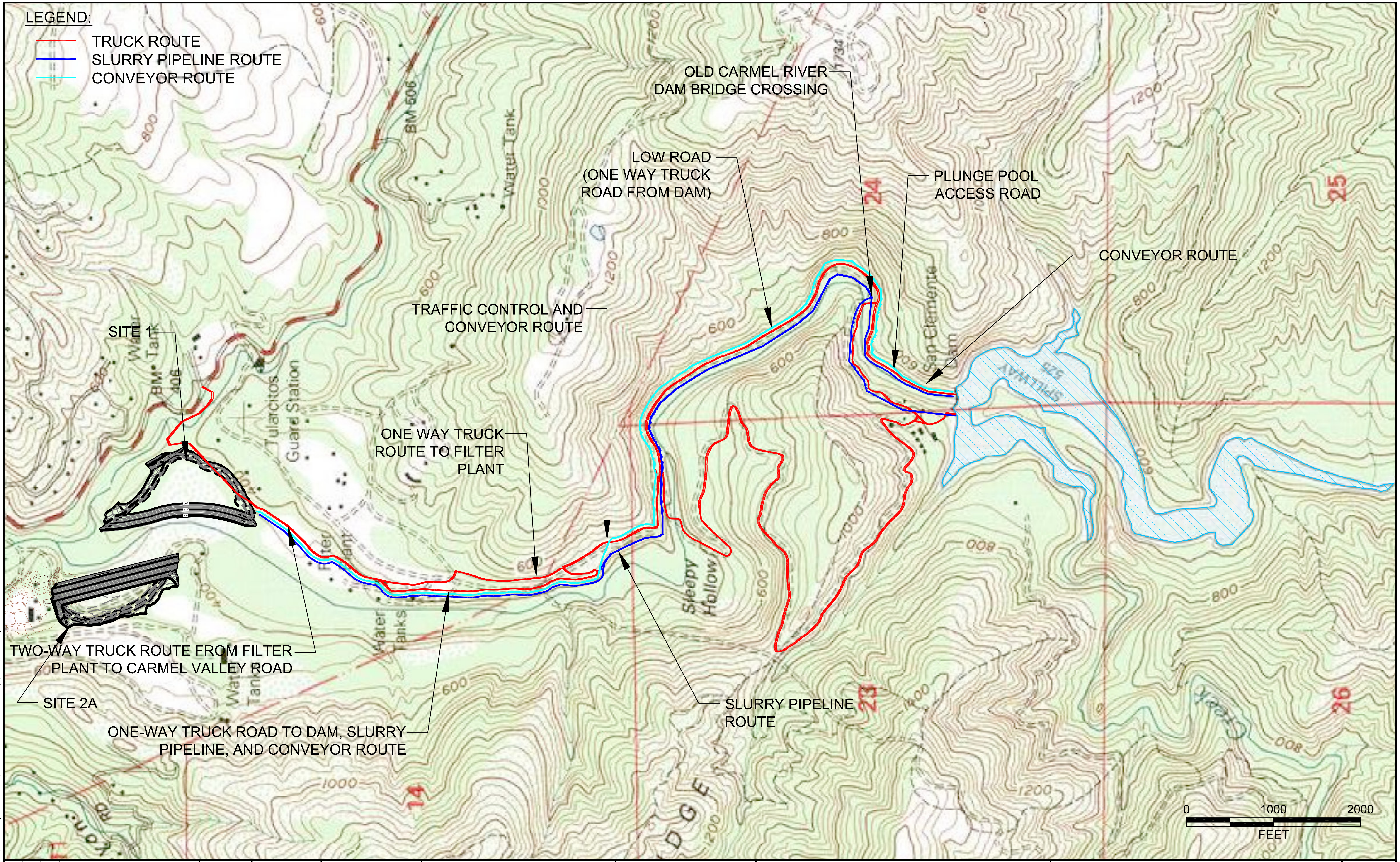
One of the most difficult challenges in implementing the dam notching and removal alternatives was to find a feasible site for permanent disposal of the sediment to be excavated from the reservoir. The site had to have enough capacity to contain the sediment, had to be located in the immediate vicinity of the reservoir and be easily accessible from it, and had to be remote enough so that the sediment transport activities can be conducted with a minimum of impact to the surrounding communities.

Several studies of potential sediment disposal sites and sediment excavation and transport methods have been conducted over the years. Moffatt & Nichol (1996) evaluated an array of potential sediment disposal sites, ranging from disposal sites in the vicinity of the reservoir to distant sites where the sediment could potentially be used for beach replenishment or restoration of military grounds. Not surprisingly, it was found that disposal costs would increase proportionally to the distance between the reservoir and the disposal site. Subsequently, the California Department of Water Resources (DWR) identified potential disposal sites in a regional map of the San Clemente Dam area (DWR 2002).

More recently, for the current EIS/EIR effort, MWH and ENTRIX considered several sites within three miles from the reservoir (shown on Figure H-1), including the sites identified by DWR, and evaluated several potential sediment excavation and transport methods as presented in the “Technical Memorandum on Screening of Sediment Disposal Sites” (MWH, 2005) included in Appendix A. A preferred site, referred to as Site 4R, was selected based on the results of this and previous studies. Site 4R is closest to the reservoir and by far the most advantageous site of those considered from an engineering standpoint. While the site is higher in elevation than the reservoir, transport costs and energy consumption associated with sediment disposal operations would still be lowest for this site versus the other sites considered. Site 4R is relatively remote and therefore the interface between construction operations and the public would be reduced. Because of its remoteness, sediment removal could proceed in two daily shifts without disturbing neighboring communities, thus resulting in a shorter schedule than for some of the other sites considered.

E.1 INTRODUCTION & APPROACH

As part of the San Clemente Dam Seismic Safety EIR/EIS, ENTRIX conducted a preliminary screening environmental constraints analysis for the potential major sediment disposal sites and conveyance routes identified for the project by MWH. The purpose of the screening analysis was to rank the sediment transport and disposal alternatives qualitatively in terms of their environmental constraints.



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SAN CLEMENTE DAM
SEISMIC RETROFIT EIR/EIS PROJECT
PLAN OF SEDIMENT DISPOSAL SITES 1 AND 2A

FIGURE 2

XREF: X-TOPO CONTOURS CAL-AM BDR
FILE: F:\Shared\Working Projects\Cal Am Water\Alternative 2 - Dam Removal\Figures\Site 1.dwg USER: visaahola Mar 10, 2005 11:53am Job No: 1004231

The environmental constraints analysis was used by the San Clemente Dam Seismic Safety Project Core Team in conjunction with an engineering screening conducted by MWH to select a preferred sediment transport and disposal alternative to be used in the EIR/EIS for all dam alternatives that require offsite sediment disposal (the dam removal and dam notching alternatives).

The sediment transport and disposal alternatives environmental constraints were evaluated qualitatively. Each site was ranked according to environmental constraints identified for (1) cultural and visual resources; (2) land use and land ownership; (3) traffic and safety; and (4) terrestrial biology. An integrated matrix was developed to present the relative ranking of each of the sediment transport and disposal alternatives for each of the four areas of environmental constraint. At the Core Team meeting held in Sacramento CA on March 29, 2005, the Core Team considered the simple ranking and discussed the weight accorded to each criteria to determine an overall rank. Based on the environmental matrix and engineering review, the Core Team established an overall ranking for both transport and disposal, and selected Site 4R as the preferred sediment disposal alternative. The preferred sediment transport method was a mix of road and conveyor belt: sediment will be directly transported to Site 4R via conveyor belt from the east side of the reservoir. Site 4R will also be accessed by road from the east, by improving an existing jeep trail leading from Cachagua Grade to the site.

The selected sediment transport and disposal alternative is analyzed in more detail in the EIR/EIS. Each dam alternative include an evaluation of the existing environment, impacts and mitigation for the selected sediment transport and disposal alternative.

E.2 SEDIMENT TRANSPORT & DISPOSAL ALTERNATIVES

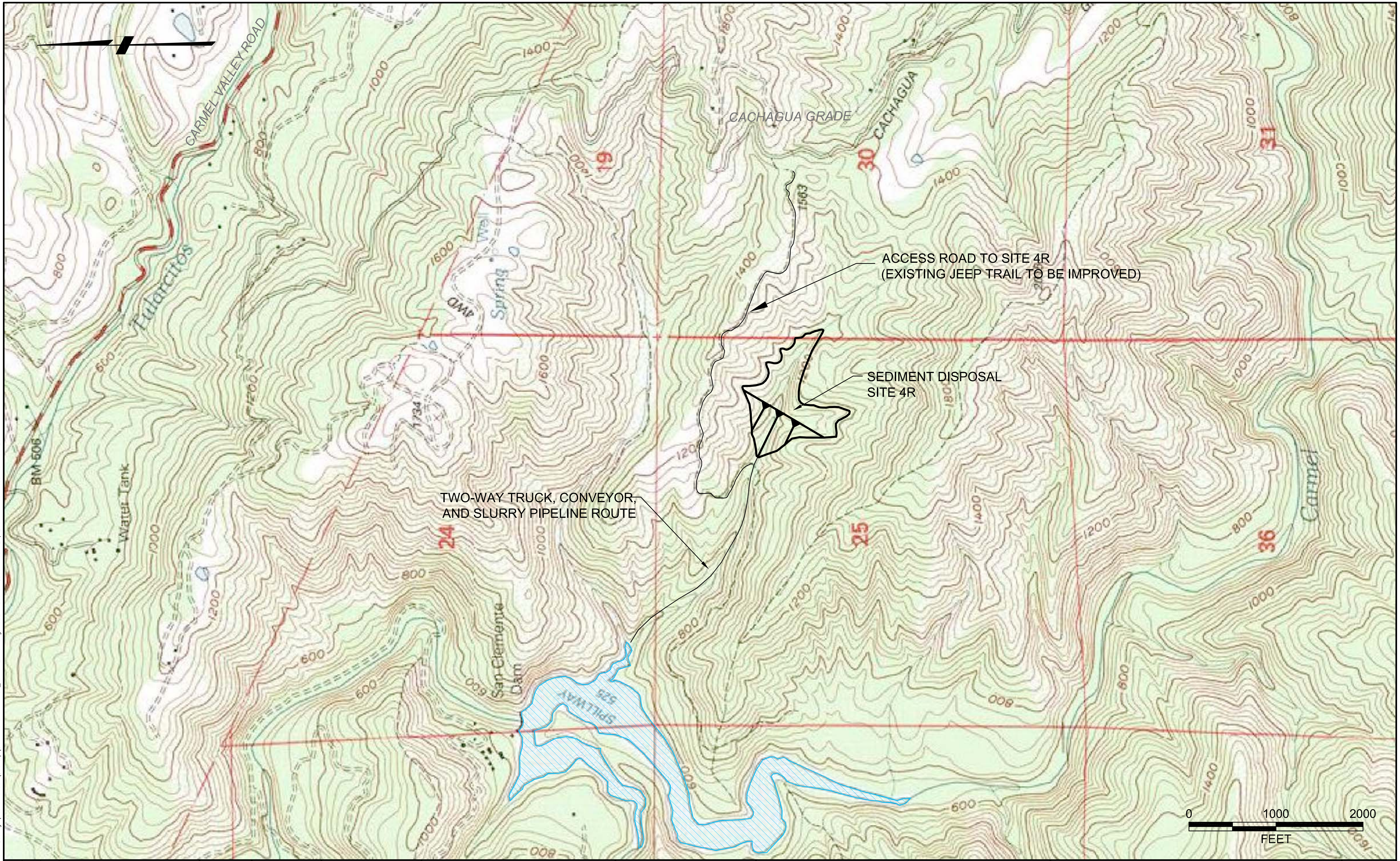
Four potential major sediment disposal sites were identified by MWH during engineering screening (Figure H-2 and Figure H-3):

- Site 1 is a 20 acre site 2.5 miles north of San Clemente Dam, near the confluence of Tularcitos Creek and the Carmel River, downstream of the Carmel Valley Filter Plant.

- Site 2A occupies 17 acres across the Carmel River from Site 1, on the site of the Stone Pine horse track. Sites 1 and 2A would be paired for sediment disposal in order to develop sufficient capacity to receive the entire volume of sediment accumulated behind San Clemente Dam.

- Site 4R is a 23 acre site located in a ravine 0.6 miles east of San Clemente Reservoir.

- Site 6R is a 23 acre site located in a ravine within Rancho Chupinos, 5.7 miles north of SCD and 2.1 miles north of Carmel Valley Road.



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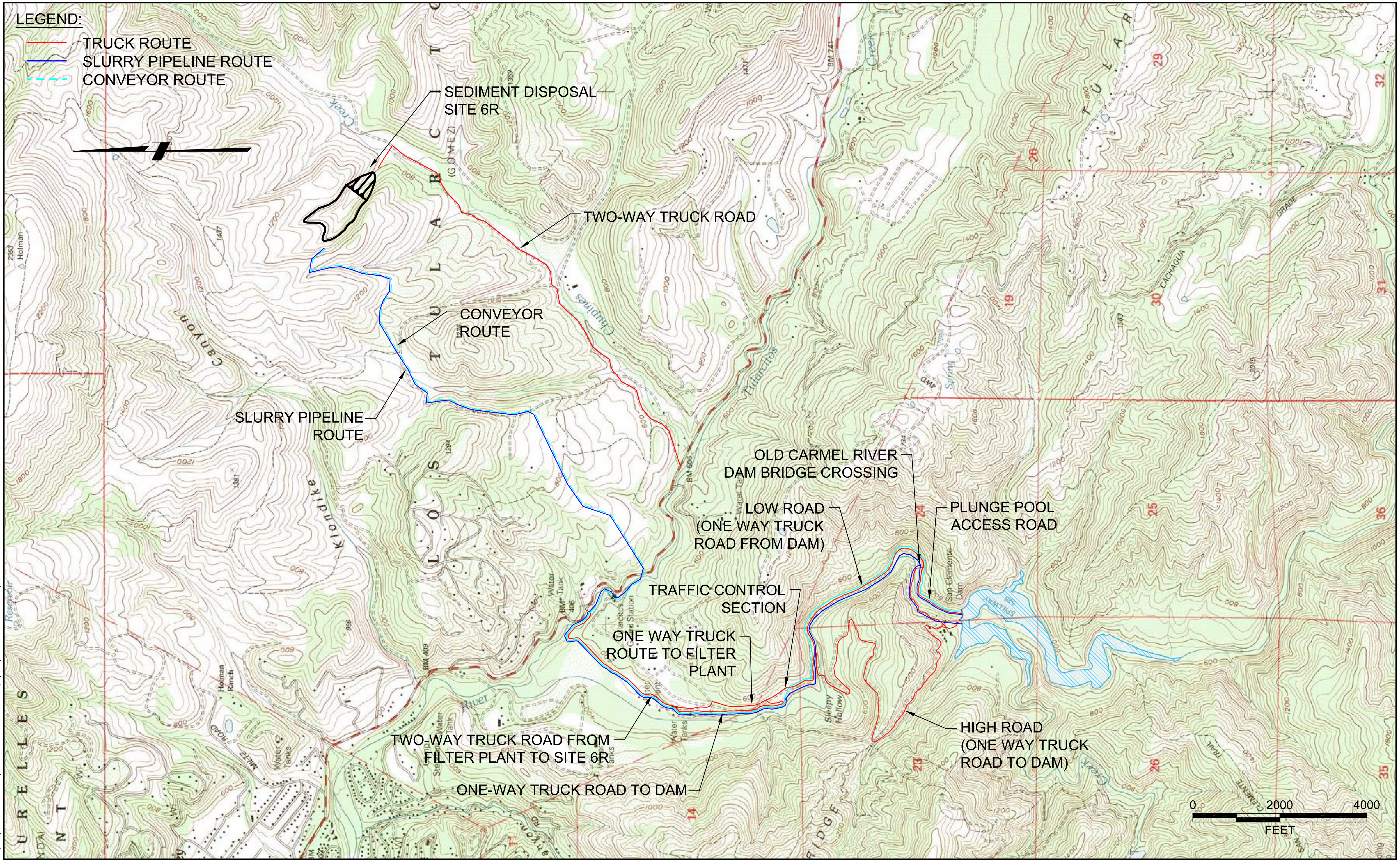

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PLAN OF SEDIMENT DISPOSAL SITE 6R

FIGURE 6

XREF: BDR
FILE: F:\Shared\Working Projects\Cal Am Water\Alternative 2 - Dam Removal\Figures\Site 4 and 6 - Plan.dwg USER: vlsoahola Mar 10, 2005 11:55am Job No: 1004231

Three methods of sediment conveyance were identified for engineering screening: slurry pipeline, conveyor belt, and trucking.

- Sites 1 and 2A could be served by slurry or conveyor.
- Site 4R could be served by any of the three methods.
- Site 6R could be served directly by slurry or conveyor, or by conveyor to Site 1 followed by trucking from there.

FIELD RECONNAISSANCE & EVALUATION

On March 22 and 23, 2005, ENTRIX conducted field reconnaissance to inspect the three potential sediment disposal sites and their associated transport routes. Table H-1 provides a summary evaluation of the environmental constraints. Each row of the table presents the criteria used in environmental constraints analysis; the table columns present each of the sites evaluated.

SITES 1 AND 2A

Cultural Resources

Neither Site 1 nor Site 2A contains visible cultural resources. Site 1 is heavily overgrown and ground visibility is very limited. Field reconnaissance did not observe any structure or other potentially historic resource or evidence of past activities in the area. No surface evidence of archaeological resources was evident. Site 2A is currently used as an equestrian racetrack. None of the associated facilities appeared to be greater than 50 years old and no historic resources were visible. The ground has been graded for the track, and no archaeological resources were evident.

Land Ownership

CAW owns both sites. Site 2A is leased to Stone Pine horse stables. The western and northern edges of site may encroach on property owned by a private landowner.

Land Use

Site 1 is currently vacant, although two wells are present on the site. The site's topography is relatively flat and sparsely vegetated with shrubs. The site is adjacent to two existing residences, one of which has tennis courts. Access to the residences is from San Clemente Drive, which is a private road. The residences are located southeast of Site 1, approximately 1,000 to 1,500 feet from the site. The tennis court is approximately 200 feet from the site. The Carmel River is located directly west of the site.

Table H-1: Summary of Sediment Transport and Disposal Environmental Constraints Analysis			
Criteria	Sediment Transport/Disposal Alternative		
	Site 1/2A	Site 4R	Site 6R
Cultural/Visual	No visible cultural resources. One record of cultural resources at Site 1 (possible village site identified in RDEIR). Greatest potential for cultural resources based on landforms. Sites are visible to existing residences and horse stables.	No visible cultural resources. No records of cultural resources. Little potential for cultural resources based on landforms. Sites are not visible to existing residences.	No visible cultural resources. No records of cultural resources. Medium potential for cultural resources based on landforms. Site is visible to ranch home but not other nearby residences.
Land Use/Land Ownership	CAW is landowner, disposal may encroach on nearby private land-owner. Disposal Site 1 adjacent to two residences, one with tennis courts. Site 2A leased to Stone Pine horse stables, used as equestrian racetrack. Transport route exists and is owned by CAW.	Monterey Peninsula Regional Park District is landowner (no conversations held with District). Disposal site is located in steep, densely vegetated canyon. Hunting cabin ca. 1.5 miles west. Transport route crosses densely vegetated land owned by Park District.	Private landowner (initial conversations indicate a willing seller). Disposal site is located in open, rolling rangeland. Rancher's home and outbuildings located on the property. Transport route crosses lands owned by CAW and private landowners. Primary uses in vicinity are ranching and open space.
Traffic & Safety	Trip generation (500 yds/hr): none (use slurry pipeline or conveyor belt) No traffic related impacts during transport operations.	With truck transport (500 yds/hr), trip generation = 46 trips/hour, 828 trips/day for 3 construction seasons. No direct impacts by haul operations to other public and private roads. Using Cachagua Road for construction and dam access may impact Cachagua Road (poor geometrics), Carmel Valley Road/Cachagua Road intersection (poor sight distance), and Cachagua Road/Jeep Trail/Dam Access Road intersection (sight distance).	With truck transport (500 yds/hr), trip generation = 76 trips/hour, 760 trips/day for 5 construction seasons assuming truck transport. Impacts to Carmel Valley Road occur at the intersections with the Tularcitos Access Road and Chupines Canyon Access Road. Left turn channelization would be required at each location on Carmel Valley Road. Potential pavement impacts to Carmel Valley Road between the two access roads.
Terrestrial Biology	Habitat: approximately 2.64 miles of vegetation (route). Disposal site occupies grasslands, coast live oak forest, riparian and developed lands, all adjacent to riparian zone.	Habitat: 1.56 miles (route) and 3.23 acres (site) of undisturbed or relatively undisturbed habitat. Disposal site is primarily undisturbed coast live oak woodland. No stream crossings.	Habitat: approximately 5.4 miles of vegetation (similar to Site 1 with an additional 3 mile route primarily in previously cultivated non-native grassland). Disposal site in previously cultivated non-native grassland.

Table H-1: Summary of Sediment Transport and Disposal Environmental Constraints Analysis

Criteria	Sediment Transport/Disposal Alternative		
	Site 1/2A	**Site 4R**	**Site 6R**
	One stream crossing (Carmel River). Sensitive habitats: riparian vegetation adjacent to disposal site. Sensitive species: California tiger salamander, California red-legged frog, western pond turtle, Cooper's hawk, yellow warbler, and Monterey dusky-footed woodrat. Large native oaks.	Sensitive habitats: 0.03 to 1.11 acres of blue oak woodland and 0.02 acre riparian vegetation Sensitive species: California tiger salamander, California red-legged frog, western pond turtle, Cooper's hawk, yellow warbler, Monterey dusky-footed woodrat, and Carmel Valley malacothrix. Many large native oaks.	One stream crossing (Tularcitos Creek) Sensitive habitats: riparian vegetation. Sensitive species: California tiger salamander, California red-legged frog, western pond turtle, Cooper's hawk, yellow warbler, and Monterey dusky-footed woodrat. Large native oaks.

Site 2A is located on the lowest terrace, just west of and above the Carmel River. Land uses on the site include an active horse race practice track, with accompanying barns and fences adjacent to the site and to the north of the site. The Carmel River is located to the east of the site.

The transport routes to the sites are owned by CAW. Land uses in the vicinity of these routes include buildings associated with the Carmel Valley Filter Plant and open grassy areas.

Terrestrial Biology

This alternative would use the existing “low road” to the dam. Any work along the low road potentially could impact riparian vegetation. From the filter plant, the route extends through grassland and coast live oak forest, paralleling the riparian zone. The eastern sediment disposal site (Site 1) is in a grassland/coast live oak/riparian area. The western sediment disposal site (Site 2A) is currently used as a racetrack, with a grassy center oval that is mowed.

Potential impacts to terrestrial biological resources along this route (approximately 2.03 miles) include the probable loss of several large coast live oaks, potential impacts to sensitive riparian vegetation, and potential habitat loss for several special status species, including California tiger salamander, California red-legged frog, western pond turtle, Cooper’s hawk, yellow warbler, and Monterey dusky-footed woodrat. This route has one water crossing at the Carmel River.

Traffic & Safety

This site would be served entirely by conveyor belt or slurry pipeline, and would have no traffic-related impacts.

SITE 4R

Cultural Resources

Site 4R was inaccessible during the field reconnaissance due to the weather and road conditions. However, based on the topographic map, no significant cultural resources would be expected to be found in the site area. The site is located in a deep ravine, with a relatively steep slope to the Carmel River below. Previous site visits by the team field biologist and engineer had identified no structures located within the site area. There is an old hunting camp or homestead near the site, but not within the probable area of potential effect. The landform is not conducive to prehistoric site types found in the area, and it is considered very unlikely that archaeological resources would be found within the boundaries.

Land Ownership

Monterey Peninsula Regional Park District is the owner. There is no indication as to the willingness of the District to receive sediment for disposal at this site.

Land Use

The site is vacant, located in a canyon, and is filled with dense vegetation, largely coast live oaks. Dense vegetation surrounds the site on all sides. Access to the site is from a gated dirt road. Land uses in the vicinity include a hunting cabin located approximately 1.5 miles west of the site. Cachagua Road, east of the site, is a paved road. Some residences are located along Cachagua Road, but are located far from the site itself, and due to the surrounding topography and vegetation have no visibility of the site.

The transport route traverses land owned by the Monterey Peninsula Regional Park District. Land uses on and in the vicinity of the conveyor belt route include vacant land with dense vegetation. Land uses on and in the vicinity of the jeep trail include vacant land covered with a mix of dense vegetation and open, grassy areas.

Terrestrial Biology

The sediment transport route extends east from an arm of San Clemente Reservoir to an uphill sediment disposal site. It also includes access (jeep trail) from Cachagua Road. This route requires the construction of a conveyor belt from the reservoir to the disposal site, improvement of the jeep trail, and possibly some improvements to Cachagua Road. This route passes through riparian vegetation fringing San Clemente Reservoir, through coast live oak vegetation and annual grassland, to the sediment disposal site situated in coast live oak vegetation. The jeep trail passes through coast live oak forest, annual grassland, and some scrub vegetation. Vegetation along Cachagua Road is primarily coast live oak forest, but also includes patches of non-native annual grassland and various scrub communities.

Potential impacts to terrestrial biological resources along this route (1.56 to 4.65 miles) are the probable loss of numerous large coast live oaks, loss of at least 3.23 acres of undisturbed or relatively undisturbed habitat, potential loss of 0.03 to 1.11 acres of blue oak woodland, the loss of 0.02 acre riparian vegetation, and potential habitat loss for several special status species. This estimate is based only on use of the site for sediment transport, and therefore includes all impacts for the route. The additional acreage for the disposal site is primarily in undisturbed coast live oak forest, in a potential ephemeral drainage.

Traffic & Safety

Tables H-2 and F-3 describe the sediment transport routes and summarize their deficiencies, potential impacts, and potential mitigation measures.

Truck trip generation required to remove sediment from this site would amount to 46 trips/hour, or 828 trips/day for 3 construction seasons. If slurry/conveyor transport is used, no truck trips are required during sediment transport operations.

Table H-2: Description of Alternative San Clemente Dam Sediment Transport Routes

Table ##-2. Description of Alternative San Clemente Dam Sediment Transport Routes

DISPOSAL SITE	ROUTE SEGMENT		ROAD TYPE	APPROXIMATE LENGTH	DAILY TRAFFIC VOLUME	DESIGN CHARACTERISTICS							
						EXISTING				FUTURE WITH PROJECT			
						LANES	WIDTH (FEET)	SHOULDERS	SURFACE	LANES	WIDTH (FEET)	SHOULDERS	SHOULDERS
4R													
	New Haul Road	Dam - Disposal Site 4R	Private - Dam Access	0.6 miles	-	N/A	N/A	N/A	N/A	2	25	0	N/A
6R													
	Tularcitos Access Road	Site 1 - Carmel Valley Rd	Private - Dam Access	0.3 miles	-	N/A	N/A	N/A	N/A	2	22	0	N/A
	Carmel Valley Road	Tularcitos Access Road - Chupines Access Road	Public-Rural Highway	1.0 miles	1750-2100	2	20 to 24	Minimal	sphalt Con	2	20 to 24	Minimal	Asphalt Conc.
	Chupines Access Road	Carmel Valley Road - Disposal Site 6R	Private - Ranch Access F	2.2 miles	-	1		Minimal	Dirt	2	22	0	Dirt

Notes

[1]Future design based upon designs prepared and/or proposed in conjunction with previous San Clemente Dam Seismic Retrofit planning and design studies.

Table H-3: Summary of Deficiencies, Potential Impacts and Mitigation for Sediment Transport Routes

ACCESS ROUTE	DEFICIENCIES/POTENTIAL IMPACTS	POTENTIAL MITIGATION MEASURES
4R	1. Potential traffic impacts associated with this alternative are not related to the road segment between the dam and the disposal site, but to the possible use of Cachagua Road as a dam access route. Deficiencies associated with Cachagua Road are described in Table 2A under the Cachagua Access Route.	1. See Table 2A, Cachagua Access.
6R (Truck Haul)	1. The proposed design of Tularcitos Access Road between Site 1 and CVR includes a single lane bridge over Tularcitos Creek and two horizontal curves immediately south of CVR. The design will not allow two-way truck travel on these segments.	1. Traffic control will be necessary during high truck volume construction periods. Widening to allow two-way operations is recommended if Tularcitos Creek Access Road is used for sediment disposal.
	2. The truck volumes generated under either medium and high truck volume conditions associated with sediment disposal to Site 6R will warrant left turn channelization on the westbound CVR approach to the Tularcitos Access Road and a right turn acceleration lane for movements from the Tularcitos Access Road to eastbound CVR.	2. Widen CVR to provide left turn channelization on the westbound CVR approach to the Tularcitos Access Road and a right turn acceleration on eastbound CVR east of Tularcitos Access Road.
	3. The truck volumes generated under either medium and high truck volume conditions associated with sediment disposal to Site 6R will warrant left turn channelization on the eastbound CVR approach to the Chupines Canyon Access Road and a right turn acceleration lane for movements from the Chupines Canyon Access Road to westbound CVR.	3. Widen CVR to provide left turn channelization on the eastbound CVR approach to the Chupines Canyon Access Road and a right turn acceleration on westbound CVR west of Chupines Canyon Access Road.
	4. The potential for pavement damage to CVR between the Tularcitos Access Road and the Chupines Canyon Access Road is high.	4. Pavement maintenance and overlay as required.

There are no direct impacts by haul operations to other public and private roads. Using Cachagua Road for construction and dam access could cause potential impacts on Cachagua Road due to poor geometrics, at the Carmel Valley Road/Cachagua Road intersection due to poor sight distance, and at the Cachagua Road/Jeep Trail/Dam Access Road intersection due to sight distance.

SITE 6R

Cultural Resources

No cultural resources were visible at Site 6R. The area is currently operated as rangeland. The property owner indicated that the land may have been used for dairy farming in the past. A large portion of his property was previously cultivated, especially areas over which the transport route would pass. The site area contained no visible evidence of structures or archaeological remains.

Land Ownership

This site is owned by a private landowner who has indicated a willingness to receive sediment for disposal at this site.

Land Use

The site is currently being used for ranching. The grassy, dry site is comprised of rolling hills covered with grass and pockets of dense vegetation. The rancher's home and associated buildings are located on the site. Residences are located approximately 1 mile to the northwest of the site but have no visibility of the site due to the topography. Land use in the immediate vicinity consists of ranching activities in large, grassy open areas.

The transport routes are located on a combination of Cal-Am owned roads (in the vicinity of the San Clemente Dam and at the southern half of the transport routes) and privately owned roads. Land uses in the vicinity of the transport routes include ranching and Dam-associated facilities.

Terrestrial Biology

This route extends along the Carmel River from the dam to the filter plant, east parallel to Tularcitos Creek and Carmel Valley Road, across Carmel Valley Road, and uphill across ranchland to the proposed disposal site. This alternative would place a conveyor belt either along the existing "low road" to the dam, or just below it. Any work along the low road would potentially impact riparian vegetation. From the filter plant, the slurry line would extend through approximately 3300 feet of coast live oak forest before crossing Tularcitos Creek and Carmel Valley Road. At this point, the conveyor belt would extend through primarily through non-native annual grassland, but would include small areas of coast live oak forest. One potential ephemeral drainage would be crossed. The disposal site is in non-native annual grassland that has previously been cultivated.

Potential impacts to terrestrial biological resources along this route are the probable loss of several large coast live oaks, potential impacts to approximately 7.6 miles of vegetation, including sensitive riparian vegetation and over 3500 linear feet in or paralleling coast live oak forest, and potential habitat loss for several special status species, including California tiger salamander, California red-legged frog, western pond turtle, Cooper's hawk, yellow warbler, and Monterey dusky-footed woodrat. This route has one water crossing at Tularcitos Creek.

Traffic & Safety

Tables H-2 and H-3 describe the sediment transport routes and summarize their deficiencies, potential impacts, and potential mitigation measures.

Truck trip generation required to remove sediment from this site would amount to 76 trips/hour, or 760 trips/day for 5 construction seasons. If slurry/conveyor transport is used, no truck trips are required during sediment transport operations.

With truck transport, impacts to Carmel Valley Road would occur at the intersections with the Tularcitos Access Road and Chupines Canyon Access Road. Left turn channelization would be required at each location on Carmel Valley Road. Potential pavement impacts occur to Carmel Valley Road between the two access roads.

H.3 RANKING

Table H-4 provides a comparative ranking of the sediment transport and disposal alternatives. Each row of the table presents the criteria used in environmental constraints analysis; the table columns present each of the sites evaluated. Each of the three site alternatives and its associated transport routes are ranked (1-3) for each of the criteria. In addition, the table notes whether the constraints of the sediment disposal and transport alternative are considered “low”, “medium”, or “high.”

- “Low” constraints are considered not to present important environmental concerns.
- “Medium” constraints are considered to present environmental concerns of some importance, which may require mitigation.
- “High” constraints are considered to present important environmental concerns, and to require mitigation.

The ranking does not imply anything about the constraints a site may have. Ranking simply distinguishes among the three sites on an ordinal scale. For example, two sites may have the same level of constraints but one may be ranked above the other (e.g., see cultural/visual rankings for Sites 4R and 6R). At the bottom of the table, the simple sum of ranking scores is given, and the Core Team decision (to eliminate or select the alternative) is explained.

Table H-4: Sediment Transport and Disposal Environmental Constraints Ranking

Ranking	Sediment Transport/Disposal Alternative		
	Site 1/2A	Site 4R	Site 6R
Cultural/Visual	3. High constraints (greatest potential for cultural resources, possible village site)	1. Low constraints (low potential for cultural resources, no records of known sites)	1. Low constraints (low potential for cultural resources, no records of known sites)
Land Use/Land Ownership	3. Medium constraints (nearby landowners and residential uses; Site 2A would cover existing race practice track)	1. Low constraints (no private land-owners, no conflicting land uses [Park District would need to approve])	2. Medium constraints (private landowner with ranch operations and residence [may be willing seller])
Traffic & Safety	1. Low constraints (trucks would not be used; sediment would be conveyed via conveyor belt or slurry pipeline).	2. Low constraints (no impact to existing public and private roads from sediment haul operations. Initial sediment site preparation and road-building to the reservoir would require access from Cachagua Road, whose geometrics are poor. Minor roadway widening prior to and/or traffic control during construction mobilization would be required.) With slurry pipeline or conveyor transport, traffic constraints would be low.	3. High constraints with truck transport from Site 1 to Site 6R (impacts to Carmel Valley pavement, left turn channelization required on Carmel Valley Road at the Tularcitos and Chupine Canyon access road intersections.) With slurry pipeline or conveyor transport, traffic constraints would be low.
Terrestrial Biology	2. Medium constraints (short route, largely along existing roads, but much of the route parallels or traverses high-value riparian habitat along Carmel River; disposal site in previously disturbed habitat; one stream crossing).	3. High constraints (short route, but disposal site is located in undisturbed native coast live oak woodland, and in an ephemeral stream).	1. Medium constraints (longer route, partly parallels or traverses riparian habitat; disposal site in previously farmed non-native grassland; one stream crossing).
Outcome of Ranking & Core Team Selection	9 points (alternative eliminated because it only marginally accommodates sediment volume, impacts known cultural resources, and has incompatible neighboring land uses and visual impacts)	7 points (alternative selected for further evaluation, including biological impacts and mitigation)	7 points (alternative eliminated due to traffic and safety impacts due to longer route traversing residential areas and Carmel Valley Road)

Cultural Resources

1 – Site 4R and Site 6R

Dense vegetation prevented ground surface observation in most of the sediment disposal areas. All areas are clear of previously recorded cultural resources. Neither site has any surface features that would indicate the probable presence of archeological resources.

3 – Sites 1 and 2A

Based on field reconnaissance the probability of containing archaeological resources would be greatest for Site 1 and 2A (based solely on landforms). A possible village site, CA-MNT-33, was previously recorded at Site One 1 and was identified in RDEIR. The site was reported as partially damaged at that time, and subsurface testing indicated that the site may be eligible for listing on the NRHP. If site 2A was chosen, further research on the equestrian facilities would be required. There is currently no historical information recorded on these buildings.

Land Use & Land Ownership

Although the land is not owned by Cal-Am, Site 4R has the least amount of conflicting land uses on and in the vicinity of the disposal site and transport routes. Site 6R has some conflicting land uses, but fewer than those associated with Sites 1 and 2A. Further, although a residence is located on Site 6R, the property owner has indicated a willingness to selling the property to CAW. While Sites 1 and 2A are owned by Cal-Am, these sites have the most conflicting land uses in and around the sites. There are residences and private recreational uses in close proximity to Site 1, and a conflicting land use (equestrian track) currently exists on Site 2A.

SITE 4R

Rationale: While disposal Site 4R is not owned by Cal-Am, there are no conflicting land uses on or in the vicinity of the site (e.g. residential or recreation), as the site is surrounded by dense vegetation on all sides. Similarly, the transport route options do not have conflicting land uses, and the access roads to the site are private and gated.

SITE 6R

Rationale: Site 6R is not owned by Cal-Am. There are conflicting land uses on the site, including ranching and the residences associated with the ranch. Land uses in the vicinity of the site are ranching. Land uses in the vicinity of the transport routes are ranching and Dam-related facilities. Following disposal, the land could return to its original land use of ranching.

SITES 1 AND 2A

Rationale: Although Cal-Am is the owner of the properties, two residences (one with a tennis court) are located in close proximity to Disposal Site 1 (within 200 feet). Land use on Disposal Site 2A includes an active horse race practice track with associated buildings. Thus, there would be conflicting land uses in the vicinity of Site 1 and directly on Site 2A. There are no conflicting land uses in the vicinity of the transport routes.

TERRESTRIAL BIOLOGY

Site 6R

Rationale: This rating is based on potential impacts to the additional linear route from the construction access road to the sediment disposal site. This alternative is the longest, but much of the length is through areas of non-native grassland that have previously been cultivated and are currently grazed. Potential impacts to biological resources on this route, including to protected oaks, sensitive habitats, and special-status species, are similar to those for Site 1. However, the disposal site itself on this route is not associated with riparian habitats and provides little habitat for special-status species. Therefore, this route is ranked first on the basis of minimizing impacts to biological resources.

Site 1 and 2A

Rationale: This rating is based on potential impacts to the route from the construction access road to the sediment disposal sites, the two sediment disposal sites themselves, a river crossing to Site 2A, and a conveyor belt from the dam to the disposal sites. Biological resources that may by impacted include protected oaks, sensitive habitats, and special-status species. This alternative is the shortest route, and is primarily along existing roads. However, much of this route is through or adjacent to riparian habitat, and it includes one crossing of the Carmel River. Additionally, one sediment disposal site includes small areas of riparian habitat and is adjacent to other riparian habitat Therefore, this route is ranked second on the basis of minimizing impacts to biological resources.

Site 4R

Rationale: This alternative is intermediate in length, but much of it is through previously undisturbed coast live oak forest. The disposal site itself is primarily in undisturbed coast live oak forest, interspersed with patches of scrub on the north side. Potential impacts to biological resources include impacts to protected oaks, sensitive habitats, and special-status species. Therefore, this route is ranked third on the basis of minimizing impacts to biological resources. However, if this route is used for both sediment disposal and construction access, impacts to habitats below the dam would be reduced from those alternatives requiring improvements to dam access roads.

Traffic & Safety

Table H-5 presents a summary impact rating and ranking of the sediment transport routes for traffic concerns.

Table H-5: Traffic Ranking of San Clemente Dam Alternative Sediment Transport Routes

DISPOSAL SITE	ROUTE SEGMENT		ROAD TYPE	APPROXIMATE LENGTH	DAILY TRAFFIC VOLUME	IMPACT RATING: IMPACT TO RESIDENTIAL DEVELOPMENT				HAUL ROUTE RATING (RATING x SEGMENT LENGTH): IMPACT TO RESIDENTIAL DEVELOPMENT				
						DIRECT	INDIRECT	ROADWAY GEOMETRICS	PAVEMENT IMPACTS	DIRECT	INDIRECT	ROADWAY GEOMETRICS	PAVEMENT IMPACTS	TOTAL SCORE
4R														
	New Haul Road	Dam - Disposal Site 4R	Private - Dam Access	0.6 miles	-	0	0	0	4	0	0	0	2	2
6R														
	Tularcitos Access Road	Site 1 - Carmel Valley Rd	Private - Dam Access	0.3 miles	-	0	0	3	4	0	0	1	1	2
	Carmel Valley Road	Tularcitos Access Road - Chupines Access Road	Public-Rural Highway	1.0 miles	1750-2100	0	0	4	4	0	0	4	4	8
	Chupines Access Road	Carmel Valley Road - Disposal Site 6R	Private - Ranch Access	2.2 miles	-	0	0	0	4	0	0	0	9	9
										0	0	5	14	19

Notes:

1. A high score indicates traffic related environmental impacts and constraints are high; a low score indicates that traffic related environmental impacts and constraints are low.
2. Rating Scale:
   - 0 = No impacts anticipated.
   - 1 = Very low level impacts; impacts can be mitigated.
   - 2 = Low level impacts; impacts can be mitigated.
   - 3 = Moderate level impacts; impacts can be mitigated
   - 4 = High level/significant impacts; impacts can be mitigated.
   - 5 = High level/significant impacts; impacts probably can not be mitigated.
3. Direct Residential Impact: Alternative adds construction related traffic to a local or collector road with residential homes directly fronting onto and accessed from the segment.
4. Indirect Residential Impact: Alternative adds construction related traffic to a segment of a local or collector road that is used to access residential development.
5. Ratings based on medium and high volumes of truck traffic.
6. Rating system evaluates the route as a haul route only. Routes that would be used for construction mobilization and dam access are not considered in the ratings presented in this table.

1 – SITE 1 & 2A

Rationale: This alternative is preferred from a traffic and safety standpoint because trucks would not be used; sediment would be conveyed via conveyor belt or slurry pipeline.

2 – SITE 4R

Rationale: This route has low constraints because there would be no impact to existing public and private roads from sediment haul operations. Initial sediment site preparation and road-building to the reservoir would require access from Cachagua Road, whose geometrics are poor. Minor roadway widening prior to and/or traffic control during construction mobilization would be required.

3 – SITE 6R

Rationale: This route has low constraints due to impacts to Carmel Valley pavement and the left turn channelization required on Carmel Valley Road at the Tularcitos and Chupine Canyon access road intersections.

Appendix I

SAN CLEMENTE DAM COMMERCIAL VALUE OF SEDIMENT IN THE RESERVOIR

M E M O R A N D U M

MWH
MONTGOMERY WATSON HARZA

To:	Fred Feizollahi and Dave Gutierrez	**Date:**	March 9, 2005
From:	Alberto Pujol and Dan Wade	**Reference:**	1004231.010101

Subject: San Clemente Dam
Commercial Value of Sediment in the Reservoir

As you requested in our December 7, 2004 meeting, we have attempted to answer the question of whether the sediment in San Clemente Reservoir has commercial value. We have concluded that while there is commercial value for the sediment, this value at the present time is completely offset by processing and transportation costs and, therefore, there is not a positive benefit-cost ratio for selling the sediment. Although our assessment is predominantly qualitative, we believe that it is sufficient to answer your question. More detailed quantitative evaluations can be made but would require additional effort and, we believe, would result in the same overall conclusion.

Background

San Clemente Reservoir has been estimated to contain approximately 2.5 million cubic yards (or about 3 million tons) of sediment. The sediment consists of sandy gravel, gravelly sand, sand, silty sand, and sandy silt. The finer-grained sediment is located nearest to the dam in both arms of the reservoir, and the coarser (gravelly) materials are encountered in the upper reaches of the Carmel River arm of the reservoir. Generally speaking, the grain size distribution of these materials, as excavated from the reservoir, would not meet typical specification requirements for high-value aggregate products (concrete sand, concrete aggregate, drain rock, base rock, etc.). Therefore, development of reservoir sediment for aggregate products would require the installation and operation of a screening and washing plant and the disposal of waste byproduct (primarily wet silt) from the processing operation in a sediment disposal site. For purposes of this evaluation, we have assumed an aggregate yield of 70%, i.e., we have assumed that about one third of the total volume of sediment would be too silty and would be wasted.

Communication with local aggregate suppliers suggests that aggregate demand could be on the order of magnitude of 200,000 tons per year (Attachment 1), suggesting that development of aggregate resources directly from the reservoir would likely take on the order of ten years. Transport of this quantity of material by highway truck via Carmel Valley Road would entail an average of about 60 truck roundtrips per business day, or about one roundtrip every ten minutes (assuming 10-hour days). In principle, this traffic impact would appear to be not significant, so transport of sand and gravel materials at this rate appears to be realistic.

We considered two main scenarios for development of aggregate resources: (1) aggregate production at the reservoir, and (2) aggregate production at a sediment disposal site. These are described and evaluated below.

On-Site Development of Aggregate Resources

This scenario envisions that sediment would be excavated from San Clemente Reservoir and processed into marketable aggregate products at the reservoir site. The waste byproduct of the processing operation would be transported to a disposal site, and the aggregate materials would be hauled off to the purchaser's site.

Evaluation: Sediment excavation and on-site aggregate processing over a period of time on the order of ten years would be difficult due to (1) the potential for environmental impacts from protracted reservoir dredging and sediment processing operations, and (2) the high cost of winter shutdowns and related annual mobilizations, installation and removal of river diversion facilities, operation of reservoir dewatering equipment, fish rescue operations, and other environmental compliance activities. Protection and mitigation measures for steelhead and California Red-Legged Frog (CRLF) during reservoir dredging operations were developed by Entrix (2004). Cost estimates prepared by Entrix and Granite Construction for annual stream diversion, dewatering, and environmental protection activities suggest that the incremental cost of these activities alone (i.e., not including the cost of sediment excavation, processing and transport operations) would be on the order of $3 million per year, or about $15 per ton of aggregate at a production rate of 200,000 tons per year. This incremental cost of environmental protection related to long-term on-site aggregate development is higher than the current price of processed aggregate at commercial sources, and therefore is higher than the revenue that could be derived. Therefore, we do not believe this to be a realistic scenario. It appears to us that from the point of view of both cost and environmental impact considerations, the removal of San Clemente Dam and its impounded sediment would need to occur over as short a time span as possible (a small number of years) in order for it to be practicable.

Development of Aggregate Resources at Disposal Site

This scenario assumes that Cal-Am moves the sediment as expeditiously as possible to a disposal site near a local highway. The question then is whether there would be a positive benefit-cost ratio in mining the sediment at the disposal site, i.e., whether the revenue from the aggregate sales would exceed the incremental costs of processing, transporting and selling the aggregate. Potential development approaches are described and evaluated below:

(1) **Mineral resources company buys the sediment "as-is," excavates it from the sediment pile, loads it on trucks, hauls it to its processing plant, processes it, disposes of the waste by-product, and sells the processed aggregate.** Operating expenses for Cal-Am could include commercial license fees, ongoing disposal site maintenance and restoration costs, ongoing disposal site environmental monitoring and mitigation costs, and legal and administration costs related to community concerns. We briefly discussed this approach with Graniterock, a leading local mineral resources

company. However, Graniterock would not be interested because of the high cost of transporting the material to its processing facility (see Attachment 1). Indeed, if we assume a cost of $2 per ton to excavate and load the sediment, 25 to 30 cents per ton-mile to haul it, $3 to $4 per ton to process it and dispose of waste material, and an aggregate yield from the sediment of 70%, it would appear that a haul distance in excess a few miles would render this approach uneconomical, i.e., the cost of this operation to the mineral resource developer would exceed the proceeds from the aggregate sales.

(2) **Mineral resources company installs an aggregate processing facility at Cal-Am's sediment disposal site, excavates sediment from the sediment pile, processes it, disposes of the waste by-product on site, and stockpiles and sells the processed aggregate.** The cost of this operation to Cal-Am could also include commercial license fees, site maintenance and restoration, environmental monitoring and mitigation, and legal and administration costs related to community concerns. Because of the greater level of industrial activity at the site, environmental risks and community relations risks would be higher. Under this approach Graniterock potentially would pay a nominal amount of $.50 per ton (see Attachment 1). However, at a production rate of about 200,000 tons per year, the resulting revenue to Cal-Am ($100,000 per year) would be highly unlikely to cover Cal-Am's costs. We conclude that this approach does not present value for Cal-Am.

(3) **Cal-Am's dam removal contractor installs an aggregate processing facility at Cal-Am's sediment disposal site, processes the sediment as it arrives to the disposal site, disposes of the waste by-product at the disposal site, and stockpiles the processed aggregate for future sale by Cal-Am or a licensee.** Under this scenario, Cal-Am would incur the initial cost of processing the 3 million tons of sediment. We believe that the incremental cost to Cal-Am of processing the sediment would be on the order of $3 to $4 per ton, so Cal-Am's initial investment may be on the order of $10 million. We have assumed that Cal-Am would then sell about 2 million tons of aggregate over a period of about 10 years, i.e., at a rate of about 200,000 tons per year. Because of the relatively large distance of this area with respect to major demand centers (Monterey and Salinas areas) and associated haul costs, it is unlikely that the aggregate products could command prices higher than $8 to $10 per ton, i.e., on the order of $1.6 million to $2 million per year. (Note that in June 2004, Graniterock estimated that the price of concrete sand at an on-site location close to Carmel Valley Road would have to range from about $1.50 per ton to $7.40 per ton to compete with closer sources, see Attachment 2). To sell the sediment, Cal-Am or its licensee would need to set up a site facility, including an office, scales, and earth-moving equipment to load third-party trucks. It is anticipated that a staff of at least three full-time personnel would be needed to cover (1) management, marketing and sales, (2) facility operation, and (3) dispatching and administration. Cal-Am's operating expenses would include but not be limited to labor costs; lease costs for the scales, loader, and office trailer; utilities; commercial license fees; site maintenance and restoration; environmental monitoring and mitigation; and legal and administration costs related to community concerns. While we have not prepared a detailed estimation, we anticipate that operating expenses could easily run on the order of $500,000 per year. The

maximum operating income might thus be in the range of $1 to $1.5 million per year over 10 years.

This approach carries risks for Cal-Am, including but not limited to production risk (that the yield of marketable aggregate will decrease because of either quality or grain-size considerations), market risk (that the assumed demand for aggregate will either not materialize or will materialize at a lower price), and operating risks (due to numerous factors including, for instance, the potential for legal challenges arising from community opposition to an industrial-type operation in their backyards). The rate of return on Cal-Am's investment that is implicit in the stream of cash flows described above is in the range of 0% to perhaps 8%, far lower than the cost of capital. Therefore, we conclude that this approach does not present value for Cal-Am at this time.

Conclusion

An approach for cost effective development of mineral resources in the sediment now stored in San Clemente Reservoir does not appear to exist at this time. While the sediment could be processed into products that have commercial value, this value is significantly and completely offset by the incremental processing and transportation costs involved. Therefore, it is concluded that there is not a positive benefit-cost ratio for selling the sediment based on current market conditions.

Attachments:

1. Letter from Mr. M. Munn, Graniterock, to Mr. Don Crone, MWH, dated January 7, 2005.
2. Letter from Mr. M. Munn, Graniterock to Mr. Fred Feizollahi, California American Water, dated June 10, 2004.

ATTACHMENT 1

Graniterock.

January 7, 2005

Dan Crone
M. W. H.
Re: San Clemente Dam

Malcolm Baldrige National Quality Award 1992 Winner

Dear Mr. Crone:

Thank you for the opportunity to consider the 2 million tons of sand and gravel from the San Clemente Dam. Upon further evaluation, the material has no value to us for reprocessing into concrete sand, pea gravel, and drainrock unless the material can be screened on site. Freight costs negatively impact the economics of moving material to our processing plant in Hollister.

We would consider the material at $0.50/ton if a screening plant could be brought on site at the stockpile location and if we were allowed to run the plant roughly 12 hours per day, five days per week, over a 10 year period. There is a possibility we would not need the full 10 years, but we cannot be certain based on current market conditions.

Sincerely,

Michael D. Munn
Sales Manager
Aggregate Division
Graniterock

- Monterey County
- San Benito County
- San Mateo County
- Santa Clara County
- Santa Cruz County
- City and County of San Francisco

ATTACHMENT 2

Graniterock.

June 10, 2004

RECEIVED
JUN 14 2004
CAL-AM WATER CO.

Mr. Fred Feizollahi, P.E.
Sr. Operations Manager
California American Water
P.O. Box 951
Monterey, CA 93942

Re: San Clemente Reservoir Sand

National Quality Award 1992 Winner

Dear Mr. Feizollahi:

California American Water has asked Graniterock, as a courtesy, to provide preliminary information regarding the potential retail market value of the sand deposit that has accumulated behind the San Clemente Reservoir on the Carmel River. We understand that you are not requesting a formal appraisal or opinion of value, but rather our informal thoughts on the value of the sand in today's construction market.

Based on the drilling logs provided by Cal Am and two "grab" samples we took during a site visit in May of 2004, the sand deposit would likely be suitable for use as concrete or plaster sand. More tests would be necessary to confirm this to the satisfaction of a potential buyer, but initial indications based on the samples tested appear promising.

With aggregate products, one of the biggest factors affecting market price is the haul distance from the point of origin to the point of use. Freight costs are often greater than the cost of material shipped. Our market analysis assumes the sand would be mined from the reservoir and stockpiled at a location close to Carmel Valley Road. We used the location adjacent to the Cal Am filer plant site to conduct our analysis of freight costs, and have assumed that all shipping would be from that site to U.S. 101 through Greenfield, rather than to Highway 1 through Carmel Valley Village. The feasible market area for the sand includes the Monterey Bay and southern Santa Clara County markets. There are numerous ready-mix concrete manufacturers in that market area with a demand for concrete sand.

Concrete sand in the potential market area from closer sources (e.g. from the sand quarry located in San Juan Bautista) is currently priced at a *delivered* price of $13.00 to $17.00 per ton, depending on the length of haul. We estimated a shipping cost of between $6.00 to nearly $16.00 per ton for various customer locations within that market area for the San Clemente sand. Depending on the landed location for the San Clemente sand, the price of the sand would have to range from about $1.50 per ton to $7.40 per ton to compete with closer sources. We think a median price for the sand would be approximately $3.00 per ton.

• Monterey County
• San Benito County
• San Mateo County
• Santa Clara County
• Santa Cruz County
• City and County of San Fransisco

Material Supplier/ Engineering Contractor
License #22

P.O. Box 50001 Watsonville , CA 95077-5001 (831) 768-2000 Fax (831) 768-2201
www.graniterock.com

Assuming that there are 2 million tons of usable sand in the reservoir, the revenue from the sale of sand from a stockpile located at the filter plant to concrete manufactures in today's market would by roughly $6 million (2 million tons x $3.00 per ton).

These are our preliminary thoughts on the market value of the sand. Of course, if Cal Am or anyone else needs more definitive information on which to base a decision regarding the sand, please let us know and we can discuss the steps required for a more definitive analysis.

Very truly yours,

GRANITE ROCK COMPANY

Cc: Joyce Ambrosius

Appendix J

SEDIMENT OPERATION AND MANAGEMENT PLAN FOR FISH PASSAGE

Final EIR/EIS

For the

San Clemente Dam Seismic Retrofit Project

SEDIMENT OPERATION AND MANAGEMENT PLAN FOR FISH PASSAGE

Prepared for

California Department of Water Resources
United States Army Corps of Engineers

Prepared by

ENTRIX Inc.

January 2008

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1.0 INTRODUCTION

1.1 BACKGROUND FOR THE SEDIMENT OPERATION AND MANAGEMENT PLAN (SOMP) FOR FISH PASSAGE

San Clemente Dam (SCD) was constructed in 1920-1921 as a diversion point for water supply. SCD originally impounded approximately 1,425 AF of water at a spillway elevation of 525 feet. Over an 86-year period of operation, the dam has trapped an estimated volume of 2.5 million cubic yards (1,555 acre-feet [AF]) of sediment generated in the upstream watershed. From the spillway elevation of 525 feet there currently remains approximately 100 AF of reservoir storage capacity.

Average natural background sediment inflow to the reservoir amounts to about 16.5 acre-feet per year, 80 percent of which is delivered by the Carmel River and the remaining 20 percent by San Clemente Creek. At this background rate of sediment inflow, it is anticipated that the remaining 100 acre feet would fill with sediment in about six to ten years.

Accumulated sediment in the Carmel River arm is at the upstream face of SCD at an elevation of about 515 AF, ten feet below the spillway elevation (see EIR/EIS Section 4.2.1 for detailed evaluation). The accumulated sediment is distributed from the east abutment to the west side of the spillway. Sediment from the Carmel River has also begun to fill the San Clemente Creek arm of the reservoir. At full reservoir pool (water surface elevation of 525), the sediment/water interface is located about 200 feet upstream of the dam in the Carmel River arm. A low flow channel has developed through the delta of stored sediment in both arms, progressing downstream to the reservoir pool.

As described in Section 4.2.3 (Issue WR-5), during low-flow periods, when all of the river flow is going through the fish ladder, the slope of the water surface of the channel leading into the remnant pool is steep and has a high sediment transport capacity. This sediment can build up in a wedge in the remnant pool that would approach the fish ladder exit. Fine sediment would be conveyed toward and through the fish ladder. Any alternative that leaves SCD in place would require construction of a new fish ladder and a way to assure fish passage upstream through the remaining reservoir to the Carmel River and San Clemente Creek.

1.2 PURPOSE OF THE SOMP

The purpose of the Sediment Operation and Management Plan for Fish Passage (SOMP) is to provide a flexible suite of management tools that can be used proactively to maintain fish passage through the fish ladder and upstream of SCD. It includes these objectives:

- Address the potential actions necessary to maintain up and downstream passage for steelhead (*Oncorhynchus mykiss*) between the top of the fish ladder and the upstream channel.

- Manage sediment conditions upstream of SCD between the upstream exit of the fish ladder and the upstream river channels to allow continuous passage for steelhead.

- Focus on measures that can be implemented proactively during the dry season (June-October), to prevent fish passage problems from developing in the subsequent wet season (November through May) and forestall the need for wet-season sediment management.

- Provide for adaptive management and ongoing improvement of the SOMP based on monitoring information.

- Emphasize consultation and coordination with resource agencies in determining actions and methods to implement in order to provide sediment management for fish passage.

2.0 SEDIMENT OPERATION AND MANAGEMENT PLAN FOR FISH PASSAGE

This SOMP provides a toolbox of actions that can be implemented to manage sediment accumulation behind SCD to maintain fish passage during the adult upstream migration season (January through May). Physical sediment management methods include sluicing sediment through the dam or excavating sediment using mechanical means or a suction dredge.

The SOMP uses a collaborative adaptive management approach that emphasizes consultation with resource agencies to choose and implement appropriate actions before the migration season begins, rather than waiting to respond to problems after they have occurred. The SOMP would be modified and improved based on information gathered during each year of sediment management.

Implementation of the SOMP would integrate new monitoring data, collected after implementation of the project and after each sediment management activity, with historic physical and fish migration as a basis for sediment management decision-making.

Because the SOMP implements a proactive, adaptive approach, it does not specify sediment control procedures in advance but retains the flexibility that would allow collaboration to choose actions (if any) and methods to manage sediment and ensure fish passage through the ladder and reservoir. The decision-making process would be based on immediate fish passage needs, data collected from previous management actions, fish migration resources, and time of the year.

2.1 MANAGEMENT SEASONS

The SOMP defines two management action windows: (1) June through October would be the dry season window and (2) November through May would be the wet season window. To ensure fish passage during the wet season, the dry season window focuses on managing sediment upstream of SCD prior to any fish migration. Dry season management activities are done while the Carmel River flow is near base flow levels, a time when the mouth of the Carmel River is typically blocked and anadromous fish are unable to enter the Carmel River from the ocean. Dry season actions are intended to establish conditions from the fish ladder upstream that will allow for fish passage throughout the upcoming migration season based on the anticipated sediment loading to the reservoir. The objective of the dry season actions is to establish conditions that will provide fish passage and not require any additional action during the wet season.

The wet season management period would focus on maintaining an open channel during the migratory season when flows are high enough to accommodate fish passage through the ladder. The two windows are differentiated by the presence of steelhead trout and the typical seasonal flow regimes of the Carmel River.

2.1.1 DRY SEASON SEDIMENT MANAGEMENT ACTIONS

- The dry season is generally the low-flow season for Carmel River and therefore would be the designated sediment management window for implementing such proactive management measures as dredging. During the dry season window (June through October), average daily flows have historically ranged from no flow (0 cfs) up to 130 cfs (based on the 48 years of recorded flows at USGS Robles Del Rio gauge).

- Because some of the management actions in the SOMP rely on low flow conditions, the historic flow record was analyzed to assess the frequency of low flow conditions in the dry season. Daily flows from the historic record were ranked and an exceedance graph was developed to estimate the probably of low flows during the months of the dry season. A flow of 20 cfs would be the upper limit for safely working in the channel upstream of the SCD during sediment management activities, based on engineering judgment regarding the magnitude of flow that would be contained in the low flow channel upstream of the dam. Figure J-1 presents an exceedance graph of the average daily flow for the Carmel River at the Robles Del Rio gage, located downstream of SCD. The exceedance graph shows the percent of time a given flow is exceeded during the dry season and could interrupt sediment management activities. The analysis of daily flow data show that a flow of 20 cfs is exceeded:

- 39 percent of the days in June;

- 12 percent of the days in July;

- 5 percent of the days in August;

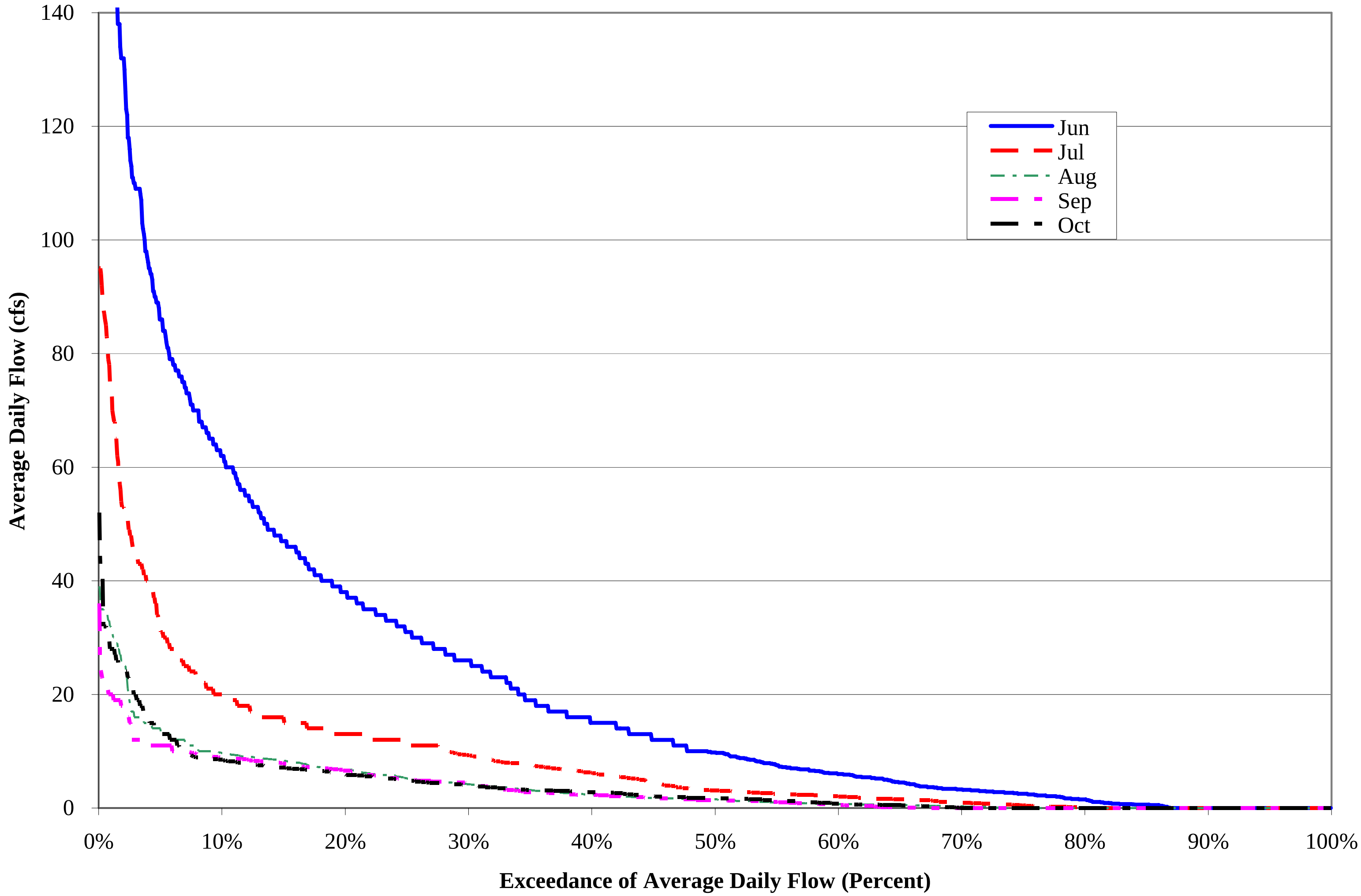
- 2 percent of the days in September; and

- 4 percent of the days in October.

These probabilities indicate that as the dry season moves further into the summer and fall months, high flows would be less likely to constrain sediment management activities behind the dam.

The dry season is further subdivided into a data collection period (June through August) and an implementation period (August through October). During the data collection period, the condition of the remnant pool, and the Carmel River and San Clemente Creek channels would be examined and fish migration data from the previous wet season would be analyzed (see SOMP Section 3.0 for further discussion of data collection). Proactive sediment management actions would be undertaken during the implementation period as discussed below. This period would comprise those months in which flows are typically lowest (Figure J-1).

Figure J-1: Exceedance of Average Daily Flow for the Sediment Maintenance Actions



Source: Data from Carmel River at Robles Del Rio (#11143200), water years 1958-2006.

2.1.2 WET SEASON FISH PASSAGE MANAGEMENT ACTIONS

Significant wet season changes in sediment conditions upstream of the dam may require implementation of wet season management. Fish passage conditions would be visually monitored during the primary fish migration period (January through May) to assess fish passage conditions. If it appears that passage may become impeded, wet-season sediment management actions would be considered, following the process described in Section 3 below.

2.2 SEDIMENT MANAGEMENT TOOLBOX

The sediment management toolbox is a resource that provides management tools to respond to sediment conditions upstream of SCD. The selection of management tools would be based on recent monitoring data regarding biological and physical conditions. Different tools may be appropriate for use depending upon the time of year (dry season versus wet season) and the type of action that is needed. These tools are explained below.

2.2.1 DRY SEASON SEDIMENT MANAGEMENT TOOLS

Under the SOMP, sediment management work is preferred to be undertaken during the dry season, when the chance of fish exposure or water quality problems is low. During the dry season, sediment buildup in the remnant pool could be addressed through maintenance tools such as:

- Mechanical dredging
- Suction dredging
- Operation of the fish ladder

A description of each sediment management tool is described below. In addition, suggested parameters and justification is also provided.

Mechanical Dredging

Mechanical dredging uses machinery to physically remove and dispose of sediment stored within the impoundment. Dredging would be accomplished with such machinery as an excavator and a dump truck to collect and haul away the sediment. Mechanical dredging is currently employed about every two to four years at Daguerre Point Dam to maintain upstream passage between a fish ladder and the river. Similar removal methods would be considered for sediment management at SCD, and would likely be employed at a similar frequency.

Suction Dredging

Suction dredging uses a vacuum to pick up a slurry mix of water and sediment. The slurry would be piped directly to a dewatering site where it would be dried and loaded into trucks to haul to a disposal site. Dewatering can be handled onsite within the reservoir area by dumping the slurry mix in a bermed area on the existing stored sediment. (Similar dewatering areas are evaluated in the EIR/EIS in relation to sediment disposal under Alternatives 1 and 2). A dry, elevated area above the low-flow channel would be used. An off-site sediment disposal location (Site 4R) has been identified and evaluated in the EIR/EIS. The amount of sediment requiring disposal on an annual basis under the SOMP would be far less than that considered for disposal at Site 4R under Alternatives 1 or 2.

Dried sediment can also be stockpiled for later addition to the river. Stockpiles could be strategically placed so as to add sediment to a flood flow for downstream conveyance, or at locations that would not be influenced by flow. This type of storage can also be used with graded sediment so as to introduce specific sediment sizes to the river.

Suction dredging would occur only if flows are low and there is no woody debris present. The fish ladder would have to be closed during this time to keep fish away from the work area. Temporary barriers also would be placed near the dredging to keep fish from the entering the work area. This technique may be appropriate to clear the fish ladder, which will pass fine sediment when open. Suction dredging would remove fine sediment that has been deposited in or suspended in front of the fish ladder.

Operation of the Fish Ladder

Sediment modeling (MEI 2007) suggests that maintaining a consistent water surface elevation (e.g., the spillway level) and avoiding rapid drawdown of the water surface could avoid the problem of a sediment wedge moving into the remnant pool and entering the fish ladder. Maintaining the spillway as the control point could be accomplished by reducing flow through the ladder and raising the water surface elevation in the remnant pool to an elevation of 525 feet. If the water surface must be brought down to an elevation below the spillway, excess sediment would be removed using dredging before the drawdown.

2.2.2 WET SEASON SEDIMENT MANAGEMENT TOOLS

The wet season includes two distinct periods: During the first period, from November to January, fish have not yet begun to migrate and the mouth of the Carmel River at the lagoon is typically closed from the ocean by a barrier beach. The second period begins once the mouth of the river is open and higher flows initiate fish migration, typically from January to May. The management tools available for the wet season include:

- Sluicing through sluice gate
- Suction dredging
- Sluicing through the fish ladder
- Trap and truck fish

A description of each sediment management tool is described below. In addition, suggested parameters and justification is also provided.

Sluicing Through the Sluice Gate

Sluicing refers to the evacuation of water and sediment from an impoundment through an orifice in a dam. Sluicing is a long-established means of releasing sediment from the reservoir. This wet season sediment management tool would be used only if fish passage conditions deteriorate, based on monitoring information. Dry season sediment management would be used to establish adequate fish passage entering the wet season, and normally should be sufficient to maintain fish passage throughout the wet season.

Sluicing would be accomplished using a 10 foot diameter circular gate constructed in SCD east of the fish ladder (Figure J-2). The gate can be opened to pass water and sediment. Sluicing can also occur through the fish ladder, which is designed to pass both water and sediment.

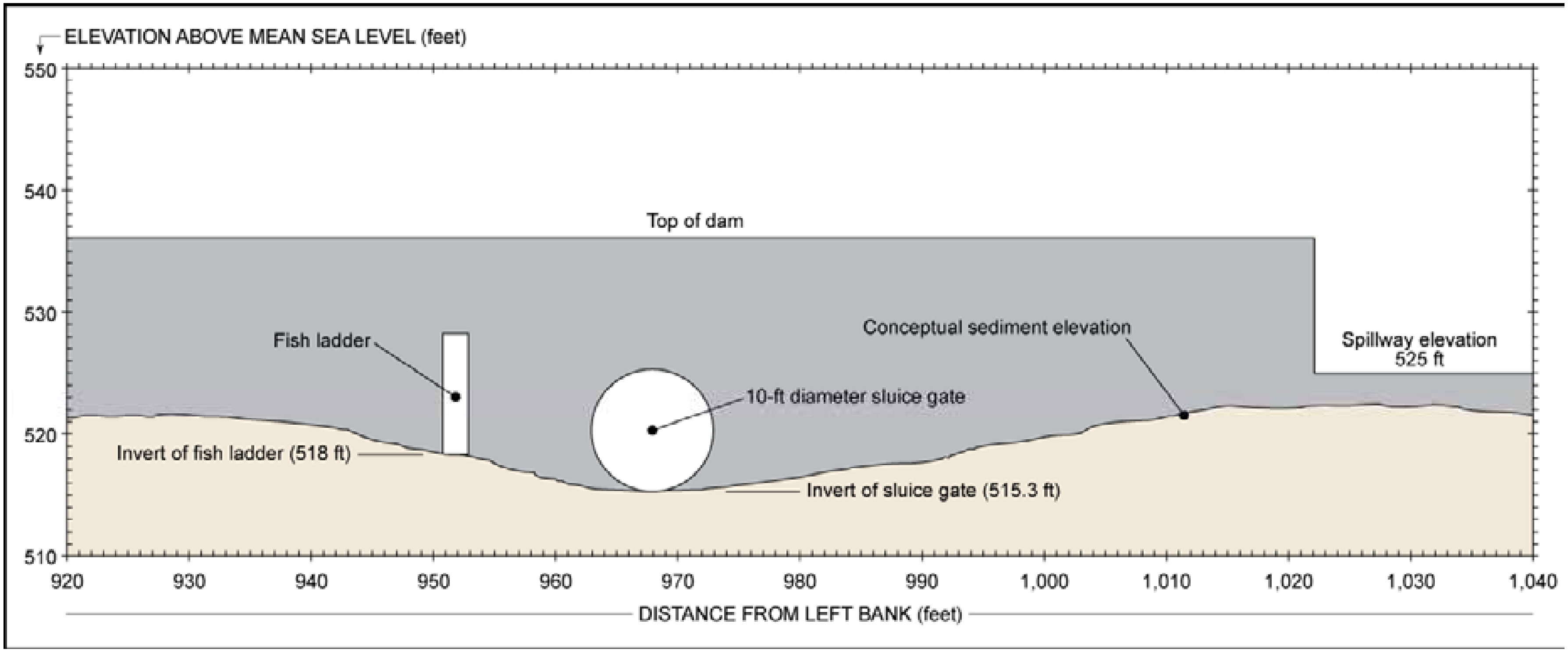
Sluicing was assessed using sediment transport modeling and available flow data described in this EIR/EIS. The SOMP identifies criteria to determine whether sluicing would be needed and whether appropriate conditions exist to consider undertaking a sluice event; it does not predetermine the use of sluicing as a sediment management tool.

Potential Sluicing Events

Prerequisites to sluicing include high flow coupled with the presence of sediment near the fish ladder that may block the ladder. Flows sufficient to carry sediment through the sluice gate typically occur during the wet season. The SOMP requires a threshold flow of 300 cfs to initiate sluicing.

To estimate the frequency and duration of potential sluicing events, historic records of average daily flows at the Carmel River at Robles Del Rio gage were analyzed. Flow data are available for this gage from October 1957 to 2006 (49 years of recorded daily flows). Data from the Robles Del Rio gage was used rather than data from the Sleepy Hollow Gage because the Robles Del Rio record is longer, is in a ready-to-use electronic format, and is more reliable. The Sleepy Hollow gage uses flow over the SCD spillway to estimate high flows. This estimation is unreliable whenever debris is present in the spillway. A comparison of the flows at both gages for water year 2005, where reliable data are available from January to July, shows a similar flow pattern. Therefore, the Robles Del Rio gage data is considered sufficient for this analysis.

Figure J-2: Sluice Gate and Fish Ladder Configuration



Adapted from MEI 2006

A spreadsheet model was developed to determine the number of potential sluicing opportunities per year, the length of an event, and the length of time between events. Potential sluicing events were defined as periods when the two-day average of daily flow falls within a range of 300-800 cfs. This range was selected based on MEI (2006), which modeled possible sluice events. The frequency and duration of possible sluicing events varies with the magnitude and duration of flow. MEI (2007) found that sluicing could remove the necessary amount of sediment at flows around 300 cfs with the sluice gate open for approximately 2 hours.

Analyses conducted using this spreadsheet model determined the number of events in a year when flows would be within the appropriate range for sluicing, and also the number of events falling in this range on the rising limb of the hydrograph. (Sluicing would be preferred to occur on the rising limb of the hydrograph because sediment transport capacity increases with flow. Sluicing at this time would improve downstream sediment transport and avoid unwanted sediment storage in the plunge pool.)

While these analyses yield an estimate of the number of potential opportunities for sluicing (as discussed further below), they do not address the issue of whether sluicing is necessary nor do they designate the preferred method to control any unforeseen buildup of sediment prior to sluicing. Actual operations and sediment management under this SOMP would depend upon several factors (as discussed in Section 3 below). Evaluation of these factors could lead to a determination that sluicing is not necessary, that the pre-season sediment management was sufficient to assure fish passage, or that the real-time hydrograph indicates the need to follow a different sluicing pattern then the one described here based on average daily flows.

Estimated Sluicing Opportunities for the Entire Hydrograph

Analysis of the 49-year record for potential sluicing opportunities throughout the rising and falling limbs of the hydrograph shows that 42 years of the 49-record, at least one sluicing opportunity was available; the years in which no sluicing opportunities occurred were seven of the eight driest years in the record.

Although few or no sluicing opportunities may occur during low flow years, sediment transport capacity also would be low and sediment deposition in the remnant pool and upstream channels would be minimal during these years. This suggests that fish passage during these times would be unlikely to present a problem. If a sluicing event were to be necessary in a dry year, the sluiced sediment would be deposited into the plunge pool and the upper reach (Reach 4.3) of the river, with little or no transport to the downstream portion of the river until higher flows returned in subsequent years.

On average, 20 sluicing opportunities occur in any given year. The duration of periods during which optimal flows are available for sluicing greatly exceeds the amount of time needed to sluice. Although the sluice gate may need to be opened for only two hours in order to evacuate the accumulated sediment, the duration of optimum flows averages five days, and periods of optimum flow range up to 56 days.

Estimated Sluicing Opportunities for the Rising Limb of the Hydrograph

Based on the results of the spreadsheet model and assuming that sluicing would be performed only on the rising limb of the hydrograph, at least one sluicing opportunity would occur in 86 percent of the years; 14 percent of the years would present no sluicing opportunities.

The total number of annual sluicing opportunities decreases if only the rising limb is used. There is an average of five opportunities per year when sluicing is constrained to the rising limb, as opposed to 19 when the entire hydrograph is considered. The average length of time when sluicing flows are optimal would be one day, with the duration of optimal sluicing flows ranging from one to three days.

Sluicing Modeling

MEI (2007) found that sediment may fill the channel upstream of the SCD and excess sediment may be conveyed into the fish ladder during the dry season, when flows drop below the capacity of the fish ladder. Whenever flows exceed the fish ladder capacity, water flows both through the ladder and over the spillway, and the spillway elevation controls the water surface elevation in the remnant pool. When flow drops below the fish ladder capacity, all the water goes through the fish ladder, the fish ladder controls the water surface elevation, and the surface water slope through the channel leading to the remnant pool increases. These factors increase sediment transport capacity, and would cause fine-grained material to refill the sluiced channel and to be transported into and through the fish ladder.

MEI found that this condition could be managed by controlling the flow through the ladder. By restricting the fish ladder opening, the surface elevation of the pool upstream of the dam could be maintained at the spillway elevation, causing fine sediment to deposit near the upstream end of the pool.

Sluicing Through the Fish Ladder

The fish ladder is designed to pass both flow and fine sediment. When open, suspended sediment and sediment that settled directly upstream of the ladder would be transported into the ladder and downstream. The fish ladder would be able to convey fine sediment (sand, silt, and clay) but may not be able to convey gravel. If coarse sediment (gravel sized and larger) were to build up, other tools such as mechanical dredging would be used to clear the sediment before opening the fish ladder.

Trap and Truck Fish

Trapping and trucking fish is not a sediment management tool, but can be used when other SOMP actions require a short-term closure of the fish ladder. The process involves collecting fish from the ladder and moving the fish upstream above the dam and fish ladder. This action would be needed if the fish ladder were closed during the migration period for any reason. For example, if sediment deposited in front of the ladder following a large flood and suction dredging was to be employed to remove it, the ladder would be closed during the operation to avoid impacting fish. (If no fish were present in the ladder, then trapping and trucking would be unnecessary.)

3.0 SEDIMENT MANAGEMENT DECISION PROCESS

The SOMP guides a process of annual data collection and evaluation during the low-flow period from June through October to proactively determine the need for sediment management actions to prepare the Carmel River and San Clemente stream channels upstream of SCD for the upcoming wet season and to maintain suitable conditions throughout the year.

3.1 DRY SEASON CONDITIONS

A decision tree for the selection of dry season sediment actions is shown in Figure J-3. Decisions are based on annual data collected to monitor changes in sediment deposition within the reservoir and fish ladder. The goal of sediment management is to maintain the Carmel River and San Clemente Creek channels flowing into the remnant pool following sediment inflow during the previous wet season.

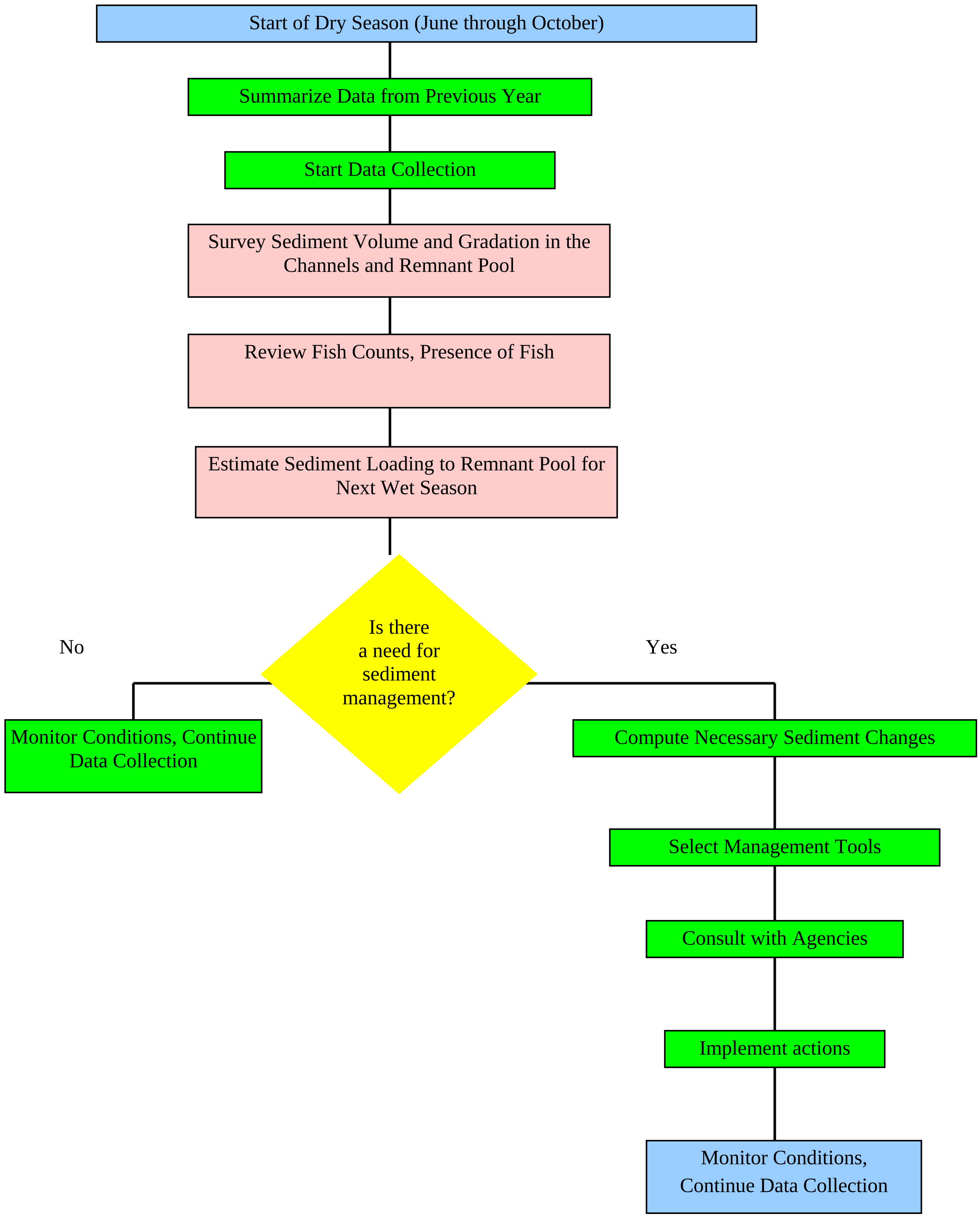
3.1.1 DATA COLLECTION

Data collection and monitoring are important components of the SMOP, and includes both physical and biological data sets. Physical data include sediment volume in the remnant reservoir, sediment passing the dam, and suspended sediment concentration. Biological data include the presence of fish in the ladder and remnant pool, numbers of fish using the ladder, and spawning utilization of the lower river.

Data collection serves two purposes: it provides a measure of current conditions and it adds to a long-term database that allows comparison of data across years to assess trends.

CAW (otherwise referred to as “applicant” on future actions relating to this project) would be responsible for the collection and analysis of data. These data would be integrated with data collected by other agencies to create a large database of information to use in the decision-making process.

Figure J-3: Schematic Representation of the Dry Season Sediment Management Actions



Adult Fish Passage Conditions

An automated fish counter would be installed in the fish ladder to record the number of fish passing each day throughout the migration season. The counter would be operated throughout the year to collect data on out-migrant smolts or residents. A counter such as the Vaki River Watcher (VRW) system would be used. The VRW is capable of counting fish, measuring body size, and determining direction of travel. These data would be used to document fish passage conditions at SCD and would augment the long-term record of fish passage at SCD.

The Monterey Peninsula Water Management District (MPWMD) monitors annual juvenile steelhead abundance monitoring at sites throughout the Carmel River. Juvenile abundance surveys may be supplemented in the area immediately downstream of SCD to document the population’s response to changes in bedload and suspended sediment conditions.

Biological Conditions

Periodic studies would be implemented through CAW (“applicant”) in selected reaches of the Carmel River to evaluate changes to the macroinvertebrate fauna. Such studies would be conducted biannually for the first several years and the results would be assessed to determine the frequency with which studies would be implemented going forward. Study reaches would include reaches immediately above and below SCD, as well as control reaches located upstream of any influence of the project. These reaches would be monitored to evaluate changes to aquatic invertebrates as a result in the change in sediment delivery to the river.

Water Quality Conditions

Water quality parameters (turbidity, dissolved oxygen, and temperature) would be monitored at established sites at locations throughout the river, beginning upstream of SCD and including the remnant pool, the channel formed through the sediment in the reservoir, the natural channel upstream of the reservoir, and locations from the dam to the mouth of the Carmel River. These data would document any changes that may occur throughout the year and following sediment management activities. Initial sampling would identify seasonal changes resulting from channel construction activities, and would continue at regular intervals throughout the year.

Sediment Inflow and Outflow

Sediment conditions in the remnant reservoir and at SCD would be monitored visually, and measured at established sampling locations. During the dry season data collection, the “applicant” would establish control points in the remnant pool and stream channels for long-term comparisons of sediment elevation and gradation. The collected data would include surveyed sediment elevation, sediment gradation, a water surface profile of the channels, and flow.

Changes in the volume of stored sediment would be estimated through channel and floodplain cross-sectional surveys. Comparisons between dry and wet season sediment volumes in the impoundment would be used to estimate the net change in stored sediment.

Flow and the fish count information would be used to related fish passage to flows during migration and to sediment conditions at the start of the wet season. These data would be used to help identify physical conditions needed to pass fish and how those conditions change from the start to end of the wet season for different water year types.

Channel Hydraulics Upstream of Dam

Channel cross sections would be surveyed at specified locations during the pre-season to estimate the hydraulic characteristics of the Carmel River and San Clemente Creek channels above SCD. Based on these hydraulic characteristics, a sediment transport relationship would be developed, closely approximating the measured sediment data. The MEI sediment model (see Appendix S) would be used to project wet season sediment flow and select sediment management actions to be implemented prior to the beginning of the upcoming wet season.

3.1.2 DATA ANALYSIS

Existing physical and biological data would be used to establish pre-project conditions and a baseline for initiating the SOMP. At project completion, physical data would be gathered on the sediment volume, channel characteristics (width, depth) upstream, and gradation upstream of the reservoir. Modeling results (MEI 2005, 2006, 2007) would be used to provide estimates of channel conditions and sediment transport and deposition in the reservoir. These data establish baseline physical and biological conditions in the river and allow CAW to project the anticipated sediment deposition in the remnant pool for the upcoming wet season.

Sediment will be removed from in front of SDC to facilitate dam thickening or dam notching. Final configurations of the remnant pool and the Carmel River and San Clemente Creek channels leading to the pool will be designed. These designs would accommodate anticipated sediment loads during the wet season and constitute the post-project initial condition.

During the first year, baseline data would be compared to sediment deposition data collected during the first dry season after project completion, to ascertain whether deposition is within the anticipated post-project condition or if excessive deposition has occurred. If this review determines sediment deposition in the remnant pool is within expected limits, then management activities would be selected to clear any newly deposited sediment prior to the start of the wet season. CAW would be responsible for their implementation. If more sediment is deposited than was anticipated following the first year of implementation, sediment management actions would be selected and implemented, and estimates of long-term sediment relationships would be adjusted to improve the ability to predict sediment loading in the future. If the channels and remnant pool are at or near the planned baseline, no maintenance or management activities would be required.

In subsequent years, the baseline database would be adjusted annually to reflect changes in stored sediment relative to the constructed channel and remnant pool. Each year, these data would be reviewed to determine actions needed to prepare the channel for the wet reason. Baseline conditions may vary from year to year, and the annually expanding database will assist in future projections of wet season conditions.

3.1.3 SEDIMENT MANAGEMENT IMPLEMENTATION

If sediment management activities are deemed necessary, they would be conducted during the low-flow period to minimize turbidity effects to fish. Low flows typically occur outside of the adult fish migration period. The objective of sediment management is to assure that the channels from both watercourses into the remnant pool are clear and have the appropriate cross-section to provide the necessary passage depth. The physical parameters for channels and the remnant pool would be established in the initial project design, but may be modified as more data are collected. In general, stream channel parameters are based on fish passage criteria for steelhead (depth and velocity), together with a goal of assuring that the remnant pool retains about 2 acre-feet of water storage capacity.

The appropriate method to restore initial post-project conditions depends on the location of the maintenance work, the amount of sediment to be removed, and the current flow conditions. The objective would be to select tools that minimize disturbance to fish and which do not adversely influence water quality.

Implementation of appropriate sediment management actions under the SOMP would establish suitable conditions for fish passage before the wet season. As more data are collected for maintenance activities, sediment projections are expected to improve allowing dry season actions to be fine-tuned.

During the first years of sediment management, moderate flow events (1.5 to 5-year recurrence interval flow) would need to be closely monitored. These moderate flow events are able to transport material downstream, but may not initiate large flows over the spillway. As a result, the amount of scour and bed mobilization immediately behind SCD under such flows would be small, allowing sediment to enter the remnant pool, possibly impeding fish passage upstream. As additional data are collected on the amount of sediment transport and deposition that occurs behind the dam during moderate flow events, managers may determine that sediment excavation may be needed.

3.2 WET SEASON CONDITIONS

During the wet season, the goal of the SOMP is to maintain conditions established during the dry season that allow fish passage past SCD and through the impoundment. At the completion of the project, a design for the upstream channels and the remnant pool at the dam would be implemented to provide fish passage under the anticipated annual sediment load. The implementation of this design going into the first wet season following completion of the constructed channels would allow fish passage throughout the wet season with the anticipated volume of inflowing sediment. Real-time monitoring of the fish passage conditions would be undertaken to ensure fish passage conditions are maintained. A decision tree for wet season conditions is provided (Figure J-4).

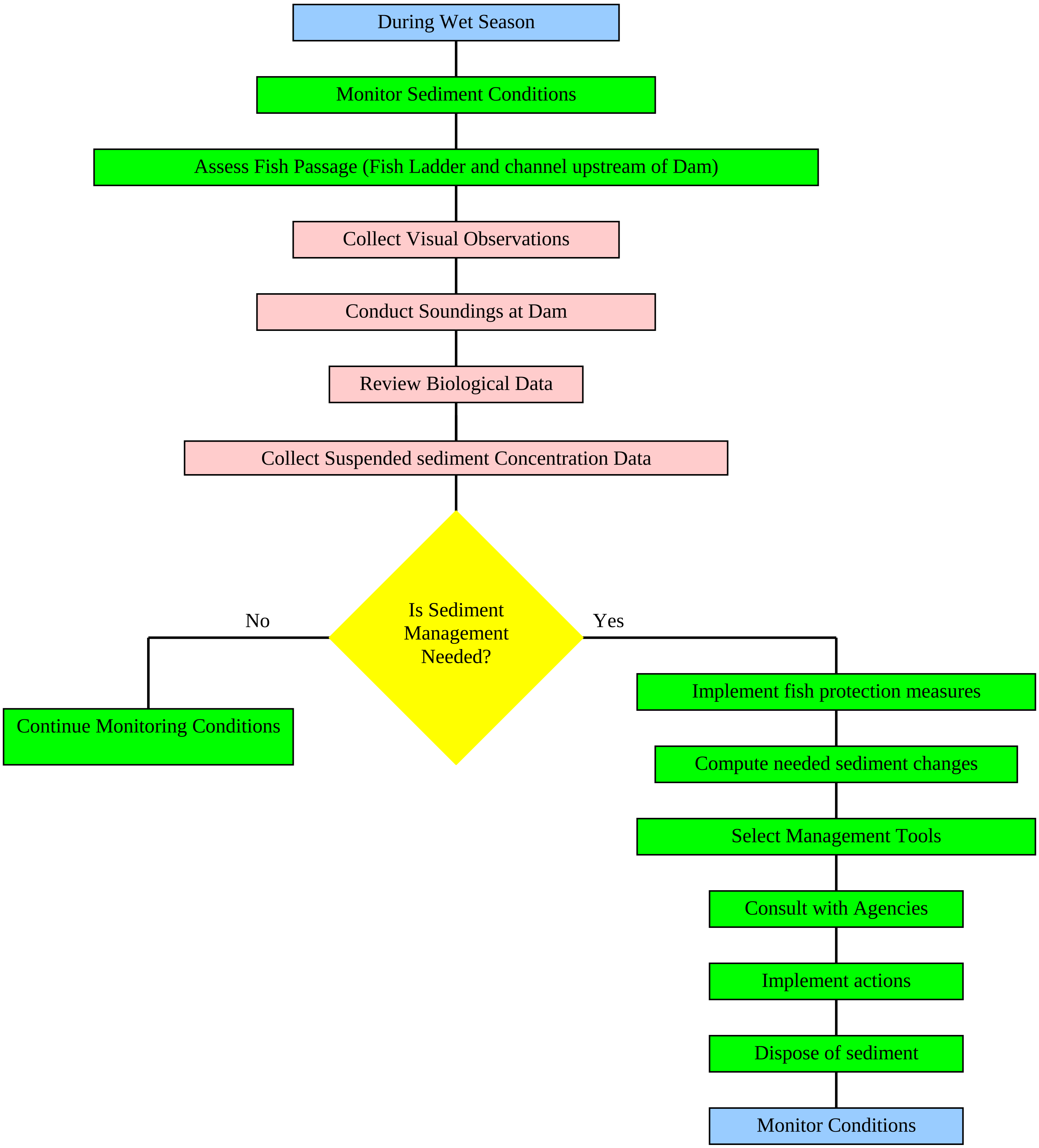
Wet season real-time monitoring would assess the sediment buildup upstream of the dam. During high flows, it is difficult to safely survey sediment elevations in the remnant pool. However, the elevation of the sediment upstream of the fish ladder and sluice gate can be visually surveyed from the dam. The remnant pool would be visually monitored to assess sediment changes during high flow events. For example, standing waves or lodged debris could indicate shallow depth. The trigger conditions that would signal a problem with excessive sediment buildup include reduced fish passage upstream of the ladder and water depths of less than one foot in the channel or remnant pool. In addition, the concentration of suspended sediment in the water flowing in the fish ladder and over the spillway would indicate the proximity of sediment to the ladder.

3.3 FISH PASSAGE MANAGEMENT COMMITTEE

A Fish Passage Management Committee (Committee) would be established and tasked with determining and selecting sediment management to effectively maintain sediment management and fish passage based on current information regarding conditions upstream of SCD. The committee would consist of CAW and representatives from NMFS, California Department of Fish and Game, and Monterey Peninsula Water Management District.

CAW would be responsible for implementing sediment management data collection and analysis and for providing management recommendations to the Committee. The Committee would approve sediment management actions and would help select sediment management tools in response to changes from baseline conditions as they arise. The Committee would meet annually during the dry season. CAW (“applicant”) would call wet season meetings only if monitoring results indicate a need for further sediment management. While the Committee would guide the application of tools described in this Plan, CAW would retain operational responsibility of SCD.

Figure J-4: Schematic Representation of the Wet Season Sediment Management Actions



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Appendix K

STORMWATER POLLUTION PREVENTION PLAN

San Clemente Dam Seismic Safety Project

Storm Water Pollution Prevention Plan

TABLE OF CONTENTS

LIST OF ATTACHMENTS

The attachments are not included in this copy

STORM WATER POLLUTION PREVENTION PLAN

1. INTRODUCTION

This Storm Water Pollution Prevention Plan (SWPPP) has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities (U.S. Environmental Protection Agency [USEPA], February 17, 1998). This plan presents the means for controlling the off-site discharge of pollutants associated with storm water discharges associated with construction activities on the San Clemente Dam Seismic Retrofit Project.

The State of California, under the regulatory authority of the Regional Water Quality Control Boards (RWQCB), has authorization from the USEPA to regulate storm water discharges from construction activities. As owner of San Clemente Dam (SCD), the California American Water Company (CAW [otherwise referred to as "applicant" on future actions relating to this project]) will submit a Notice of Intent to the Central Coast Regional Water Quality Control Board (CCRWQCB) so that project construction activities will be covered by the General Permit prior to the beginning of construction. The SWPPP will be submitted to the CCRWCQB for approval before construction begins.

In general, this SWPPP includes specifications for best management practices that will be utilized to control erosion and sedimentation during construction to minimize impacts resulting from construction activities. CAW's objective is to minimize the potential for erosion and sedimentation during dam conversion activities, and to effectively restore disturbed areas created during construction activities at the SCD. The measures described in this plan are intended to prevent discharge of pollutants during construction activities. CAW will meet these objectives by employing the erosion and sediment control measures set forth in this plan. This plan presents typical structural and non-structural erosion and sediment control measures and management practices that will be implemented during construction activities. The erosion and sediment control measures described in this plan will serve as minimum standards during construction. In general, the measures are designed to minimize erosion and sedimentation by:

- Minimizing the quantity and duration of soil exposure;
- Protecting critical areas during construction by reducing the velocity of run-off and redirecting runoff away from disturbed areas;
- Installing and maintaining erosion and sediment control measures during construction;
- Re-establishing vegetation as soon as possible following final grading; and

- Inspecting and maintaining erosion and sediment controls as necessary until final stabilization and revegetation is achieved.

Environmental Inspectors (EIs) will be responsible for ensuring that contractors implement and maintain erosion and sediment control measures during construction. This plan and a copy of the Notice of Intent will be kept at all of the construction sites (if practical) or at the nearest contractor office or trailer and plan will be available for review upon request.

All personnel involved in the project will attend an environmental training program that will include a discussion on general erosion and sediment control requirements, proper clearing and grading methods, and the importance of protecting sensitive resources on the project. Crews specializing in erosion control tasks will be given additional training on proper installation and maintenance of erosion and sediment control measures.

To be eligible under the NPDES general permits for storm water discharges from construction activities, an applicant must certify that storm water discharge will not adversely affect threatened and endangered species. The applicant will review the completed and ongoing threatened and endangered species consultations with various agencies for this project in the application. Storm water discharges from this project are not expected to have adverse affects to threatened and endangered species.

In general, construction activities proposed can be mitigated with BMPs discussed in this SWPPP. Potential short-term, significant and unavoidable water quality impacts are projected in the event of a reservoir drawdown. Lowering water levels would increase turbidity and decrease dissolved oxygen levels, which could adversely affect aquatic organisms in the reservoir. In order to mitigate effects of this drawdown, the reservoir water level would be drawn down at a relatively slow rate (about 0.5 feet or less per day), similar to that currently being used for the annual drawdown (an interim dam safety measure). Other unavoidable elevated turbidity levels are projected in the operation of sluice gates, which would increase the sediment load to the downstream river. To minimize the effect of this increased turbidity on species downstream, operation of sluice gates would occur during periods of high runoff as specified in the detailed sluice plan put forth in the Sediment Management and Operations Plan (SOMP) (Appendix J). In addition, establishment of appropriate turbidity standards to reduce turbidity impacts will be developed in consultation with the appropriate permitting agencies prior to construction. Further discussion of these issues can be found in Section 4.3 (Water Quality) of the EIR/EIS.

The NPDES general permits for storm water discharges from construction activities have removed the requirements for review of historic preservation issues. Rather the USEPA is conducting consultations on a case-by-case basis. However, since the CAW San Clemente Dam Seismic Safety Project is being conducted under the jurisdiction of the US Army Corp of Engineers (USACE), a historic preservation review has been conducted. The review activities are summarized in Cultural Resources (Section 4.1).

The report documents the surveys and consultations that were conducted and were ongoing as of the date of the report as required the National Historic Preservation Act.

Additional materials to accompany this plan will be included in the following attachments upon finalization of the plan:

- Attachment A – Location Map
- Attachment B – Typical Drawings
- Attachment C - Notice of Termination
- Attachment D - Report Form for Inspections

2. DISCUSSION OF POSSIBLE CONSTRUCTION ACTIVITIES

The need for the San Clemente Dam Seismic Safety Project is to increase dam safety to meet current standards for withstanding a Maximum Credible Earthquake (MCE) and passing the Probable Maximum Flood (PMF) at the dam. Construction activities for the San Clemente Dam Seismic Safety Project would vary depending on the alternative selected. Most alternatives include work on access roads and the fish ladder. In addition, a new facility to divert water will be constructed upstream of the dam to replace the existing surface water diversion at San Clemente. The water diversion facility would apply to Alternatives 1, 2, and 3 of the San Clemente Dam Seismic Safety Project. Existing access roads with minor improvements would be used to reach the base of the dam. The Old Carmel River Dam Bridge (OCRB) and the access road from the filter plant to the dam would be improved. The existing access road along the east side of the Carmel River, between Old Carmel River Dam and the base of San Clemente dam would be rebuilt. Under some of the alternatives, an existing 4WD road would be improved to connect Cachagua Road with the sediment disposal site. This route would be used only to move construction equipment and materials necessary to construct the road, prepare the sediment disposal site, and connect the sediment disposal site to the dam by conveyor belt. All sediment transport would occur via conveyor belt from the dam to the disposal site. Accumulated sediment in the reservoir would be removed over multiple seasons by excavation with heavy equipment. No sediment would be hauled by truck over any roads. This preliminary Plan is a comprehensive discussion of all the possible construction activities independent of the alternative selected.

Under the Proponent’s Proposed Project and some of the alternatives, the existing fish ladder would be removed and replaced to accommodate the lowered dam elevation and to comply with existing criteria for fish passage promulgated by the National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG). A tower crane would be staged at the base of the dam to move construction materials from the batch plant to the dam face and fish ladder. A high-level outlet equipped with a sluice gate would be installed to enable controlled and limited sediment releases to maintain both upstream passage to the fish ladder exit. Sediment in the reservoir would be removed down to various levels depending on the selected alternative. The historic Carmel River channel exposed by sediment excavation in the reservoir's inundation zone would be restored as needed. Additional construction activities would depend on the alternative selected; however the actual construction disturbances would be within the vicinity of the dam structure.

Several of the alternatives would include a number of activities, some of which will not result in disturbance of soil. Those activities include upgrading the electrical system at the dam to support a conveyor sediment transport system.

Construction activities for alternatives may involve clearing and grading, excavation, pipe laying or other activities, backfilling, cleanup and restoration. The actual activities conducted at any given site will depend on the specific alternative selected. However, all activities that will involve ground disturbance are subject to the provisions of the General Permit.

All disturbed areas will be returned to pre-construction contours, as near as practicable and stabilized, as appropriate. Thus, the only changes expected to occur in regard to storm water runoff, will be temporary soil disturbances created during construction.

Because of the variety of topographic settings, runoff coefficients for every construction location are not presented in this plan. The runoff coefficient values will vary significantly based on the various soil types that will be encountered. Construction reclamation efforts will return project-disturbed areas to pre-construction contours, and all project disturbances will be stabilized and revegetated. Therefore, no appreciable difference between pre- and post-construction runoff coefficients is expected, but a monitoring program, regulated by the CCRWQCB, the CDFG, and the USACE as appropriate, will be executed for a 10 year period.

Potentially hazardous materials that may be stored at construction sites could include diesel fuel, fuel oil, hydraulic oils, lubricants, and small amounts of other chemicals. These materials will be handled according to the provisions of the Spill Prevention Control and Countermeasure Plan (SPCC Plan). The SPCC Plan details how these materials will be stored and handled as well as containment, cleanup, and reporting procedures that will be followed in the event of a spill or release of these materials.

3. EROSION AND SEDIMENT CONTROL

Best Management Practices (BMPs) are incorporated into this SWPPP to prevent erosion and protect water quality, control dust control, minimize loss of native vegetation, protect wildlife, protect cultural resources, protect and minimize potential adverse impacts to wetlands and water bodies. Construction contractors will submit additional BMPs to the Project Engineer that conform to this SWPPP. The SWPPP may be further modified during permit consultation with the CCRWCQB. The Contractor will implement the BMPs during construction to control the off-site discharge of pollutants.

3.1 General Measures

Temporary erosion and sediment control measures along with methods for minimizing demolition impacts are designed to effectively reduce erosion and the transport of sediment, and to protect sensitive resources during construction. The following general environmental protection measures will be implemented to minimize environmental impacts during construction and operation of the project:

- All personnel, vehicles, and equipment will stay in the designated construction areas. Access roads outside of the construction area will be designated by CAW. All staking, flagging, and exclusion fencing will be respected.

- Construction, cleanup, and reclamation will be managed to minimize the time between grading, trench excavation, backfilling, and final restoration/reclamation.

- Temporary erosion/sediment control devices will be installed immediately after initial soil disturbance and will be maintained throughout construction and restoration, as necessary, until replaced by permanent erosion control measures.

- Permanent erosion control measures and final cleanup will be completed within 10 days of completion of the dam seismic retrofit. If this schedule cannot be met, these activities will be completed as soon as possible. In no case will final cleanup be delayed beyond the end of the next recommended seeding season.

- A stockpile of erosion control materials, including straw bales, silt fence, and geotextile fabric, will be stored at the contractor yard during the entire period that construction disturbance occurs. Materials will be stored for planned use during construction, and sufficient additional quantities will be stored for maintenance and emergency use.

- Blasting mitigation devices will be utilized as needed in the construction process whenever demolition occurs on the SCD site.

- Environmental Inspector(s) will verify compliance with the environmental requirements throughout construction.

3.2 Sediment Control Plan Elements

Temporary sediment barriers are designed to reduce the velocity of water flow and intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to limit sediment transport out of the construction area. Temporary sediment barriers will be installed at the following locations immediately after initial ground disturbance:

- adjacent to paved roadways, drainages, wetlands (dry or wet), springs (dry or wet), impoundments (dry or wet), and other sensitive resources where the topography will direct sediment into these resource areas;

- around soil or spoil piles, where necessary (e.g., adjacent to flowing drainages); and
- Where requested by the Environmental Inspector to prevent significant sediment transport into adjacent resource areas.
- Straw bale or silt fence sediment barriers will be placed at the bottom of slopes and will be located at least 6 feet from the toe of the slope, where possible, in order to increase ponding volume. The ends of the sediment barrier will be turned upslope to capture sediment.
- Sediment barriers will be placed so as not to hinder construction activities and above the ordinary high water mark of active stream channels. If silt fences or straw bale sediment barriers are placed across the construction area, provisions will be made for traffic flow. A gap approximately 15-feet-wide, will be provided along the silt fence or straw bale row, with the ends of the sediment barrier turned slightly upslope. Across the gap, a driveable earth berm will be installed and maintained immediately upslope of the sediment barrier (upturned ends of the sediment barrier will tie into the driveable earth berm).
- If sediment builds up to greater than 40 percent of barrier capacity, the sediment will be removed or spread on the sediment disposal site. Damaged or undermined sediment control barriers will be repaired or replaced as described in this plan.

3.2.1 Straw Bales

Straw bale sediment barriers consist of a row of tightly abutted straw bales placed perpendicular to the runoff direction with the ends turned upslope. The barriers are typically one bale high, placed on the fiber-cut edge (ties not in contact with the ground) in a 4-inch-deep trench, and anchored securely with two wooden stakes driven through each bale. Soil will be placed and compacted along the toe of the uphill side of the straw bale barrier. If a dugout area cannot be excavated due to the presence of rocky material, the Contractor will install the straw bale so that the bale will not be undermined.

Only straw bales that are certified to be free of noxious weeds will be used. The Contractor will acquire weed-free straw and provide the “applicant” with the appropriate documentation.

3.2.2 Silt Fences

Silt fence composed of commercial filter fabrics with sufficient strength to prevent failure will be provided and installed by the Contractor. The height of the silt fence will not exceed 36 inches above the ground. The fabric will be cut from a continuous roll of fabric with splices only at the support posts. When splicing sections, at least a 6-inch overlap of fabric will be secured and wrapped to the post(s). Support posts will be a maximum of 10 feet apart.

The bottom edge of the silt fence will be installed in a trench excavated approximately 4 inches wide by 6 inches deep and refilled with compacted soil, unless on-site constraints dictate otherwise (e.g., rock). If a trench cannot be excavated, the Contractor will secure the bottom edge of the silt fence so that it will not be undermined. Silt fences will be attached to supporting posts by staples or wire. As determined by the Environmental Inspector, a wire fence may be used instead of wooden support posts to provide additional strength on hillsides.

3.2.3 Sandbags

Sandbags may be used as dikes or sediment barriers to control sediment in drainage swales. Sandbags can be strategically placed to control runoff, dissipate runoff energy, and catch sediment (i.e. as a “J” hook at the end of a waterbar).

3.3 Erosion Control Plan Elements

Temporary erosion control measures will be installed where needed immediately following significant soil disturbance and will be maintained throughout the course of construction. In general, temporary erosion control measures will be removed during cleanup activities after permanent erosion control measures have been installed. Permanent erosion control measures are designed to minimize erosion and sedimentation after construction until revegetation efforts have effectively stabilized the construction area...

3.3.1 Waterbars

Waterbars are utilized in various forms (e.g., rolling dips on access roads, driveable berms across travel ways, waterbars on slopes, etc.) during project construction and after final grade restoration. Waterbars are intended to intercept water traveling down a disturbed slope and divert water off disturbed soil into stable, well-vegetated, or adjacent rocky areas.

Waterbars will be installed near the base of slopes adjacent to wetlands and drainages, except at those specific sites (e.g., terrain slopes away from a canal) where, in the judgment of the Environmental Inspector, waterbars are not necessary to prevent discharge of sediment into sensitive resources. The general spacing for temporary and permanent waterbars is as follows:

- 300 feet for slopes of 5 to 15 percent
- 200 feet for slopes of 15 to 30 percent
- 100 feet for slopes greater than 30 percent

The Environmental Inspector can modify the final spacing of waterbars in the field. Waterbar spacing is based on a site-specific evaluation of the project site and standard construction protective measures. This spacing takes into account the soils, timing of construction, and area of disturbance anticipated for construction of the project. Except for site-specific situations as determined by the Environmental Inspector (e.g., extremely long slopes with highly erodible soils), waterbars will not be constructed on slopes with less than a 5 percent gradient.

Earthen waterbars will be constructed of existing suitable material and compacted to increase durability. Alternatives to waterbars may include a series of tightly abutted straw bales (constructed as per Section 3.1.1.2), excelsior logs, or abutted burlap bags filled with native sand/soil. The installation angle will be two to eight percent down slope (as measured by a hand-held clinometer or level) and will extend to, or slightly beyond, the edge of the disturbed construction area, but within the boundaries of the project area.

Where possible, waterbars will discharge into stable, non-erosive (vegetated or rocky) receiving areas. In isolated instances where waterbars discharge into unstable or highly erosive areas without rock or vegetation, flow energy dissipators or “J-hook” shaped sediment barriers may be positioned at the waterbar outlet. Additionally, in highly erodible soils, the spacing between waterbars may be decreased to further slow the velocity of water. Whenever feasible, waterbars will be sited so that they do not outlet directly into sensitive resource areas (e.g., cultural sites, rare plant sites, drainages, waterbodies, wetlands, etc.).

The Contractor will regularly inspect and repair waterbars during construction to maintain their effectiveness. Waterbars worn down by heavy construction traffic or filled with sediments will be repaired, as needed, and the sediment will be spread on the disturbed area uphill of the waterbar.

3.3.1 Check Dams

Where determined necessary by the Environmental Inspector, the Contractor will install check dams in bar ditches or other intermittent drainages to minimize the transport of sediment from the construction zone. Check dams will be constructed of staked straw bales or stacked sand bags just inside the drainage area edge. The center of the structure will be lower than the ends to channel water and create a sediment dump immediately upstream of the structure. The structure, and any deposited sediment, will be removed following final restoration of the site.

3.3.2 Surface Roughening

Surface roughening involves tracking of the ground surface with heavy machinery creating a series of shallow depressions running parallel to the ground surface contours. Surface roughening assists in controlling erosion by reducing the speed of storm water runoff, increasing infiltration, and trapping sediment.

3.4 Blasting Mitigation Plan Elements

Should the alternative selected entail demolition components, potential water quality impacts related to these activities would be mitigated to a less-than-significant level by implementing appropriate BMPs. These are described in the following paragraphs.

3.4.1 Blasting Mats

The application of blasting mats over concrete blocks at demolition sites prevents flying concrete debris.

3.4.2 Fabric Barriers

Fabric barriers placed on the ground surface in the active construction/demolition area serve to catch sediment and cement debris.

3.5 Hazardous Materials Management

Care will be taken during construction to prevent the discharge of potential pollutants such as construction materials, petroleum products, debris, and sanitary wastes into Waters of the United States. Each contractor will submit and maintain an approved Spill Prevention Control and Countermeasure Plan (SPCC Plan) on site and will conduct activities according to their plan. The SPCC Plan will be prepared and certified by a California Registered Professional Engineer to comply with the provisions of the EPA Oil Pollution Prevention Regulation. The SPCC Plan will address the following areas:

- Operating procedures that prevents oil spills
- Control measures installed to prevent a spill from reaching navigable waters
- Countermeasures to contain, clean up, and mitigate the effects of an oil spill that reaches navigable waters

The SPCC Plan, at a minimum will include the following measures to protect water quality:

- Refueling of construction equipment and vehicles in the staging area would only occur within a designated, paved, and bermed area where possible spills can be contained. Fuel storage would be in double contained areas, capable of holding 125 percent of the volume of fuel being stored.
- Truck and cement equipment wash-down would not occur in the ordinary high water area of the channel.
- Equipment and vehicles operated within the ordinary high water would be checked and maintained daily to prevent leaks of fuels, lubricants, or other fluids to the stream.

- Litter and construction debris would be removed from below the ordinary high water line daily and disposed of at an appropriate site. All litter, debris, and unused materials, equipment or supplies would be removed from the construction staging areas above ordinary high water at the end of the construction season.

- At the end of each workday, all construction equipment will be moved to the staging area to protect against accidental spills.

- All vehicles carrying over 150 gallons of fuel will have a fuel spill prevention plan and all materials required to clean up a spill if it were to occur in transit. In some cases, a vehicle following the fuel truck would carry the clean-up equipment.

Fueling of construction equipment will be restricted within 100 feet from streams or wetlands unless site conditions preclude this (i.e., steep slopes on which movement of equipment to fueling stations would create excessive disturbance). In these areas, special precautions may be implemented at the approval of the Environmental Inspector. In all cases, refueling will be conducted in accordance with the SPCC Plan. No storage of hazardous materials, chemicals, fuels, or lubricating oils will be allowed within 100 feet of stream and wetlands. Refueling will also be restricted within 200 feet of any known potable private water well and within 400 feet of any municipal or community water supply well. The Environmental Inspector will install “No Refueling” signs along the project site in areas where refueling and maintenance of vehicles is restricted to warn construction workers of the restriction in the area.

3.6 Wetlands

When the construction activities encounter wetlands, CAW will protect and minimize potential adverse impacts to wetlands by:

- Expediting construction in and around wetlands, and limiting the amount of equipment and mainline construction activities within wetlands to reduce disturbances of wetland soils;

- Restoring wetlands to their original configurations and contours;

- Permanently stabilizing upland areas near wetlands as soon as possible after completion of ground disturbing work; and

- Inspecting the project area periodically during and after construction and repairing any erosion control or restoration features until vegetation is successfully established on the upland portions of the project area.

3.7 Waterbodies

No perennial waterbodies have been identified within the proposed construction areas. However, in the event that waterbodies are encountered, CAW will protect and minimize potential adverse impacts to waterbodies by the following protective measures:

- Expediting construction and limiting the amount of equipment and activities in waterbodies;
- Reducing clearing, leaving in place as many trees as possible on stream banks;
- Constructing waterbody crossings as perpendicular to the axis of the waterbody channel as engineering and routing conditions allow;
- Maintaining ambient downstream flow rates;
- Removing all construction material and structures from the waterbody after construction;
- Restoring stream channels and bottoms to their original configurations and contours;
- Permanently stabilizing stream banks and adjacent upland areas after construction; and
- Inspecting the project area periodically during and after construction and repairing any erosion controls and/or performing restoration, as needed, in a timely manner.

4. CLEANUP AND RECLAMATION

4.1 Cleanup

After final construction on the dam, all disturbed portions of the construction area, including the access roads, and staging areas, will be returned to preconstruction grades and contours. Construction debris will be removed from the project site and shall be graded where appropriate and decompacted so that the soil is left in the proper condition for planting. Permanent water bars (constructed in the same manner as temporary waterbars) will be constructed after final grading and prior to seeding.

Every effort will be made to complete final cleanup and installation of permanent erosion control measures within 10 days after final backfilling is complete. If this schedule cannot be met, final cleanup will be completed as soon as possible. In no case will final cleanup be delayed beyond the end of the next recommended seeding season. Sediment barriers left in place after construction will be limited to earthen berms, waterbars, and diversion swales, although silt fences may be left in place in specific locations at the direction of the Environmental Inspector.

4.2 Reclamation

Reclamation, including alleviating soil compaction, final seedbed preparation, and revegetation, will occur immediately after final cleanup. Reclamation and revegetation of the project site incorporates permanent erosion and sediment control measures. However, if final restoration cannot occur in a timely manner due to weather or soil conditions, temporary erosion and sediment control measures will be employed until the weather is suitable for final cleanup and revegetation. Seeding may be postponed until conditions allow (e.g., time of year, soil moisture, or weather conditions). However, in no case shall final cleanup be delayed beyond the end of the next recommended seeding season. If final reclamation or reseeding is delayed more than 30 days before the perennial vegetation seeding season, areas adjacent to waterbodies shall be mulched with 3 tons/acre of straw, or its equivalent, for a minimum of 100 feet on either side of the waterbody.

Wherever possible, sediment barriers left in place after construction will be limited to earthen berms, waterbars, and diversion swales, although silt fences may be left in place in specific locations at the direction of the Environmental Inspector.

4.3 Revegetation and Seeding

Following final recontouring of the project site and installation of permanent erosion control measures, the project site will be seeded with a seed mix that is native and appropriate for the local conditions. Due to the dispersed nature of this project, the Environmental Inspector, in conjunction with the landowner, will determine the specific revegetation requirements (including seed mixtures and soil amendments) for each site. The project site will be seeded within 6 working days of final grading in accordance with recommended seeding dates, weather and soil conditions permitting. Slopes steeper than 3:1 will be seeded immediately after final grading in accordance with recommended seeding dates, weather permitting.

Prior to application of the seed, the seedbed will be prepared to depth of 3 to 4 inches using appropriate equipment to provide a firm, smooth seedbed that is free of debris. For broadcast and hydro-seeding, the seedbed will be scarified to ensure sites for seeds to lodge and germinate. The seed will be applied and covered uniformly per local soil conservation authorities recommendations for the seed mixture being applied. A range drill will be used on many of the disturbed sites, however, broadcast or hydro-seeding may also be used at double the recommended seeding rates. Where broadcast seeding is used, the area will be lightly raked or dragged with appropriate equipment after seeding to lightly cover the seeds.

Seed will be purchased in accordance with the specifications for seed mixes described in the Botanical Resource Management Plan (Appendix U). and used within 12 months of testing. PLS is an agricultural industry standard that omits dust, chaff, and empty seed, weed and other crop seed in the calculation of the weight and value of purchased seed. Specifics on the calculation of PLS can be found at http://www.dot.state.tx.us/mnt/wildflower/pls_explanation.htm. Legume seed will be treated with a species-specific inoculate per manufacturer's specifications.

4.4 Mulching

Mulch, consisting of weed-free straw, wood fiber, or an approved equivalent, may be applied to disturbed soils to minimize the effects of wind or rain on exposed soils.

During rainy conditions, mulch reduces the impact of rainfall in initiating erosion and slows the down slope velocity of surface flow.

4.4.1.1 Straw Mulch

An acceptable application of straw mulch will include the following:

- Straw mulch will be required in the following areas:
  - within 100 feet of flowing streams;
  - slopes of 30 to 40 percent with less than 70 percent surface cover; and
  - slopes of 0 to 30 percent with highly wind erodible soils and less than 70 percent surface cover, as directed by the Environmental Inspector or other qualified personnel.
- Straw mulch will be applied at a rate of 2,000 to 4,000 pounds (3,000 on average) per acre, as directed by the Environmental Inspector. Mulch rates may be reduced or eliminated by the Environmental Inspector, where necessary.
- Only straw that is free of noxious weeds will be used. Written confirmation from an approved supplier will be required.
- Straw fiber length will be at least 8 inches long to facilitate crimping in place after application.
- Equipment specifically designed to crimp straw will be used to crimp straw fibers to a depth of 2 to 3 inches. Steep slopes inaccessible with a crimper will be crimped by tracking with tracked equipment running perpendicular to the slope. Farm discs will not be allowed for crimping.
- Acceptable straw mulch crimpers include:
  - mechanical crimper;
  - backhoe with crimper forks;
  - tracked equipment tracking up and down slopes (restricted to areas where other methods will not work); or
  - Equivalent, as approved by the Environmental Inspector.
- If a straw mulch blower is used, strands of the mulching material will be at least 8 inches long to allow anchoring. Alternatively, organic liquid mulch binders may be used in accordance with the manufacturer’s recommendations and with CAW’s approval.

If reclamation and seeding is deferred more than 10 days after final grade restoration, all disturbed slopes above waterbodies and wetlands will be temporarily stabilized by applying 3 tons of dry straw mulch per acre for a minimum distance of 100 feet above the edge of the waterbody or wetland.

After final restoration and seeding, mulch will be applied to all dry sandy sites, slopes greater than 8 percent, and all slopes within 100 feet of waterbodies to control erosion. Mulch will be spread over the area to a visible coverage of at least 75 percent of the ground surface and at a rate of 2 tons of dry straw (or functional equivalent) per acre.

4.5 Matting/Netting

Where determined necessary by the Environmental Inspector and/or Construction Inspector, erosion control matting will be installed along the stream banks of flowing streams and steep slopes (greater than 33 percent) after final grade restoration to reduce rain impacts on soils, to control erosion, and to stabilize steep slopes and waterbody banks.

The Contractor will use matting supplied in continuous rolls of 30 feet or greater with a minimum width of 4 feet. Staples will be made of wire, 0.09 inch in diameter or greater, and have a “U” shape with legs 8 inches in length and a 2-inch crown. Wire staples will be driven into the ground for the full length of the staple legs. Alternatively, wood pegs (0.5-inch-diameter) may be used to secure the erosion control fabric. In areas of active livestock grazing, protection measures other than fabric must be used.

Matting will be anchored, as it is unrolled to prevent stretching of the material and incomplete ground contact. For stream bank installations, mats will be laid parallel (upper mat overlapping lower mat in a shingle pattern) to the waterbody to a point above the top of the bank. Native materials (e.g., rocks, logs, etc.) may be used in conjunction with the matting to aid in bank stabilization.

During regular erosion control monitoring, erosion control matting will be inspected for washouts, adequate staking, and loss of matting. Damaged or undermined matting will be repaired or replaced, as necessary.

5. MAINTENANCE AND REPORTING

5.1 Inspection and Modifications

Throughout construction, the Engineer, Contractor and the Environmental Inspector will inspect temporary erosion control structures as follows:

- daily in areas of active construction or equipment operation;
- on a weekly basis in areas with no construction or equipment operation; and
- In all areas of the project site within 24 hours of each 0.5-inch or greater rainfall event, soil and weather conditions permitting.

The Environmental Inspector (EI) will document all erosion control inspections in the Environmental Daily Inspection Report. In the event of forecasted impending heavy precipitation, all temporary erosion control devices found needing repair or new installation will be repaired immediately. During this period, the Contractor will provide additional personnel, vehicles, and materials to repair erosion control structure damage where noted during the inspection.

Should structures clog, deteriorate, fail, be damaged, or require maintenance, the Contractor will conduct repairs or replacements within 24 hours after problems have been identified, weather and soil conditions permitting. Additionally, changes to the SWPPP will be made reflecting any corrective measures determined necessary during the inspection.

On sites that have been finally stabilized or where runoff is unlikely due to seasonal arid periods in arid areas (average 0 to 10 inches of rainfall) or semi-arid areas (average 10 to 20 inches), inspections will be conducted at least once every month until the project site revegetates successfully. Inspections will take place until coverage under the permit is terminated.

Based upon the results of the inspection, this plan will be revised as needed within seven calendar days to address pollution sources identified and pollution prevention measures recommended. Any changes to this plan will be implemented before the next anticipated storm event or as soon as practicable following the inspection. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this SWPPP, and actions taken resulting from observation made during the inspection will be made and retained as part of the plan for at least 3 years following the date of the inspection.

5.2 Reporting

Any noncompliance or discharge that may seriously endanger health or the environment will be reported as soon as possible, but no later than 24 hours from the time “the applicant” first becomes aware of the circumstance. The report will be made to the appropriate agency in accordance with the SPCC Plan and will be made to the US EPA Emergency Response Branch, and the appropriate State Agency. In addition to verbal notification, a written submission to both the USEPA and the State Agency will be provided within 5 days of the time that CAW becomes aware of the circumstances. The submission will contain the following:

- Description of the noncompliance and its cause;
- Period of noncompliance, including exact dates and times;
- Estimated time noncompliance is expected to continue, if it has not been corrected; and
- Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

5.3 WATER QUALITY MONITORING

6. COMPLETION PROCEDURES

6.1 Notice of Termination

Following completion of construction activities and final stabilization of disturbed areas, a Notice of Termination (NOT) will be submitted to the USEPA at the address indicated on the NOT form. In California, the NOT will be submitted to the Executive Officer of the Regional Water Board responsible for the area in which the facility is located. The mailing address is:

Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401
Phone: (805) 549-3147

The NOT serves as notification that permit coverage of storm water discharges associated with the construction activities under the general NPDES Permit have been terminated.

Final stabilization is defined as:

"All soil disturbing activities have been completed and a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas not covered by permanent structures, or equivalent permanent stabilization measures (such as rip-rap, gabions, or geotextiles) have been employed" (USEPA 2005).

"In some parts of the country, background vegetation will cover less than 50 percent of the ground (i.e., arid areas). Establishing at least 70 percent of the native vegetation cover criteria for final stabilization (e.g., if the native vegetation covers 50 percent of the ground), 70 percent of the 50 percent would require 35 percent total cover for final stabilization." (USEPA 2005).

Following completion of construction activities, all disturbed areas will be stabilized either through revegetation or other appropriate measures, except for those areas which were cropland prior to construction and which are to be returned to crop production. After the construction areas are adequately stabilized and a NOT has been filed, no additional storm water management will be undertaken.

7. LITERATURE CITED

USEPA, NPDES General Permit for Stormwater Discharges from Construction Activities. Construction General Permit (CGP) 2003. Modified January 21, 2005. http://www.epa.gov/npdes/pubs/cgp2003_entirepermit.pdf

STORM WATER POLLUTION PREVENTION PLAN CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

______________________________ ______________________
Name Date
Title
Company

Appendix L

CARMEL RIVER REACH COMPARISONS

Table TT1. Comparison of reach designations

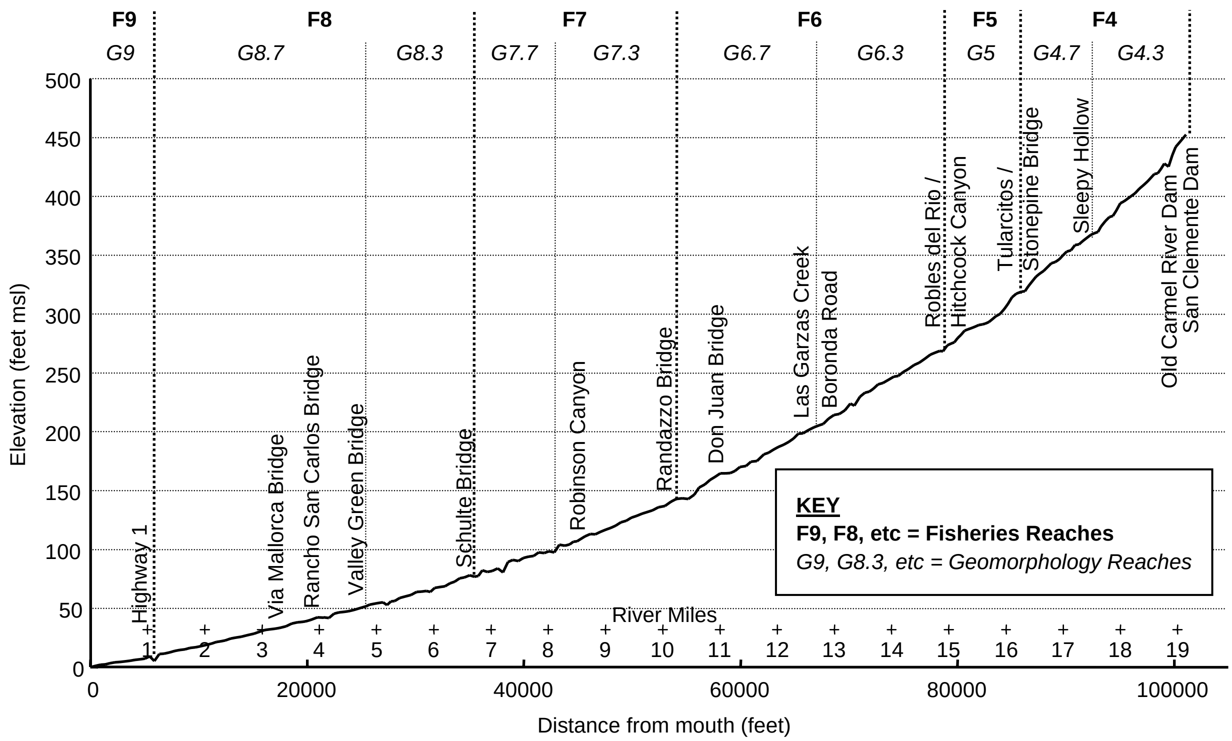
Geomorphology reach no.	Length (mi)	Fisheries reach no.	Length (mi)	Reach description**	Upstream station (River Mile)	Downstream station (River Mile)
		1	1.3	Los Padres Dam to Cachagua Creek	25.3	24
		2	4	Cachagua Creek to San Clemente Dam	24	20
		3	0.9	San Clemente Dam	20	19.1
4.3	1.7	4	3	San Clemente Dam to Sleepy Hollow	19.1	17.4
4.7	1.3			Sleepy Hollow to Tularcitos Creek	17.4	16.1
5	1.3	5	1.3	Tularcitios Creek to Hitchcock Canyon	16.1	14.8
6.3	2.2	6a, b, c*	4.6	Hitchcock Canyon** to Las Garzas Creek	14.8	12.6
6.7	2.4			Las Garzas Creek to Randazzo Bridge	12.6	10.2
7.3	2.1	7	3.5	Randazzo Bridge to Robinson Canyon	10.2	8.1
7.7	1.4			Robinson Canyon to Schulte Road	8.1	6.7
8.3	1.9	8	5.6	Schulte Road to Valley Green Bridge	6.7	4.8
8.7	3.7			Valley Green Bridge to Highway 1	4.8	1.1
9	1.1	9	1.1	Highway 1 to mouth	1.1	0
Total length	**25.3**	**Total length**	**19.1**			

NOTES:

***Fisheries reach no. 6 consists of three subreaches:**

6a	1.5	Robles del Rio** to DeDampiere
6b	1.5	DeDampiere to Borondo Road
6c	1.6	Borondo Road to Garland Park

**Hitchcock Canyon is the same location as Robles Del Rio



F9
F8
F7
F6
F5
F4
G9
G8.7
G8.3
G7.7
G7.3
G6.7
G6.3
G5
G4.7
G4.3
Elevation (feet msl)
Distance from mouth (feet)
River Miles
Highway 1
Via Mallorca Bridge
Rancho San Carlos Bridge
Valley Green Bridge
Schulte Bridge
Robinson Canyon
Randazzo Bridge
Don Juan Bridge
Las Garzas Creek
Boronda Road
Robles del Rio / Hitchcock Canyon
Tularcitos / Stonepine Bridge
Sleepy Hollow
Old Carmel River Dam
San Clemente Dam
KEY
F9, F8, etc = Fisheries Reaches
G9, G8.3, etc = Geomorphology Reaches

Appendix M

SEDIMENT TRANSPORT MODELING

APPENDIX M

SEDIMENT TRANSPORT MODELING

Sediment Management Studies and Sediment Transport Modeling Conducted for the 2000 RDEIR

As described in EIR/EIS Chapter 1, the San Clemente Dam Seismic Safety Project was considered in CEQA processes leading to a Draft EIR in 1998 and a Recirculated Draft EIR (RDEIR) in 2000. Comments on the RDEIR identified sediment management and sediment transport in the lower Carmel River as among the most serious concerns of the project. The National Marine Fisheries Service (NMFS) requested further evaluation of sediment transport and effects with dam removal.

Sediment transport analyses conducted for the RDEIR examined (1) the rate at which sediment stored behind SDC would erode, (2) the suspended sediment concentration in the river downstream of the SDC, and (3) the potential effects of the stored sediment on flooding, channel stability, and habitat conditions in the 19-mile reach of Carmel River between the dam and the Pacific Ocean. Sediment-transport modeling simulated sediment outflow from the reservoir and downstream sediment movement over a 41-year hydrologic period of record. Analysis showed that significant aggradation of sand and fine gravel-sized sediment would occur downstream if the dam were lowered or removed without first removing the stored sediment (MEI 2003).[1] This level of aggradation was considered unacceptable, both in terms of its potential flood risk and its potential to pose a significant barrier to upstream fish migration.

One scenario analyzed evaluated the effects of notching the dam in 15-foot increments every 5 to 10 years until it was completely removed. Again, a significant amount of sediment was found to erode and remain in the downstream river, severely impacting channel stability and flood carrying capacity by the end of the 41-year simulation period (MEI 2003). These results underscored the necessity of excavating the stored sediment to reduce downstream impacts.

Sediment Management Studies and Sediment Transport Modeling Conducted for the Present EIR/EIS

For the present EIR/EIS, further sediment analyses were conducted to investigate all of the action alternatives, including one (Alternative 3) which had not been previously considered in the 2000 RDEIR (MEI 2005, 2006b). (This alternative is described in Chapter 3.5.)

Sediment transport modeling for the Proponent's Proposed Project and Alternative 1 (Dam Notching) considered the proposed use of a sluice gate to manage sediment to maintain steelhead passage through the fish ladder. Instream conditions resulting from

[1] Downstream sediment storage in the river ranged from 100 to 700 AF under various scenarios analyzed, as compared to about 20 AF stored in the channel under baseline conditions.

periodic sluicing were modeled by MEI (2006a) to estimate effects to sediment remaining in the reservoir and to downstream reaches of the Carmel River. The simulations were performed for a single sluice event for one year.

Mussetter Engineering, Inc. (MEI) modeled sediment conditions in the reservoir and the river downstream of SCD using two computer models:

(1) A HEC-6T sediment transport model was used to simulate the accumulation of sediment in the reservoir and sediment releases from the reservoir to the river downstream. Thus, the model simulates the movement of sediment from the reservoir to the ocean. The model uses an assumed upstream sediment load that varies with river flow as the sediment input to the model. The output of this model includes the stored sediment in the reservoir, sediment load passing SCD, and sediment load in the lower river. The HEC-6T model uses a 41-year hydrologic pattern based on the measured flow at the Robles Del Rio gage. Because project-related changes in sediment transport are expected to be greatest in the first year following construction, two different hydrologic time series were used: one that starts with a wet year (1978); and one that starts with a dry year (1985) (MEI, 2006). This was accomplished by organizing the 41-year flow record to start with 1978 or 1985. The hydrology that begins with 1978 is referred to as "wet-year hydrology," and that beginning in 1985 is referred to as "dry-year hydrology."

(2) Sediment management activities were incorporated into the simulations to assess the sediment release downstream. A second model was used to simulate the behavior of sediment in the reservoir when a sluice gate is used to release sediment past the dam. This model tracks the release of sediment through the sluice gate and the subsequent formation of an upstream channel in the remnant pool. This model's output is used in the HEC-6T model to simulate downstream sediment loading. This sluicing model uses a one-year hydrologic record for simulation. The simulations were performed assuming a sluicing event for a single dry year and a single wet year. The sluicing event simulated was a two-hour sluice at a time when the river flow exceeded 300 cfs, and occurring after January 1. The days chosen for simulation of sluicing events were January 4, 1978 (wet year) and February 9, 1985 (dry year). The simulation was continued through the remainder of the year.

Sediment concentrations present in the lower river were analyzed by post-processing the results from the HEC-6T sediment transport model to estimate the suspended sediment concentration. Estimates of concentration were made for the entire reach of the lower river (from SCD to the ocean).

Sediment Transport Modeling

SUMMARY OF MODELING HISTORY

To date, six reports have been published by MEI analyzing the current (baseline) downstream sediment transport, and potential effects resulting from the implementation of a seismic safety project.

(1) The first report (MEI 2003) modeled variations of the current project alternatives. However, because Alternative 3 (Carmel River Reroute) had not been proposed at that time, it was not considered in the report. The results of the 2003 modeling focused on the volume of sediment transported from behind SCD, without any prior sediment removal, down to the mouth of the river. MEI then evaluated changes in channel storage and bed elevation from SCD down to the mouth of the river. The 2003 results indicated that the release of stored sediment in addition to the natural sediment load in the river would cause significant changes in the channel downstream.

(2, 3) Subsequently, MEI prepared three reports (2005, 2006b and 2007a) focusing on the alternatives assessed in the San Clemente Dam Seismic Safety Project EIR/EIS, including prior removal of the stored sediment for the dam removal alternatives. In these reports, the effects of the alternatives were evaluated in terms of timing, volume, and distribution of sediment downstream of the dam site. The size of material transported from the location of the dam site to the downstream reaches was also estimated.

Additionally, two reports were prepared by MEI (2006a and 2007b) because a sluice gate has been proposed for the two alternatives that keep the dam in place (Dam Thickening and Dam Notching). The sluice gate would be one option used to periodically flush sediment away from the ladder and provide flows and sediment transport capacity sufficient to maintain the desired open-channel conditions upstream from the dam. The results of the models depict the size, volume, timing and movement of sediment through the reservoir and downstream to the mouth of the river during sluicing events of various stream flow magnitudes.

SEDIMENT MODELING ASSUMPTIONS AND APPROACH

MEI modeled a baseline condition that reflects current conditions present in the river and reservoir at the time environmental analysis began (because the NEPA/CEQA process occurs over several years, sediment conditions in the reservoir have changed while the EIR/EIS is being prepared, reviewed, and finalized). This baseline was used in the 41-year simulation of sediment movement and represents the condition with the dam remaining in place. The baseline condition begins with about 100 AF of storage remaining in the reservoir at the start of the simulation.

Because the reservoir will soon “fill” with sediment (other than a remnant pool, as explained in Section 4.2.1), MEI developed a modified baseline to simulate the effects of sediment management actions under the Proponent’s Proposed Project and Alternative 1. The modified baseline begins the simulation with the remaining capacity of the reservoir filled with sediment. This modified baseline was necessary to simulate the sediment management actions with all alternatives at a common starting point relative to the sediment load that would be available to the river downstream of the dam. The modified baseline was used for a single-year simulation. This modified baseline is similar to the Proponent's Proposed Project except it does not include sediment management. MEI modeled the Proponent's Proposed Project by adding sediment management to the modified baseline.

Sluicing is one of the techniques proposed for managing sediment for fish passage, and was simulated using the sediment transport models described above. Modeling was not conducted for all sediment management activities, but was conducted for sluicing because of concerns raised in comments on the Draft EIR/EIS regarding potential impacts related to suspended sediment following a sluicing event. A sluicing event was simulated for the Proponent's Proposed Project to assess effects on fish passage in the reservoir and downstream.

As described in Chapters 3.2 and 3.3, sluicing is accomplished using a gate through the dam that can be opened to release sediment and water. This gate is modeled as a 10 foot diameter pipe located east of the fish ladder (see Figure 4.2-9, Hydrology in the Final EIR/EIS). The total volume of sediment passing through the sluice gate and the volume of sediment stored in the lower river was estimated from the sediment models.

To assess sediment management by sluicing, MEI used the sluicing model to estimate the upstream (reservoir) bed profile through the remnant pool after sluice events lasting 2, 4, 8, and 24 hours, and at sluice flow rates ranging from 300-800 cfs. Based on that analysis, MEI estimated that a 2-hour sluice at 300 cfs would be sufficient to maintain the channel upstream of the dam. Such a sluice would remove about 2.4 AF of sediment. The modeling assumed that the sluice would occur after January 1 when the river flow exceeded 300 cfs. The final sluicing simulation was conducted for one sluicing event in a single year and not the full 41-year simulation. (This was done because it is not expected that sluicing would be needed every year or multiple times per year.)

The results of the simulation were used to assess the need for sluicing and test the validity of the assumption that sluicing would be infrequent. Sluicing under the modified baseline condition was simulated for the Proponent's Proposed Project for a single wet year (1978) and a dry year (1985) (MEI 2007b). The simulations for these specific years for the other alternatives are found in the 41-year simulation. No specific sluicing run was conducted for Alternative 1, which can be extrapolated from the results for the Proponent's Proposed Project. (Alternatives 2 and 3 remove the dam and either excavate and remove the sediment or stabilize it in place; they therefore do not require a sluicing analysis.)

The Sediment Operations and Management Plan for Fish Passage (SOMP, see Appendix J) describes a toolbox of sediment management approaches that may be used under the Proponent's Proposed Project or Alternative 1. Sediment may be removed upstream of SCD by some form of mechanical excavation using a backhoe or by suction dredging. These sediment removal techniques may be employed if persistent dry year conditions present challenges for fish migration at times when sluicing could damage river habitat or harm adult or juvenile fish in the lower river. Sediment removal techniques such as these would be employed to maintain fish passage through the remnant pool and avoid potential impacts to Reach 4.3 from sluicing. These sediment management tools were not simulated.

At the time that this modeling was conducted, the No Project (No Action) Alternative (Alternative 4) included environmental improvements such as a new fish ladder and sluice gates. For the Final EIR/EIS, these improvements are not considered part of Alternative 4 (see Chapter 3.6), however the modeling that was conducted presents results for an Alternative 4 configuration that includes sluice gates and a new fish ladder. For long-term simulation of sediment movement, the Proponent's Proposed Project is similar enough to Alternative 4 that the results for the two can be considered to be the same. For the one-year sluicing event, a specific model run was conducted for the Proponent's Proposed Project and Alternative 4 by adding sluicing to the modified baseline condition.

Although Alternatives 2 and 3 do not entail sluicing, sediment management actions are undertaken for each of these alternatives that could result in downstream sediment transport. Sediment would be excavated for offsite disposal under Alternatives 1 and 2, and would be redistributed and stabilized in the river under Alternative 3. In each case, the sediment stored upstream of SCD would be excavated using heavy equipment and, after excavation, new channels would need to be constructed, either to provide a new stream channel across the remaining sediment (Alternative 1), or to restore a free-flowing river in its historic channel (Alternative 2), or to create a river channel capable of carrying the Carmel River flow in San Clemente Creek (Alternative 3). At a practical level, not all of the overlying sediment can be removed under Alternative 2 or 3 (and not all the stored sediment is planned for removal under Alternative 1). The ability to completely excavate stored sediment is constrained by the irregular shape of the underlying canyon, obstacles such as boulders, and the need to avoid excavation into underlying native soils. Therefore, sediment transport modeling of Alternatives 2 and 3 assumes that one foot of sediment would remain in the reservoir area after the excavation and dam removal and be available for transport downstream.

RESERVOIR CROSS-SECTIONS

MEI developed assumed cross sections through the reservoir for the Carmel River and San Clemente Creek for the different alternatives (Figures M-1 through M-5). The assumed channels contain a low-flow channel and a flood channel, and are sized for the anticipated flow and sediment loads. These cross sections are based on a hydraulic assessment by MEI that determines the cross section capable of conveying the base flow, median flow, 2-year flood, the 100-year flow, and the probable maximum flood

(MEI 2007a). Each is sized to be stable under the anticipated flow and sediment conditions. These cross sections were used in the modeling of the alternatives.

Downstream of the dam, the individual Carmel River, cross-sections used in the model were grouped within defined river reaches for the presentation and discussion of the results (Table M-1).

FLOW DISTRIBUTION BETWEEN SPILLWAY AND FISH LADDER

The Proponent's Proposed Project and Alternative 1 include a fish ladder that provides access to the remnant pool for migrating fish. The ladder can be operated at different flow rates by reducing the ladder opening at the dam. When the river flow is less than ladder capacity, all of the flow goes through the ladder and the water surface elevation in the remnant pool is controlled by the ladder.

At river flows greater than the ladder capacity, the spillway controls the water surface elevation in the remnant pool. Some water will flow through the fish ladder and some over the spillway. Preliminary modeling indicated that the storage of sediment in the remnant pool for dry years depends on the water surface elevation in the pool. When flow exceeds the ladder capacity, any sediment moving at that flow will deposit at the head (upstream end) of the remnant pool. When all the flow is through the ladder, sediment will move into the pool and approach the dam and ladder. Therefore, simulations were performed both with the fish ladder operating at full capacity and with the ladder operating at a reduced capacity, assumed to be 10 cfs for this analysis.

The purpose of the second simulation is to increase the range of low flows under which the water surface elevation is at the spillway and force any sediment deposition to the head of the remnant pool.

CHANNEL CROSS-SECTIONS

Figures M-1 through Figure M-5 represent theoretical channel cross sections that would be necessary to pass the 100-year flow under the alternatives. These channels are sized to be hydraulically stable and pass the anticipated sediment loads. These channels are used in the sediment transport modeling to assess the movement of sediment upstream of the current damsite and do not reflect the natural channel that existed before construction of San Clemente Dam.

Figure M-1: Typical Cross Section for the Alternative 1 (Dam Notching) in the Carmel River Arm

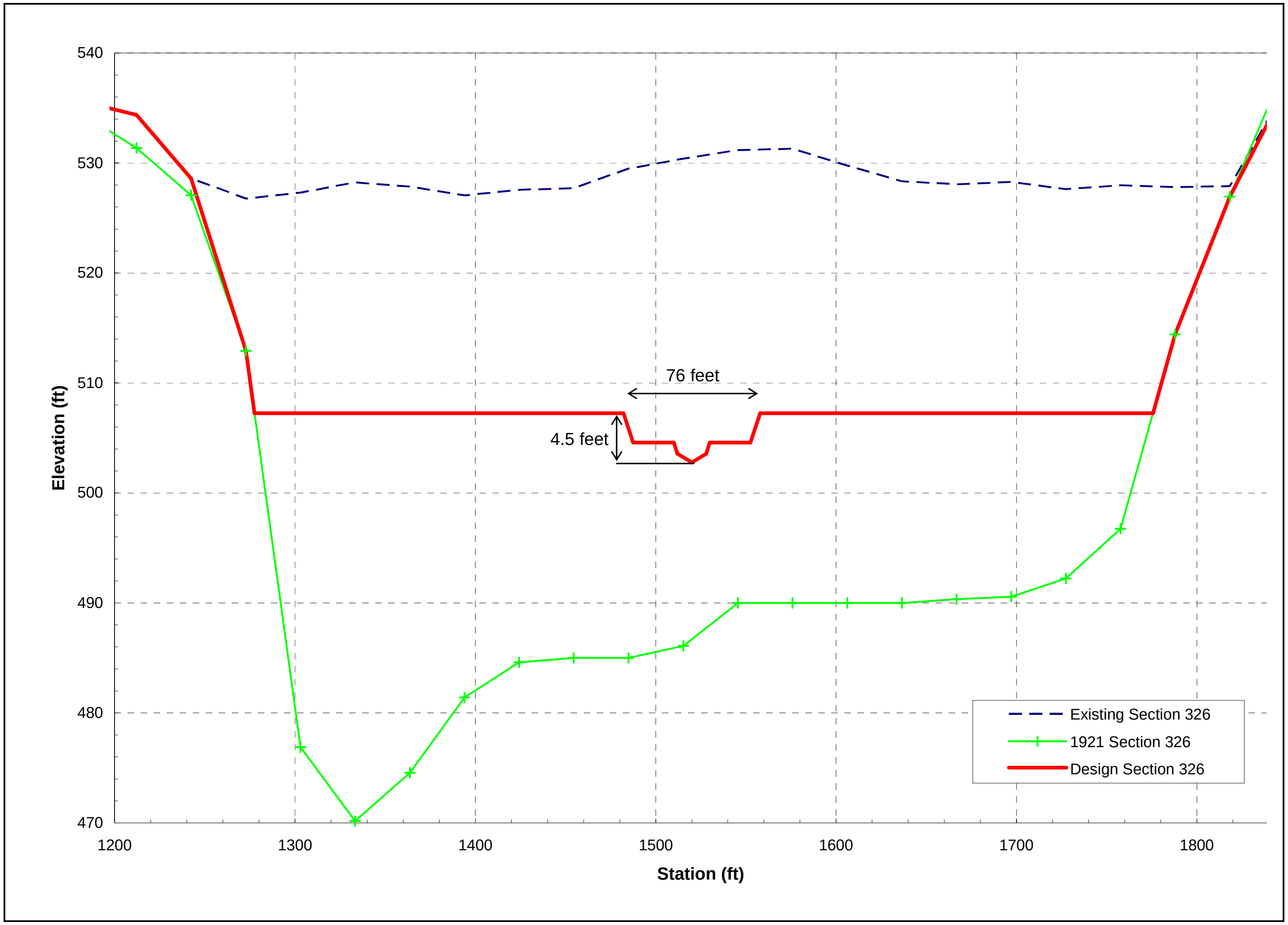


Figure M-2: Typical Cross Section for the Alternative 1 (Dam Notching) in the San Clemente Creek Arm

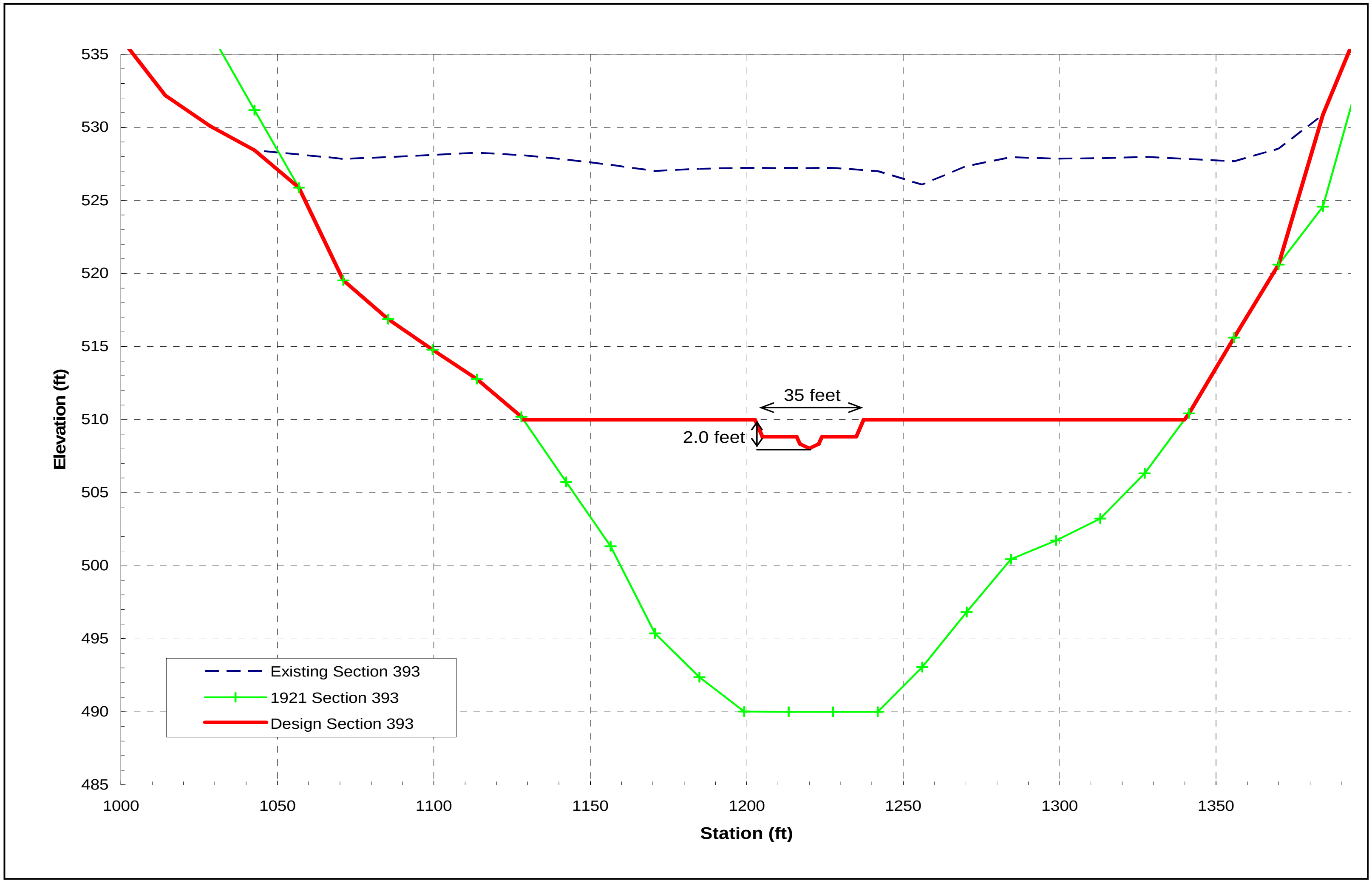


Figure M-3: Typical Cross Section for the Alternative 2 (Complete Dam Removal) in the Carmel River Arm

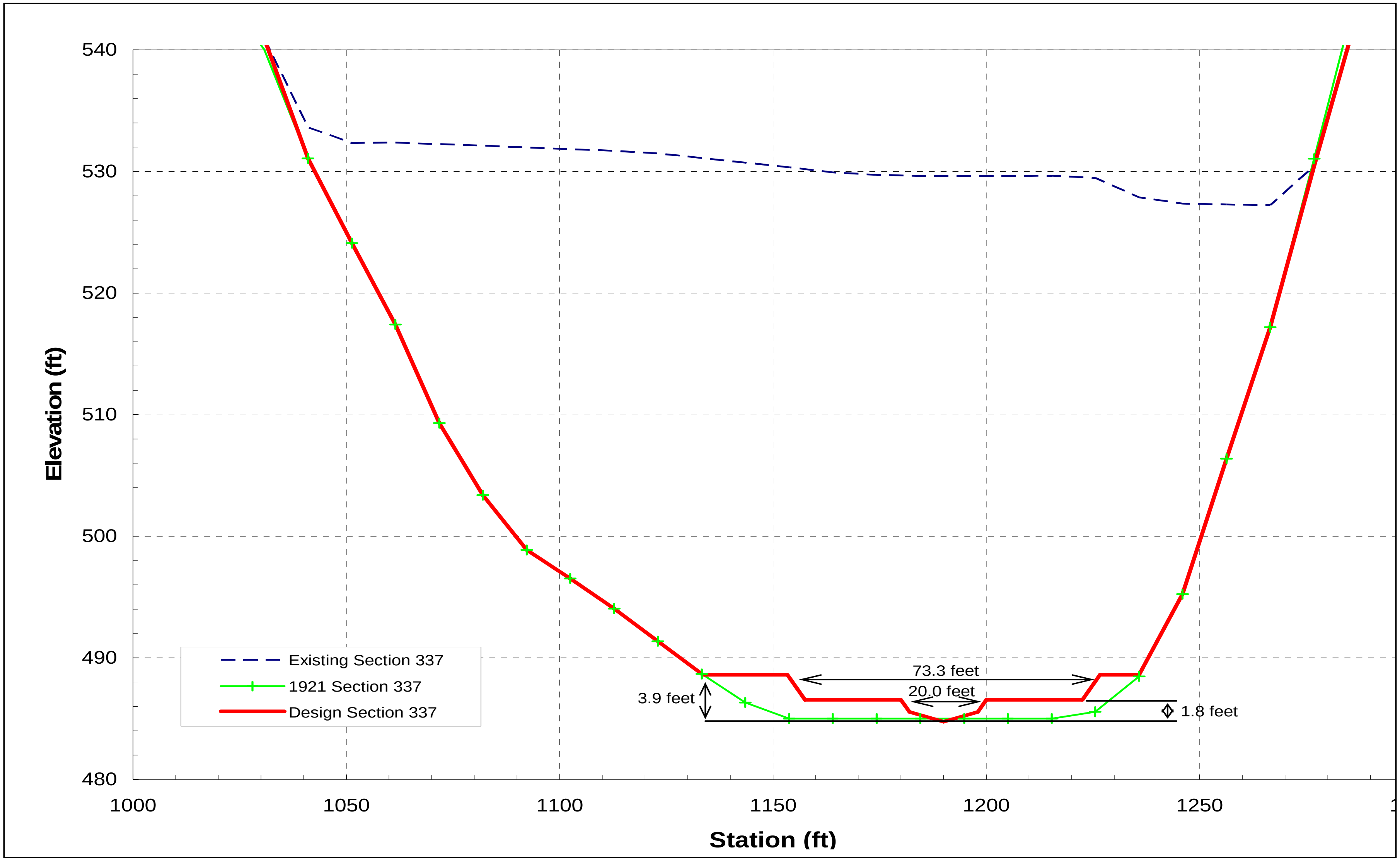


Figure M-4: Typical Cross Section for the Alternative 2 (Dam Removal) in the San Clemente Creek Arm

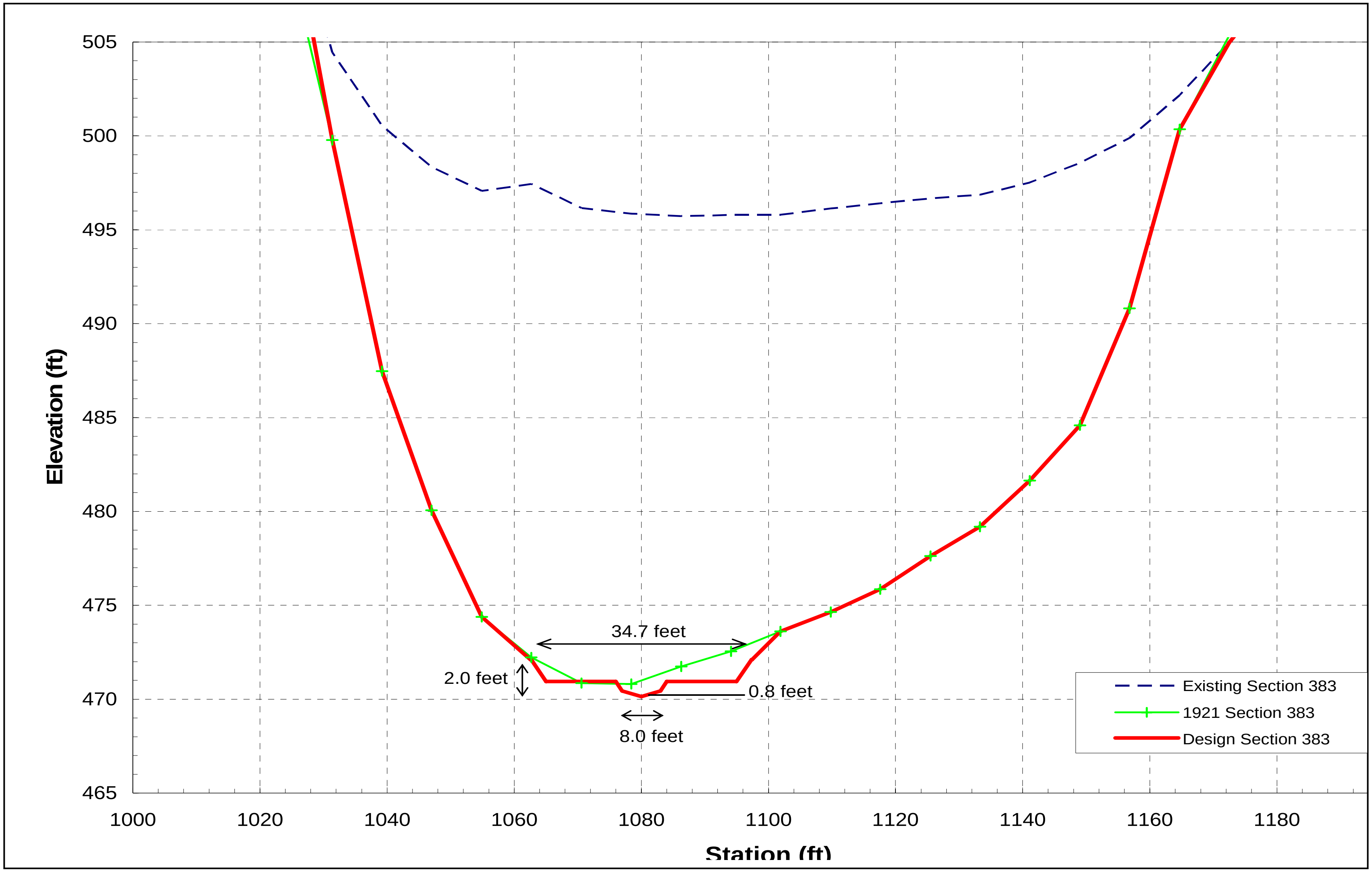


Figure M-5: Typical Cross Section for the Alternative 3 (Carmel River Bypass) in the San Clemente Creek Arm

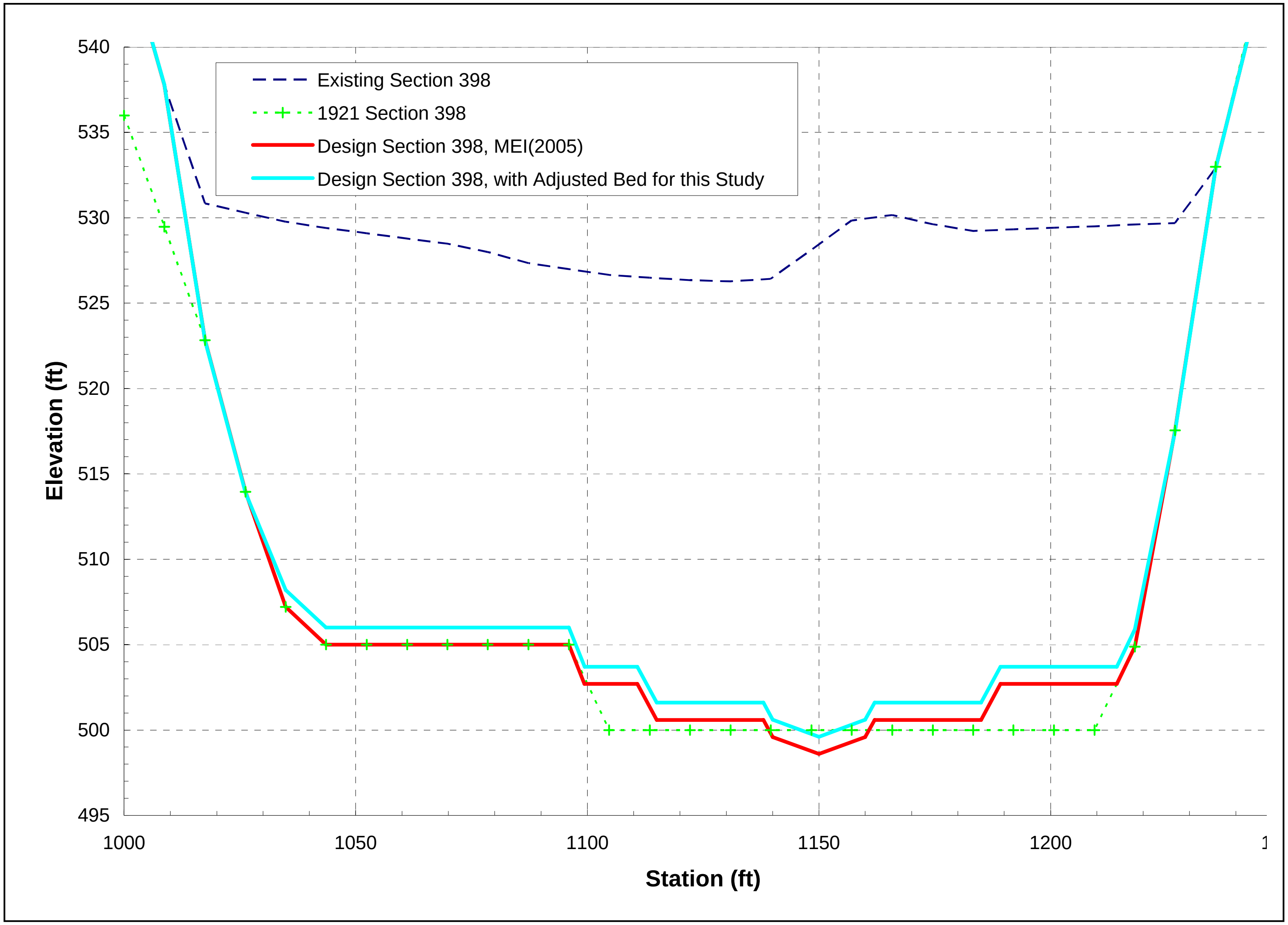


Table M-1: Summary of Subreaches Used in the Sediment Transport Modeling

Subreach Number	Description	Upstream Station	Downstream Station	Subreach Length		Average Gradient		Bed Size Material		Model Cross Sections
		(ft)	(ft)	(ft)	(miles)	(ft/ft)	(ft/mile)	D_{50}	D_{84}	
4.3	San Clemente Dam to Sleepy Hollow	101,400	92,400	9,000	1.70	0.0099	52.1	203	293	207- 232
4.7	Sleepy Hollow to Tularcitos Creek	92,400	85,800	6,600	1.25	0.0079	41.5	152	227	189 to 206
5	Tularcitos Creek to Hitchcock Canyon	5,800	78,800	7,000	1.33	0.0067	35.3	161	230	168 to 188
6.3	Hitchcock Canyon to Garza Creek	78,800	67,000	11,800	2.23	0.0055	29.0	103	176	142 to 167
6.7	Garzas Creek to Randazzo Bridge	67,000	54,100	12,900	2.44	0.0048	25.4	86	155	115 to 141
7.3	Randazzo Bridge to Robinson Canyon	54,100	42,900	11,200	2.12	0.0035	18.7	75	121	93 to 114
7.7	Robinson Canyon to Schulte Road	42,900	35,400	7,500	1.42	0.0029	15.1	53	88	77 to 92
8.3	Schulte Road to Valley Green Bridge	35,400	25,400	10,000	1.89	0.0025	13.2	38	65	55 to 76
8.7	Valley Green Bridge to Highway 1	25,400	5,900	19,500	3.69	0.0021	11.2	1.8	6.2	14 to 54
9	Highway 1 to mouth	5,900	0	5,900	1.12	0.0009	4.5	1.5	4.9	0.5 to 13
			Total Length	**101,400**	**19.2**					

Source: MEI 2007a

SEDIMENT TRANSPORT EVALUATION CRITERIA

Three evaluation criteria were applied to the output of sediment transport modeling: reservoir sedimentation, sediment loading, and downstream sediment concentration.

Reservoir Sedimentation

Reservoir sedimentation was evaluated from the simulated total sediment load retained in the reservoir and also by the reservoir trap efficiency. The 41-year simulation is used for this analysis. Trap efficiency refers to the amount of sediment entering the reservoir that is trapped within the reservoir area. The computation is based on the long-term simulation of sediment transport through the reservoir. The trap efficiency was estimated by summing the total sediment retained in the reservoir area divided by the total sediment inflow to the reservoir. In recent years the trap efficiency was about 75 percent but declines to about 35 percent as the reservoir fills.

Reservoir sedimentation was assessed for sluicing under the Proponent's Proposed Project, using a one-year simulation as explained above.

Over the long term, sedimentation of the reservoir may be affected by unanticipated events such as wildfires or landslides. Such events can produce large amounts of sediment that enters the river and moves downstream to the reservoir. These events occur randomly and therefore no modeling was performed for them.

Downstream Sediment Loading

The sediment transport modeling simulated the total amount of sediment passing the dam to the lower river for the 41-year simulation period under the four alternatives, and includes sediment grain size distribution.

Downstream sediment loading was also assessed for sluicing under the Proponent's Proposed Project. Simulations were performed for the change in channel bed elevation as a result of the downstream sediment loading.

Downstream Sediment Concentration

Using the modeled sediment loading results, MEI estimated suspended sediment concentrations in the lower river water column. Suspended sediment concentrations were estimated from 0.5 feet above the river bed to the water surface. Results were presented for the river reaches described in Section 4.2 of the Final EIR/EIS (Hydrology, Table 4.2-3).

Suspended sediment concentrations were also assessed for sluicing under the Proponent's Proposed Project.

Appendix N

SUMMARY OF HYDRAULIC AND SEDIMENT-TRANSPORT ANALYSIS OF RESIDUAL SEDIMENT: ALTERNATIVES FOR THE SAN CLEMENTE DAM REMOVAL/RETROFIT PROJECT, CALIFORNIA

Summary of Hydraulic and Sediment-transport Analysis of Residual Sediment: Alternatives for the San Clemente Dam Removal/Retrofit Project, California

March 19, 2007

1. INTRODUCTION

Mussetter Engineering, Inc. (MEI) was retained by MWH Americas, Inc. (MWH) to perform an evaluation of the potential effects to the downstream river of residual sediment that would remain in the valley bottom during implementation of the Carmel River Bypass (**Figure 1**), Complete Removal and Dam Notching (**Figure 2**) Alternatives for the San Clemente Dam Removal/Retrofit project.

The baseline effects of the Bypass Alternative were evaluated in a previous study (MEI, 2005) under the assumption that all of the sediment deposits in the relevant portion of the reservoir would be excavated prior to removal of the dam. In practice, a portion of the existing deposits would likely remain in the valley bottom under either of the Complete Dam Removal or Bypass Alternatives because it is not practical to remove all of the sand from the pre-existing, coarse-grained bed material. In addition, depending on the actual design of either of these alternatives, it may be more practical to intentionally leave a limited amount of the existing deposits to provide material within which the reconstructed channel can adjust, rather than completely pre-forming the channel to the desired dimensions.

For the Dam Notching Option, the profile on the sediment deposits after excavation would intersect the pre-dam profile about one mile upstream from the dam in the Carmel River Branch and about 2,000 feet upstream from the dam in the San Clemente Creek Branch, assuming that the gradient across the remaining deposits after excavation is the same as the existing reservoir gradient (**Figures 3 and 4**). In the portion of the reach upstream from this intersection, the residual sediment issues will be similar to those for the Bypass and Complete Removal Alternatives. The sediment deposits beneath the reconstructed channel in the reach between the dam and the intersection with the pre-dam profile will be significantly finer than in the up- and downstream river, which will affect the transport rates and downstream sediment delivery.

Based on the above discussion, the following tasks were conducted to analyze the effects of the residual sediment under each of the three alternatives:

Carmel River Bypass Option

a. The HEC-6T sediment-routing model that was used to evaluate the Carmel River Bypass Option (MEI, 2005) was modified to reflect a residual sediment depth of 1.0 feet across the valley bottom.

b. Consistent with the previous modeling studies, the modified model was run with both the 1985 (dry starting period) and 1978 (wet starting period) hydrology.

Complete Dam Removal Option

a. Cross-sectional geometry was developed for appropriately sized, reconstructed channels in both the Carmel River and San Clemente Creek branches of the reservoir, with the channel profile at approximately the pre-dam elevations. A one-dimensional (1-D) step-backwater model of each reach was developed to evaluate the hydraulic conditions in the reconstructed reaches, and the resulting cross-sectional geometry was integrated into the HEC-6T sediment-routing model.

b. The HEC-6T sediment-routing model was modified to reflect the reconstructed channel geometry with a residual sediment depth of 1.0 feet.

c. The modified model was run for both the 1985 (dry starting period) and 1978 (wet starting period) hydrology.

Dam Notching Option

a. Cross-sectional geometry was developed for appropriately sized, reconstructed channels in both the Carmel River and San Clemente Creek branches of the reservoir, with the channel dimensions and gradient in the reach between the dam and the intersection with the pre-dam profile in each branch established to convey the inflowing baseload, and the profile upstream from that point at approximately the pre-dam elevations. This task included development and refinement of a 1-D step-backwater model of each reach to evaluate the hydraulic conditions in the reconstructed channels.

b. The HEC-6T sediment-routing model was modified to reflect the reconstructed channel geometry, with a residual sediment depth of 1.0 feet in the reaches upstream from the intersection of the excavated profile and the pre-dam bed elevations.

c. The modified model was run for both the 1985 (dry starting period) and 1978 (wet starting period) hydrology.

Results from each of the above described model runs were summarized and interpreted.

2. HYDRAULIC ANALYSIS

2.1. Model Development

A hydraulic analysis was performed to aid in developing appropriate profiles and cross-sectional shapes for the diversion channel and reconstructed reaches of the Carmel River and San

Clemente Creek under the Complete Dam Removal and Notching Alternatives, and the results were assessed to evaluate the hydraulic conditions and capacity of the resulting channels. The hydraulic analysis was performed using the U.S. Army Corps of Engineers' one-dimensional (1-D) HEC-RAS step-backwater program, Version 3.1.3 (USACE, 2005).

2.1.1. Complete Dam Removal Alternative

Model topography for the reconstructed reaches of San Clemente Creek and the Carmel River was estimated based on the pre-dam (1921) 5-foot contour-interval mapping, under the assumption that the majority of the existing sediment deposits could be removed. The resulting slope is about 1.2 percent in the Carmel River Branch and about 2.5 percent in the San Clemente Creek Branch (**Figures 5 and 6**).

The cross-sectional geometry for the reconstructed channel was developed to convey between the 1.5- and 2-year peak discharges in each branch. Consistent with the original Carmel River Bypass Option design geometry (MEI, 2005), a two-stage, compound channel form was selected. The geometry in the Carmel River Branch includes a 20-foot wide, 1.8-foot deep low-flow channel and a 73-foot wide high-flow channel with an overall depth of 3.9 feet (**Figure 7**). In the San Clemente Creek Branch, the geometry includes an 8-foot wide, 0.8-foot deep low-flow channel and a 35-foot wide high-flow channel with an overall depth of 2.0 feet (**Figure 8**). The capacity of the low-flow channel is approximately 130 cfs and the capacity of the bankfull channel is approximately 1,330 cfs in the Carmel River branch, and the corresponding capacities in the San Clemente Creek branch are 20 and 318 cfs, respectively.

The cross-sectional geometry was inserted into the existing conditions model that was developed in MEI (2005) and executed over a range of flows including:

- the median flow at San Clemente Dam (15 cfs),
- the 2-year peak discharge (2,250 cfs),
- the maximum mean daily flow in the 41-year period of record from the CVSIM model (8,468 cfs),
- the 100-year peak discharge (22,700 cfs), and
- the probable maximum flood (PMF) that was estimated by CDWR to have a peak discharge of 81,200 cfs.

A roughness value (Manning's *n*) of 0.035 was used for the main channel in the reconstructed reach of San Clemente Creek, and an *n*-value of 0.08 was used in the portion of the cross section that extends across the re-constructed floodplain to the valley wall under the assumption that vegetation will colonize the floodplain within a few years after construction.

2.1.2. Dam Notching Alternative

Under the Dam Notching Alternative, the profile on the sediment deposits after excavation will intersect the pre-dam profile about one mile upstream from the dam in the Carmel River Branch and about 2,000 feet upstream from the dam in the San Clemente Creek Branch, assuming that the gradient across the remaining deposits after excavation is the same as the existing reservoir gradient (Figures 3 and 4). In the portion of the reach upstream from this intersection, the residual sediment issues will be similar to those for the Bypass and Complete Removal Alternatives.

Consistent with the Bypass and Complete Dam Removal Alternatives, a two-stage channel was used to maintain reasonable flow depths and velocities over the range of flows. The channel in the Carmel River Branch includes a 20-foot wide, 1.8-foot deep low-flow channel bounded by a 76-foot wide high-flow channel with an overall depth of 4.5 feet (**Figures 9 and 10**). The bankfull capacity of the channel in the portion of the reach upstream from the intersection of the pre-dam surface is about 1,930 cfs approximately the 2-year flood peak and the low flow channel will convey about 130 cfs, and the bed-material transport capacity significantly exceeds the inflowing sediment load (**Figures 11 and 12**). Between the intersection and the dam, the low-flow channel capacity is about 35 cfs and the bankfull capacity only about 530 cfs due to the flatter slope. With this geometry, however, the transport capacity matches the inflowing sediment load very closely, indicating that the main channel in this reach will not significantly aggrade or degrade. The channel in this portion of the reach will eventually adjust to the 1.5- to 2-year peak by deepening as the overbanks continue to aggrade during the relatively frequent overbank flows.

The compound channel in the San Clemente Creek Branch includes an 8-foot wide, 0.8-foot deep low-flow channel bounded by a 35-foot wide high-flow channel with an overall depth of 2.0 feet (**Figure 13**). The capacities of the low flow and bankfull channels downstream from the intersection with the pre-dam surface are about 8 and 120 cfs, respectively, increasing to 20 and 320 cfs, respectively, in the upstream reach.

To establish the gradient of the channel across the remaining reservoir deposits under this alternative, it was assumed that the floodplain of the reconstructed channel will coincide with the crest elevation of the notch (506 feet), with the channel invert below the dam crest (Figure 3). To accommodate this configuration, a 4.5-foot deep by 30-foot wide low-flow notch will be cut into the lowered dam to convey the 2-year peak flow of 2,250 cfs under critical depth conditions.

2.2. Hydraulic Model Results

2.2.1. Complete Dam Removal Alternative

Under the Complete Dam Removal Alternative, the computed water-surface profiles in the Carmel River Branch indicate that the valley constriction in the vicinity of the existing dam causes a relatively significant backwater effect at flows greater than the 2-year peak (**Figure 14**). The backwater extends about 600 feet upstream from the constriction in the Carmel River branch and about 1,300 feet upstream in the San Clemente Creek branch at the 100-year discharge (**Figure 15**). The analysis also indicates that hydraulic jumps will occur at discharges greater than the 2-year event at other locations where the valley constricts the flow, causing a localized increase in energy slope. If this alternative is ultimately selected, it may be possible to eliminate some of these jumps at moderate flows in the 2- to 50-year range by adjusting the channel configuration and profile during the detailed design phase. At higher flows, the valley configuration controls the jumps, and it will probably not be possible to eliminate them. Given the infrequency of flows in this range, this is not considered to be a serious limitation of the Bypass option.

The model results indicate that average velocities in the reconstructed reach of the Carmel River Branch will range from about 2.4 fps at the median flow of 15 cfs to about 9 fps at the 2-year peak discharge of 2,250 cfs (combined Carmel River and San Clemente Creek flows)

(**Figure 16, Table 1**). Flow conditions at the 2-year peak are near-critical or supercritical. At the 100-year peak discharge, average main channel velocities are about 11.7 fps in areas with subcritical flow, but range up to 20.1 fps in supercritical areas. In the San Clemente Creek Branch, the average velocity is 1.7 fps at the median flow, increasing to 6.6 fps at the 2-year event and 10.7 fps at the 100-year event (**Figure 17**). Although the high velocities are expected given the relatively steep gradient of the reach, constraints on fish passage should be considered in the design phase.

Table 1. Summary of average hydraulic parameters under the Complete Dam Removal Option for the median flow, the 2-year peak discharge, the 100-year peak discharge, and the PMF.

Flow	Discharge at Existing Dam (cfs)	Carmel Branch				San Clemente Creek Branch			
		Main Channel Velocity* (ft/s)	Hydraulic Depth* (ft)	Top Width* (ft)	Energy Grade* (ft/ft)	Main Channel Velocity* (ft/s)	Hydraulic Depth* (ft)	Top Width* (ft)	Energy Grade* (ft/ft)
Median Flow	15	2.5	0.4	15.1	0.01299	1.7	0.1	4.9	0.0264
1.5-year Peak	1,193	7.7	2.1	73.0	0.01240	5.7	1.0	33.5	0.0199
2-year Peak	2,250	9.1	2.5	90.9	0.01192	6.6	1.2	46.2	0.0166
100-year Peak	22,700	16.6	9.2	206.3	0.00532	10.7	4.6	99.4	0.0080
PMF	81,200	20.7	22.2	309.5	0.00313	11.8	15.3	169.8	0.0044

*Includes sections with supercritical flow.

2.2.2. Dam Notching Alternative

Under the Dam Notching Alternative, hydraulic conditions are similar to the Complete Dam Removal Alternative in both branches upstream from the intersection with the pre-dam surface, since the design geometries and channel profiles are similar. Downstream from the intersection, however, the significantly flatter slopes result in increased flow depths and top widths, and decreased velocities and energy gradients (**Figures 18 and 19, Table 2**). In the San Clemente Creek Branch, the backwater effects from the Carmel Branch extend about 200 feet upstream from confluence with the Carmel River at the 2-year peak flow, and about 2,000 feet upstream at the 100-year peak (Figure 19).

Downstream from the intersection in both braches, main channel velocities are relatively consistent at flows less than the 2-year event, when the flow is constrained to the reconstructed channel, but at flows greater than the 2-year event, constrictions in the valley cause locally high velocities (**Figures 20 and 21**). At the 2-year event, the average main channel velocity on the remaining reservoir deposits is about 4.0 fps in the Carmel River branch and about 3.4 fps in the San Clemente Creek Branch, increasing to 8.9 and 7.1 fps in the reaches upstream from the intersection with the pre-dam profile. Average main channel velocities downstream from the intersection for the 100-year event are about 9.1 and 3.6 fps in the Carmel River and San Clemente Creek Branches, respectively, increasing to 18.5 and 15.0 fps upstream from the intersection.

Table 2. Summary of average hydraulic parameters under the Notching Option for the median flow, the 2-year peak discharge, the 100-year peak discharge, and the PMF.									
Flow	Discharge at Existing Dam (cfs)	Main Channel Velocity* (ft/s)	Hydraulic Depth* (ft)	Top Width* (ft)	Energy Grade* (ft/ft)	Main Channel Velocity * (ft/s)	Hydraulic Depth* (ft)	Top Width * (ft)	Energy Grade* (ft/ft)
		Carmel River Branch (Upstream)				**Carmel River Branch (Downstream)**			
Median Flow	15	2.6	0.4	14.9	0.0164	1.1	0.8	17.6	0.0010
1.5-year Peak	1,193	7.5	2.1	75.1	0.0136	3.5	2.0	274.8	0.0012
2-year Peak	2,250	8.9	2.7	83.0	0.0133	4.0	3.0	279.5	0.0011
100-year Peak	22,700	18.5	7.9	208.8	0.0094	9.1	13.5	321.5	0.0013
PMF	81,200	24.1	17.0	340.9	0.0064	13.7	27.8	403.1	0.0012
		San Clemente Creek (Upstream)				**San Clemente Creek (Downstream)**			
Median Flow	15	1.6	0.1	5.0	0.0288	0.9	0.2	6.1	0.0049
1.5-year Peak	1,193	5.8	0.9	33.4	0.0252	3.2	0.6	172.5	0.0037
2-year Peak	2,250	7.1	1.0	48.7	0.0249	3.4	1.1	175.1	0.0029
100-year Peak	22,700	15.0	3.3	80.6	0.0243	3.6	8.3	209.9	0.0006
PMF	81,200	19.0	9.5	107.9	0.0134	4.7	20.1	274.8	0.0002

3. SEDIMENT-TRANSPORT ANALYSIS

The sediment-transport modeling for this study was performed using modified versions of the earlier HEC-6T models that were developed for MEI (2005). The following sections describe the model modifications and results.

3.1. Model Development

The following three scenarios were modeled for this study:

Scenario 1: the Carmel River Bypass Alternative,
Scenario 2: the Complete Dam Removal Alternative, and,
Scenario 3: the Dam Notching Alternative.

The model for each alternative was developed by substituting the cross sections discussed in the previous section into the appropriate locations in the existing conditions geometry file. No changes were made to the portion of the model that represents the river downstream from the dam for any of the scenarios. Consistent with the previous studies, two hydrologic scenarios were evaluated for each scenario to represent wet and dry conditions immediately after removal of the dam (1978 and 1985 start-dates, respectively).

3.1.1. Carmel River Bypass Alternative Model Development

The model geometry for the Carmel River Bypass Alternative was similar to the model geometry in MEI (2005), except that the channel bed geometry was adjusted in the reconstructed (Bypass) reach of San Clemente Reservoir by adding 1 foot of elevation to the cross section points located between the valley walls to account for the residual sediment (**Figure 22**). The sediment size-gradation in the 1-foot deep BSR between the diversion channel outlet and the dam was estimated based on the gradations for Zones 9A, 11, and 2A from MEI (2003) (**Figures 23 and 24**). Upstream from the diversion channel in the Carmel River Branch, the cross-sectional geometry and sediment gradation in the BSR was the same as that used in the MEI (2005) model. Consistent with the previous study, the portion of the Carmel River Branch that would remain in permanent storage below the diversion channel was not included in the model.

3.1.2. Complete Dam Removal Alternative Model Development

The model for the Complete Dam Removal Alternative was developed by inserting the cross-sectional geometry for both branches of the reservoir that was developed for this alternative (Section 2.1.1) into the existing conditions model. The geometry of the channel bed was then adjusted by adding 1 foot of elevation to the cross section points located between the valley walls to account for the residual sediments that would likely remain after excavation. The existing dam was removed from the model, and a BSR with a depth of 1-foot was added to the bottom of the model. The gradation of the BSR sediments in the Carmel Branch was based on Zones 9, 5, 3, 1, and 12, and Zones 9A, 11, 2A, and 1A in the San Clemente Creek Branch (Figures 23 and 24, **Figure 25**).

3.1.3. Dam Notching Alternative Model Development

The cross-sectional geometry for the Dam Notching Alternative Model was developed in a similar manner to the Complete Dam Removal Alternative by inserting the new geometry, as appropriate (Section 2.1.2), and adjusting the cross sections in the reach upstream from the intersection with the pre-dam surface to include an additional one foot of elevation along the channel bed to account for the residual sediment. Downstream from the intersection with the pre-dam profile, the BSR includes the portion of the reservoir deposits that will remain below the notched dam. The geometry of the dam was adjusted by lowering the crest to an elevation of 506 feet and adding the 30-foot wide, 4.5-foot deep low flow notch to tie into the assumed geometry of the upstream reconstructed channel. Based on the profiles shown in Figures 23 and 25, the gradation of the BSR was adjusted to include Zones 8, 5, 3, 1 and 12 in the Carmel River Branch, and Zones 10, 2A and 1A in the San Clemente Creek Branch.

3.2. Reservoir Model Results

Results from the sediment-transport models were evaluated to determine the effects of the alternatives on the timing, volume, and distribution of sediments evacuated from the reservoir and deposited in the downstream Carmel River. Potential impacts were evaluated by comparing results from each of the alternatives with results from the baseline (with dam) conditions model that was presented in MEI (2005) that represents the no-action or dam-thickening alternatives. The results from the Carmel River Bypass Alternative were also compared to the Bypass Alternative with no BSR from MEI (2005) to assess the effects of the residual sediments.

3.2.1. Carmel River Bypass Alternative

The general direction and magnitude of the predicted responses for the Carmel River Bypass Alternative are very similar to those from the earlier study (Carmel River Bypass Alternative with no BSR), but there are differences that are important to interpretation of the effects of the BSR for the other alternatives evaluated in this study. The total volume of sediment passing the existing dam location at the end of the 41-year simulation is about 556 ac-ft for the flow sequence with the 1985 start-date and about 576 ac-ft for the 1978 start date (**Figures 26 and 27**). This represents an increase of 12 to 15 ac-ft over the results from the previous model with no BSR. Because the HEC-6T program interprets the BSR as the depth below the cross section thalweg elevation to which any point along the cross section can erode, it is possible for more than one foot of erosion to occur outside of the low-flow channel (**Figure 28**). This interpretation of the BSR is believed to reasonably reflect conditions after excavation to the pre-dam surface that will likely include areas where the residual sediments are more than 1 foot deep, or where the pre-dam surface included fine-grained alluvial deposits.

The total load passing the existing dam location is 12 percent (1985 start date) to 14 percent (1978 start date) higher than under baseline conditions. Most of the increase occurs in the gravel and cobble size-ranges, with a volume of about 70 ac-ft under both start dates compared to about 23 ac-ft under baseline conditions (**Figure 29**). This indicates that about 77 percent of the inflowing gravel would be transported to the existing dam location, compared to 25 percent under baseline conditions. The results also indicate that 97 ac-ft (1978 start date) to 117 ac-ft (1985 start date) of additional sediment is stored in the reservoir upstream from the existing dam location (**Figures 30 and 31**). Despite net storage, 15 ac-ft (1985 start date) to 28 ac-ft (1978 start date) of material is eroded from the residual sediments in the reconstructed reach of San Clemente Creek, and therefore, between 128 and 132 ac-ft is stored on the Carmel River delta upstream from the diversion channel.

3.2.2. Complete Dam Removal Alternative

Results from the Complete Dam Removal Alternative indicate that this option has the largest impact on sediment loading to the downstream river, with about 670 ac-ft of total load passing the dam at the end of the 41-year simulation with both start dates (Figures 26 and 27). This represents a 30 percent increase over baseline conditions. The majority of the increase occurs in the coarse sand and gravel size ranges, with about 380 ac-ft of medium to coarse sand and 104 ac-ft of gravel (Figure 29). This indicates that all of the inflowing sand and gravel is transported to the existing dam location, and an additional 13 ac-ft of gravel is entrained from the upstream portion of the delta and transported to the location of the existing dam, representing an increase of about 14 percent over baseline conditions. The increased loading at the location of the existing dam is primarily due to the removal of the flat portions of the delta and the relatively large amount of residual sediment that is exposed in the reconstructed channel bed and overbanks in the Carmel River Branch. As expected, the amount of sediment stored in the existing reservoir is significantly less than under the other alternatives, with only about 3 ac-ft (1985 start date) to 4 ac-ft (1978 start date) of material that is primarily stored in the overbanks of the reconstructed channel in areas where the valley widens and the energy gradient flattens at higher flows.

3.2.3. Dam Notching Alternative

Results from the Dam Notching Alternative indicate that the total load passing over the reconfigured dam during the 41-year simulation period is similar to the Carmel River Bypass Alternative [573 ac-ft (1985 start date) to 585 ac-ft (1978 start date)] (Figures 24 and 25). The primary difference in the sediment loading over the notched dam is an increase in the amount of fine material and a decrease in the amount of gravel. Under the Dam Notching Alternative, 197 ac-ft (1985 start date) to 201 ac-ft (1978 start date) of very fine to fine sand is delivered over the dam, compared to 172 to 178 ac-ft of this material under the Bypass Alternative. The volume of gravel passing the dam is 55 ac-ft (1978 start date) to 59 ac-ft (1985 start date), compared to about 70 ac-ft under the Bypass Alternative. These gravel volumes represent 60 percent (1978 start date) to 65 percent (1985 start date) of the inflowing gravel. The increased fine material loads and the decreased gravel loads passing over the dam result from the reduced gradient and transport capacity of the reconstructed reaches downstream from the intersection with the pre-dam surface. The increase in fine sediment loading results in an overall reduction in the amount of material trapped in the reservoir [100 ac-ft (1985 start date) to 89 ac-ft (1978 start date), compared to 97 to 117 ac-ft under the Bypass Alternative, and 177 to 168 ac-ft under the baseline conditions].

3.3. Model Results for the Carmel River Downstream from the Existing Dam

Potential impacts of the alternatives on the river downstream from the dam were assessed based on the magnitude of sediment storage along the reach and the resulting changes in bed elevation, the effects of these changes on flood potential, and the volume of gravels that remain in storage within the main channel. The evaluations were performed on a reach-by-reach basis using the 10 subreaches that were identified in MEI (2002a) (**Table 3**).

3.3.1. Sediment Storage Volumes

Under the Bypass Option with one foot BSR to account for the residual sediment in the reconstructed reach of San Clemente Creek, the maximum increase in the total volume of sediment stored in the river during the simulation period is about 19 ac-ft, occurring in the sixth year of the simulation for the 1978 start date and the eighth year of the simulation for the 1985 start date (**Figures 32 and 33**). For the 1978 start date, the curves in Figure 32 for the Bypass Alternative (with and without the BSR) are generally parallel after the first 10 years of the simulation, indicating that no additional sediment accumulates in the river after this time. Interestingly, for the 1985 start date (Figure 33), after the initial increase in sediment deposition that occurs in Years 8 through 10, the curves for the Bypass Alternative (with and without the BSR) slowly converge, indicating that the river eventually recovers from the effects of the residual sediments. This difference in the 1978 and 1985 start dates is likely a result of relatively large amounts of coarse material that are deposited in the river at the beginning of the 1978 start-date simulation and armor the channel bed, thereby protecting the underlying finer material. This process does not occur to the same extent under the 1985 start-date simulation. The total volume of material that is deposited in the river at the end of the simulation ranges from 57 ac-ft (1985 start date) to 73 ac-ft (1978 start date), a moderate increase over the baseline (with dam) conditions that represents 10 to 12 percent increase in the load passing the location of the existing dam (**Figure 34**). The distribution of sediment storage along the reach varies significantly, with net degradation in Subreaches 8.3 and 8.7, little or no net degradation or aggradation in Subreaches 6.3 and 6.7, and net aggradation in the remainder of the reach

(**Figures 35a and 35b**). Subreach 9, downstream from Highway 1, is the most strongly aggradational of the subreaches. Of the above storage volumes, 74 percent (1978 start-date) to 79 percent (1985 start-date) is located in the overbanks, and the remainder is in the main channel of the river. The model results also indicate that 2 ac-ft (1978 start-date) to 9 ac-ft (1985 start-date) of gravel is stored in the main channel at the end of the simulation (**Figure 36**). The majority of the gravel is stored in the lagoon area downstream from Highway 1 (Subreach 9) and in the reach between Robinson Canyon and Shulte Road (Subreaches 7.3 and 7.7), while some depletion of gravel occurs between Garzas Creek and Randazzo Bridge (Subreach 6.7) and between Valley Green Bridge and Highway 1 (Subreach 8.7).

As expected, the volume of sediment stored in the river at the end of the simulation is larger under the Complete Dam Removal Alternative (Scenario 2) than under the other alternatives since the trapping effect of the reservoir is completely removed. Under this scenario, 123 ac-ft (1985 start date) to 170 ac-ft (1978 start date) of sediments are stored in the river at the end of the 41-year simulation, or about 18 to 25 percent of the inflowing sediment load passing the location of the existing dam (Figures 32 through 34). The model results indicate that in-channel degradation will occur in Subreach 6.7 for both start-dates (Figures 35a and 35b). Subreaches 8.3 and 8.7 would be essentially in equilibrium, and aggradation will occur in the remaining subreaches. Consistent with the Bypass Alternative (Scenario 1), Subreach 9 is the most strongly aggradational. Because the reconstructed reaches of the reservoir deliver all of the inflowing gravel to the downstream river, the volume of in-channel gravels is higher than the other alternatives, with about 18 ac-ft (1978 start date) to 35 ac-ft (1985 start date) stored in the main channel at the end of the simulation. In spite of the overall increase in gravel storage, there is net depletion of gravel in Subreach 6.7 with both start dates and in Subreach 7.3 with the 1978 start date, and insignificant net change in Subreaches 8.3 and 8.7 (Figure 36).

Under the Notching Alternative, 58 ac-ft (1978 start date) to 60 ac-ft (1985 start date) of total sediment is stored in the river at the end of the simulation, a slight increase over baseline (with-dam) conditions due to the larger volume of coarse material that passes the dam. This represents about 10 percent of the load passing over the notched dam, similar to the percentage under Scenario 1. The distribution of sediment along the reach is also similar to Scenario 1 (Figures 35a and 35b), with generally less aggradation in the upstream three subreaches. For the overall downstream river, about 6 ac-ft (1978 start date) to 7 ac-ft (1985 start date) of additional gravel is stored in the main channel, similar in magnitude and distribution to Scenario 1 but substantially less than under Scenario 2 (Figure 36).

These results indicate that the Complete Dam Removal Alternative would result in more sediment storage in the river over the long-term than would occur under either the Bypass or Dam Notching Alternatives, and the differences between the Bypass Alternative and the Dam Notching Alternative are likely within the uncertainty in the model. In addition, the impacts of each of the alternatives evaluated in this study to the downstream river are relatively small compared to the impacts that would occur under the previously analyzed dam notching and dam removal scenarios (**Figure 37**).

3.3.2. Reach-averaged Bed Elevation Change

As an additional step in understanding the potential effects of the additional sediment storage in the river, the change in mean bed elevation at the end of the 41-year simulation was computed for each of the subreaches using methods described in MEI (2003). As discussed in MEI

(2003), the trends in bed elevation change and in-channel storage along the reach are similar; however, the relative magnitudes are somewhat different due to differences in reach length and channel width from subreach to subreach. Under the Carmel River Bypass Alternative, the largest change in bed elevation occurs in Subreaches 7.3, 7.7, and 9, with increases of between 0.1 and 0.2 feet (**Figure 38**). Average increases of about 0.1 feet also occur in the upstream subreaches (Subreaches 4.3 through 5). The remainder of the subreaches shows a net decrease in mean bed elevation, with average decreases of less than 0.05 feet in Subreaches 6.3, 8.3, and 8.7, and about 0.1 feet in Subreach 6.7.

As expected, the largest changes in bed elevation occur under the Complete Dam Removal Alternative (Scenario 2) because the changes in in-channel sediment storage are greatest under this scenario. The overall change is, however, relatively small, with a distance-weighted average increase of about 0.1 feet over the entire reach. The largest changes occur in the upstream subreaches (Subreaches 4.3, 4.7, and 5), with increases of 0.24 to 0.43 feet at the end of the simulation. Average increases of about 0.2 feet occur in Subreaches 7.3 and 7.7, and Subreaches 6.3 and 9 increases by about 0.15 feet. A net decrease in bed elevation of about 0.11 feet occurs in Subreach 6.7, and the remainder of the subreaches (Subreaches 8.3 and 8.7) show essentially no change in mean bed elevation.

Under the Dam Notching Alternative (Scenario 3), the patterns of aggradation and degradation through the study reach are similar to those under Scenario 1, but the changes are slightly smaller in most areas. Exceptions occur in Subreaches 7.7 and 9, where the increase in mean bed elevation is slightly larger than predicted under Scenario 1.

3.3.3. Effects of Sediment Storage on Flood Conditions

The effects of the indicated aggradation or degradation on flood potential along the reach under each scenario were evaluated by importing the cross sections from the HEC-6T model into a detailed HEC-2 step-backwater model that includes all of the bridges and other hydraulic controls along the reach, running each model with the 100-year peak discharge, and comparing the resulting water-surface profiles. The specific steps that were used in the evaluation were as follows:

1. The year during the simulation when the aggradation impacts on April 1 are largest was identified for each of the 10 subreaches. A separate, modified floodplain model was then developed for the worst-case conditions within each subreach by substituting the cross-sectional geometry from the HEC-6T model for the target year into the existing conditions floodplain model. This resulted in the development of 10 separate models for each HEC-6T model run.

2. The updated floodplain models for each case were then run with the 100-year peak discharge to develop a 100-year water-surface profile for the entire study reach.

3. An envelope water-surface profile incorporating the highest 100-year water-surface elevation at each cross section was then developed, and this envelope profile was compared to the 100-year profile under existing conditions.

The results from this analysis indicate that the flooding impact is about the same and relatively small under the Bypass Option and the Notching Option, and the impact under the Complete

Dam Removal Option is somewhat larger, especially in the upstream subreaches (**Figure 39 and 40**). To aid in comparing results among the alternatives and subreaches, distance-weighted average increase in water-surface elevation were computed for each of the subreaches (**Figures 41 and 42**). The results generally indicate that, under each of the alternatives, the most significant changes from existing conditions occur in the upstream portion of the study reach (Subreaches 4.3, 4.7, and 4.5), with the most significant impacts occurring under the Complete Dam Removal Alternative. Under this scenario, the average change in water-surface elevation ranges from 0.25 to 0.40 feet, with worst-case increases of as much as 2.2 feet in certain locations (Figures 39 and 40). Under the other two alternatives, the maximum increase in water-surface elevation ranges from 0.03 feet (Subreach 5, Dam Notching Alternative, 1985 start date) to about 0.2 feet (Subreach 4.3, Carmel River Bypass Alternative, 1978 start date). Downstream from the Boronda Bridge (Subreaches 6.7 through 9), the worst-case increases in water-surface elevation are relatively small for each of the alternatives (except for the relatively large increase that occurs upstream from Rancho San Carlos Road Bridge), and the differences among the three alternatives are relatively insignificant.

4. SUMMARY AND CONCLUSIONS

This study included an evaluation of the potential effects to the downstream river of residual sediment that would remain in the valley bottom during implementation of the Carmel River Bypass, Complete Dam Removal and Dam Notching Alternatives for the San Clemente Dam Removal/Retrofit project. A variety of analyses were performed to complete this evaluation, including the following:

1. A detailed hydraulic analysis of the design elements in the existing reservoir to identify appropriate dimensions for the reconstructed reaches of the Carmel River and San Clemente Creek under the Complete Dam Removal and Dam Notching Alternatives.

2. Sediment-transport modeling to evaluate the sediment-transport characteristics through the reservoir and impacts to the downstream river for each of the three scenarios, and

3. An additional hydraulic analysis to evaluate the potential effect of changes in sediment storage on flood potential in the downstream river.

The reconstructed channel through the existing reservoir under the Complete Dam Removal Scenario was sized to convey between the 1.5- and 2-year peak discharge. For the Dam Notching Alternative, the selected channel dimensions will convey the 2-year peak discharge upstream from the intersection with the pre-dam surface with transport capacity that exceeds the upstream supply. In the flatter reach across the remaining reservoir deposits, the bankfull capacity is only about 530 cfs, but the transport capacity is approximately in balance with the upstream supply.

Sediment-transport modeling was conducted for each of the three scenarios to determine the pattern of sediment erosion and transport over a simulated 41-year period, both within the existing reservoir and downstream into the Carmel River. The model results generally indicate that the impacts to the downstream river for the Bypass and Dam Notching Alternatives will be similar to those for baseline (with dam) conditions. The impacts from the Complete Dam Removal Option are somewhat greater, but generally on the same order-of-magnitude, as baseline conditions. Under the Complete Dam Removal Alternative, very little additional sediment would be stored in the reservoir over the 41-year simulation period, compared to nearly 180 ac-ft under the baseline (with dam) conditions (**Figure 43**). The total volume of sediment stored in the downstream river is also relatively small, ranging from 57 ac-ft under the Bypass Alternative to 127 ac-ft under the Complete Dam Removal Alternative.

The impact of the indicated changes in sediment storage on flood potential is also relatively small. Under the Bypass and Dam Notching Alternatives, average changes in 100-year water-surface elevation of 0.1 to 0.2 feet occur in the portion of the reach upstream from Rosie's Bridge, but increase to between 0.2 and 0.4 feet under the Complete Dam Removal Alternative. The differences in water surface in the downstream portions of the reach are considerably smaller, with average changes of less than 0.1 feet for the Bypass and Dam Notching Alternatives, and less than about 0.15 feet for the Complete Dam Removal Alternative.

5. REFERENCES

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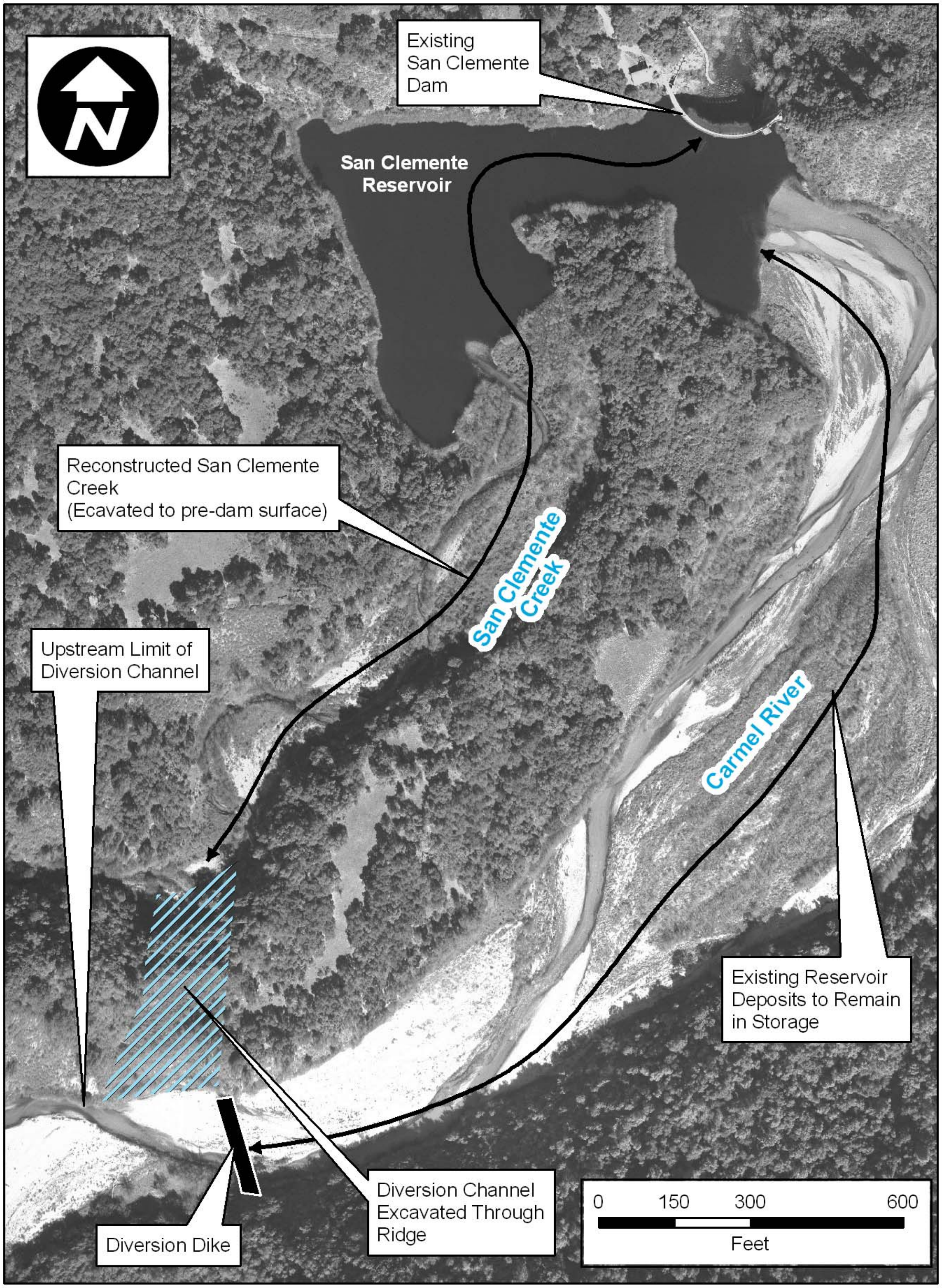


Figure 1. Proposed elements of the Carmel River Bypass Alternative.

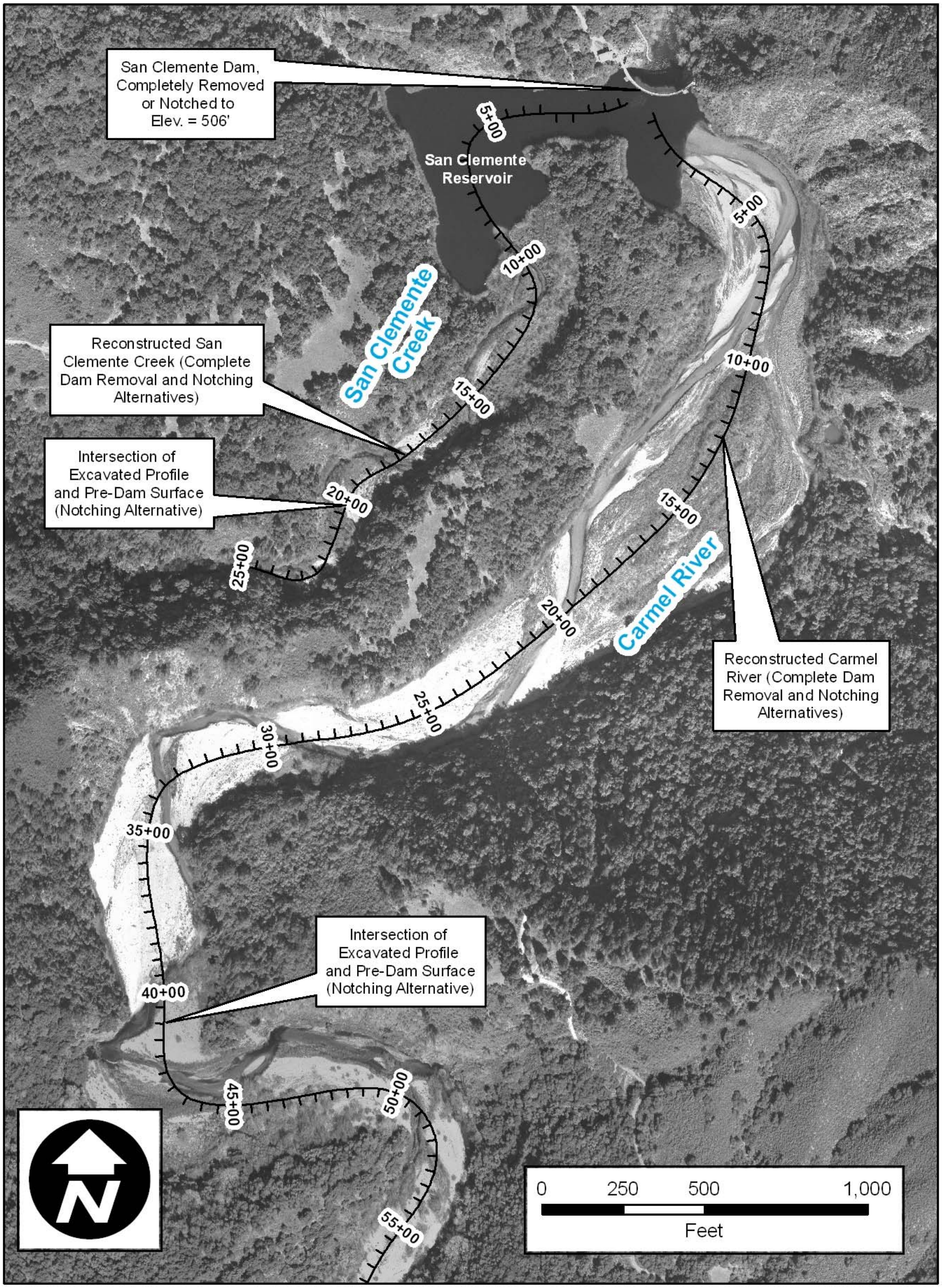


Figure 2. Proposed elements of the Complete Dam Removal and Dam Notching Alternatives.

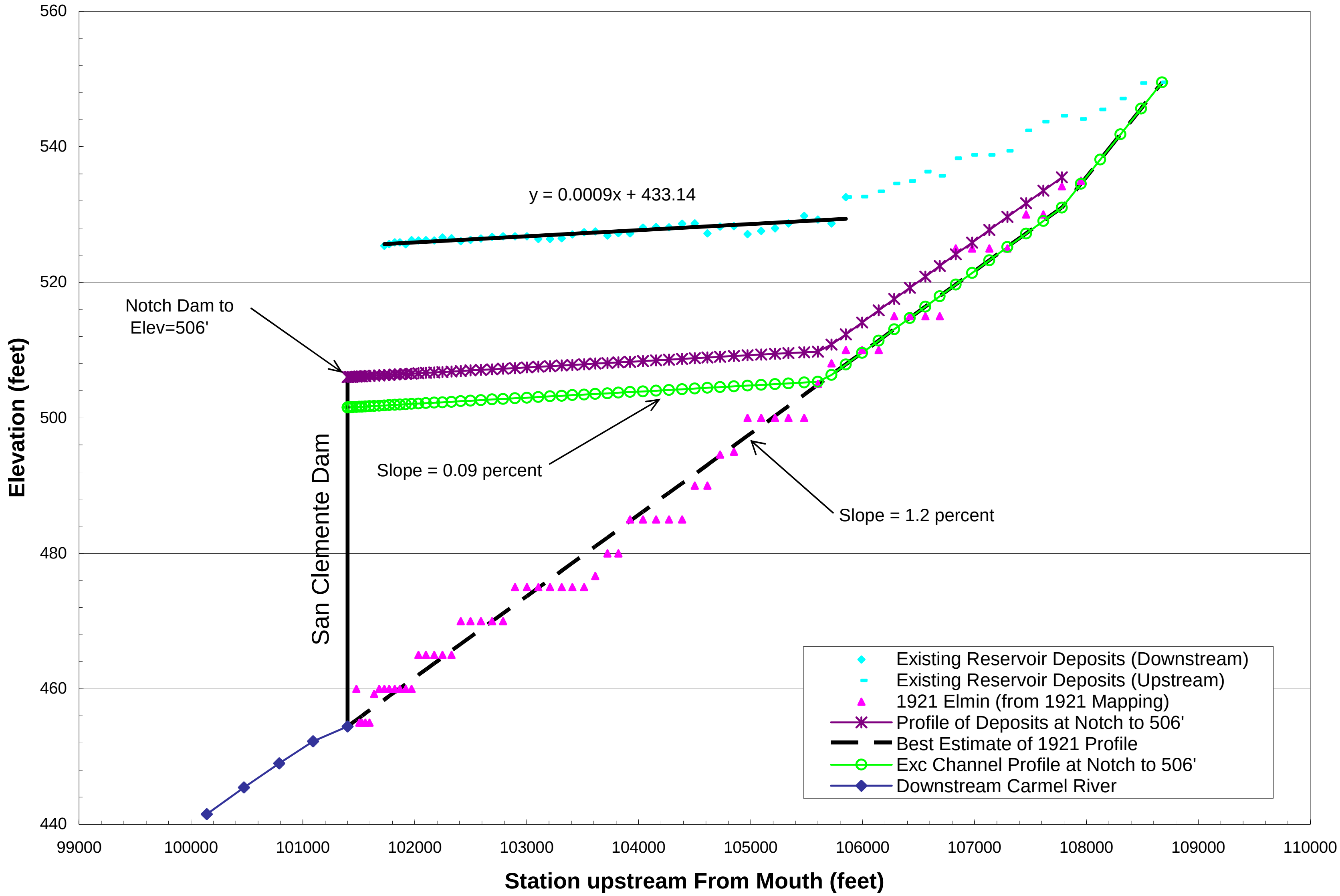


Figure 3. Longitudinal profile of the existing reservoir deposits, the pre-dam surface, and the constructed profile under the Notching Alternative in the Carmel Branch of San Clemente Reservoir.

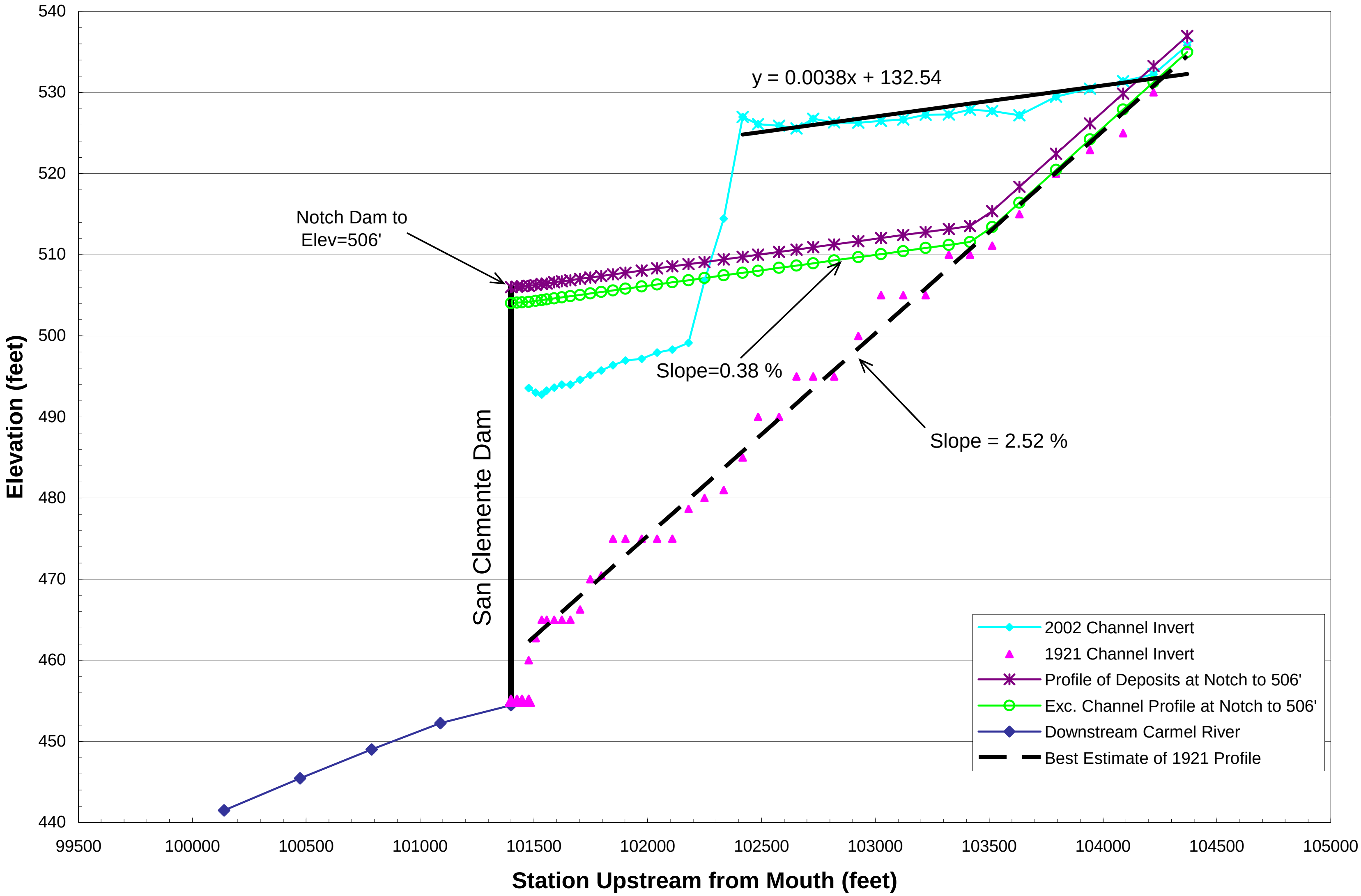


Figure 4. Longitudinal profile of the existing reservoir deposits, the pre-dam surface, and the constructed profile under the Notching Alternative in the San Clemente Creek Branch of San Clemente Reservoir.

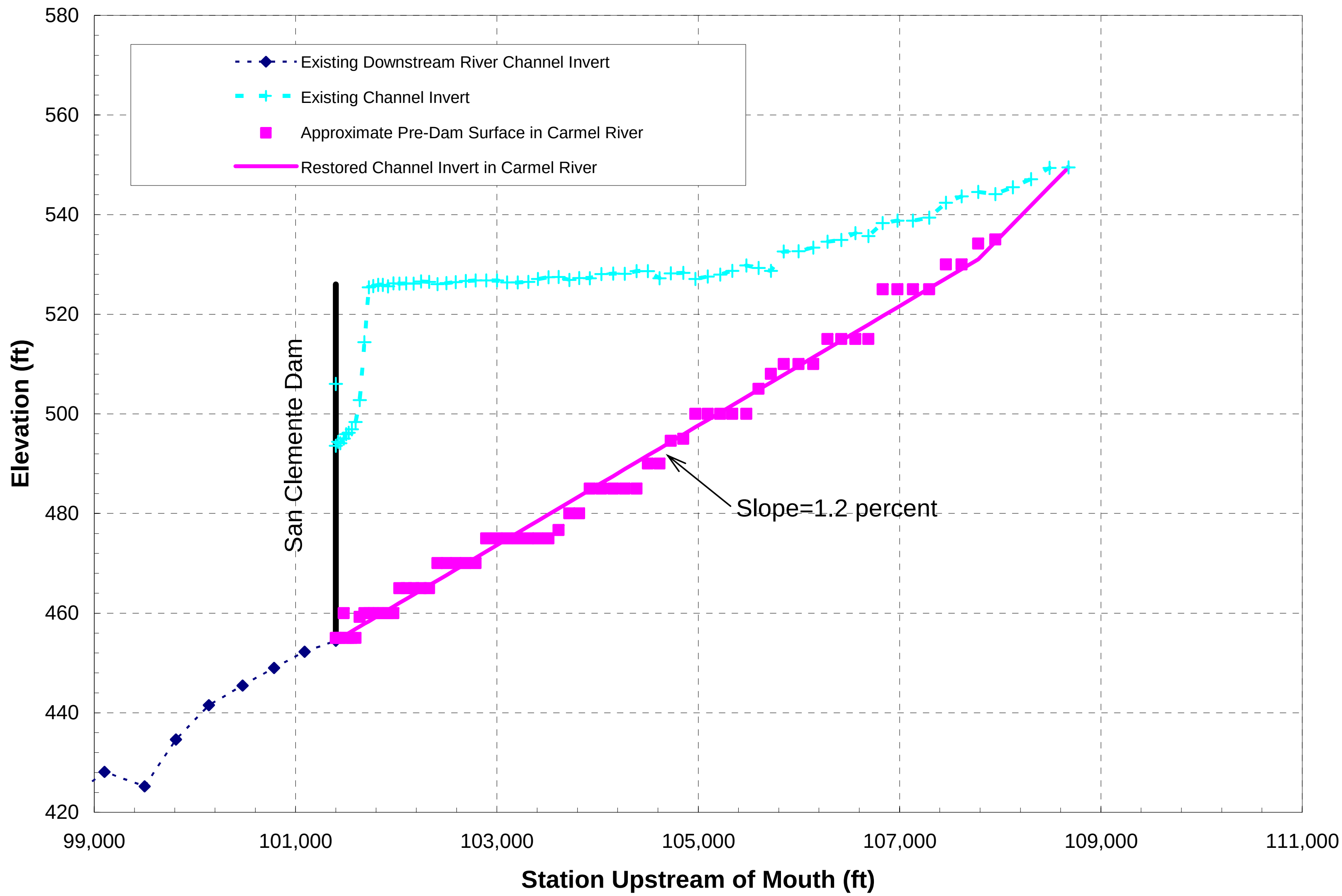


Figure 5. Profiles of the existing sediment deposits and reconstructed reach of the Carmel River Branch for the Complete Dam Removal Alternative.

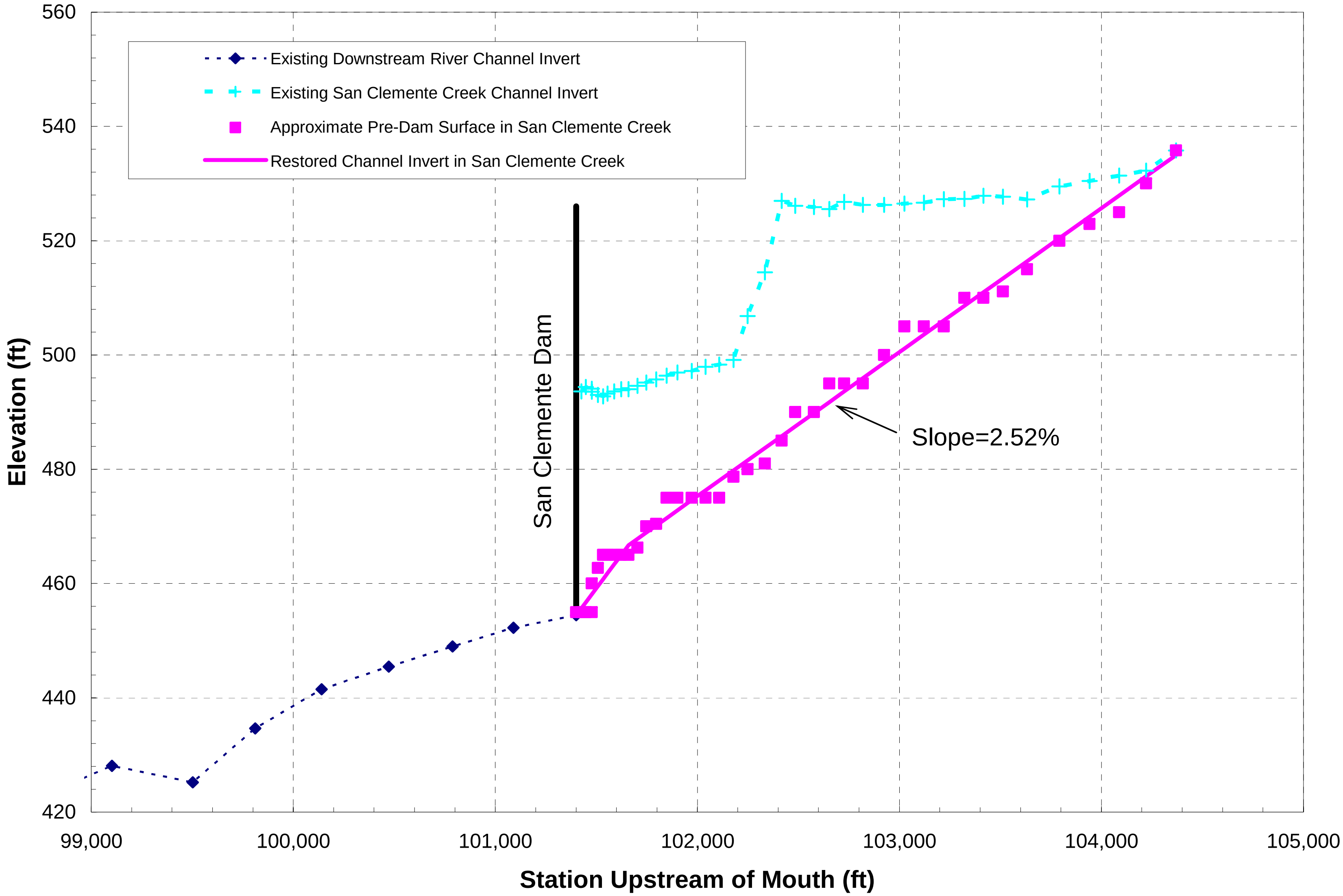


Figure 6. Profiles of the existing sediment deposits and reconstructed reach of the San Clemente Creek Branch for the Complete Dam Removal Alternative.

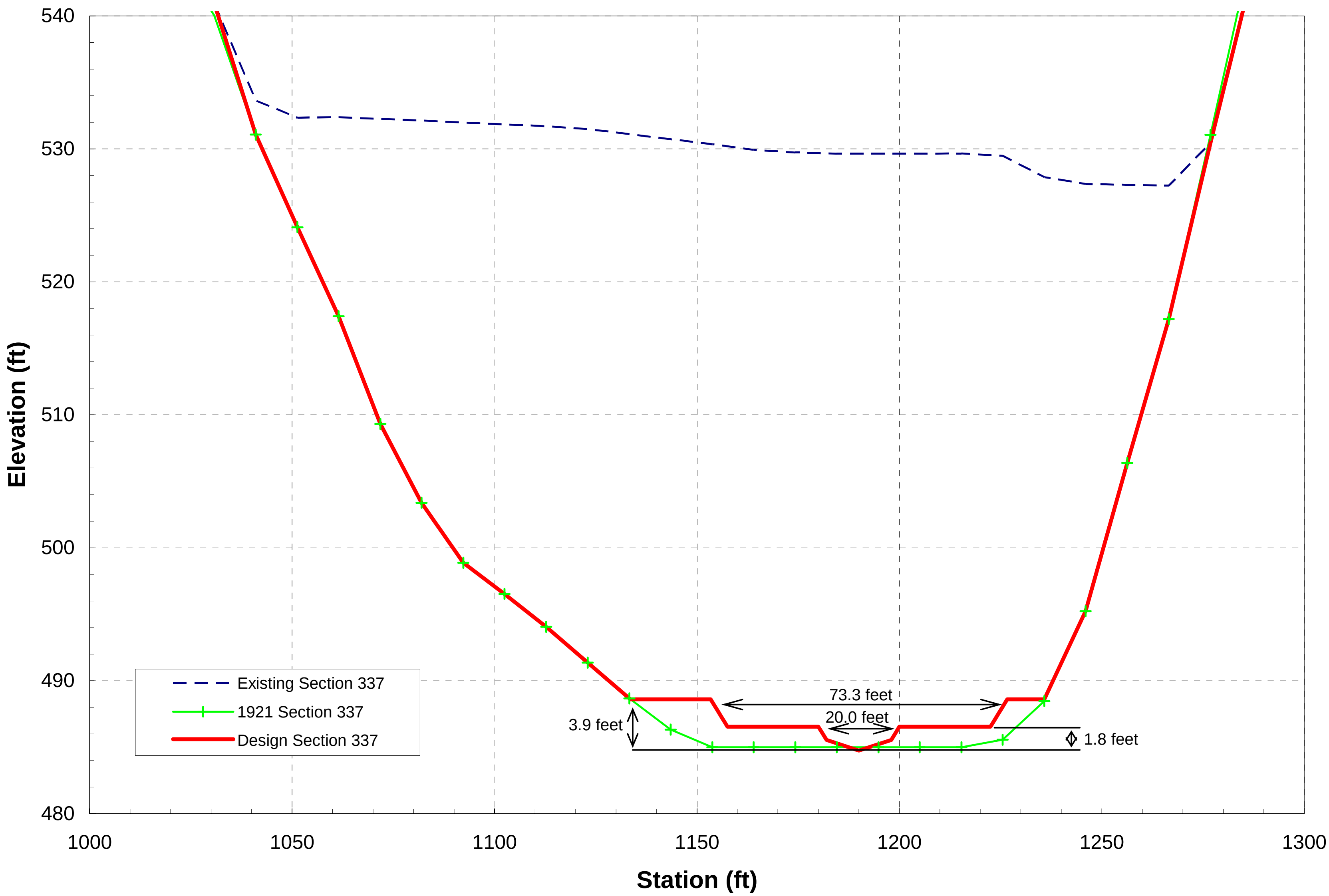


Figure 7. Typical cross section and design channel geometry for the reconstructed reach of the Carmel River Branch under the Complete Dam Removal Alternative.

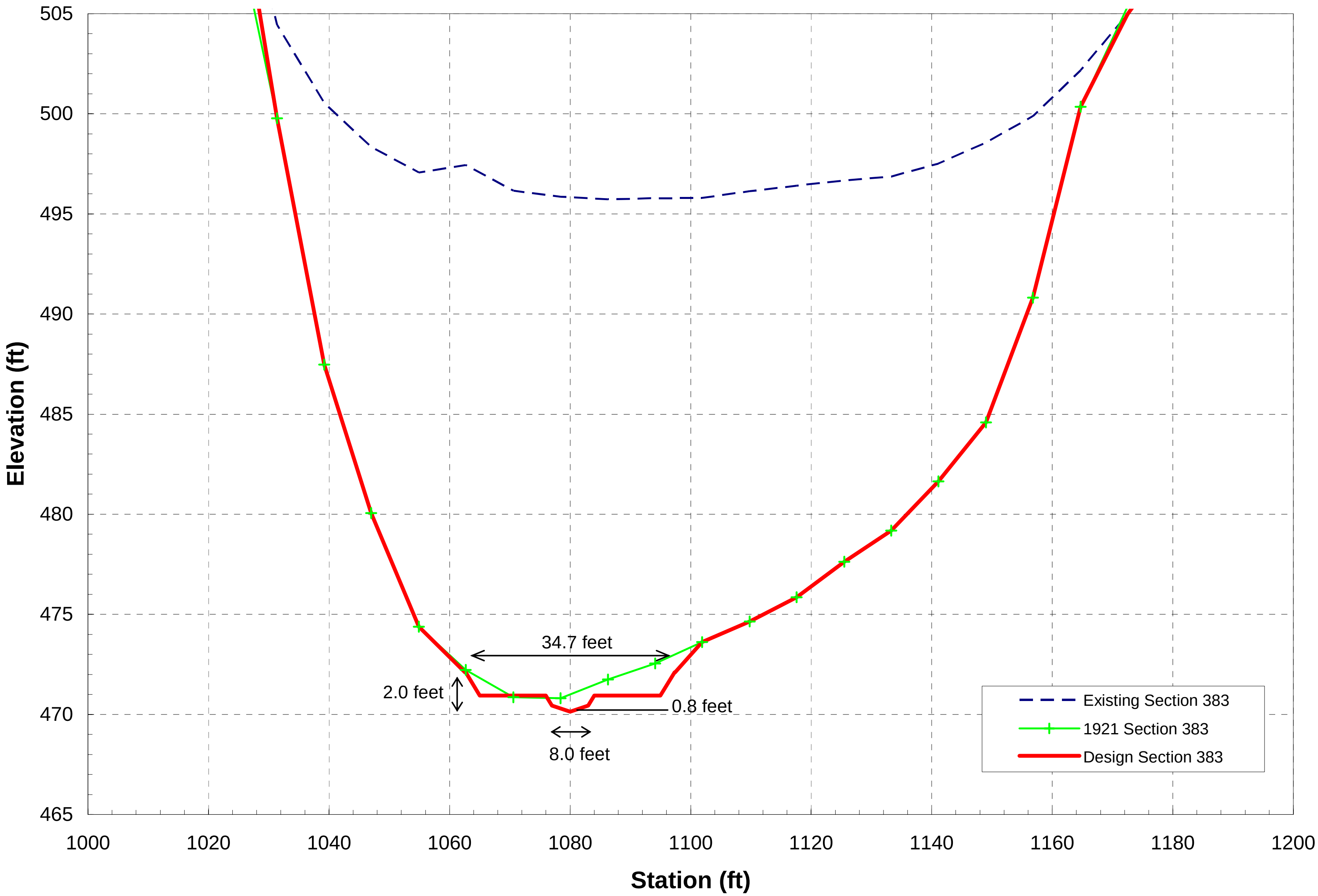


Figure 8. Typical cross section and design channel geometry for the reconstructed reach of the San Clemente Creek Branch under the Complete Dam Removal Alternative.

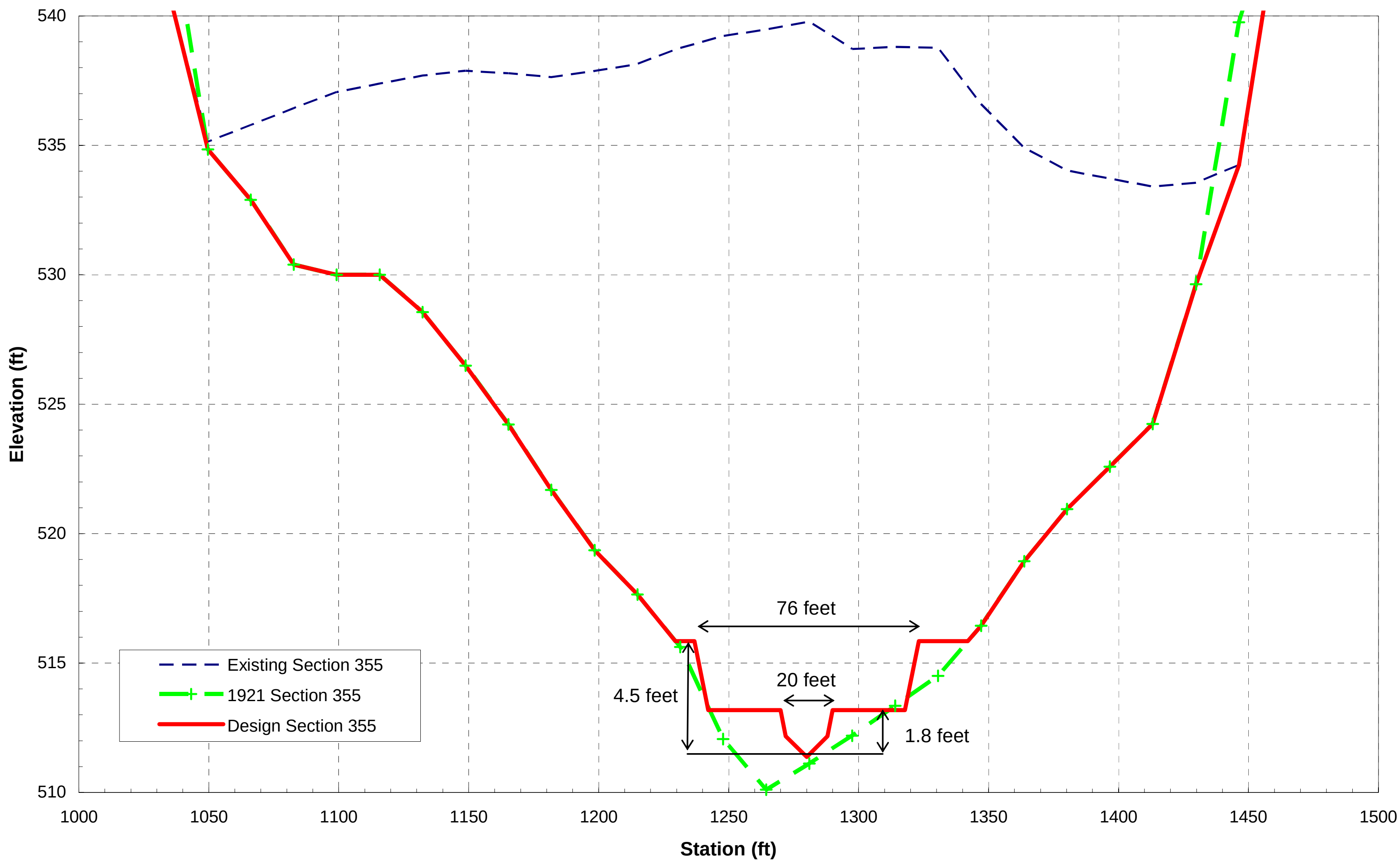


Figure 9. Typical cross section and design channel geometry (upstream from the intersection with the pre-dam surface) for the reconstructed reach of the Carmel Branch under the Notching Alternative.

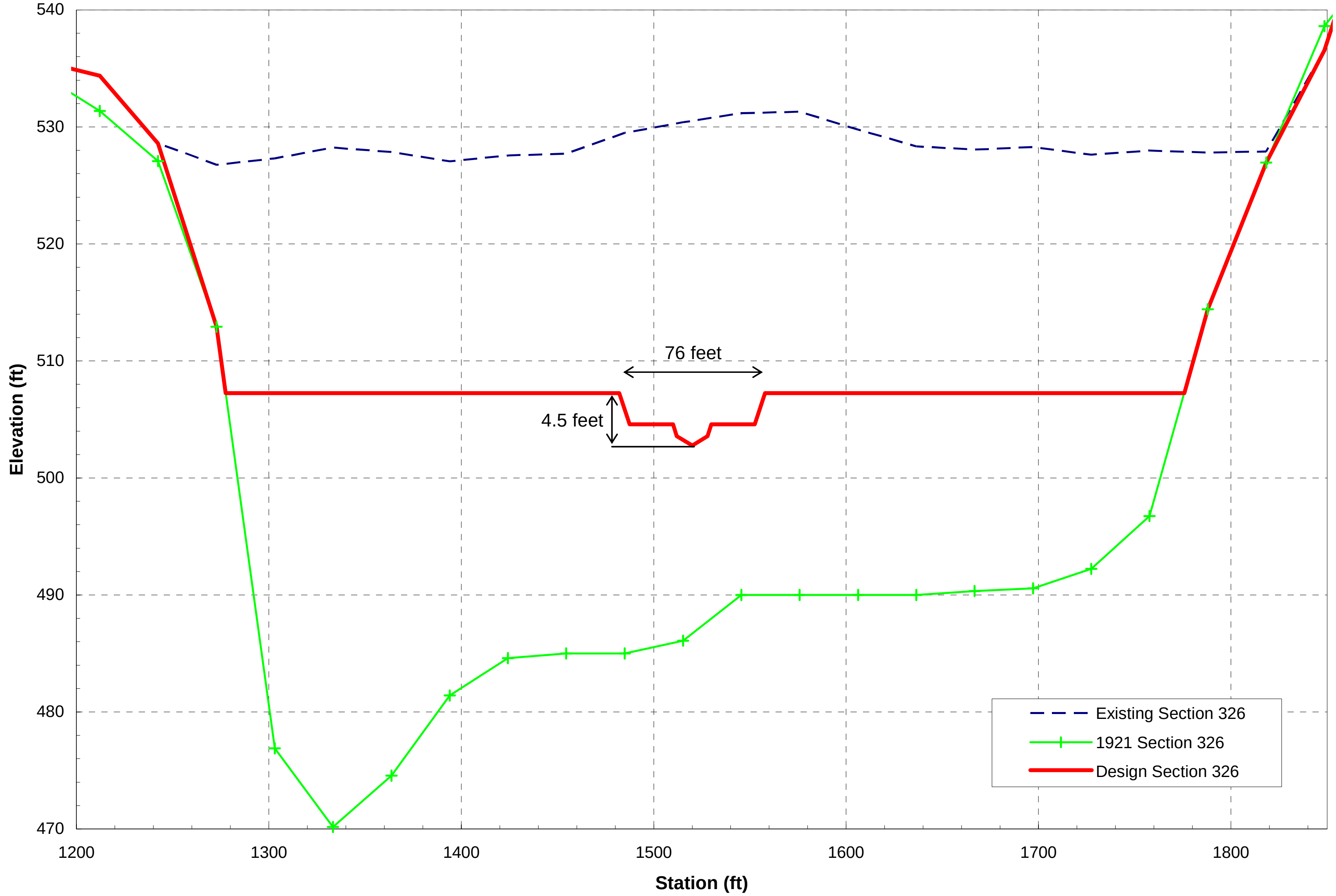


Figure 10. Typical cross section and design channel geometry (downstream from the intersection with the pre-dam surface) for the reconstructed reach of the Carmel Branch under the Notching Alternative.

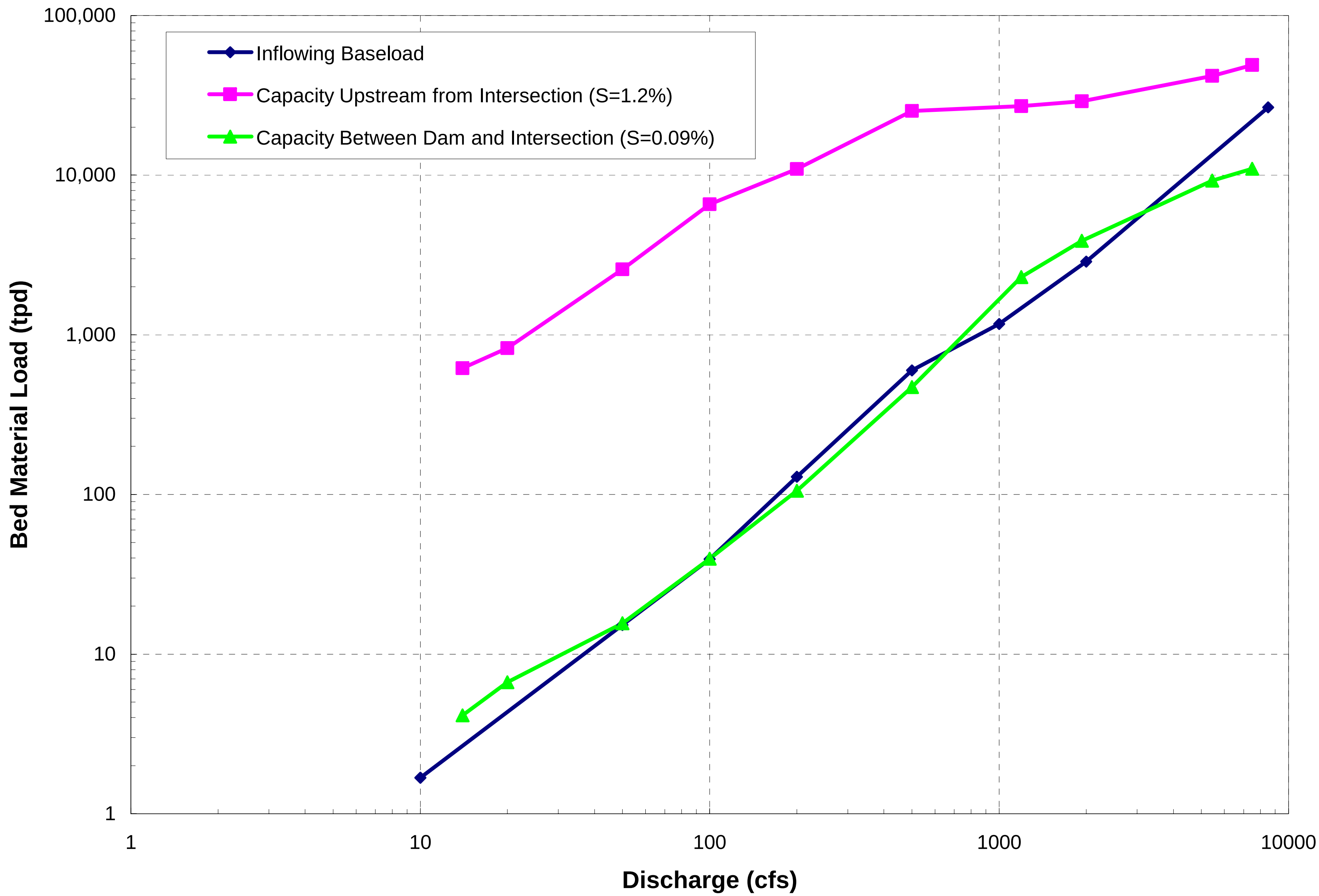


Figure 11. Inflowing sediment load (base load) and computed transport capacity of the reconstructed reach of the Carmel River between the dam and the intersection with the pre-dam surface.

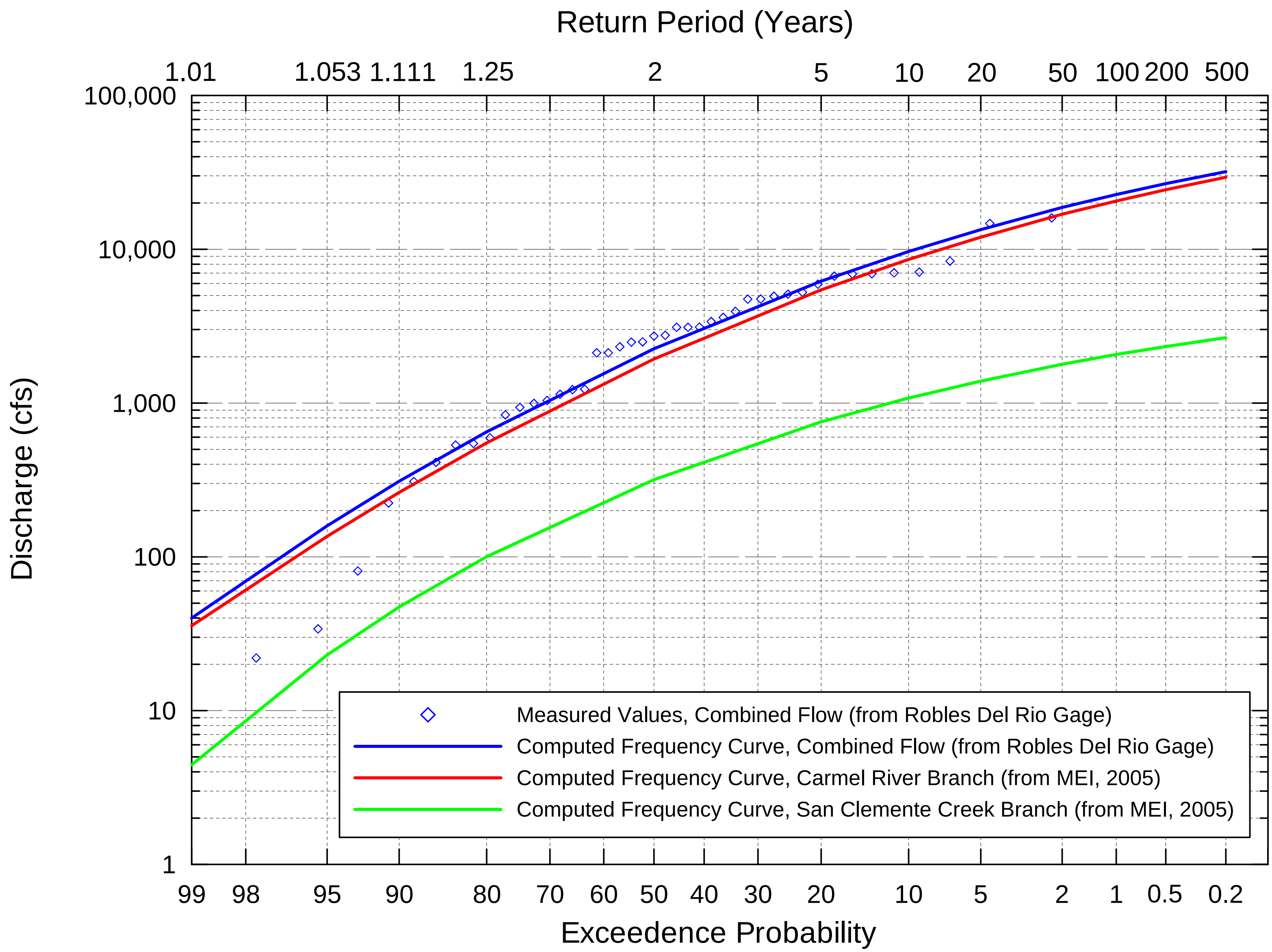


Figure 12. Computed peak flood-frequency curve for the combined flow (based on the Robles Del Rio flood-frequency analysis), and for the Carmel River and San Clemente Creek Branches of San Clemente Reservoir (as discussed in MEI, 2005).

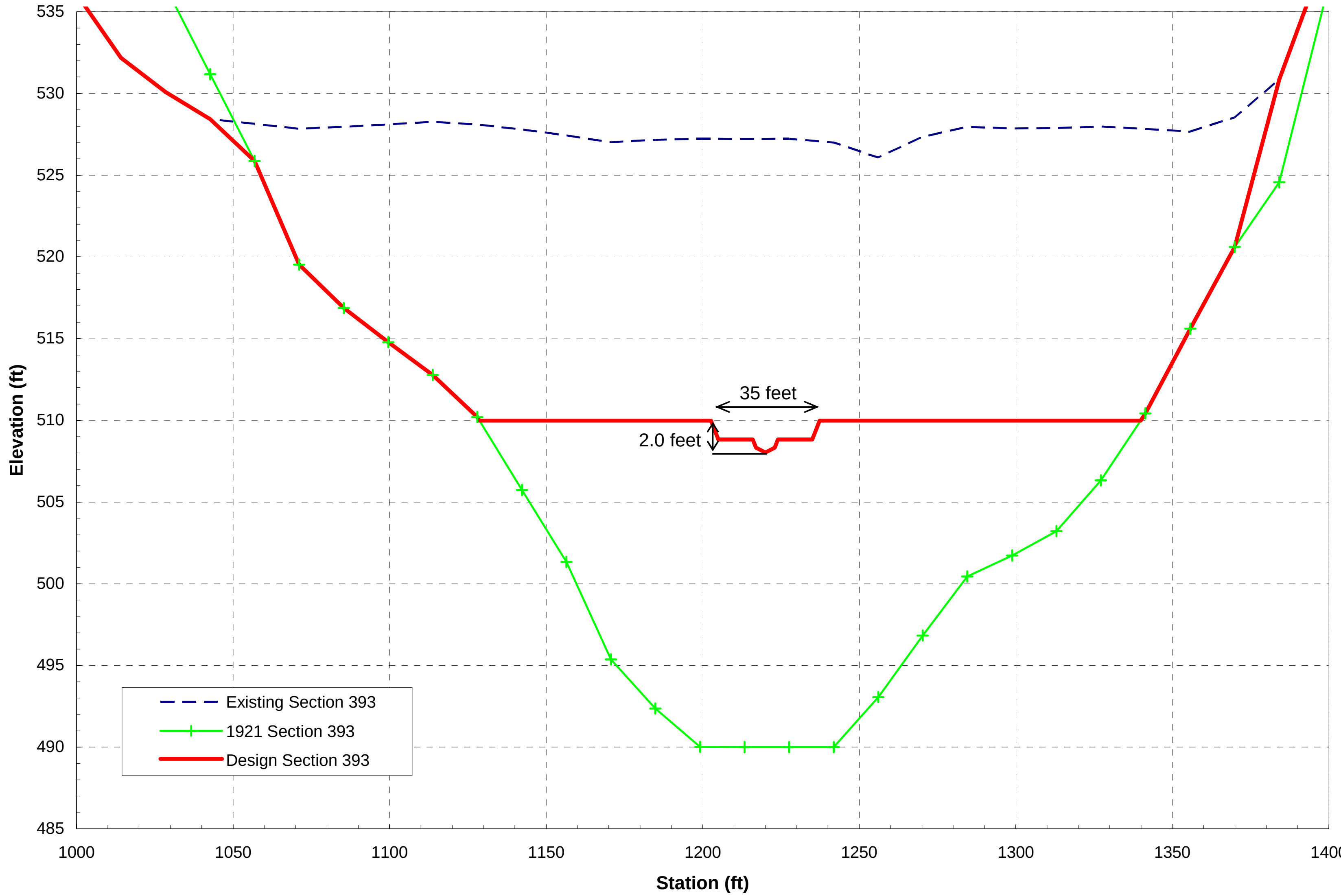


Figure 13. Typical cross section and design channel geometry for the reconstructed reach of the San Clemente Creek Branch under the Notching Alternative.

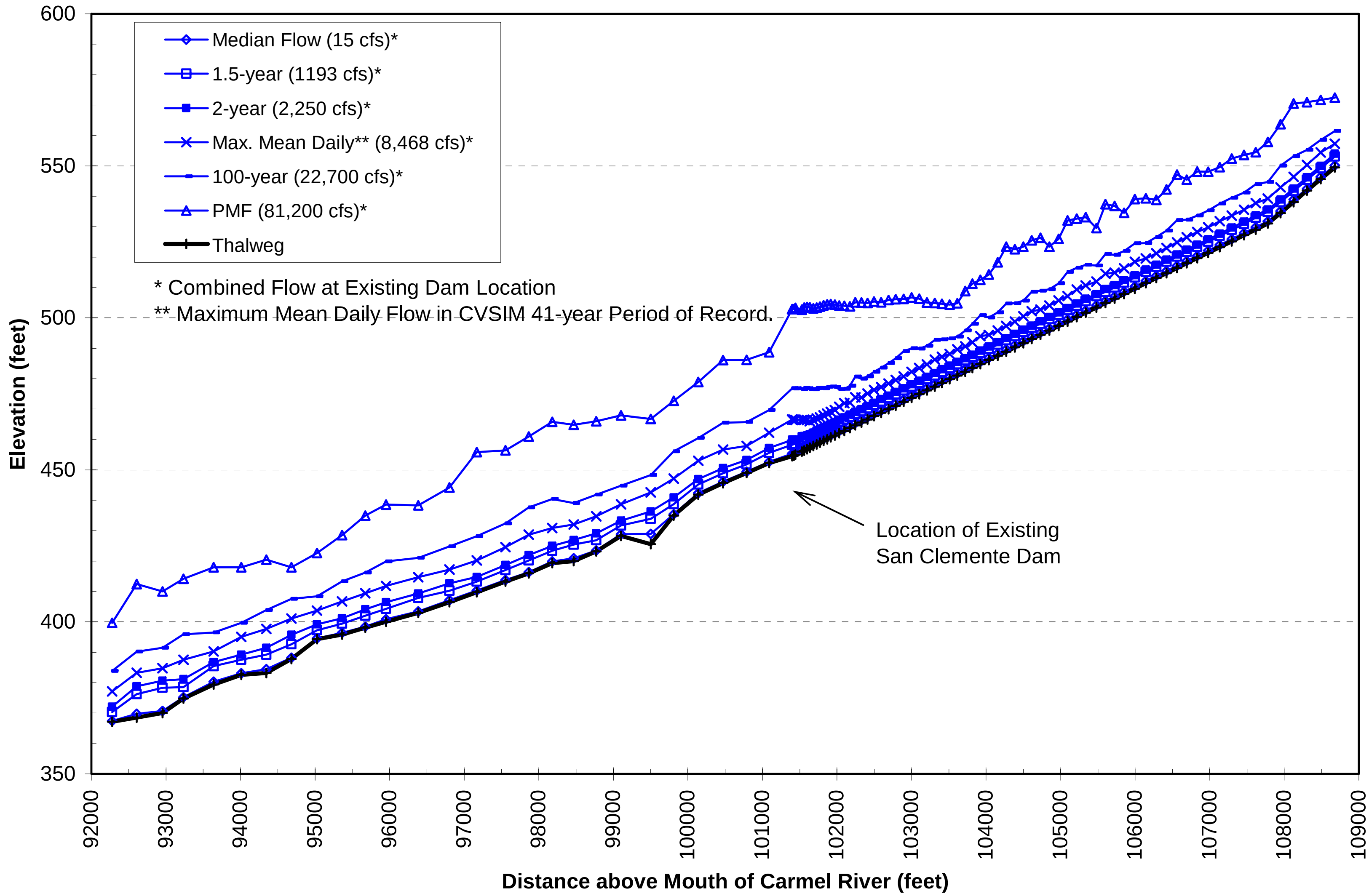


Figure 14. Computed water-surface profiles for selected discharges in the Carmel Branch of San Clemente Reservoir under the Complete Dam Removal Alternative.

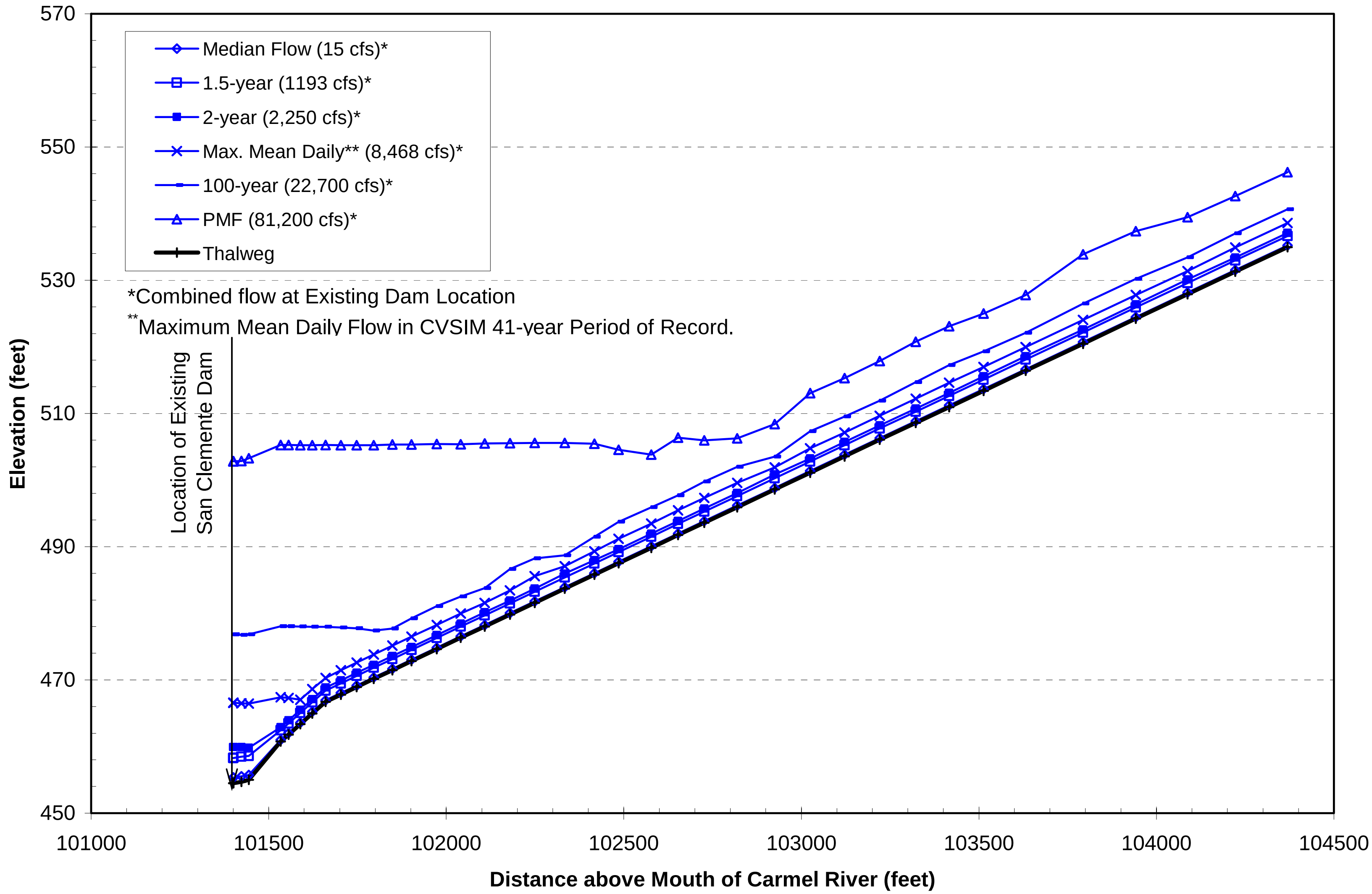


Figure 15. Computed water-surface profiles for selected discharges in the San Clemente Creek Branch of San Clemente Reservoir under the Complete Dam Removal Alternative.

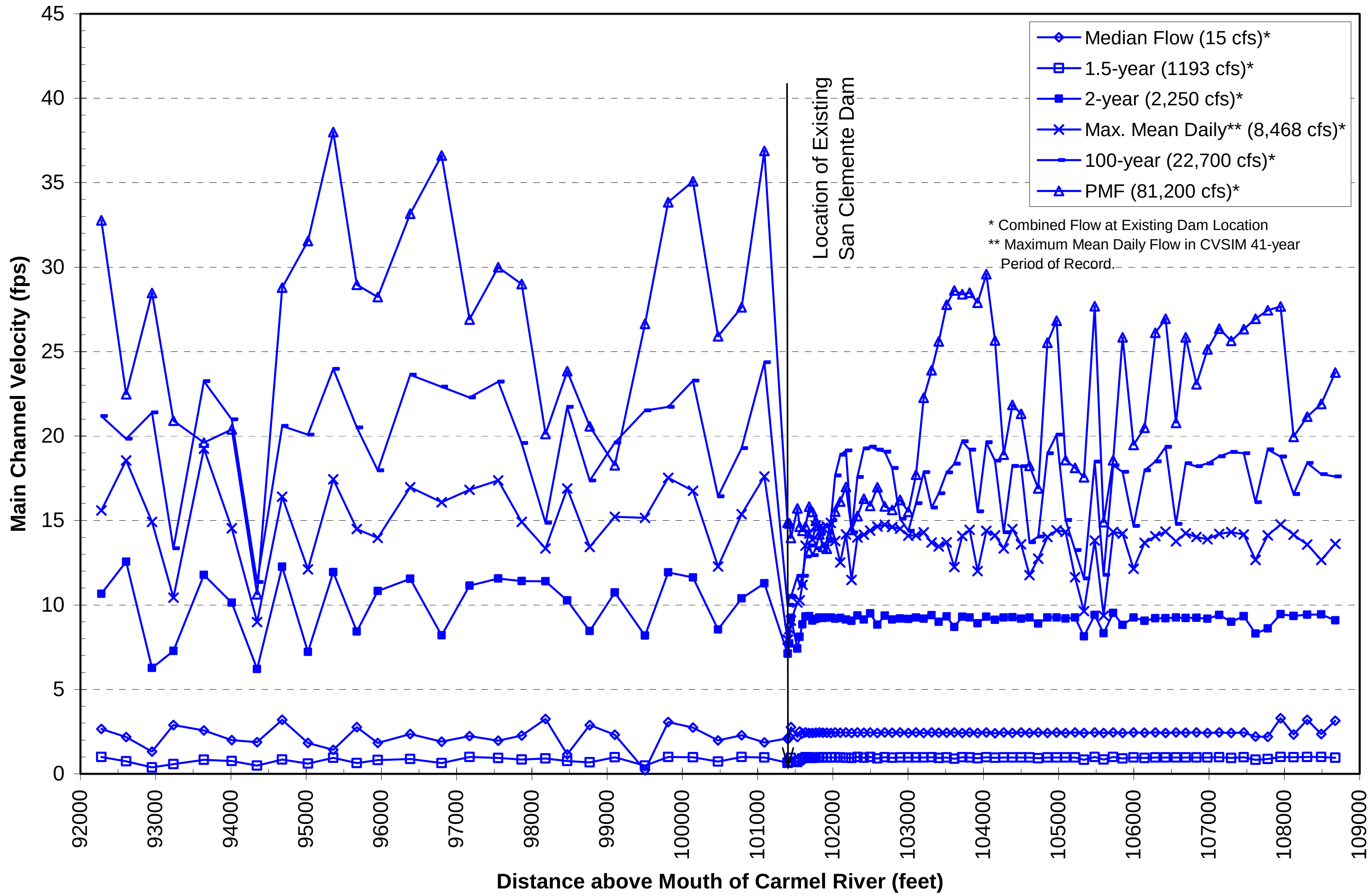


Figure 16. Computed main-channel velocity profiles for selected discharges in the Carmel River Branch of San Clemente Reservoir under the Complete Dam Removal Alternative.

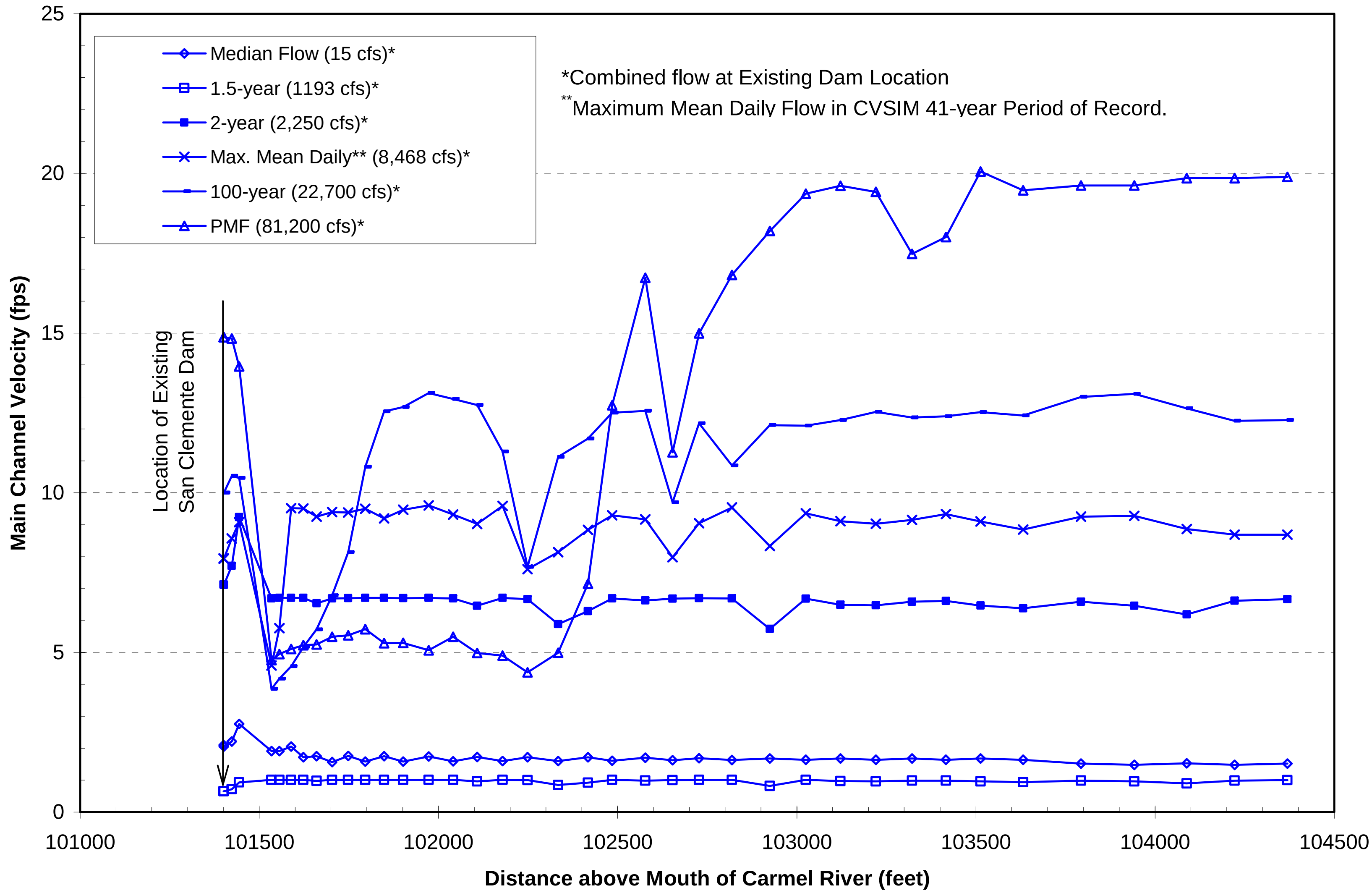


Figure 17. Computed main-channel velocity profiles for selected discharges in the San Clemente Creek Branch of San Clemente Reservoir under the Complete Dam Removal Alternative.

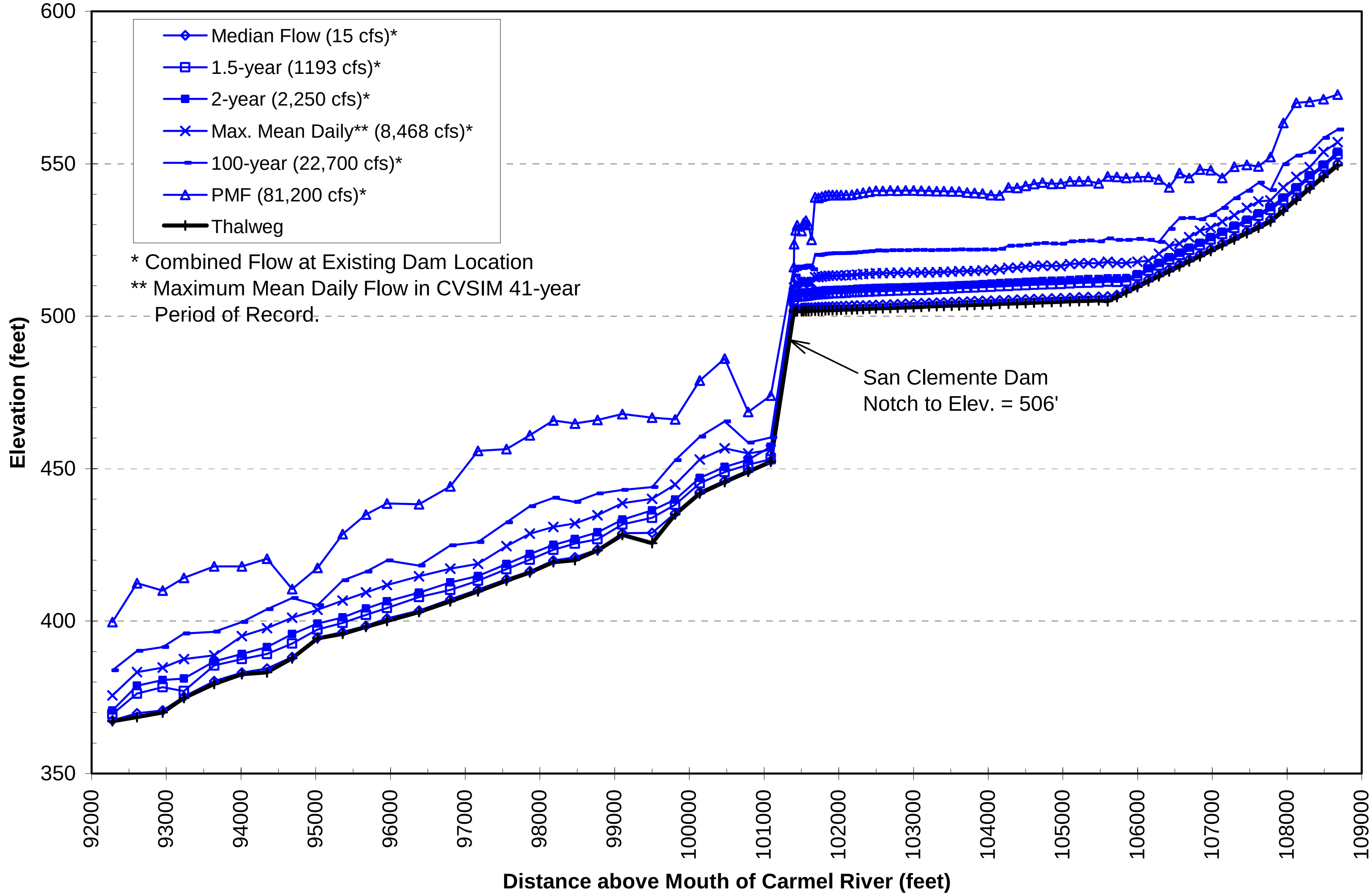


Figure 18. Computed water-surface profiles for selected discharges in the Carmel Branch of San Clemente Reservoir under the Notching Alternative.

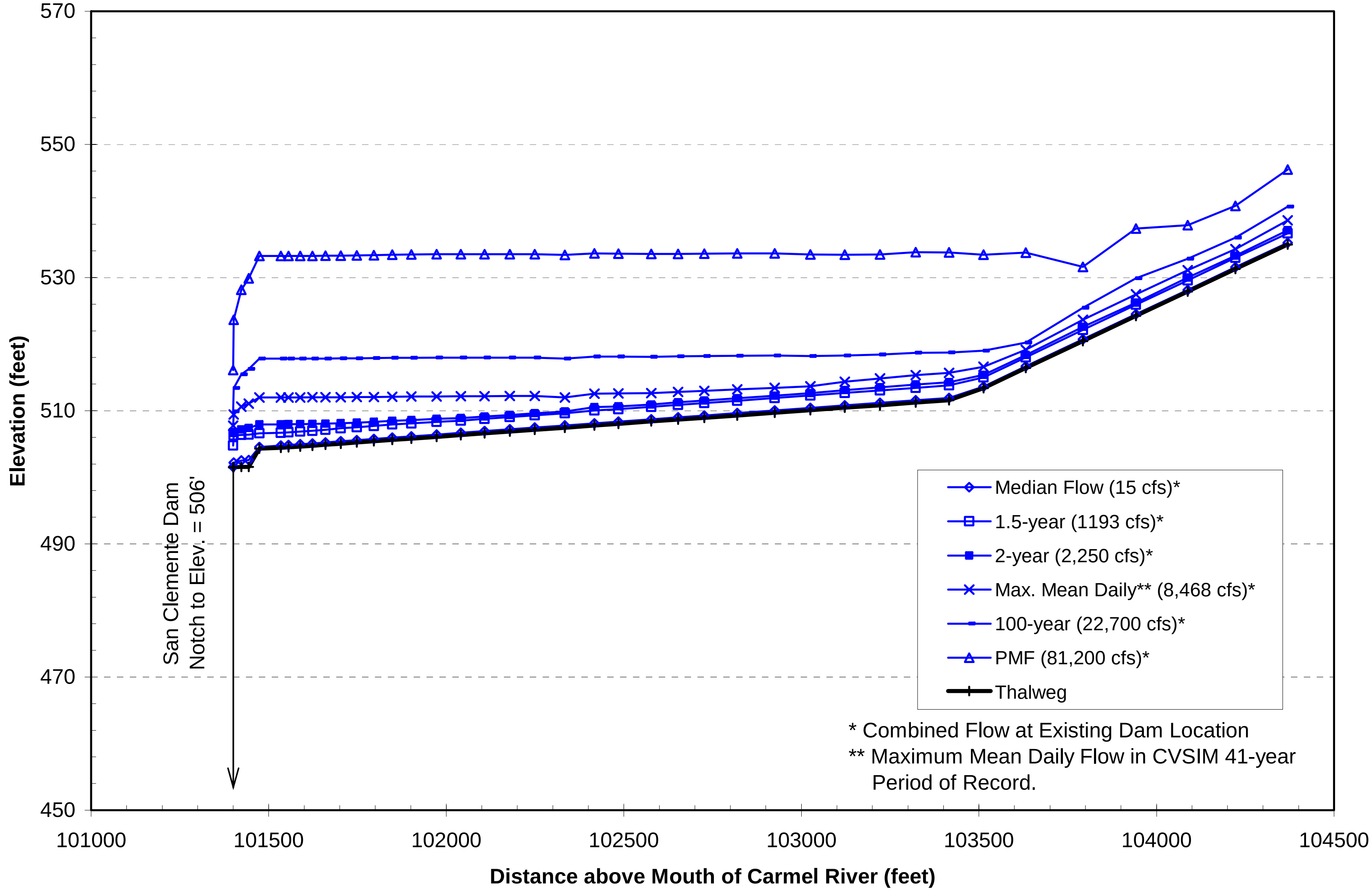


Figure 19. Computed water-surface profiles for selected discharges in the San Clemente Creek Branch of San Clemente Reservoir under the Notching Alternative.

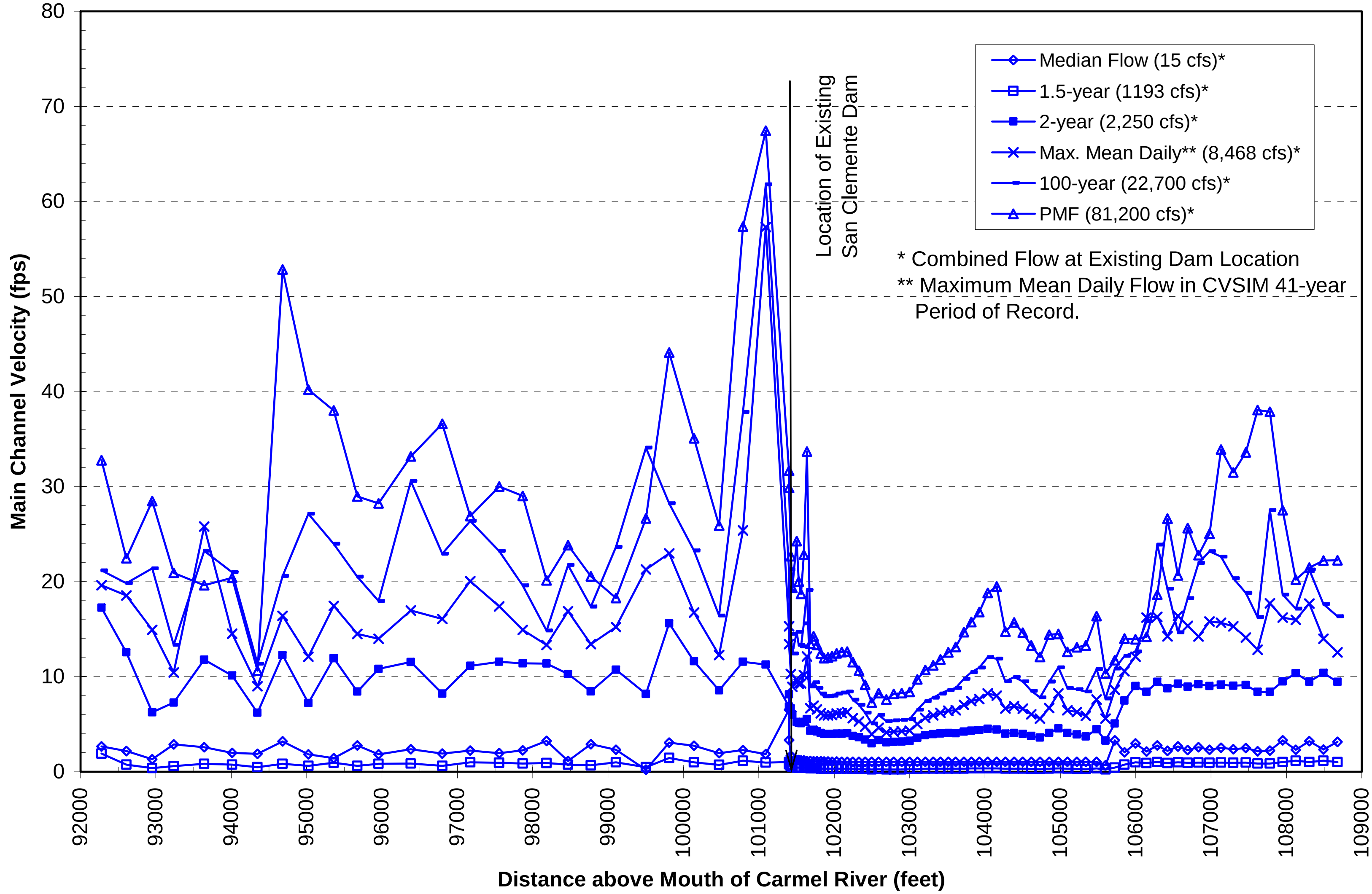


Figure 20. Computed main-channel velocity profiles for selected discharges in the Carmel Branch of San Clemente Reservoir under the Notching Alternative.

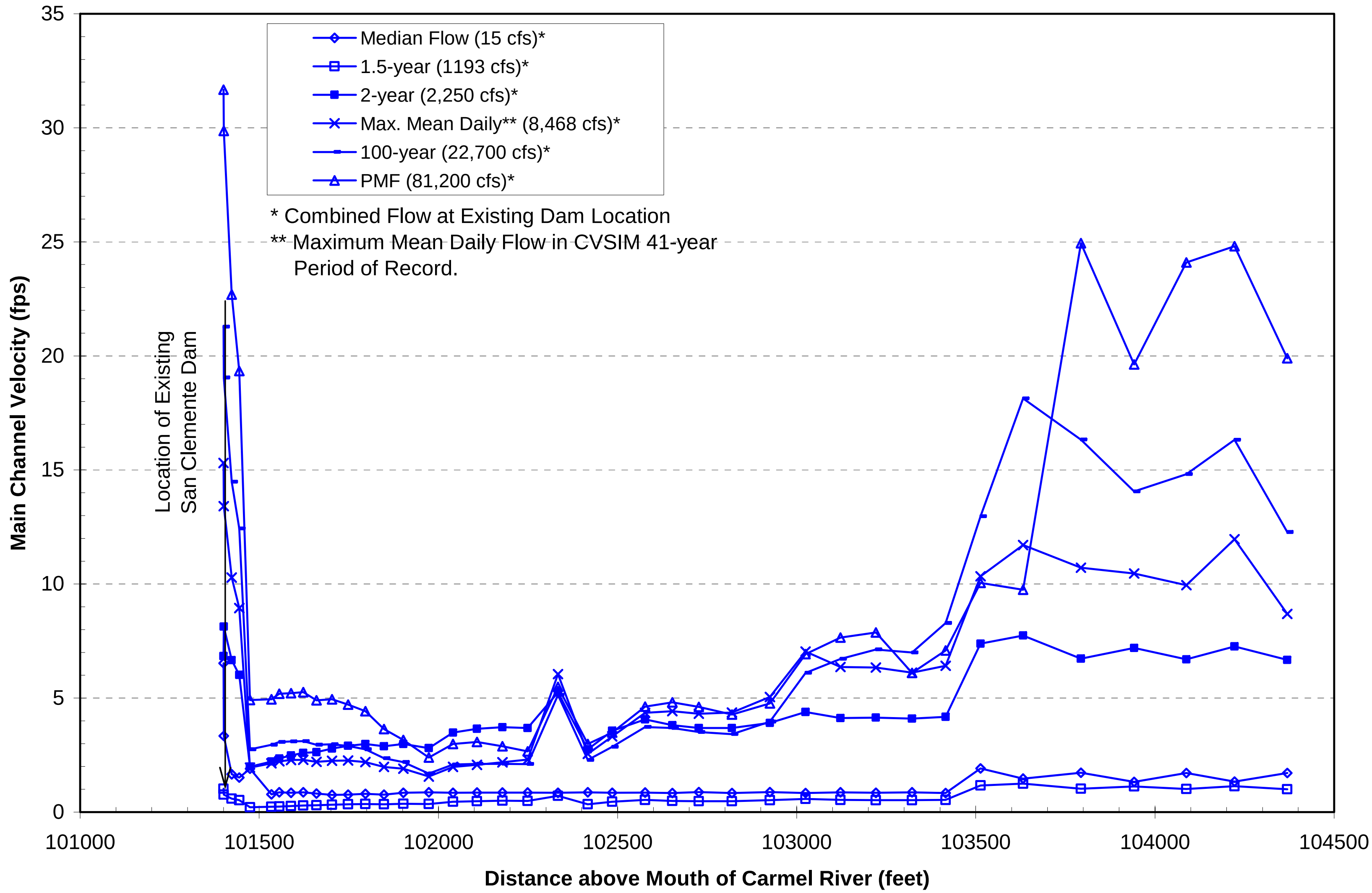


Figure 21. Computed main-channel velocity profiles for selected discharges in the San Clemente Creek Branch of San Clemente Reservoir under the Notching Alternative.

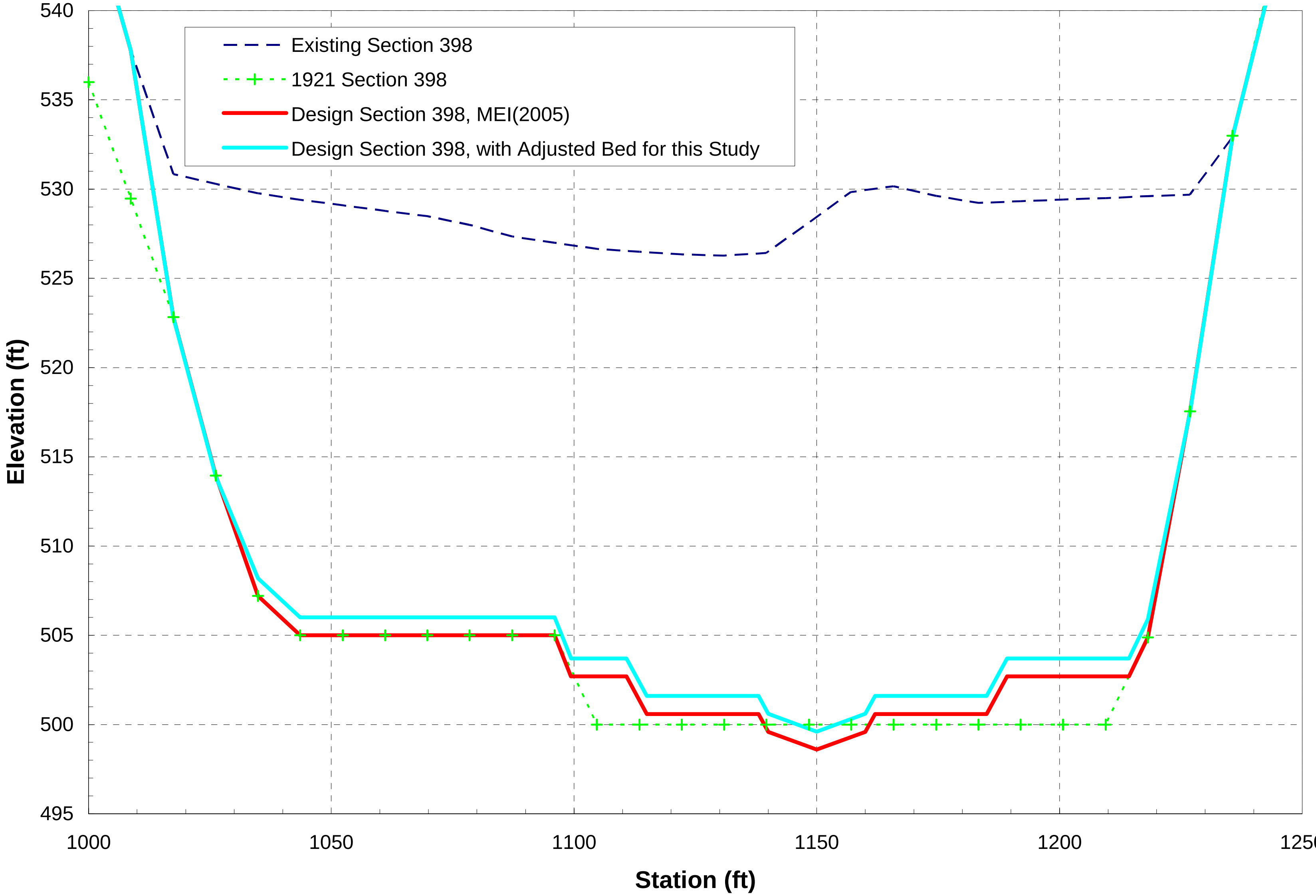


Figure 22. Typical cross section in the reconstructed reach of San Clemente Creek under the Carmel River Bypass Alternative showing the existing section, the pre-dam (1921) section, the design section (MEI, 2005), and the adjusted design section for this study.

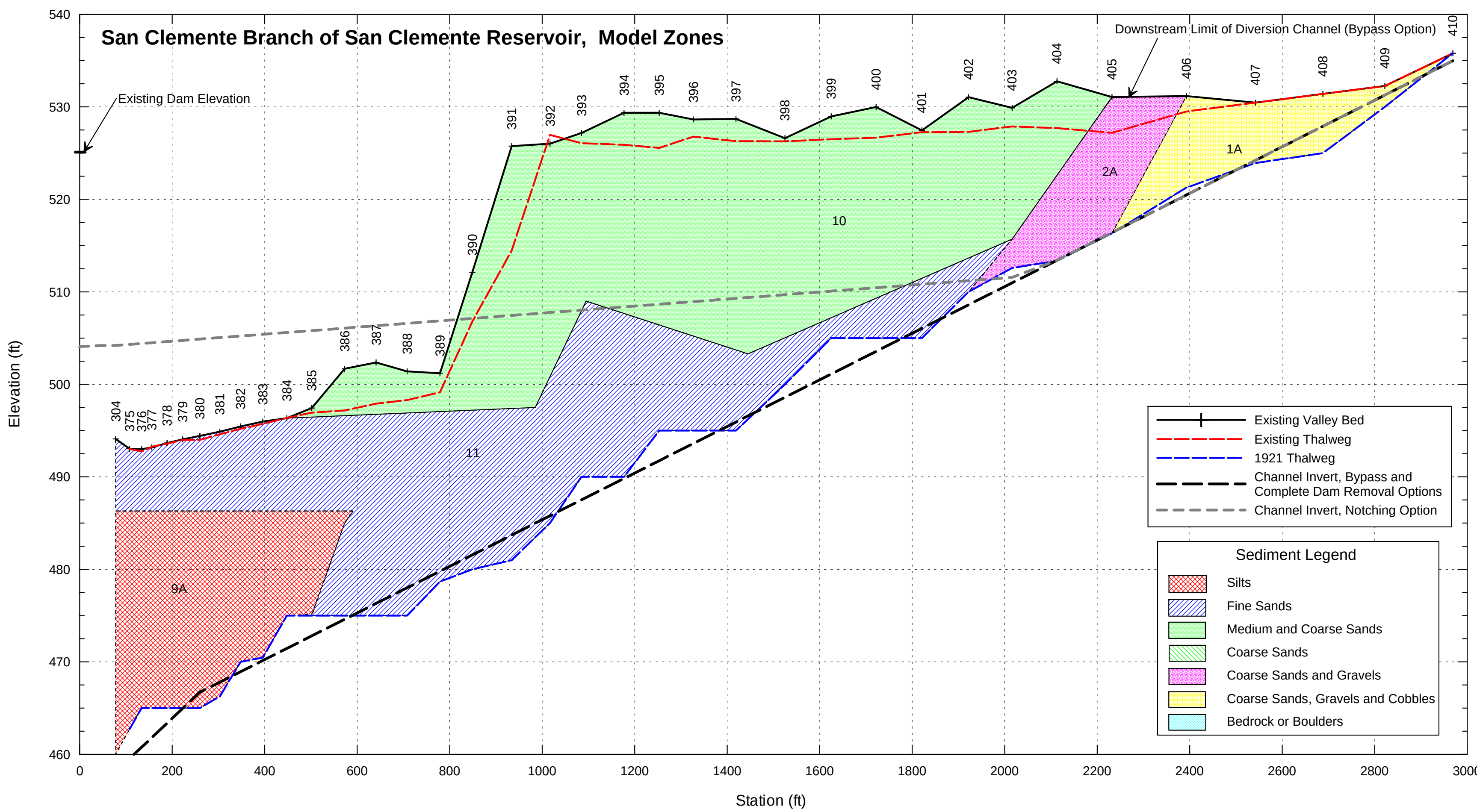


Figure 23. Profile of reservoir sediment zones and the channel invert for the Bypass, the Complete Dam Removal, and for the Notching Alternatives, San Clemente Creek Branch of San Clemente Reservoir.

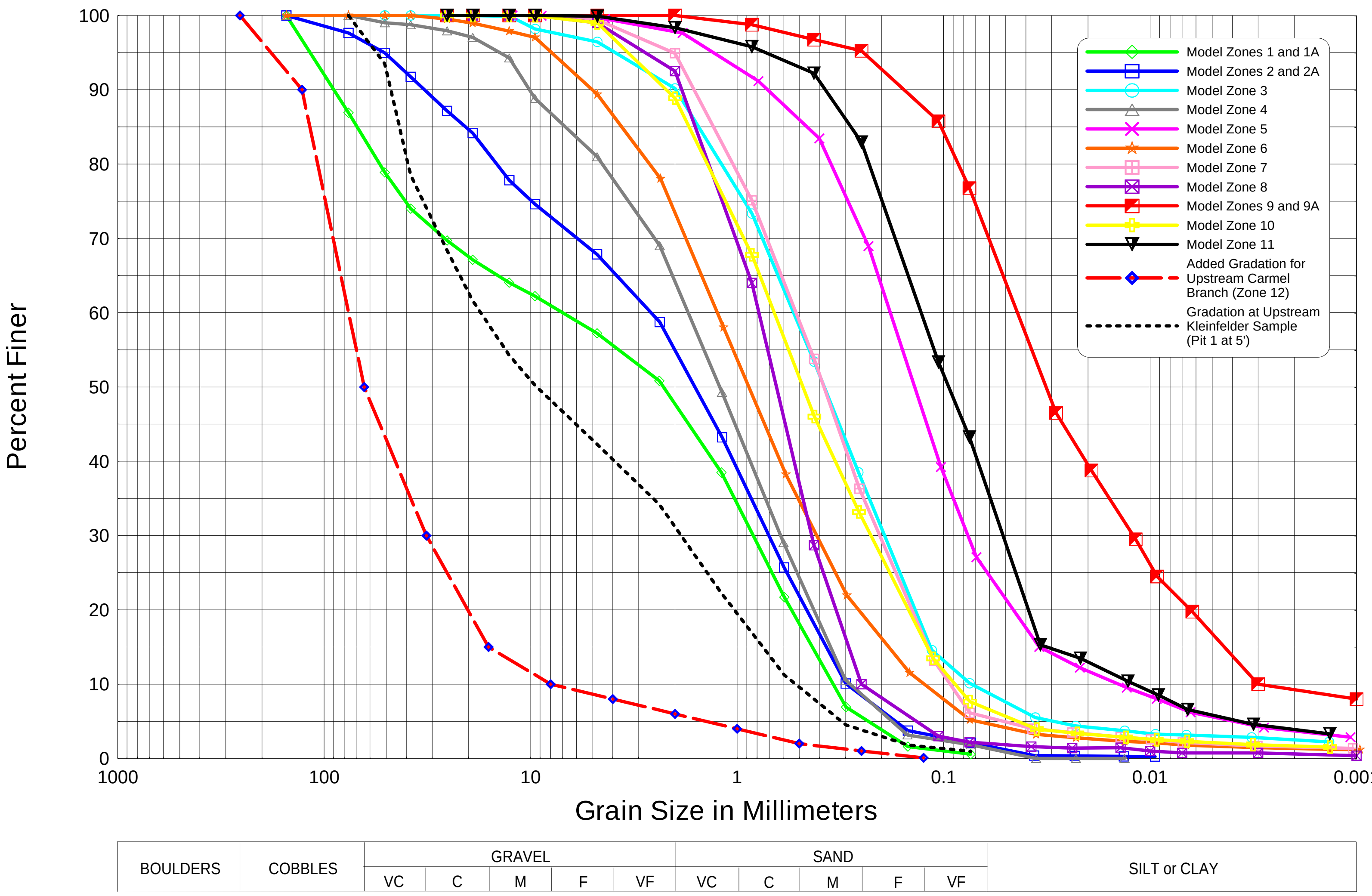


Figure 24. Gradation curves for the model sediment zones (from MEI, 2005).

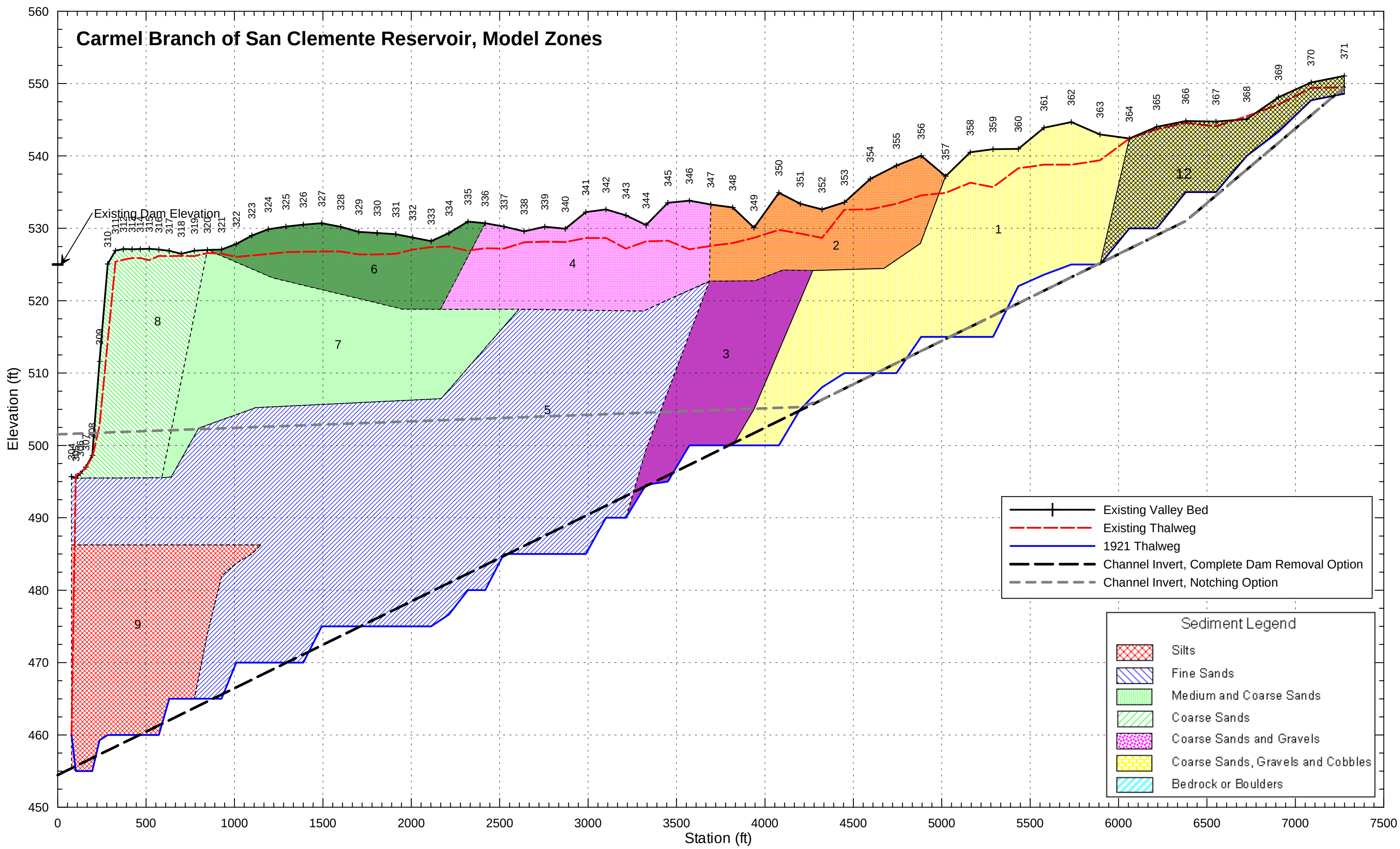


Figure 25. Profile of reservoir sediment zones and the channel invert for the Complete Dam Removal Alternative and for the Notching Alternative, Carmel Branch of San Clemente Reservoir.

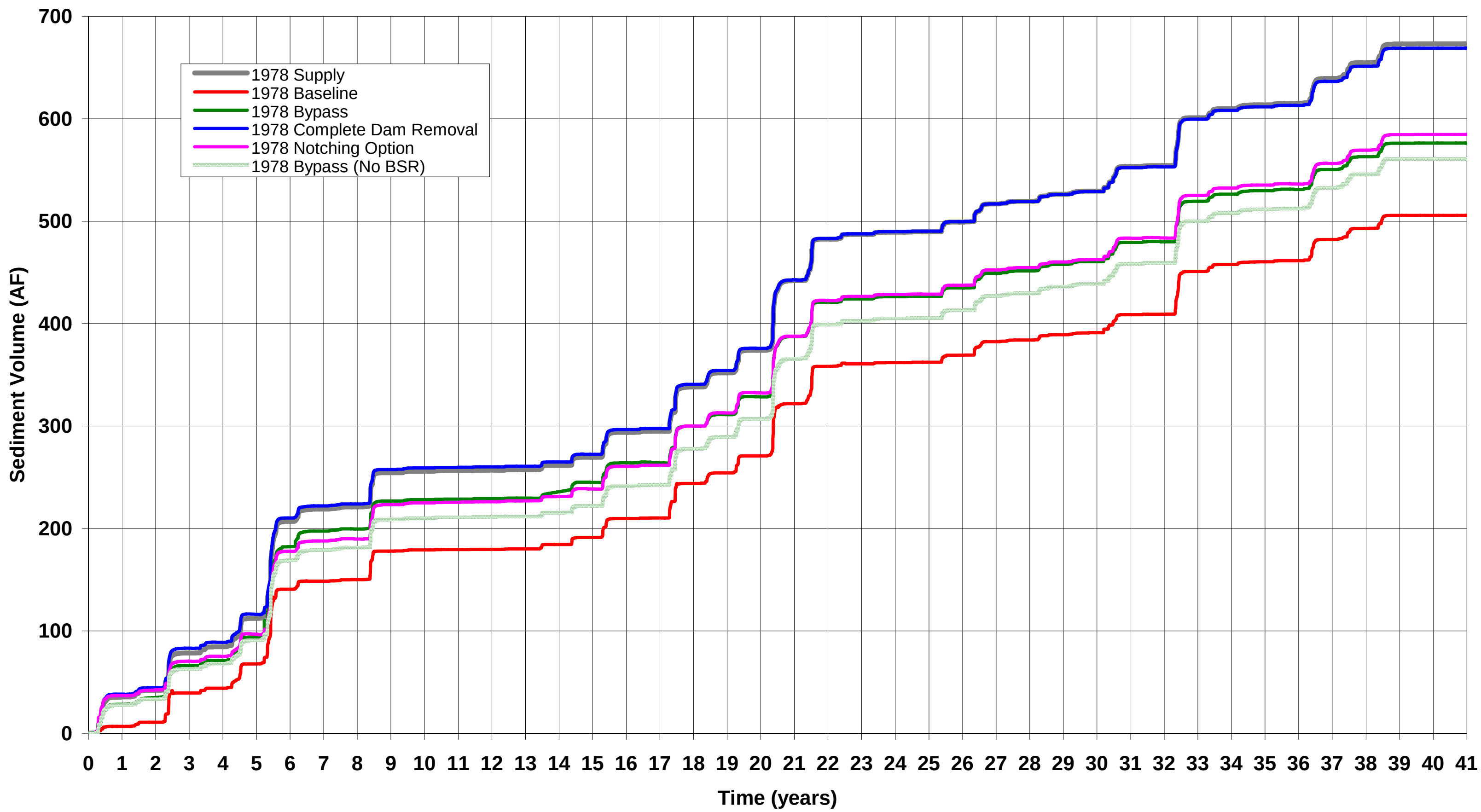


Figure 26. Inflowing base load and estimated sediment load passing the location of the existing dam for baseline (with dam) conditions evaluated in MEI (2005) and for the Bypass, Complete Dam Removal, and Notching Alternatives evaluated in this study (1978 start date). Also shown are the results from the Bypass Alternative with no BSR evaluated in MEI (2005) for the 1978 start date.

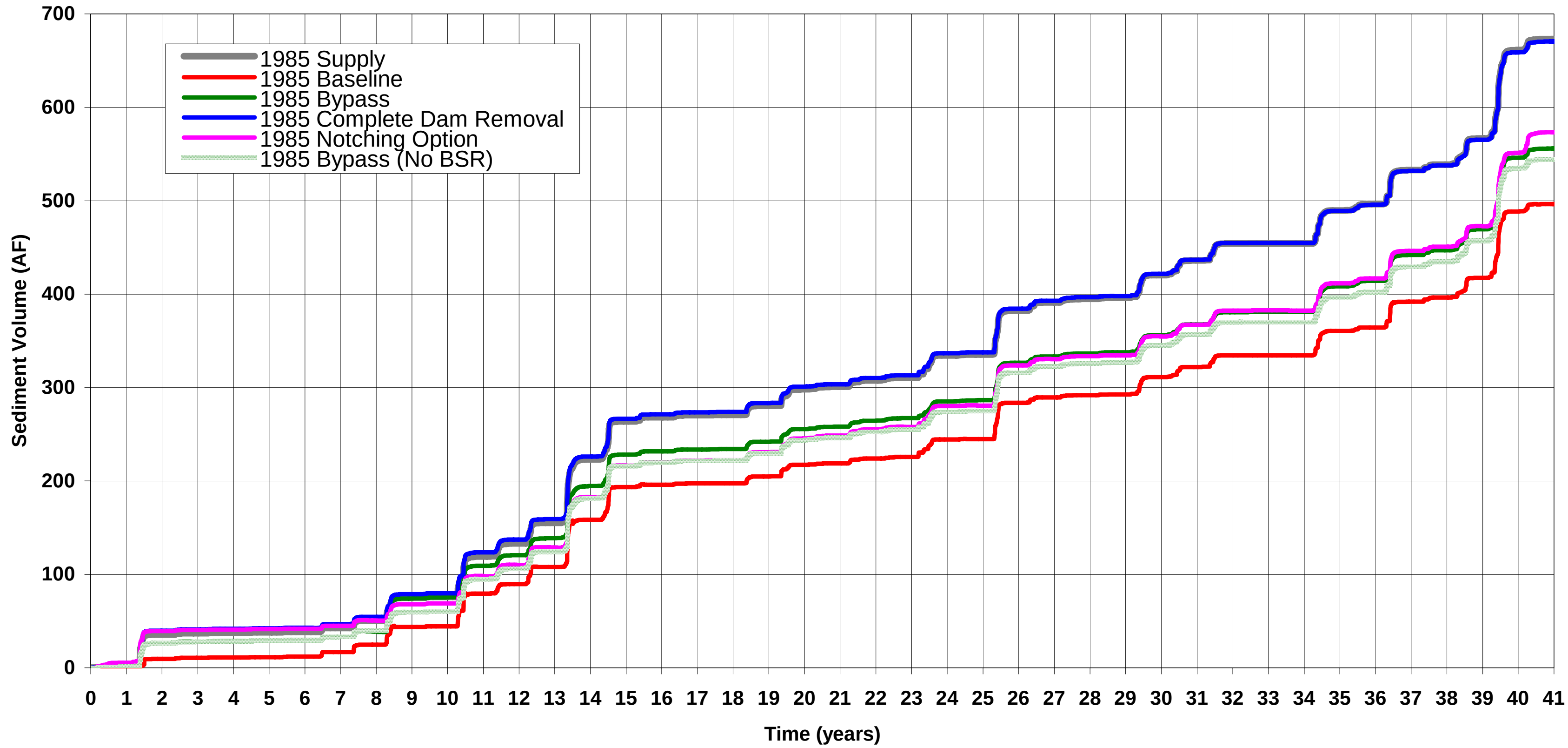


Figure 27. Inflowing base load and computed sediment load passing the location of the existing dam for baseline (with dam) conditions evaluated in MEI (2005) and for the Bypass, Complete Dam Removal, and Notching Alternatives evaluated in this study (1985 start date). Also shown are the results from the Bypass Alternative with no BSR evaluated in MEI (2005) for the 1985 start date.

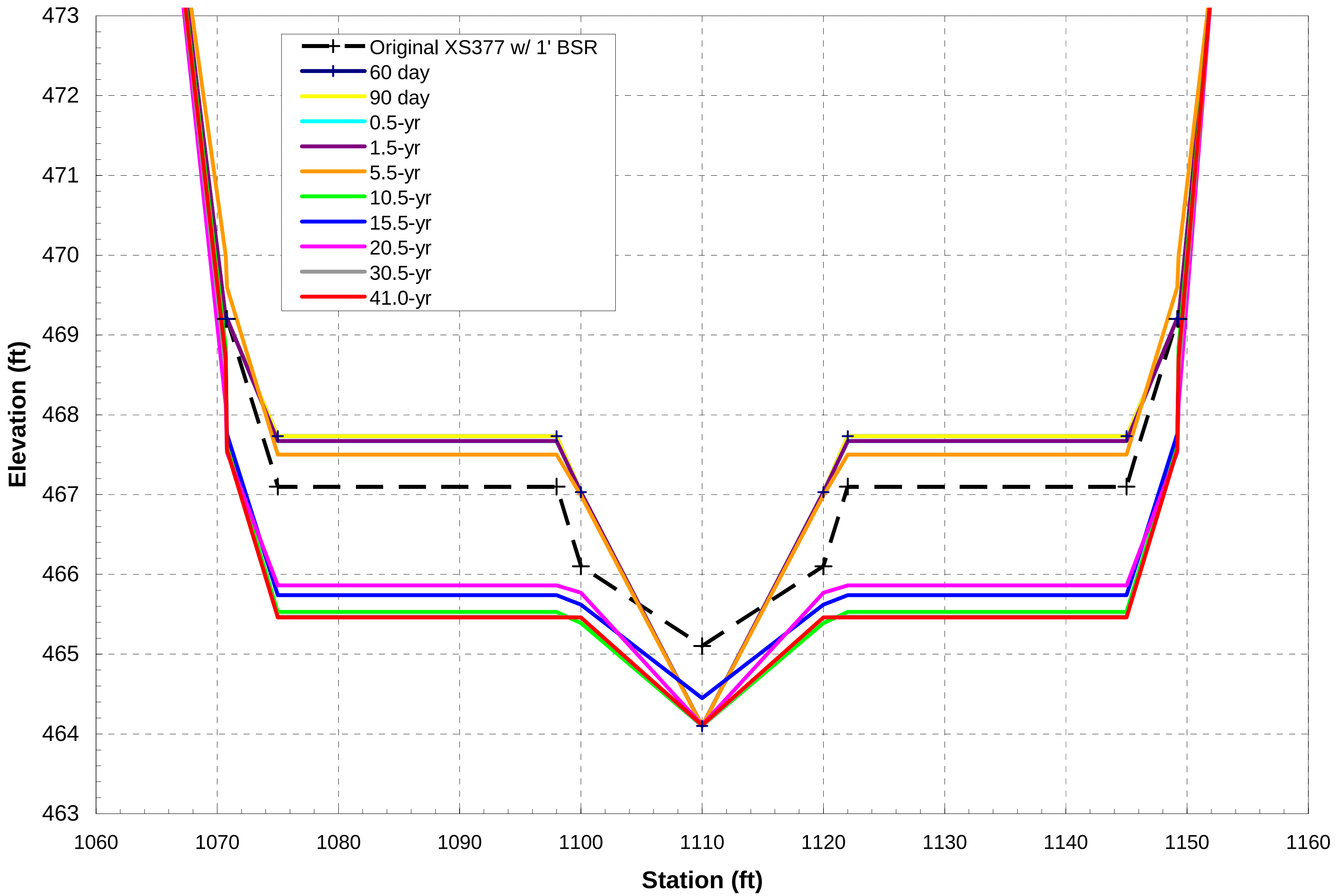


Figure 28. Typical cross section in the reconstructed reach of San Clemente Creek showing erosion of sediments in excess of 1.0 feet in the overbanks.

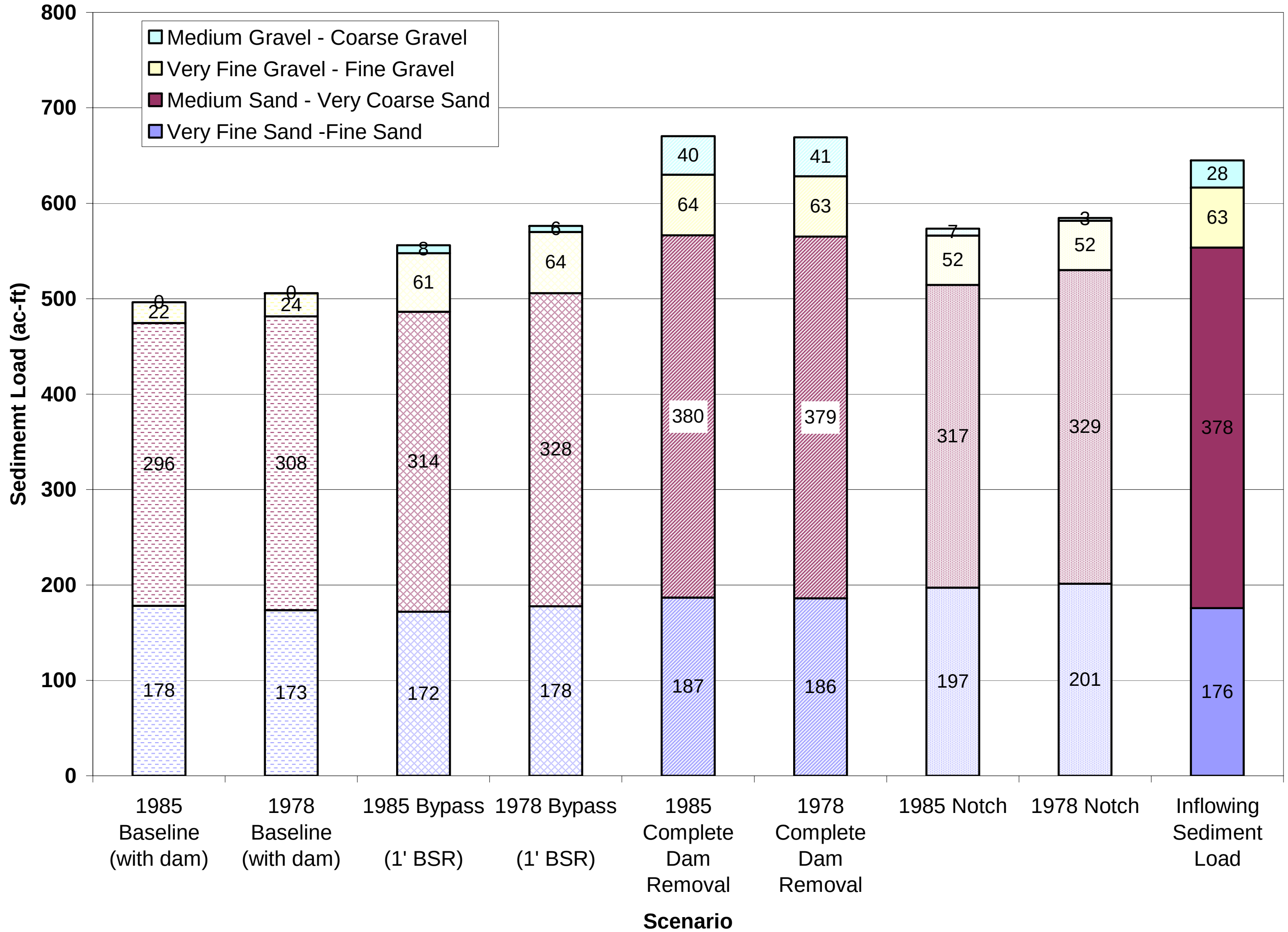


Figure 29. Total bed-material load, by size-range, passing San Clemente Dam during the 41-year simulation for baseline (with-dam) conditions evaluated in MEI (2005) and the Bypass, Complete Dam Removal, and Notching Alternatives for this study. Also shown is total sediment supply to the reservoir.

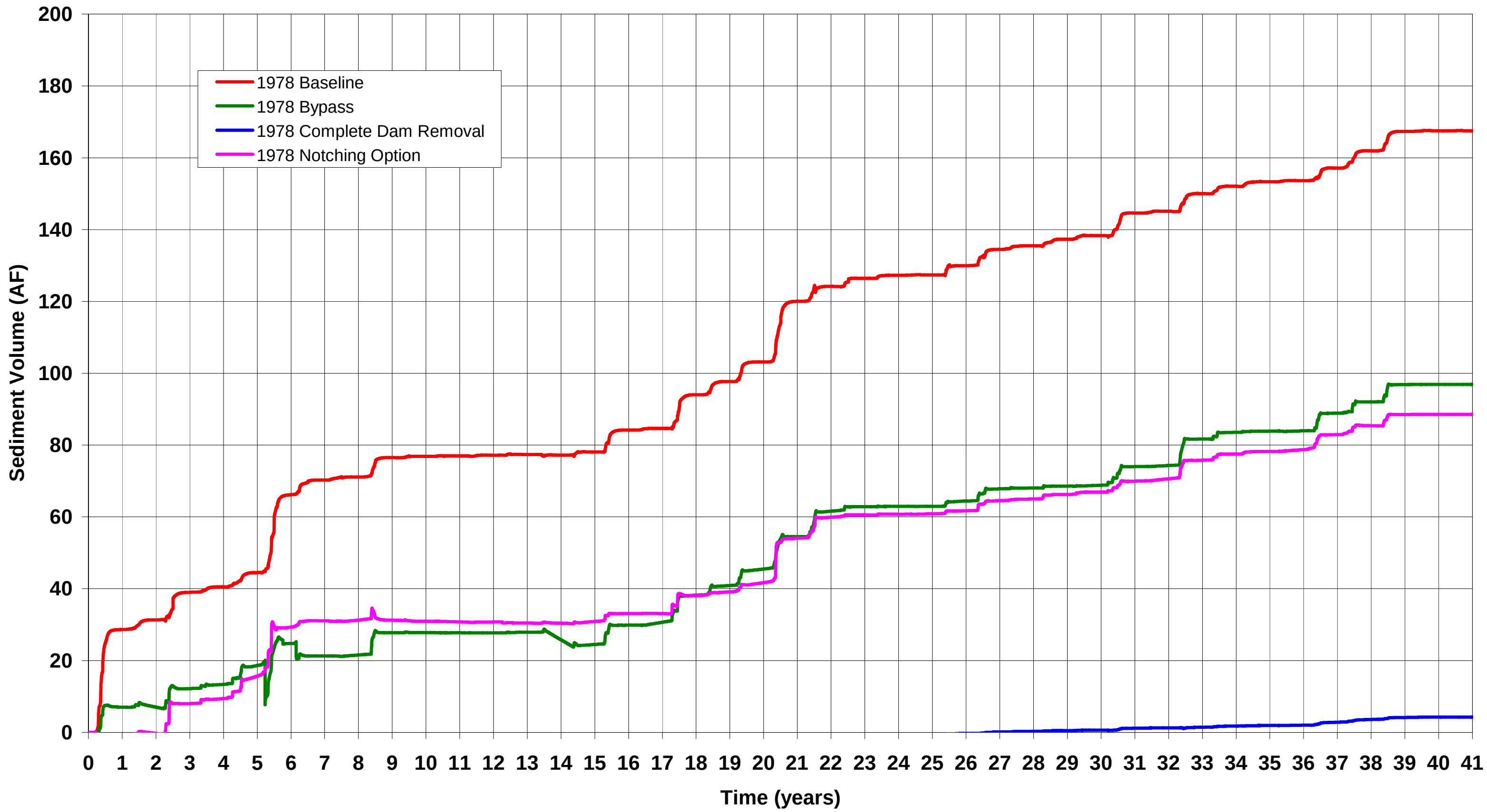


Figure 30. Total volume of sediment trapped in the reservoir (upstream of the existing dam) during the 41-year simulation for the baseline (with dam) conditions evaluated in MEI (2005) and for the Bypass, Complete Dam Removal, and Notching Alternatives in this study (1978 start date).

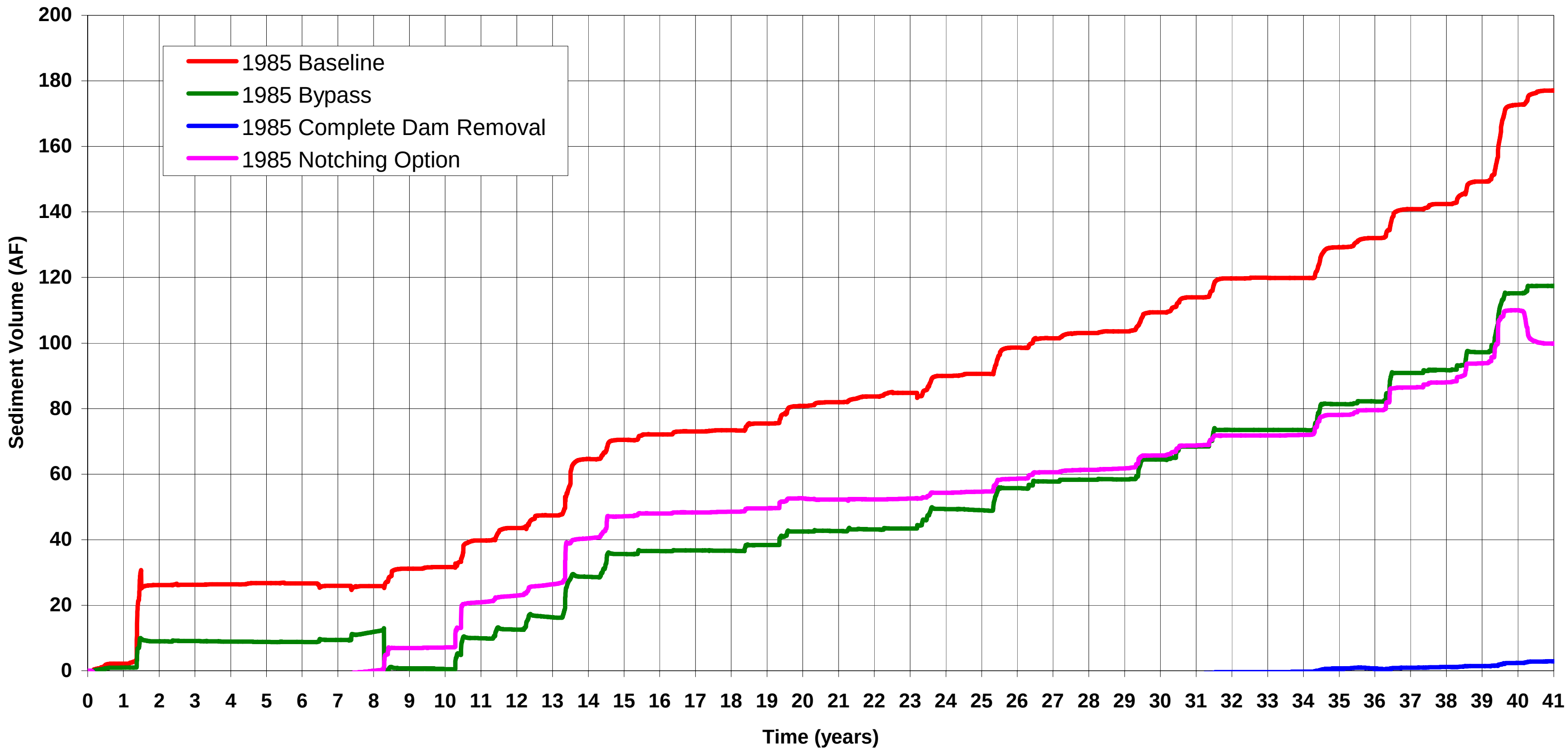


Figure 31. Total volume of sediment trapped in the reservoir (upstream of the existing dam) during the 41-year simulation for the baseline (with dam) conditions evaluated in MEI (2005) and for the Bypass, Complete Dam Removal, and Notching Alternatives in this study (1985 start date).

Table 3. Summary of subreaches used to evaluate model results (from MEI, 2002a).										
Subreach Number	Upstream Station (ft)	Downstream Station (ft)	Subreach Length		Description	Average Gradient		Bed-Material Size (mm)		Model Cross Sections
			ft	miles		ft/ft	ft/mi	Median (D_{50})	D_{84}	
4.3	101,400	92,400	9,000	1.70	San Clemente Dam to Sleepy Hollow	0.0099	52.1	203	293	207 to 232
4.7	92,400	85,800	6,600	1.25	Sleepy Hollow to Tularcitos Creek	0.0079	41.5	152	227	189 to 206
5	85,800	78,800	7,000	1.33	Tularcitos Creek to Hitchcock Canyon	0.0067	35.3	161	230	168 to 188
6.3	78,800	67,000	11,800	2.23	Hitchcock Canyon to Garza Creek	0.0055	29.0	103	176	142 to 167
6.7	67,000	54,100	12,900	2.44	Garzas Creek to Randazzo Bridge	0.0048	25.4	86	155	115 to 141
7.3	54,100	42,900	11,200	2.12	Randazzo Bridge to Robinson Canyon	0.0035	18.7	75	121	93 to 114
7.7	42,900	35,400	7,500	1.42	Robinson Canyon to Schulte Road	0.0029	15.1	53	88	77 to 92
8.3	35,400	25,400	10,000	1.89	Schulte Road to Valley Green Bridge	0.0025	13.2	38	65	55 to 76
8.7	25,400	5,900	19,500	3.69	Valley Green Bridge to Highway 1	0.0021	11.2	1.8	6.2	14 to 54
9	5,900	0	5,900	1.12	Highway 1 to mouth	0.0009	4.5	1.5	4.9	0.5 to 13
Total Length			**101,400**	**19.2**						

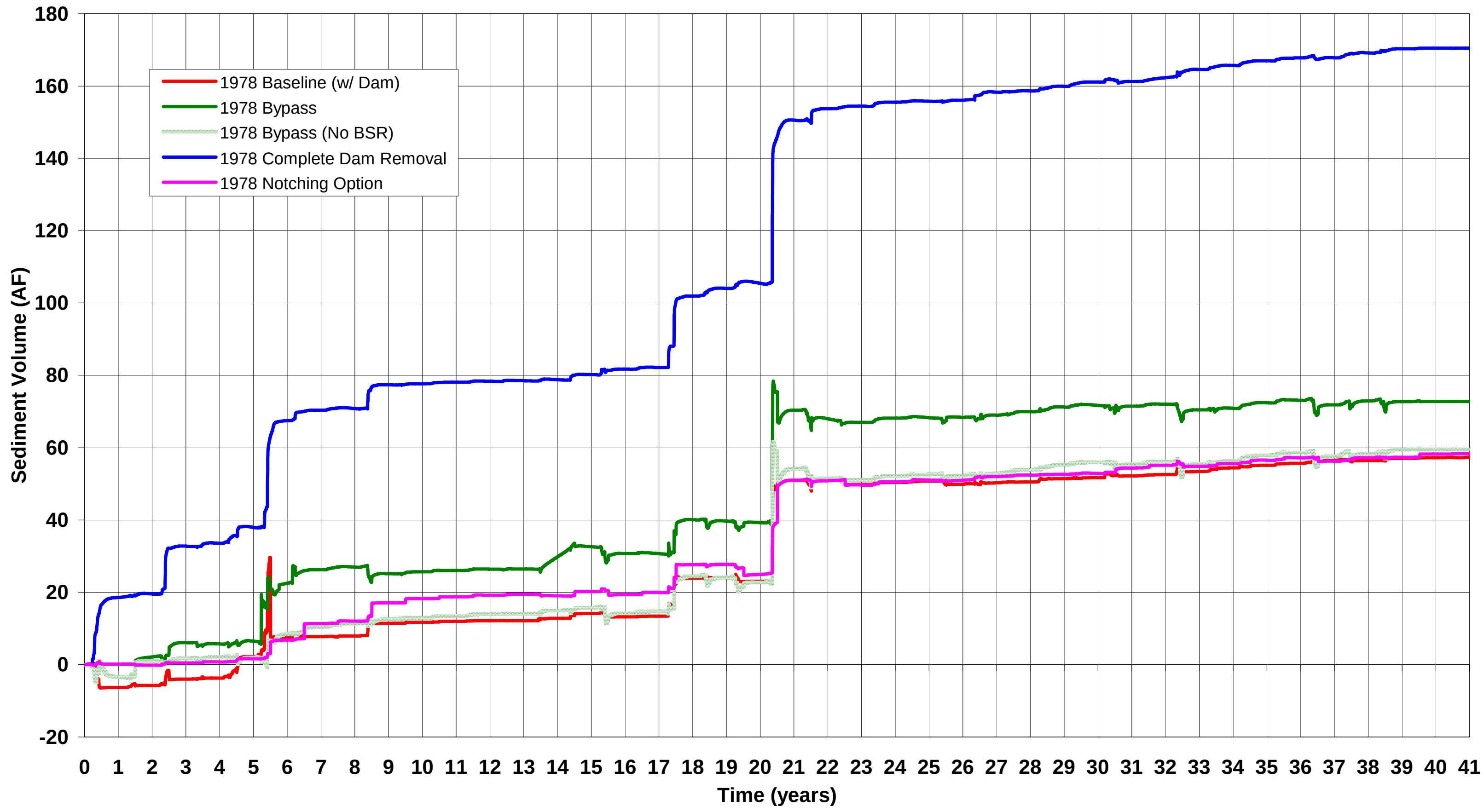


Figure 32. Total volume of sediment stored in the Carmel River downstream from San Clemente Dam for the 41-year simulation under baseline (with dam) conditions evaluated in MEI (2005) and for the Alternatives evaluated in this study (1978 start date).

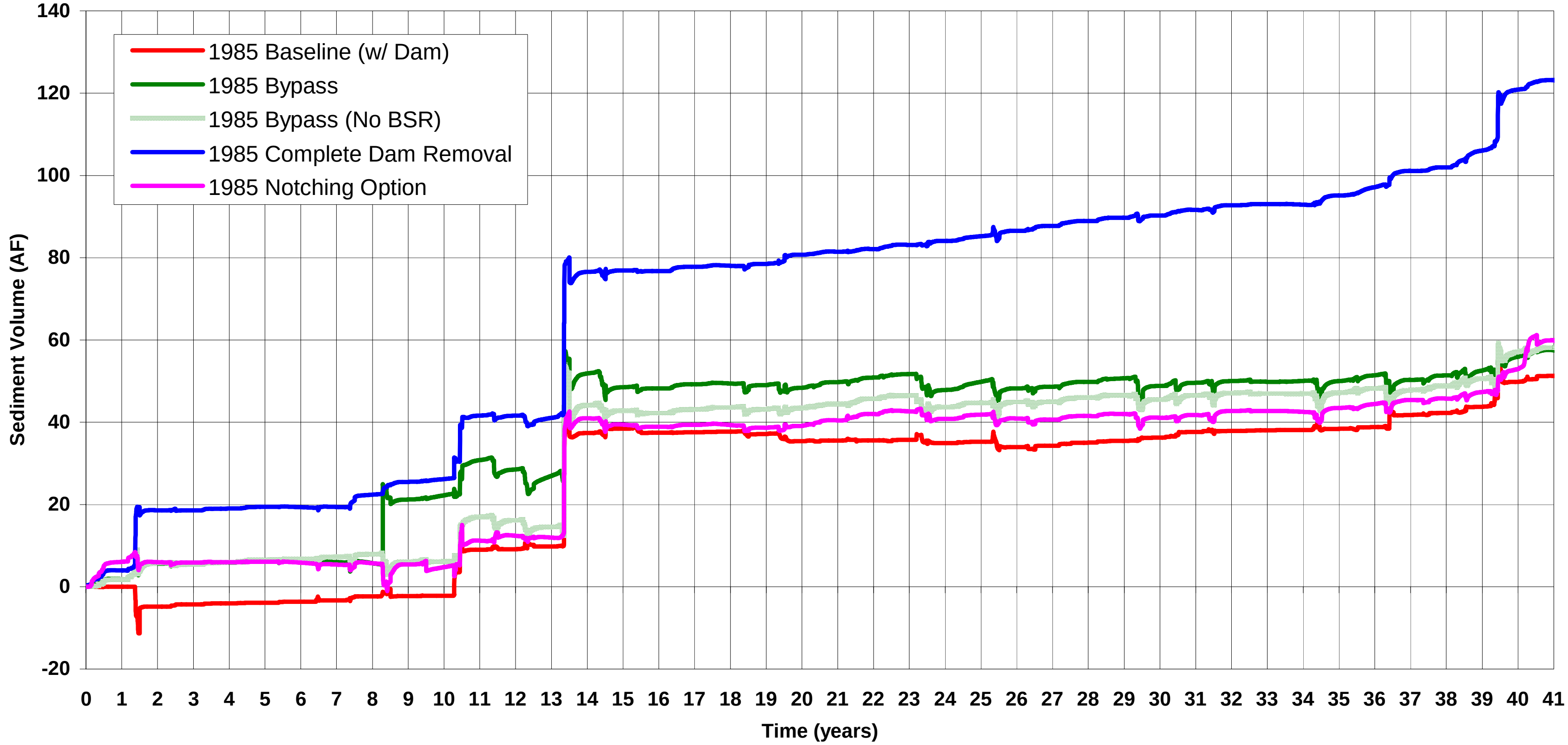


Figure 33. Total volume of sediment stored in the Carmel River downstream from San Clemente Dam for the 41-year simulation under baseline (with dam) conditions evaluated in MEI (2005) and for the Alternatives evaluated in this study (1985 start date).

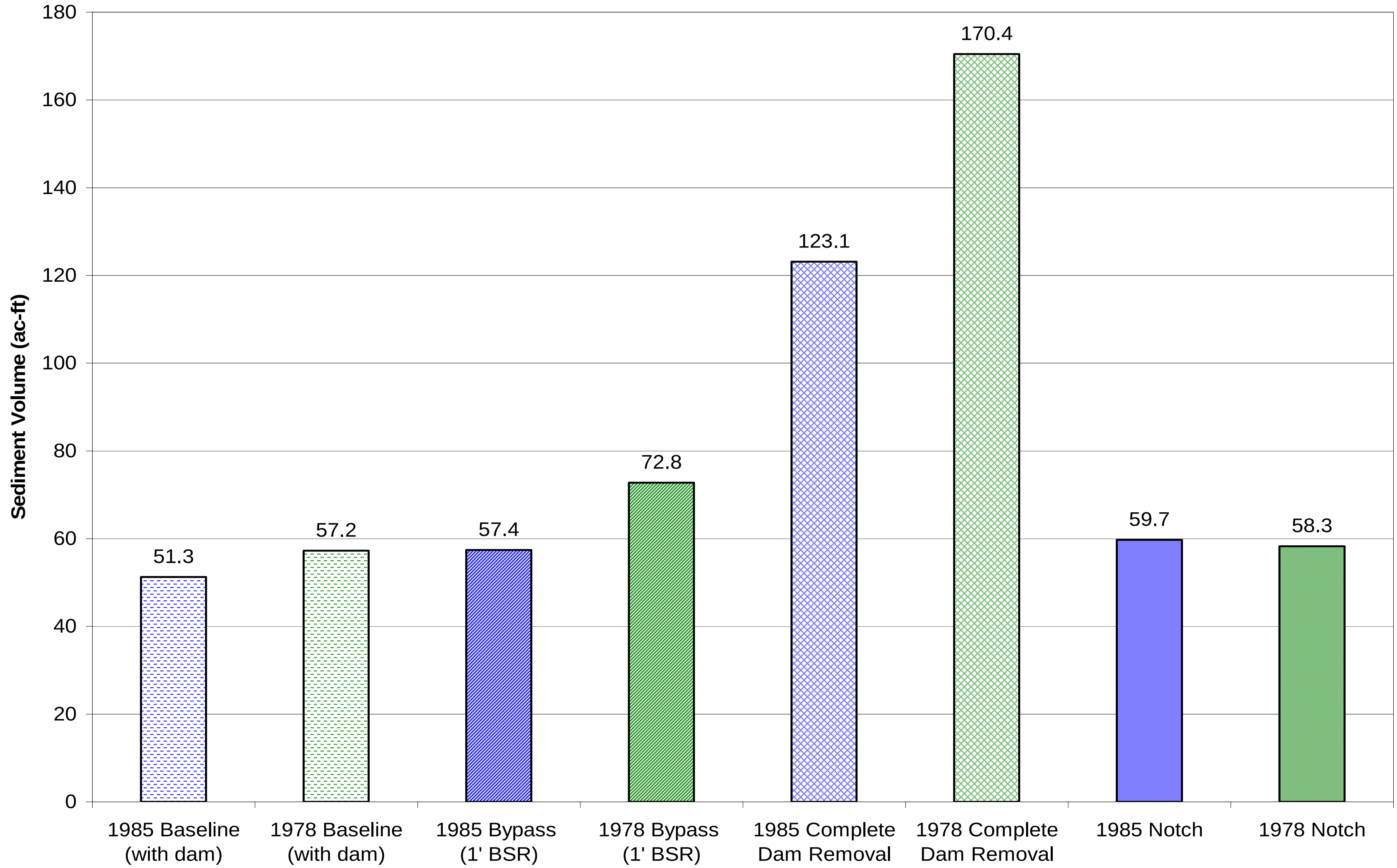


Figure 34. Total volume of sediment stored in the downstream Carmel River for the baseline (with dam) scenario (MEI, 2005) and the alternatives evaluated in this study.

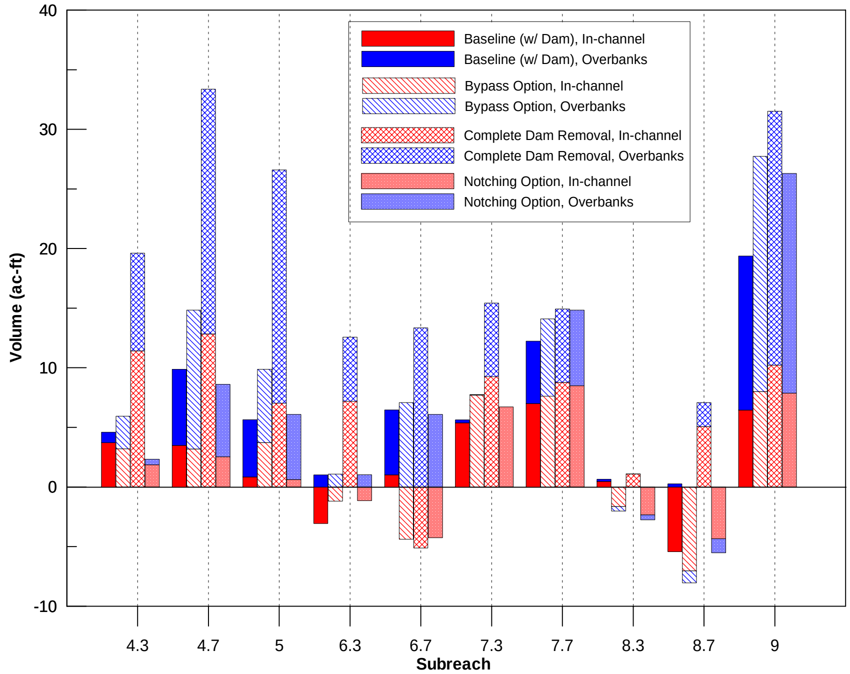


Figure 35a. Sediment volume stored in the river downstream from San Clemente Dam at the end of the 41-year simulation, by subreach, for the baseline (with dam) conditions evaluated in MEI (2005) and for the alternatives evaluated in this study (1978 start-date).

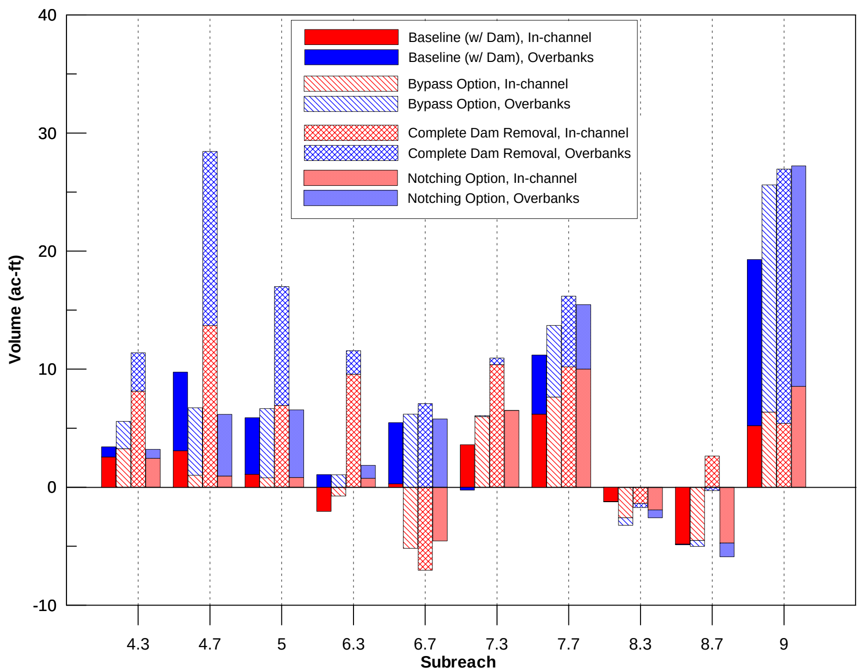


Figure 35b. Sediment volume stored in the river downstream from San Clemente Dam at the end of the 41-year simulation, by subreach, for the baseline (with dam) conditions evaluated in MEI (2005) and for the alternatives evaluated in this study (1985 start-date).

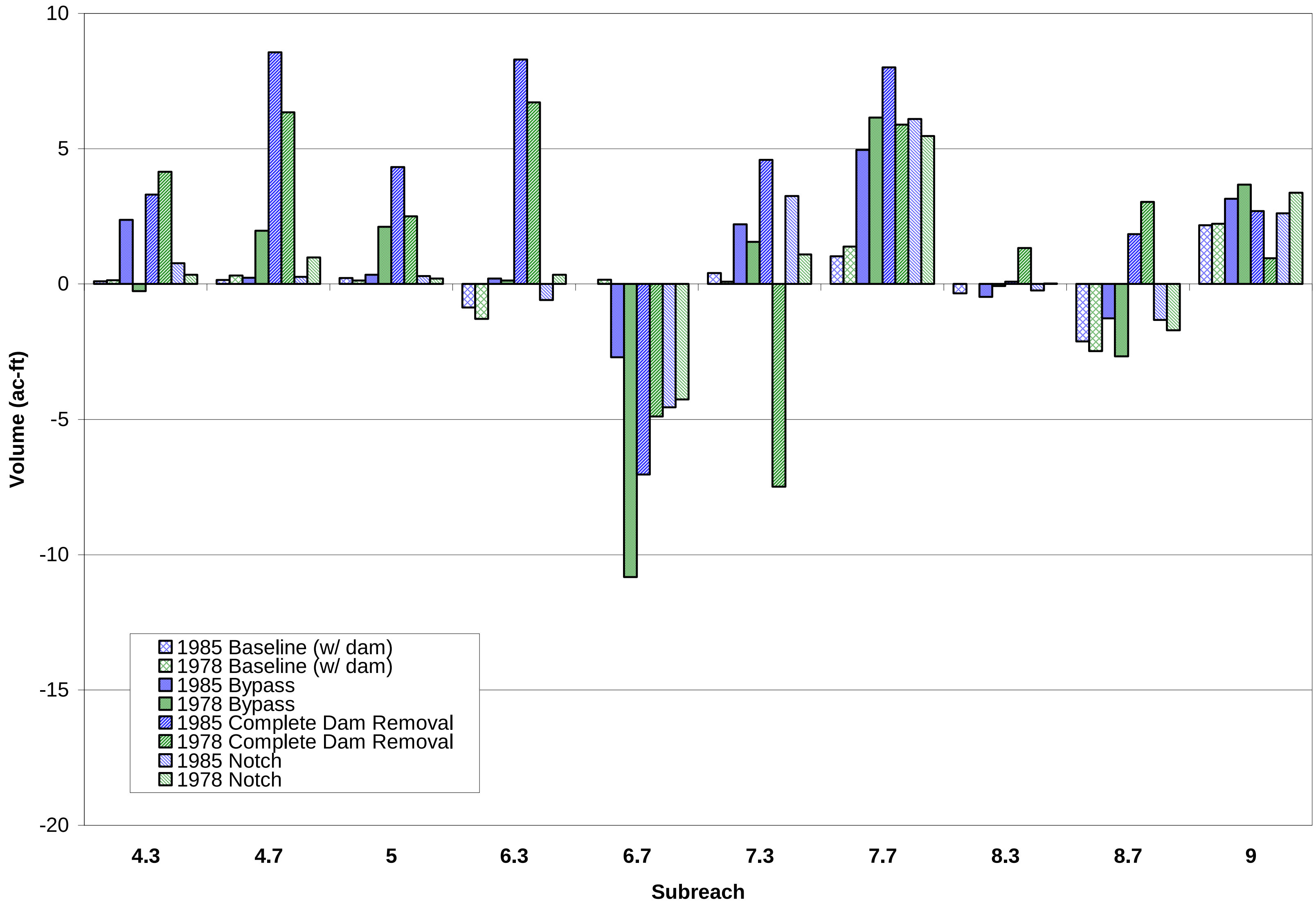


Figure 36. Volume of gravels stored in the main channel in each of the subreaches under the baseline (with dam) conditions evaluated in MEI (2005) and under the alternatives evaluated in this study.

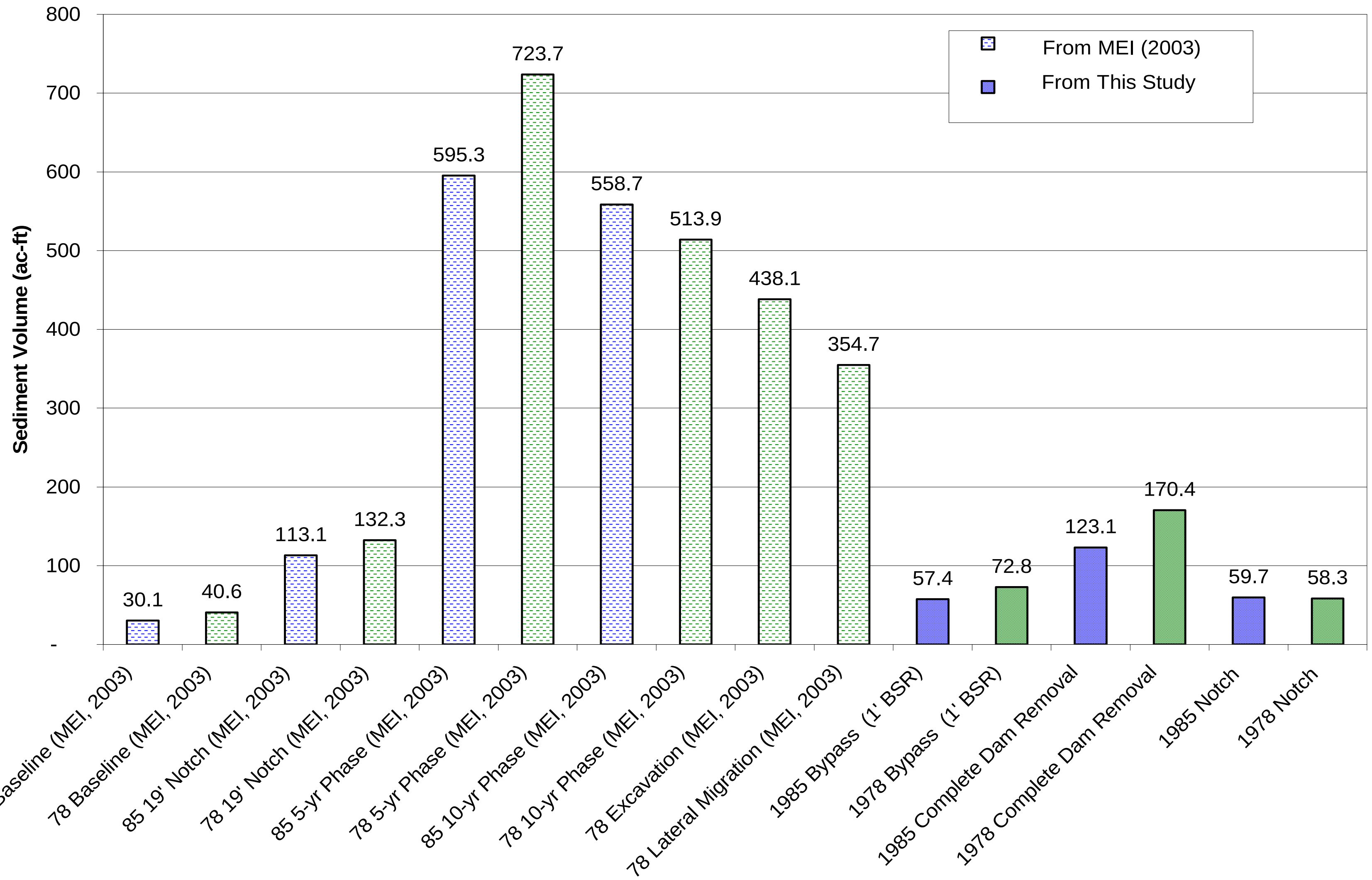


Figure 37. Comparison of total sediment volume stored in the Carmel River below the existing dam location at the end of the 41-year simulation under scenarios evaluated in MEI (2003) and evaluated for this study.

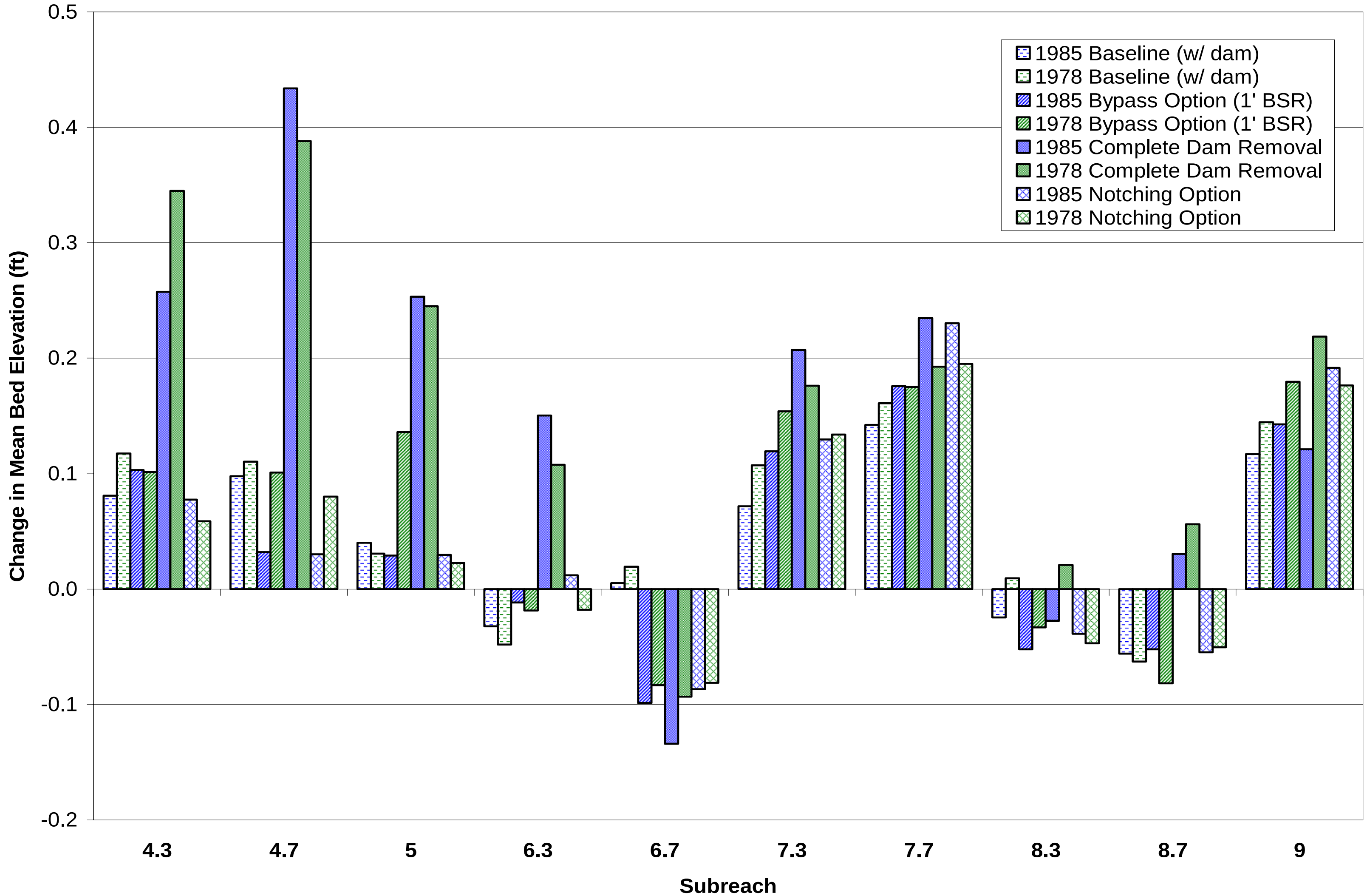


Figure 38. Change in mean bed elevation at the end of the simulation for each of the subreaches under the baseline (with dam) conditions evaluated in MEI (2005) and under the alternatives evaluated in this study.

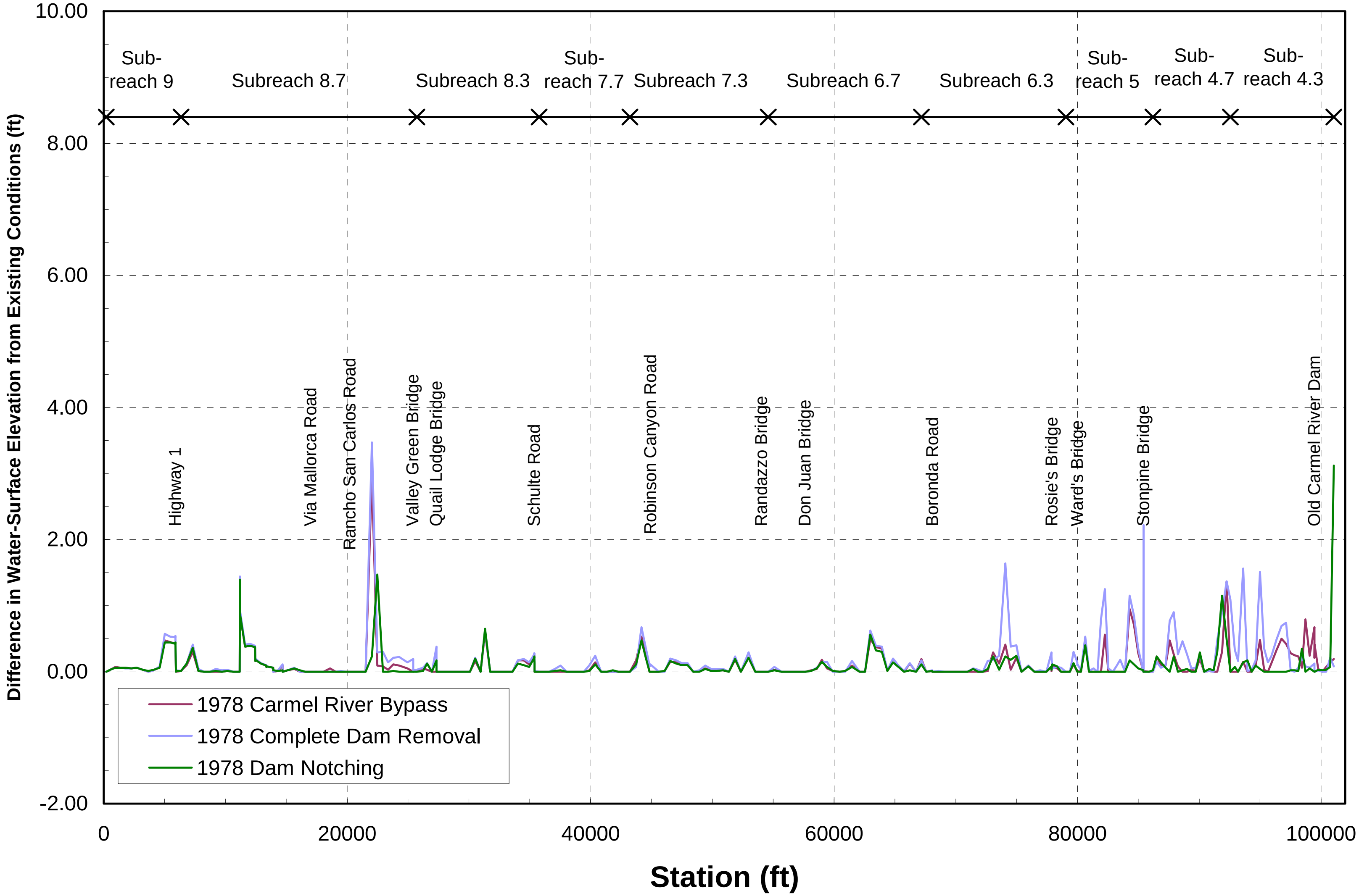


Figure 39. Maximum difference in 100-year water-surface elevation from existing conditions for the alternatives evaluated in this study (1978 start date).

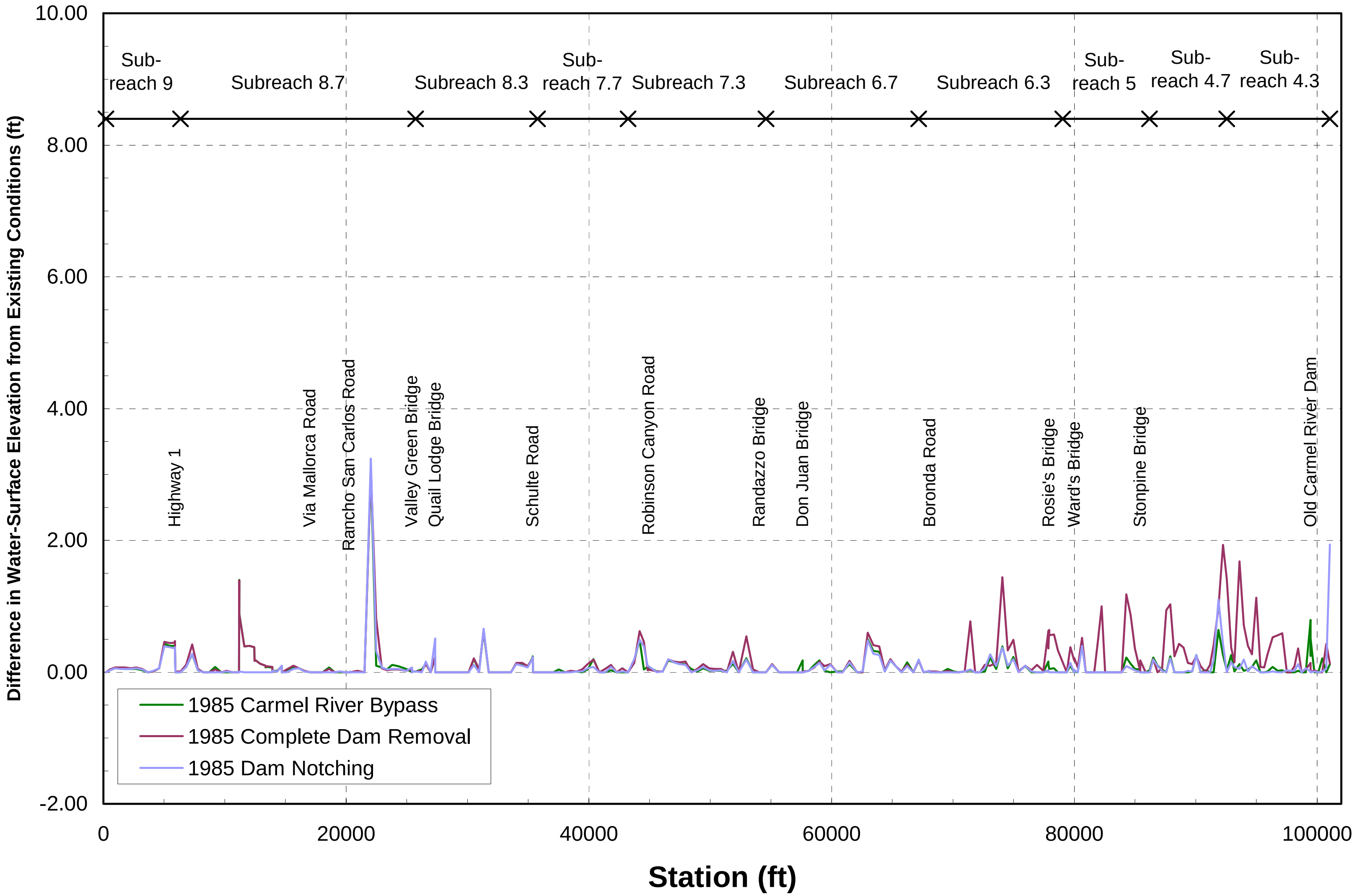


Figure 40. Maximum difference in 100-year water-surface elevation from existing conditions for the alternatives evaluated in this study (1985 start date).

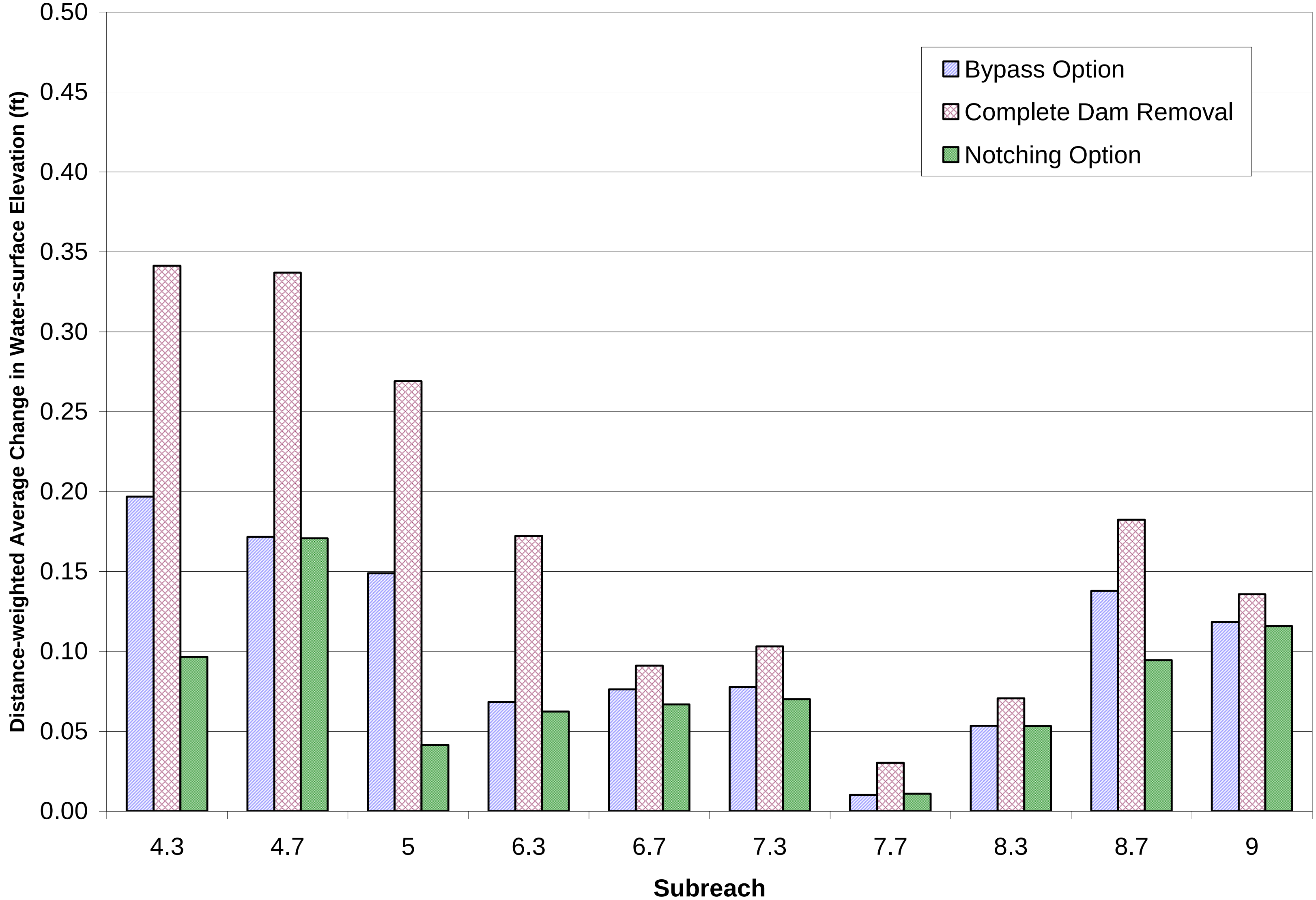


Figure 41. Distance-weighted average difference in maximum 100-year water-surface elevation from existing conditions, by subreach, for the alternatives evaluated in this study (1978 start date).

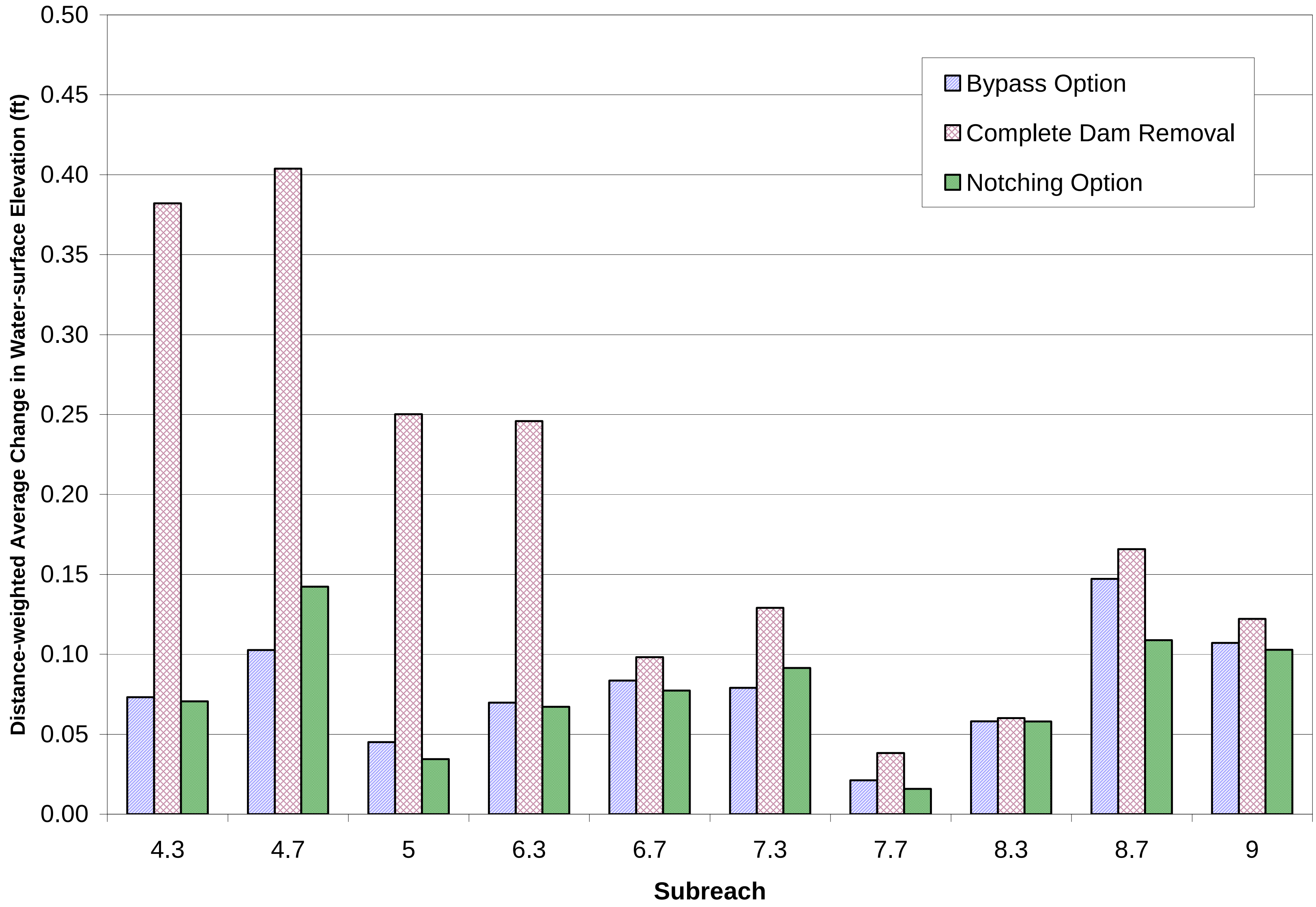


Figure 42. Distance-weighted average difference in maximum 100-year water-surface elevation from existing conditions, by subreach, for the alternatives evaluated in this study (1985 start date).

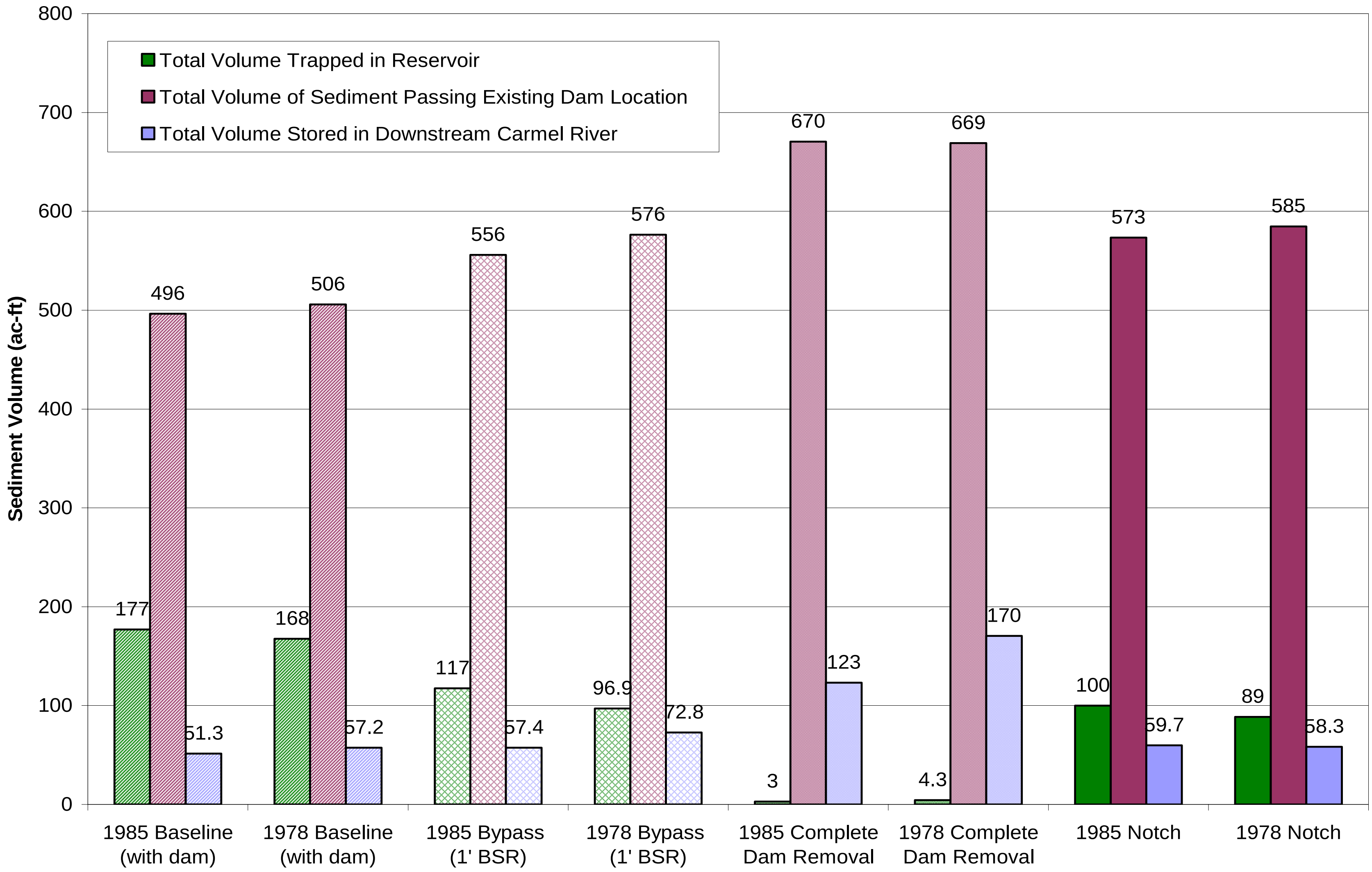


Figure 43. Summary of sediment-transport modeling results at the end of the 41-year simulation.

Appendix O

SUSPENDED SEDIMENT CONCENTRATION ASSOCIATED WITH A SLUICE EVENT

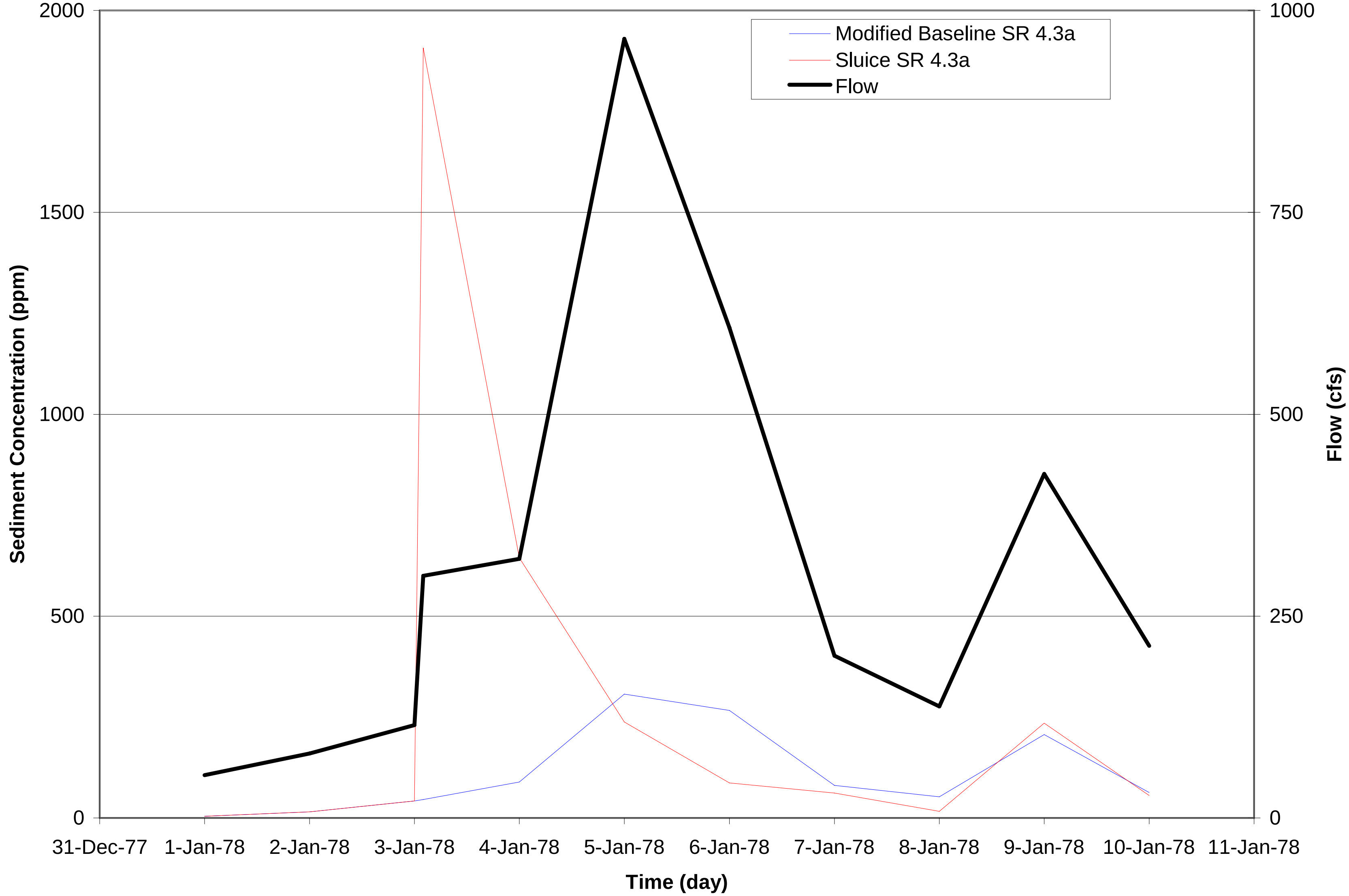


Figure O-1: Simulated Suspended Sediment Concentration at Reach 4.3 for a Wet Year

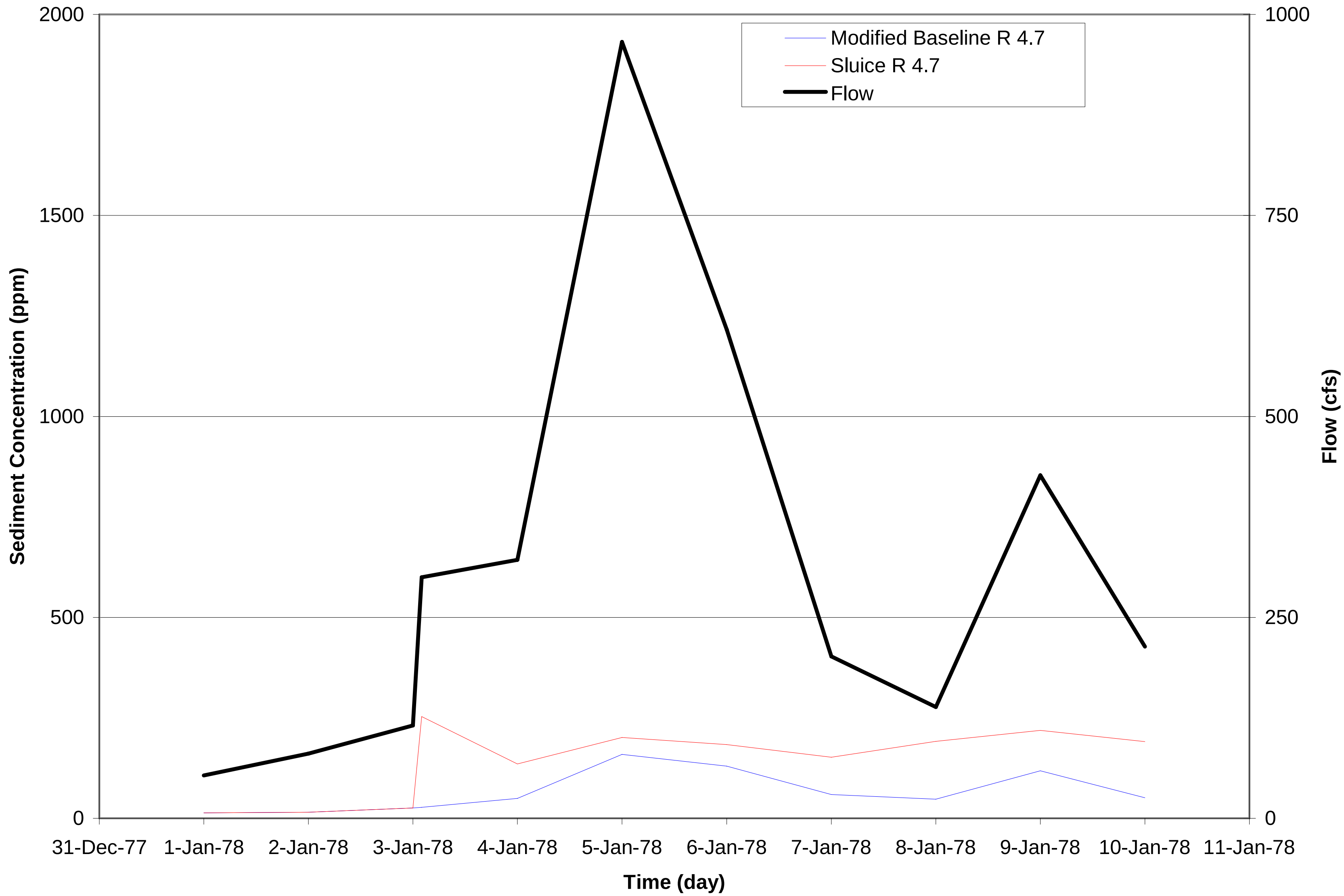


Figure O-2: Simulated Suspended Sediment Concentration at Reach 4.7 for a Wet Year

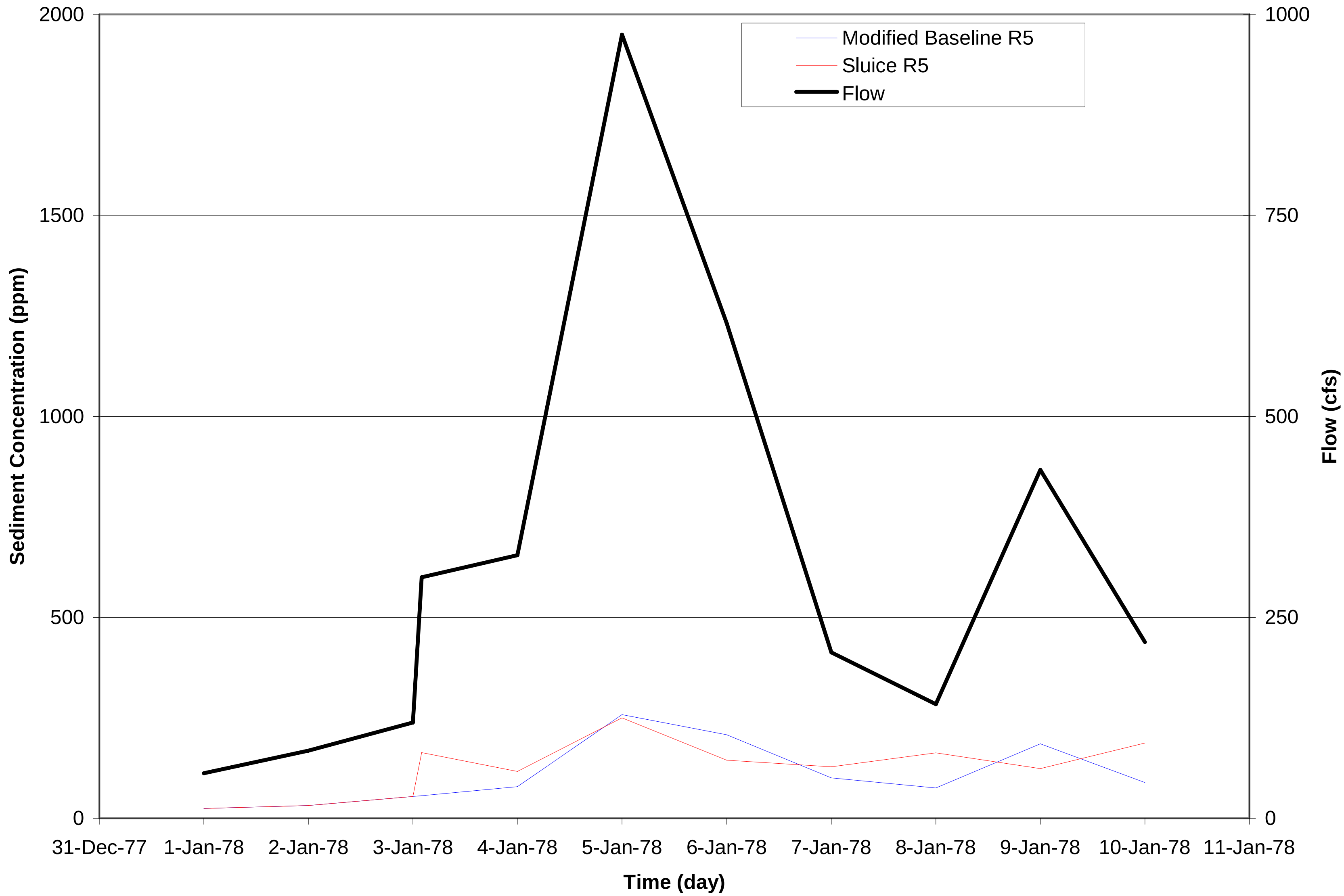


Figure O-3: Simulated Suspended Sediment Concentration at Reach 5 for a Wet Year

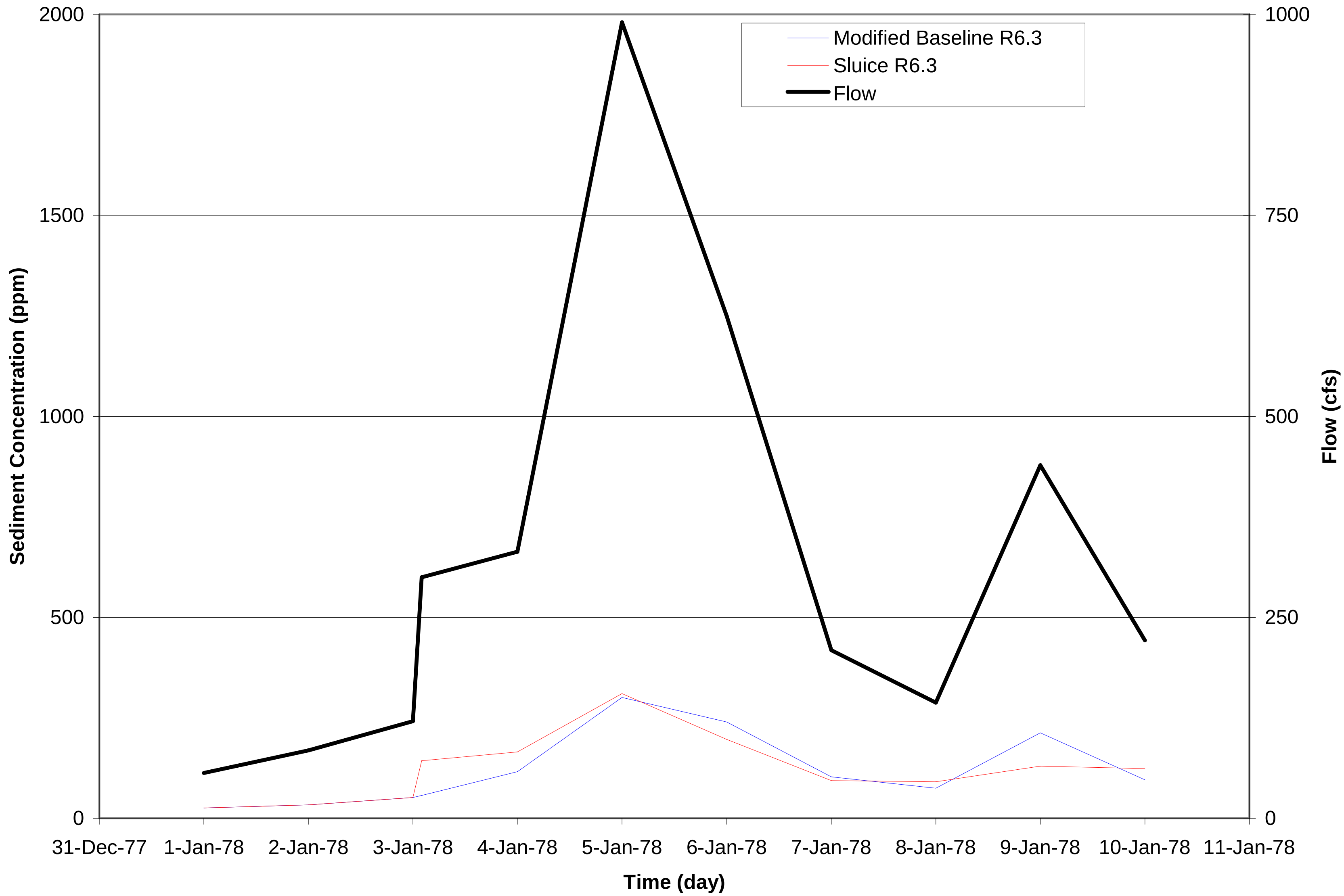


Figure O-4: Simulated Suspended Sediment Concentration at Reach 6.3 for a Wet Year

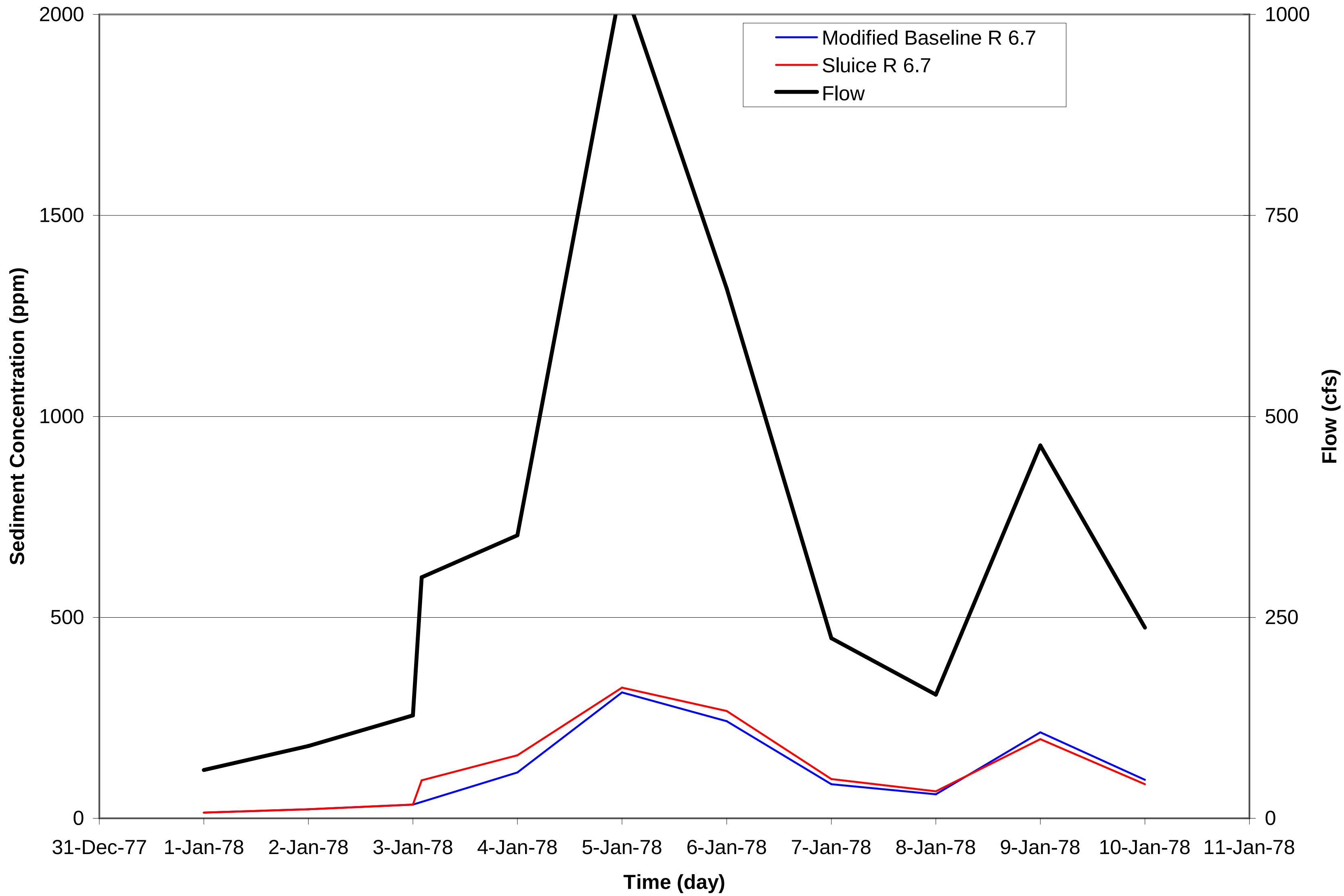


Figure O-5: Simulated Suspended Sediment Concentration at Reach 6.7 for a Wet Year

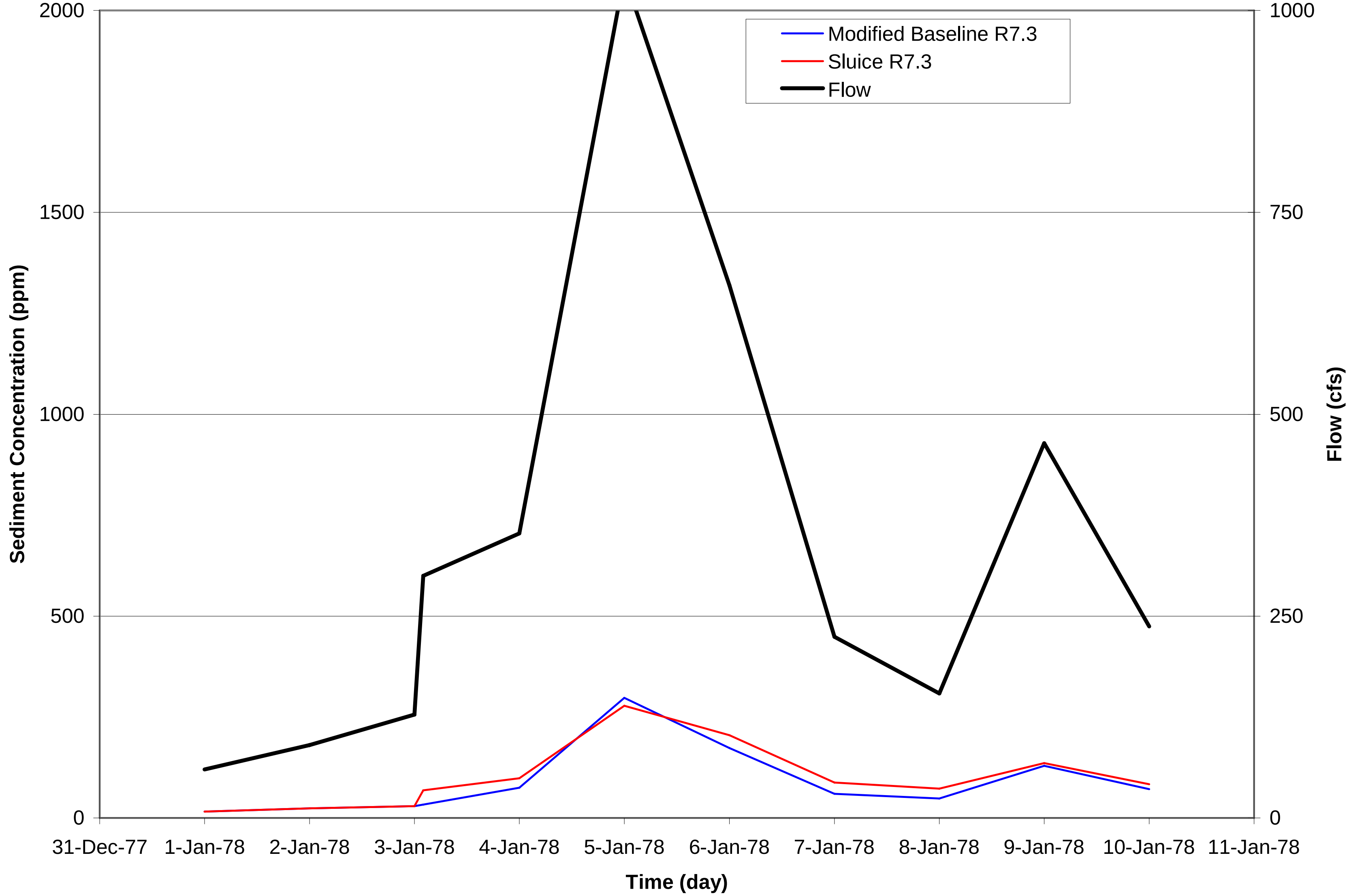


Figure O-6: Simulated Suspended Sediment Concentration at Reach 7.3 for a Wet Year

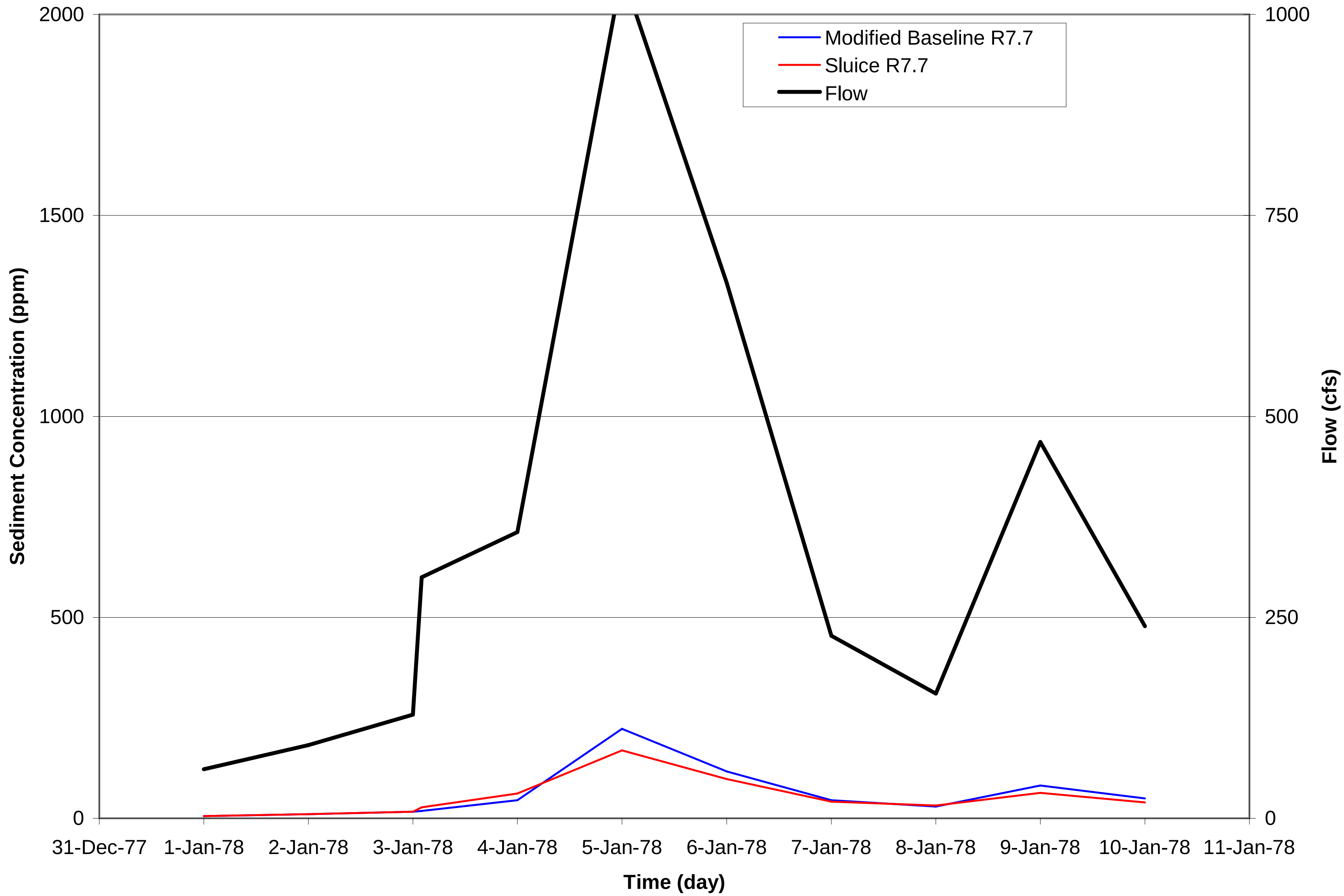


Figure O-7: Simulated Suspended Sediment Concentration at Reach 7.7 for a Wet Year

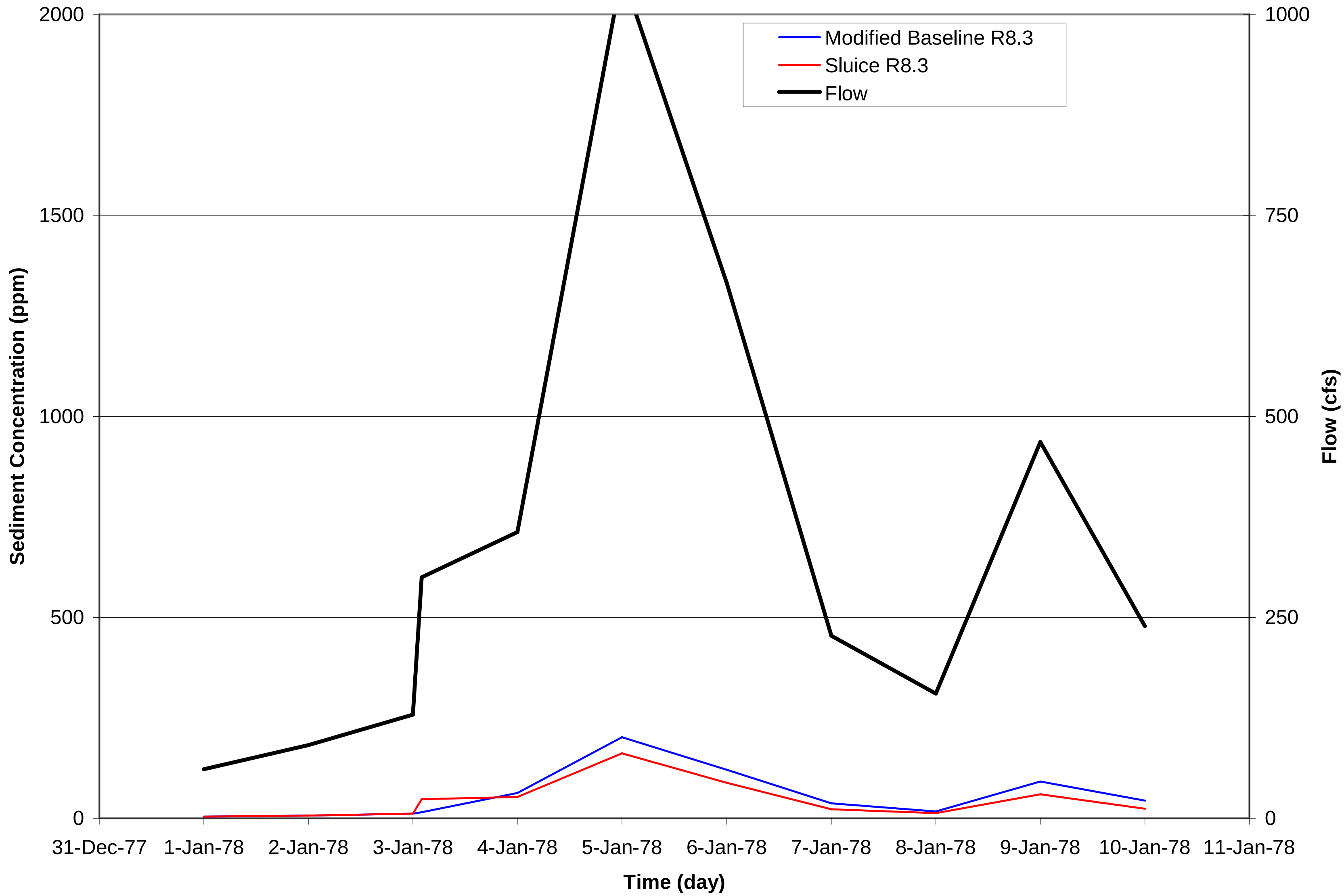


Figure O-8: Simulated Suspended Sediment Concentration at Reach 8.3 for a Wet Year

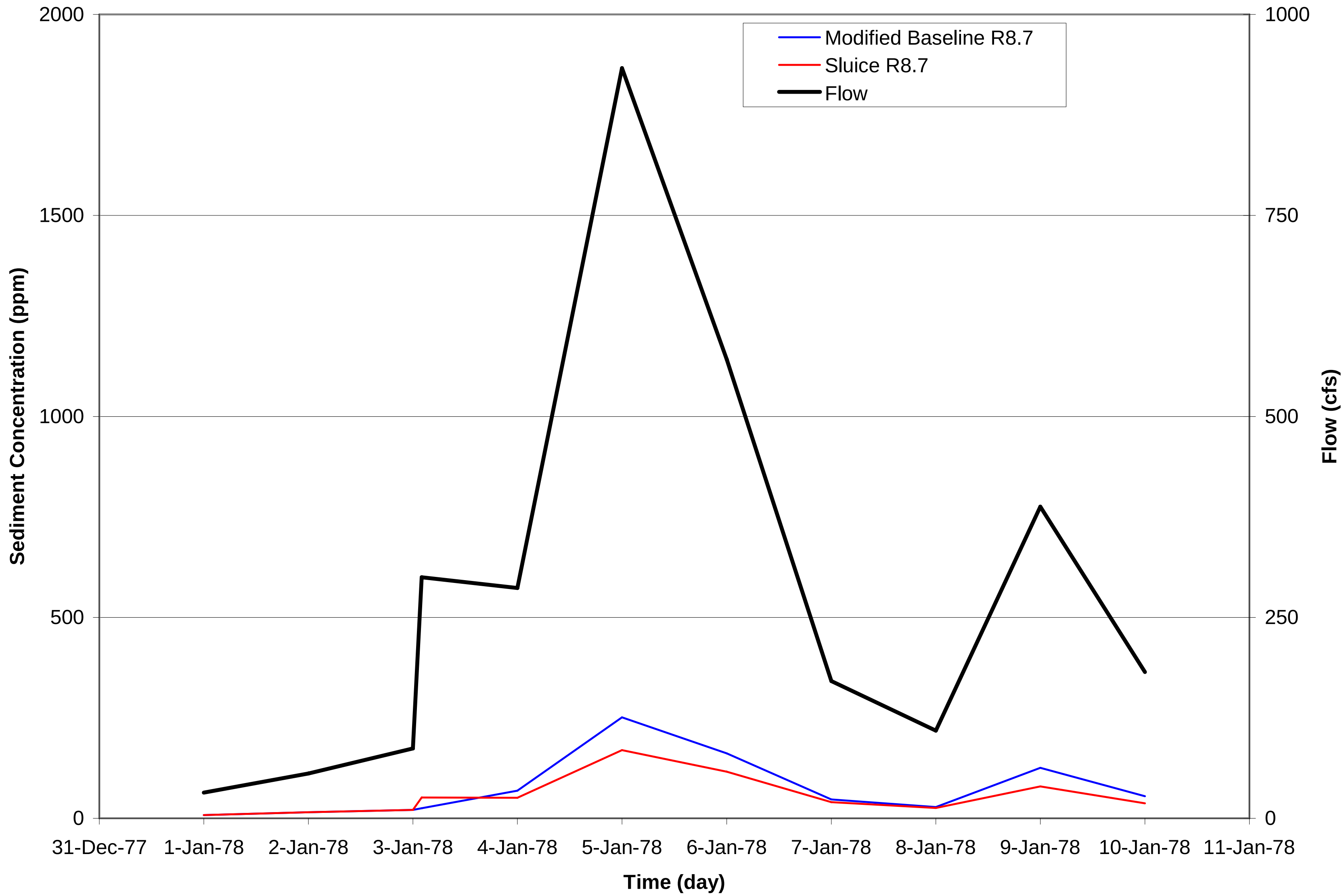


Figure O-9: Simulated Suspended Sediment Concentration at Reach 8.7 for a Wet Year

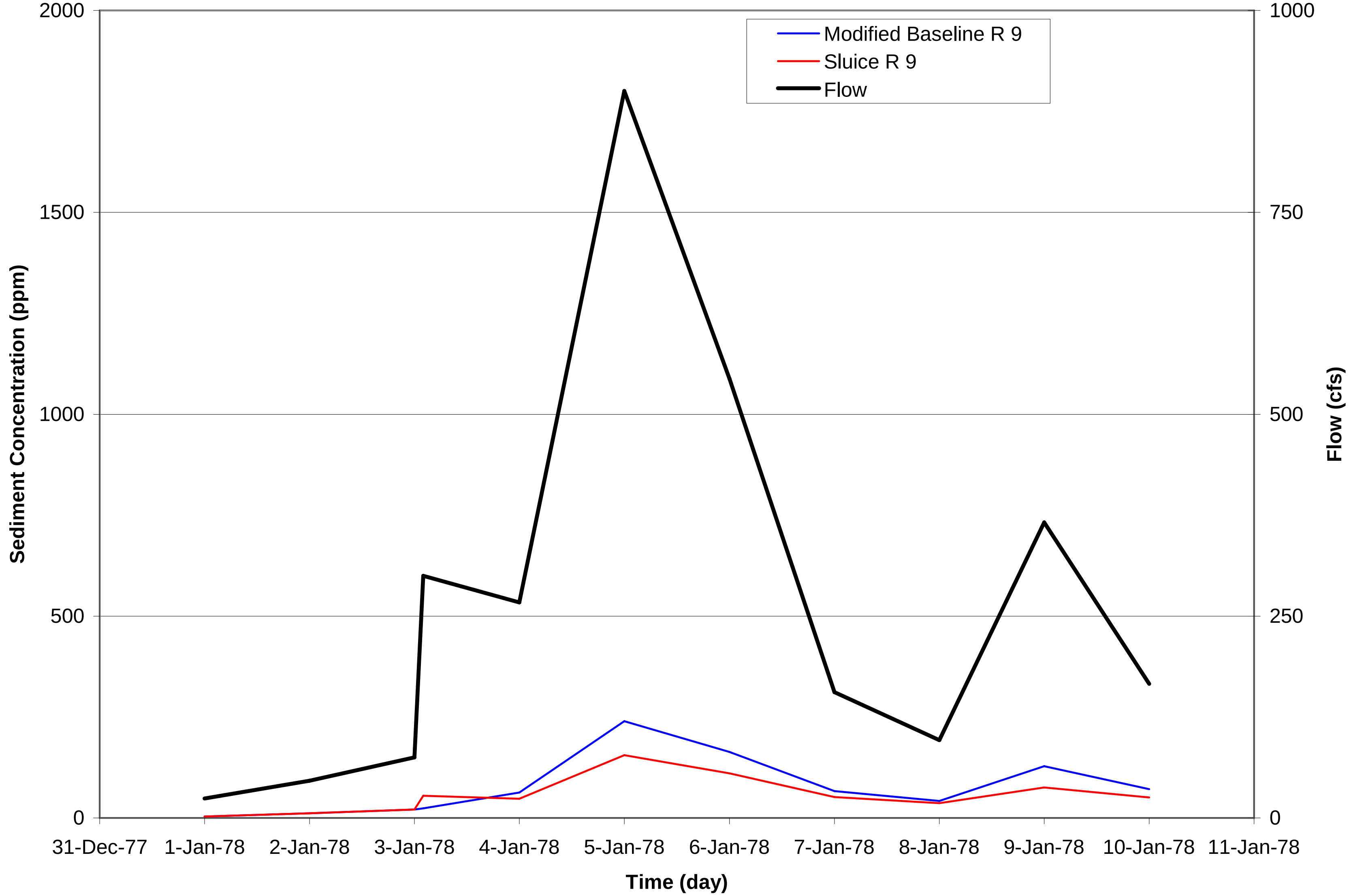


Figure O-10: Simulated Suspended Sediment Concentration at Reach 9 for a Wet Year

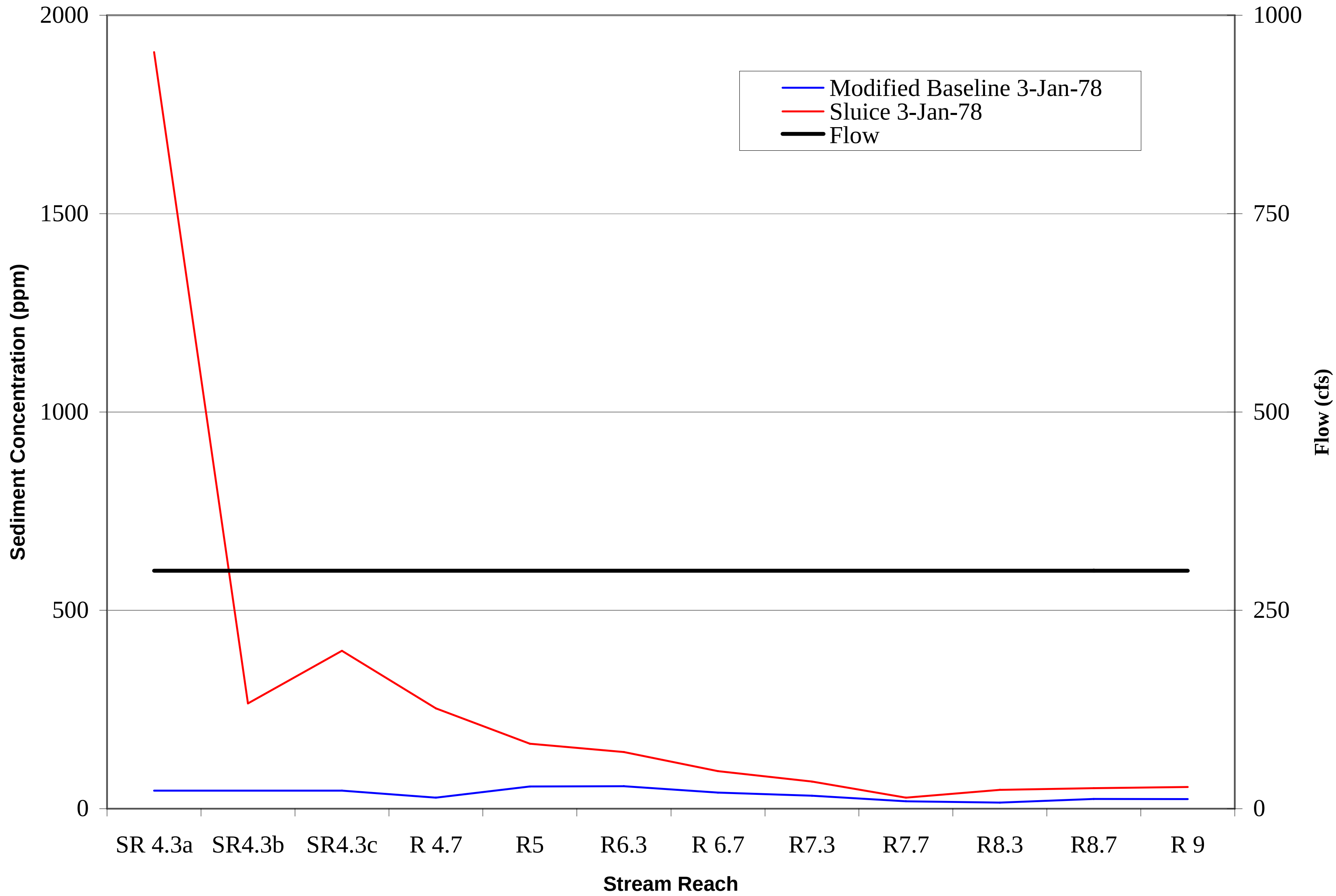


Figure O-11: Simulated Suspended Sediment Concentration along Carmel River for Day 1 of a Wet Year Sluice Event

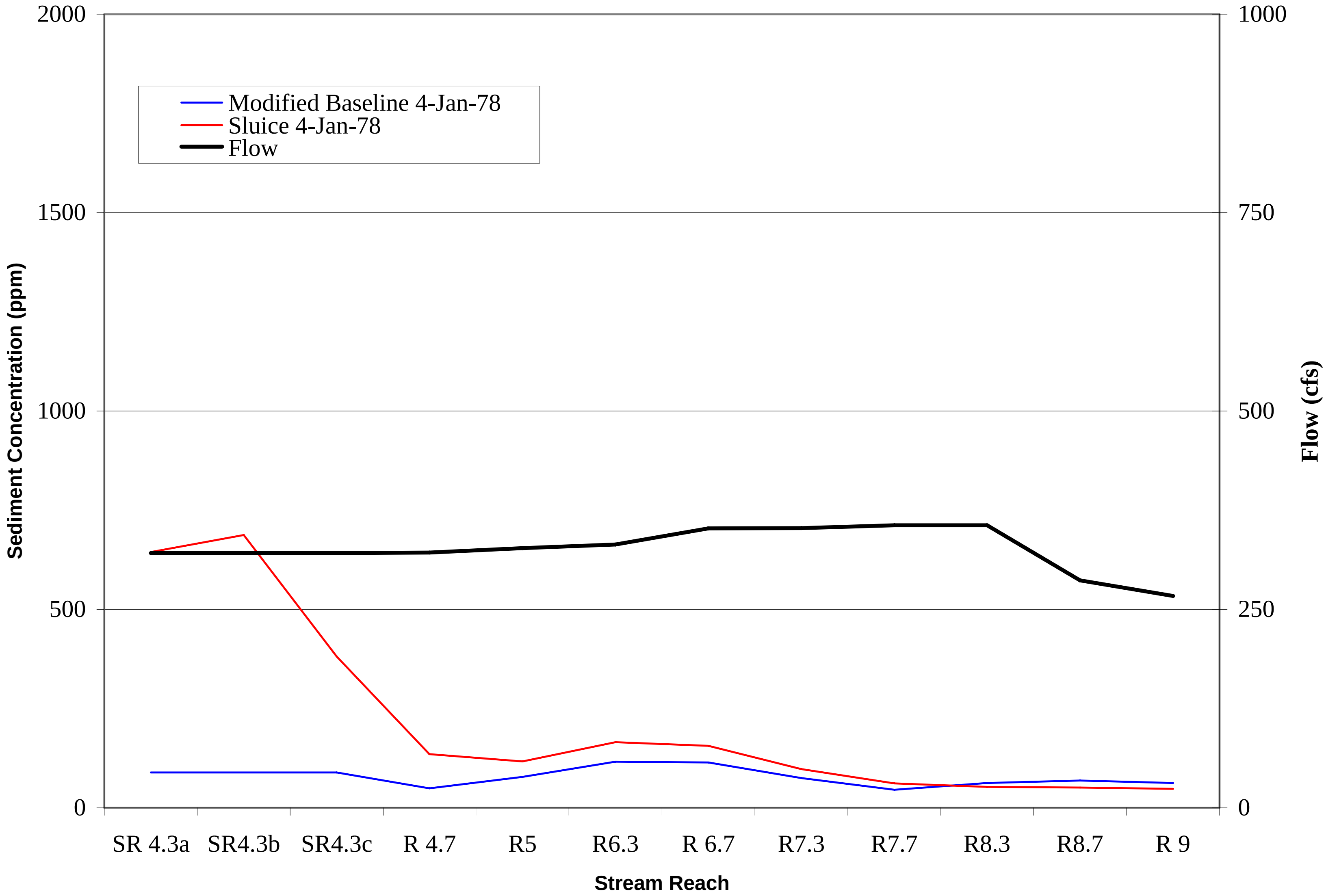


Figure O-12: Simulated Suspended Sediment Concentration along Carmel River for Day 2 of a Wet Year Sluice Event

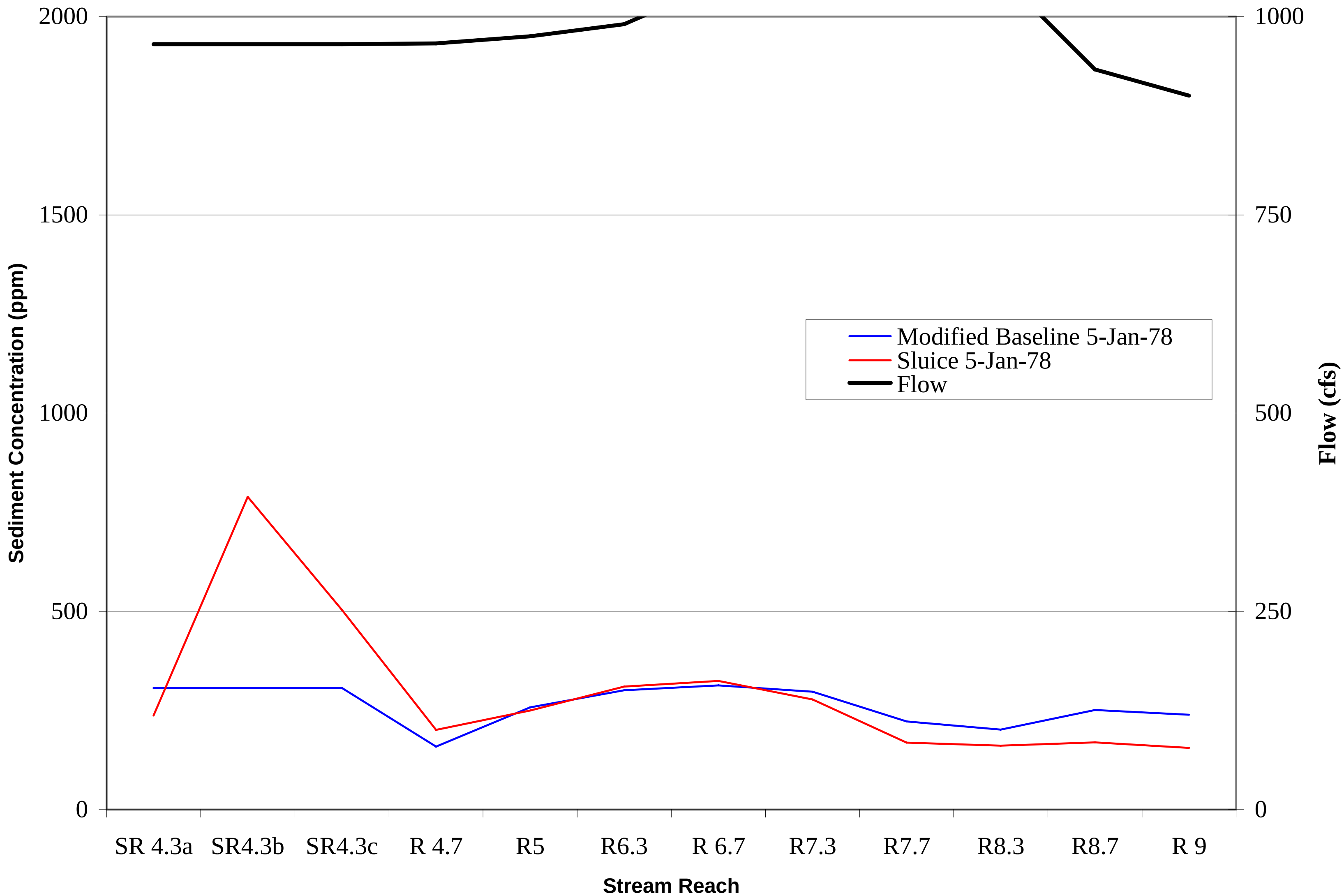


Figure O-13: Simulated Suspended Sediment Concentration along Carmel River for Day 3 of a Wet Year Sluice Event

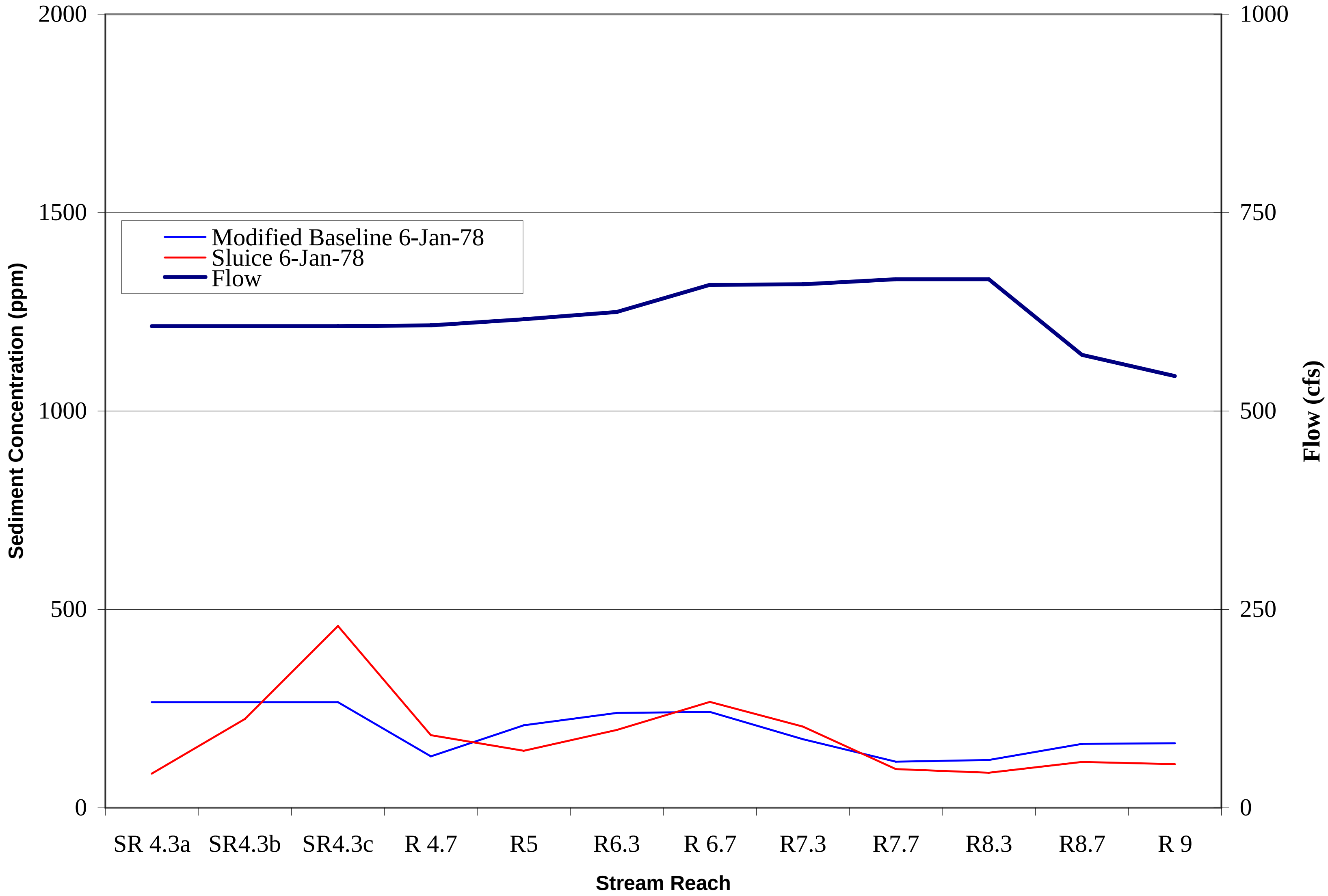


Figure O-14: Simulated Suspended Sediment Concentration along Carmel River for Day 4 of a Wet Year Sluice Event

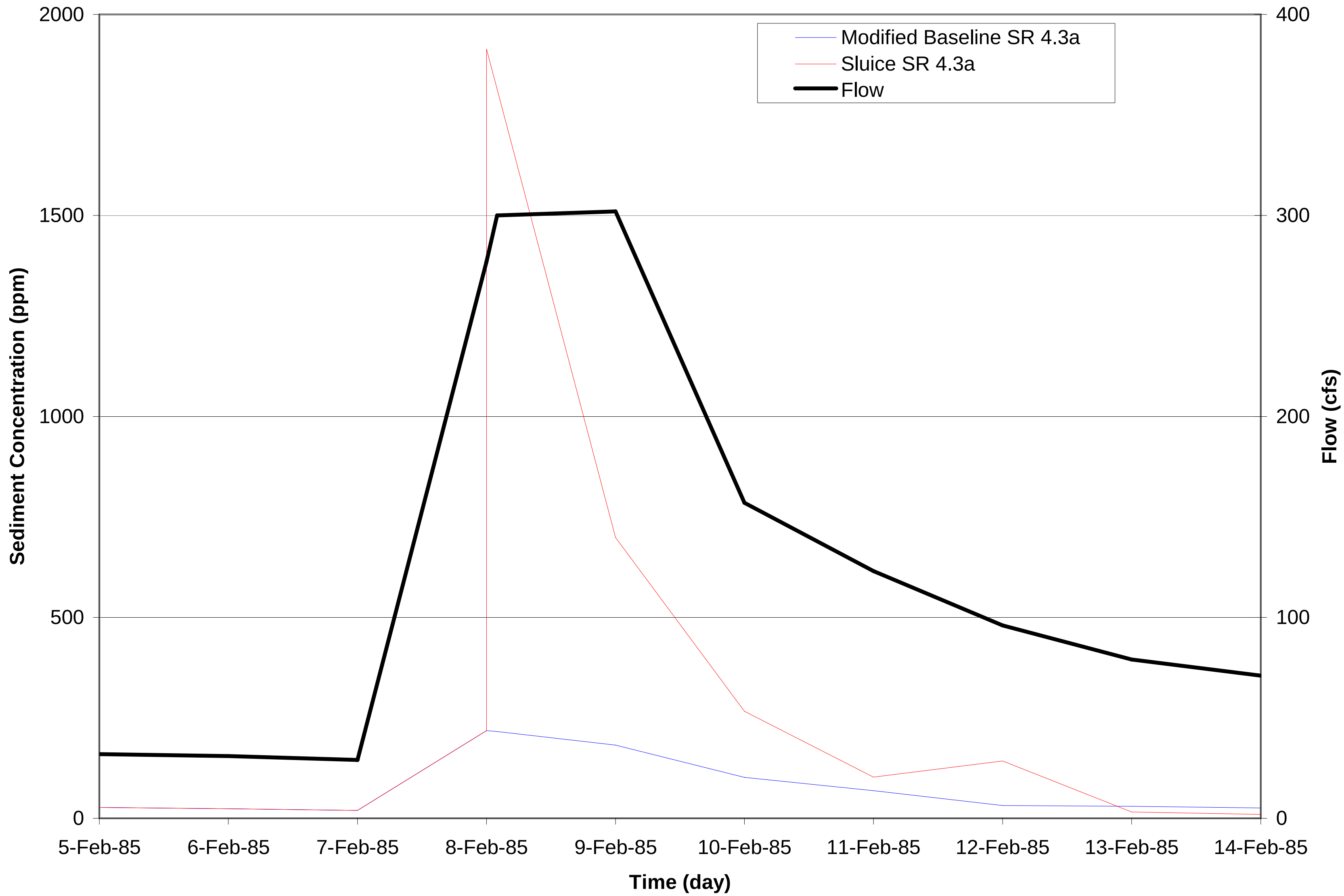


Figure O-15: Simulated Suspended Sediment Concentration at Reach 4.3 for a Dry Year

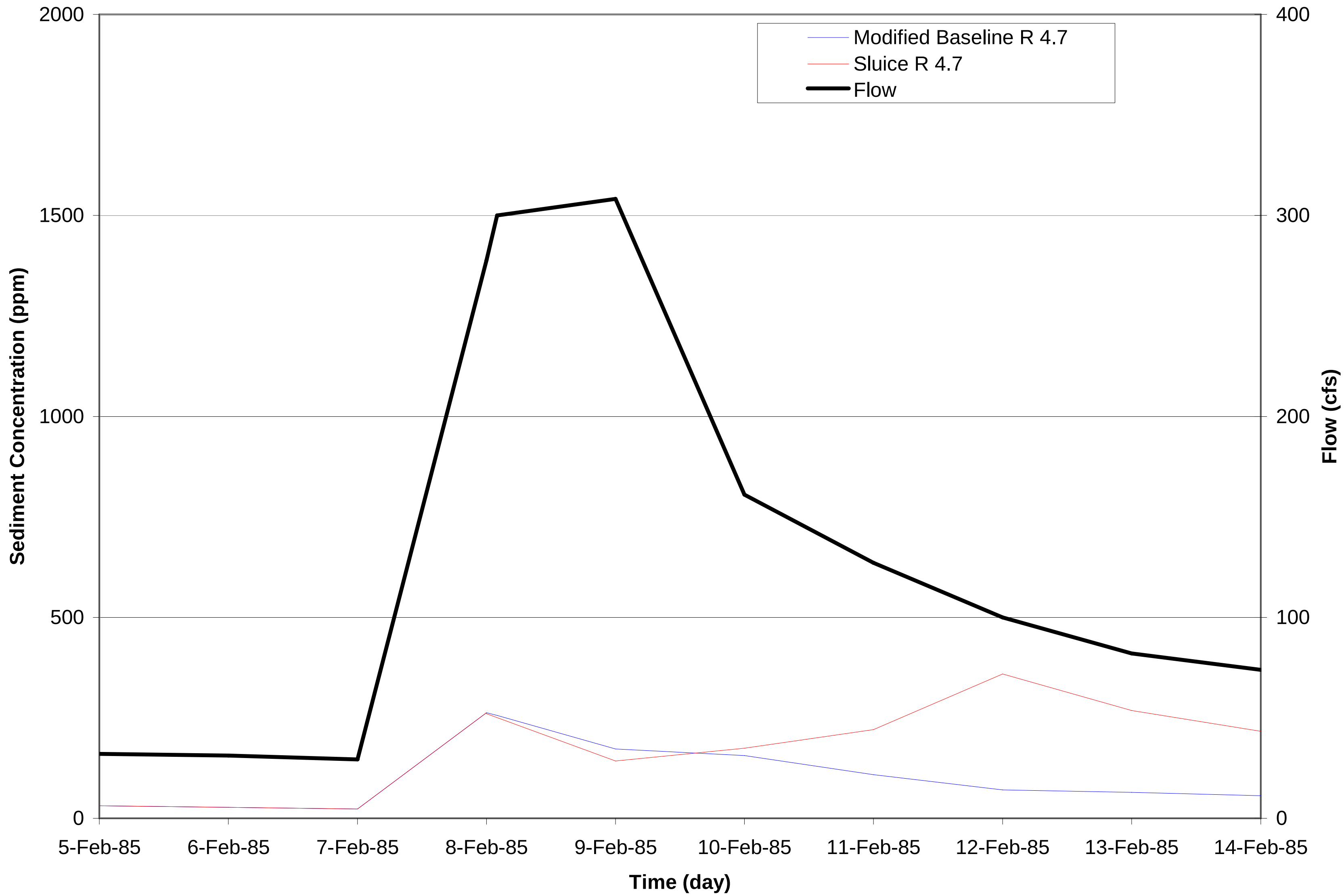


Figure O-16: Simulated Suspended Sediment Concentration at Reach 4.7 for a Dry Year

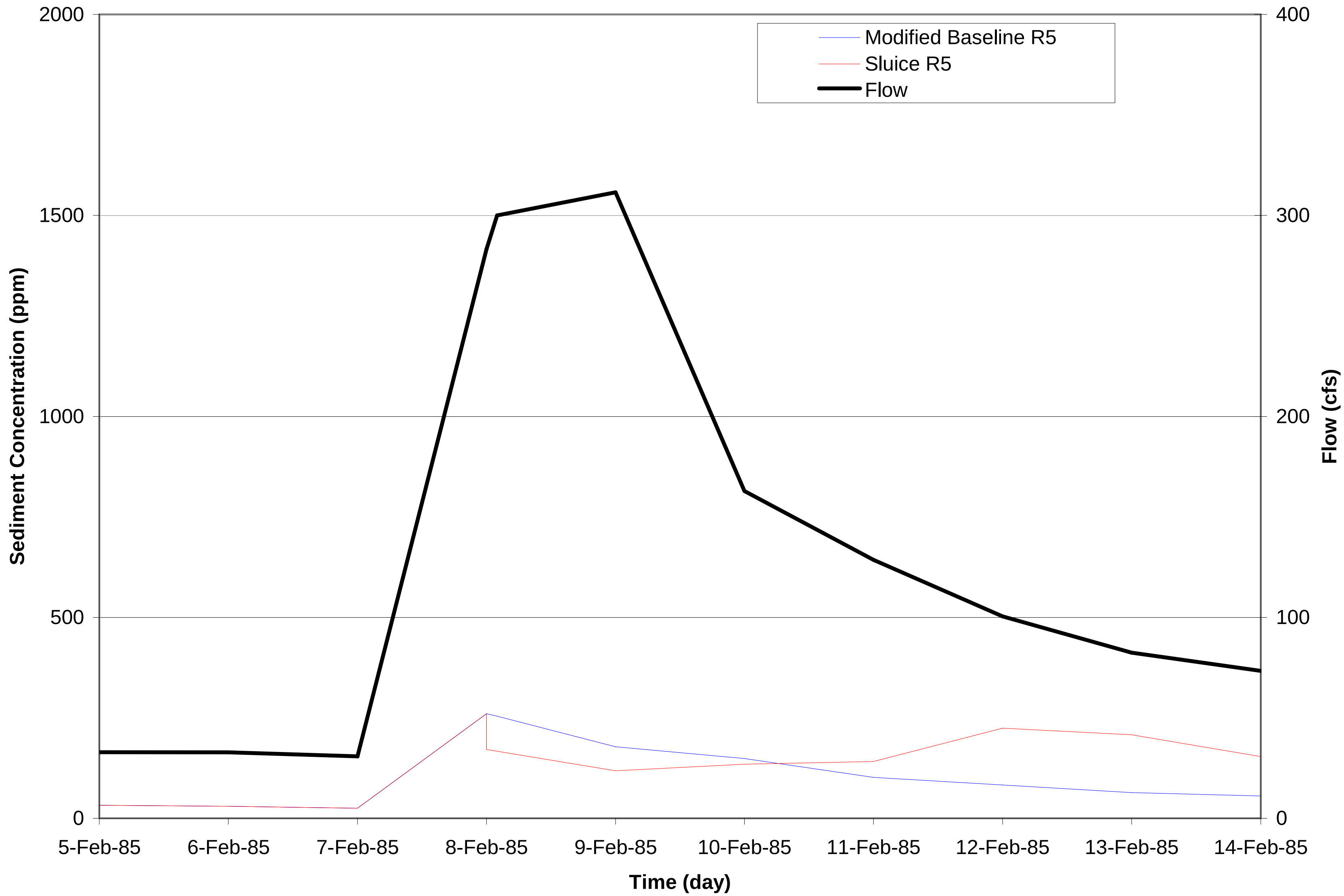


Figure O-17: Simulated Suspended Sediment Concentration at Reach 5 for a Dry Year

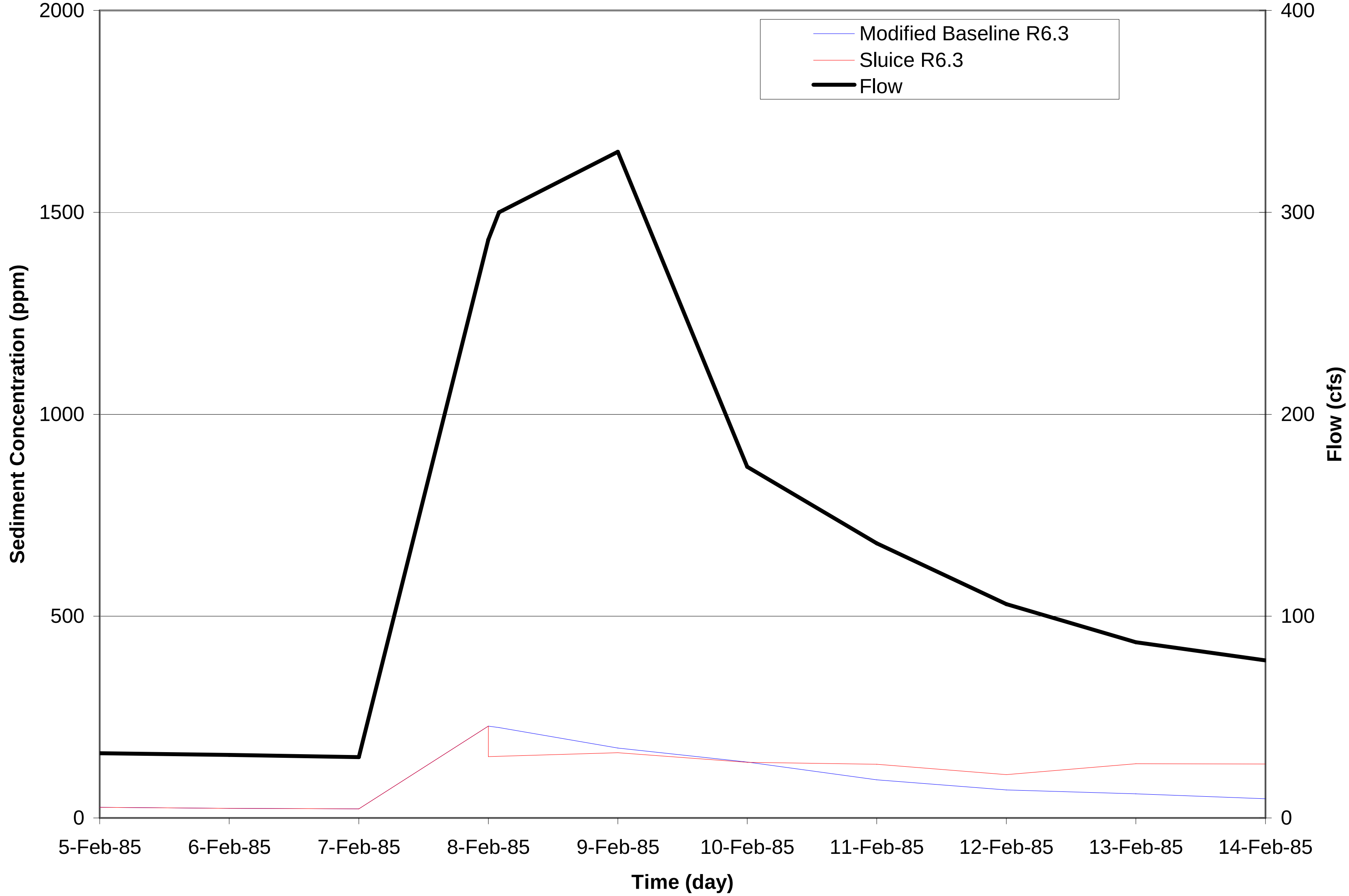


Figure O-18: Simulated Suspended Sediment Concentration at Reach 6.3 for a Dry Year

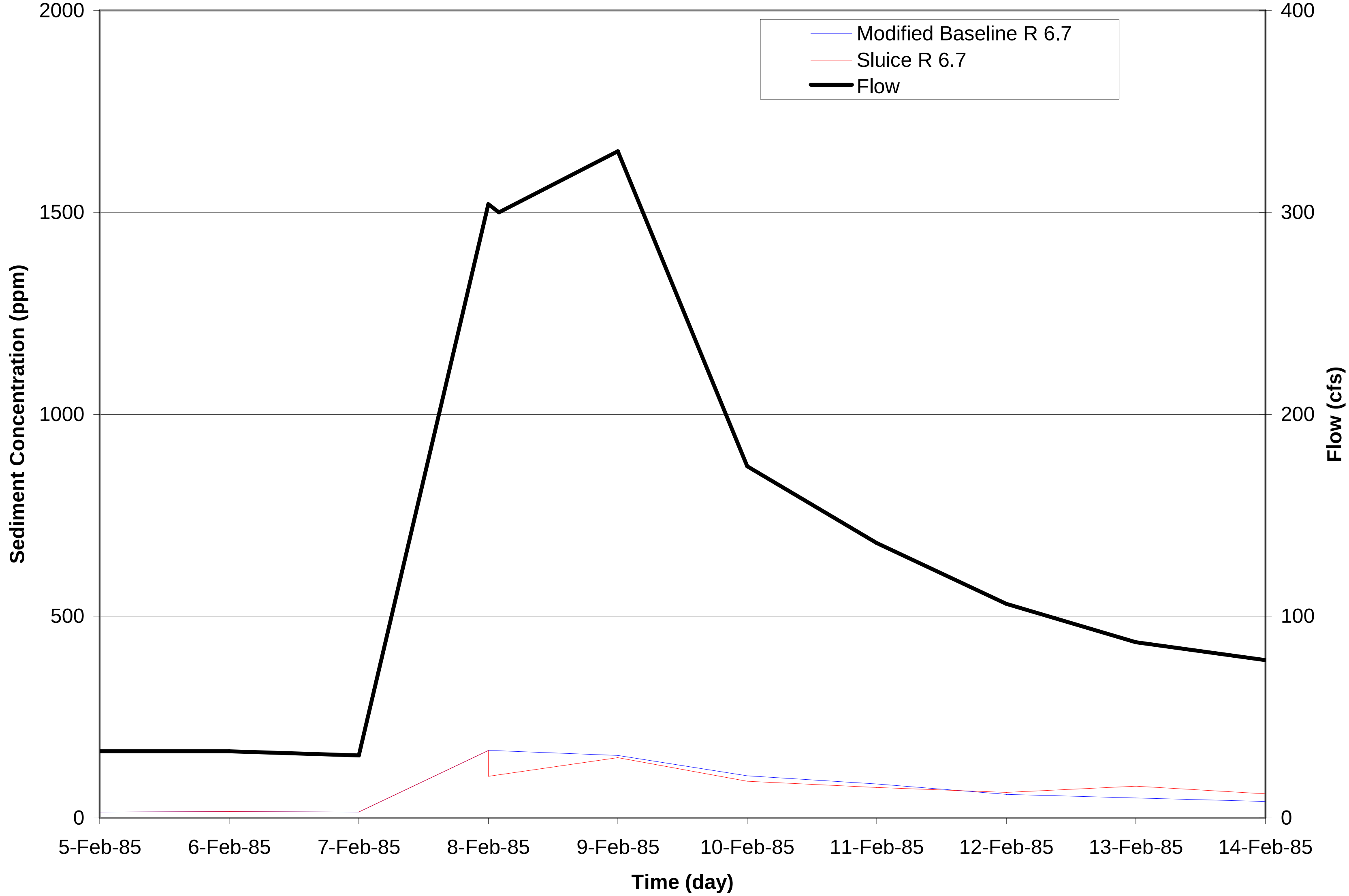


Figure O-19: Simulated Suspended Sediment Concentration at Reach 6.7 for a Dry Year

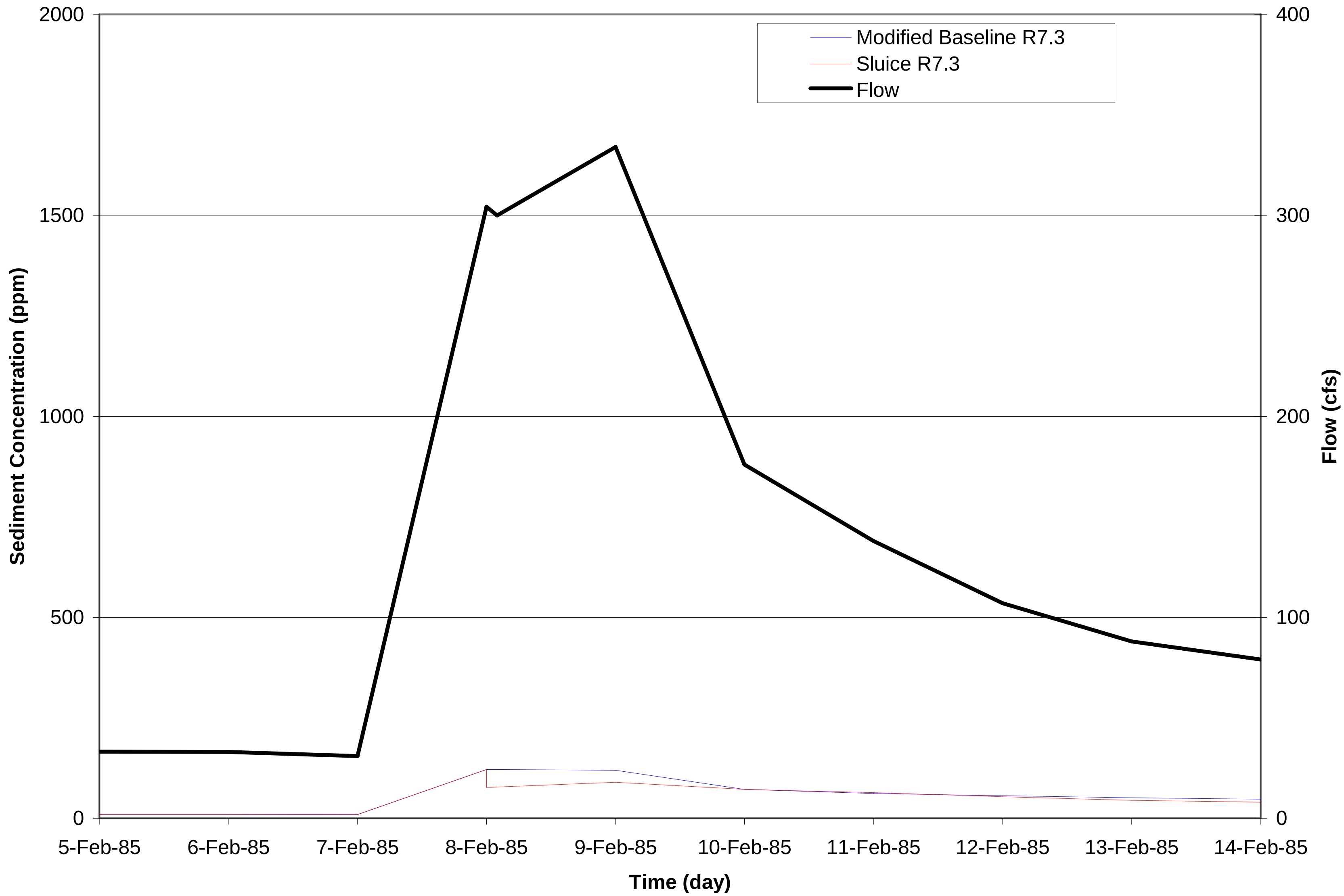


Figure O-20: Simulated Suspended Sediment Concentration at Reach 7.3 for a Dry Year

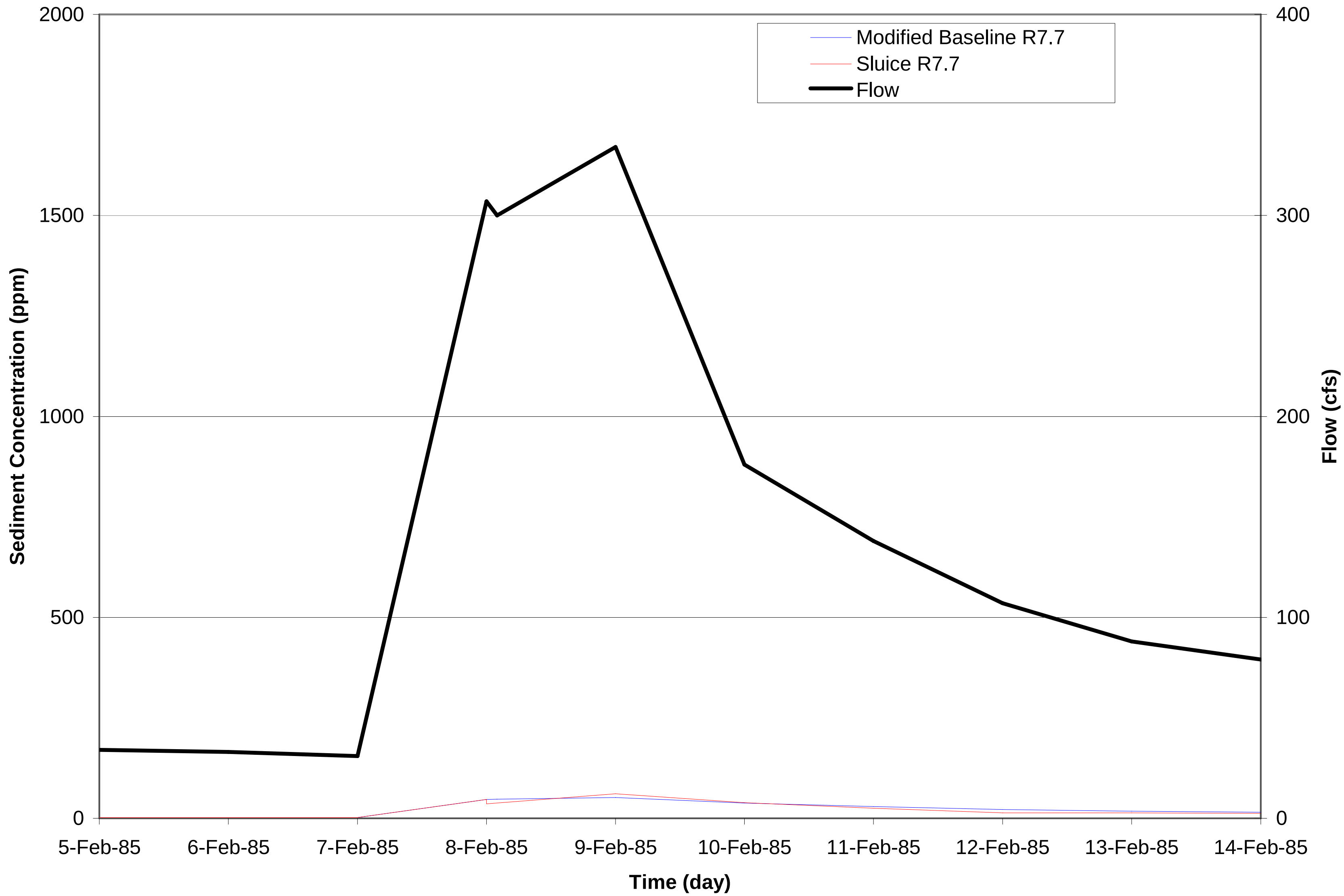


Figure O-21: Simulated Suspended Sediment Concentration at Reach 7.7 for a Dry Year

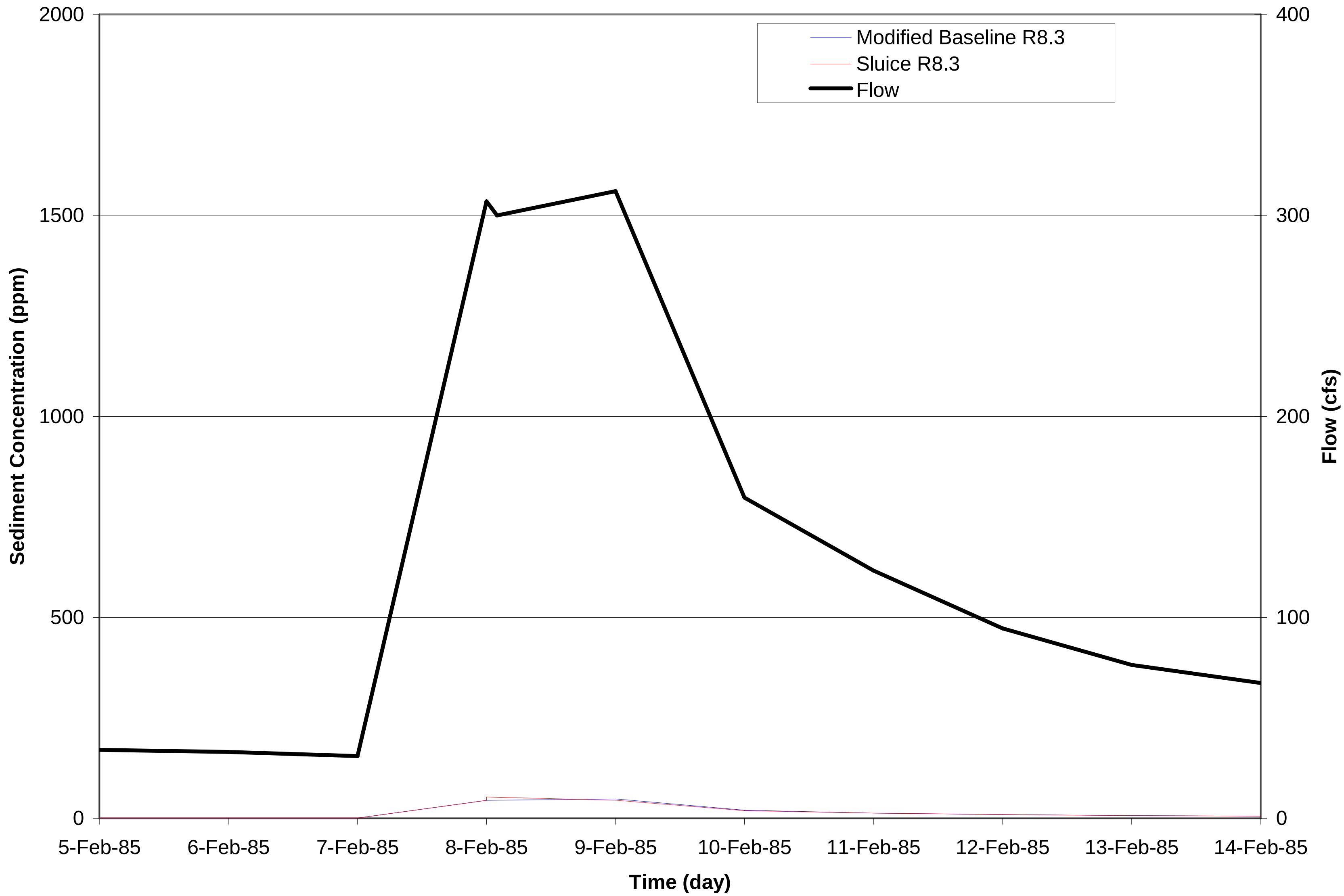


Figure O-22: Simulated Suspended Sediment Concentration at Reach 8.3 for a Dry Year

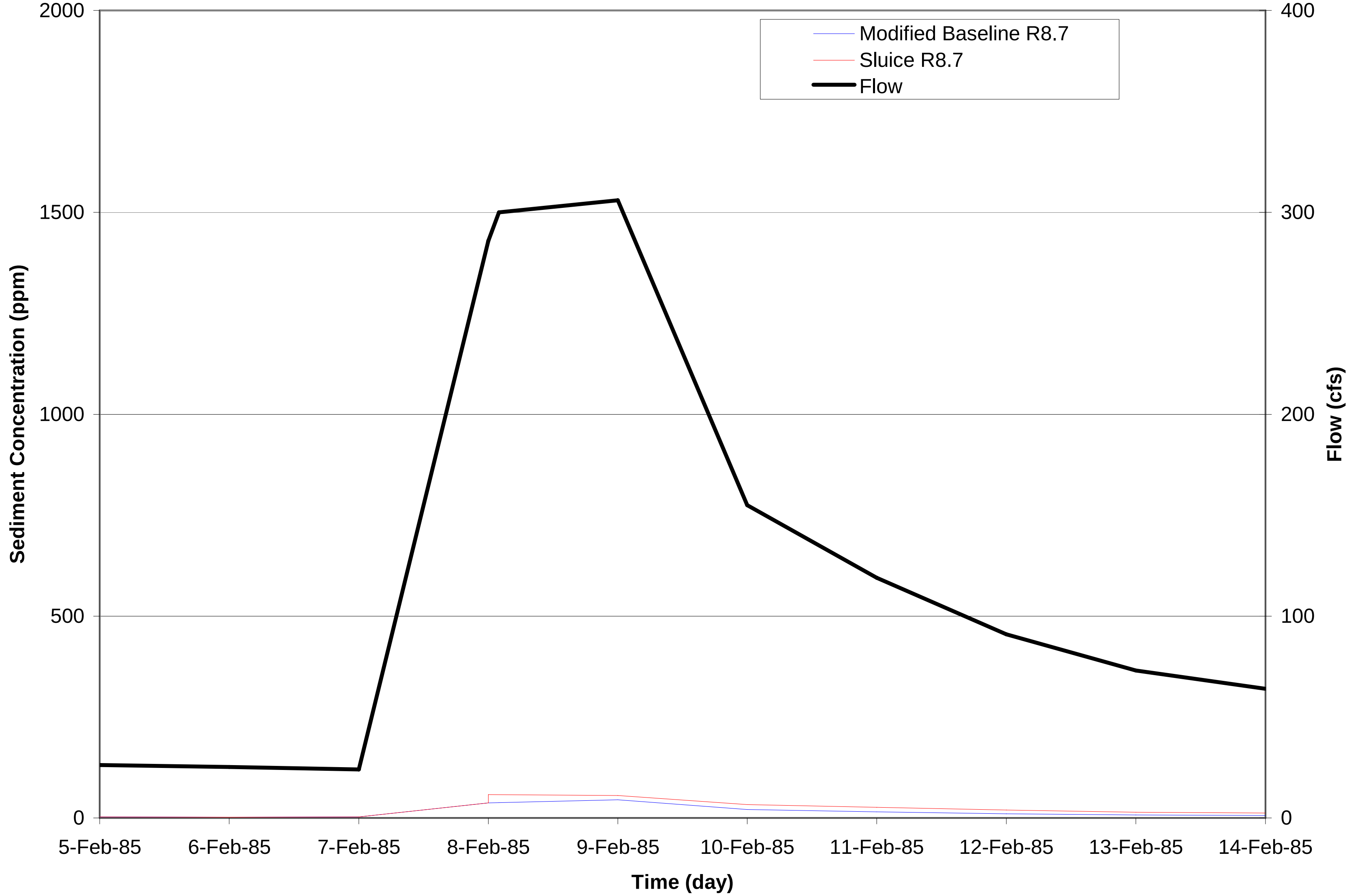


Figure O-23: Simulated Suspended Sediment Concentration at Reach 8.7 for a Dry Year

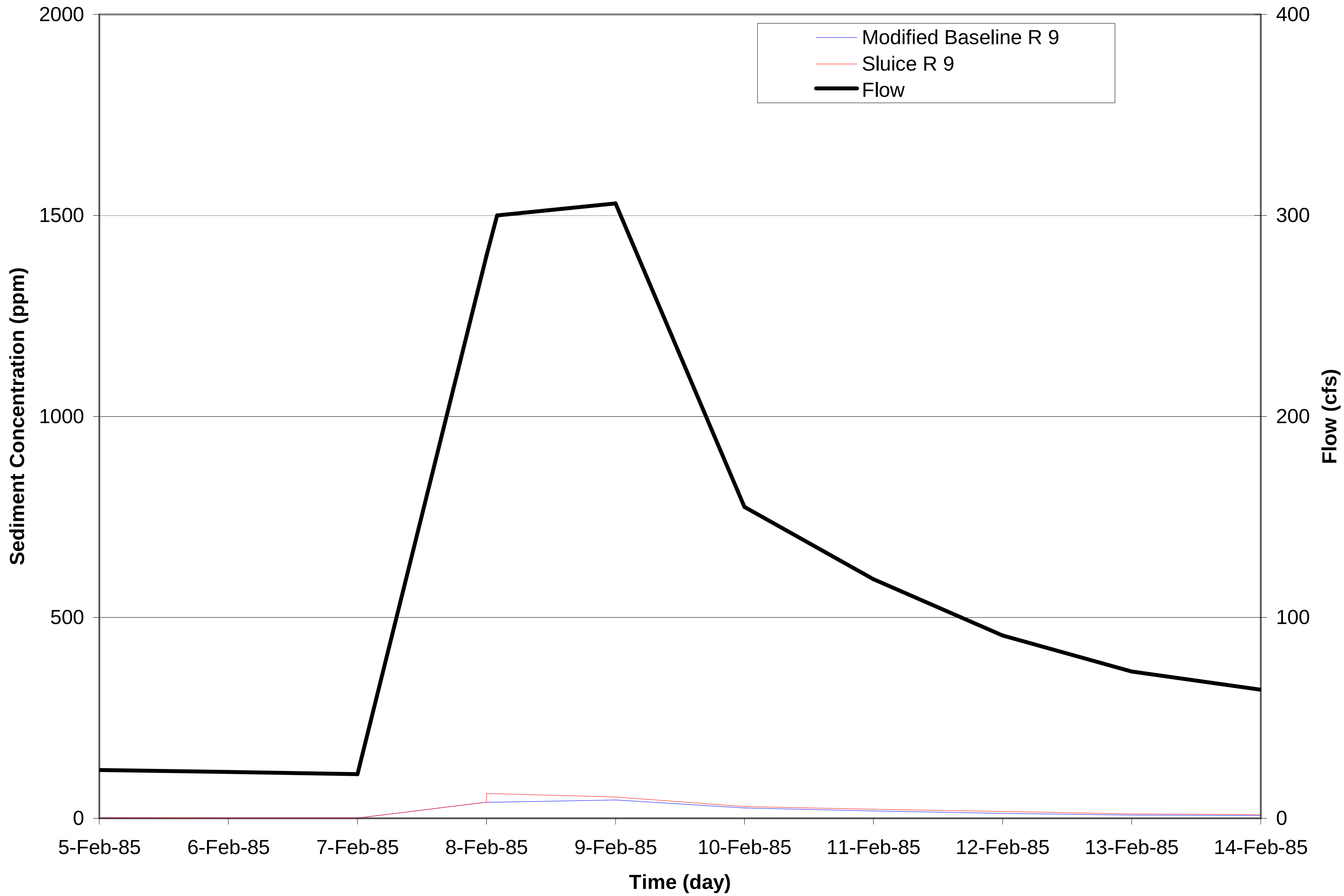


Figure O-24: Simulated Suspended Sediment Concentration at Reach 9 for a Dry Year

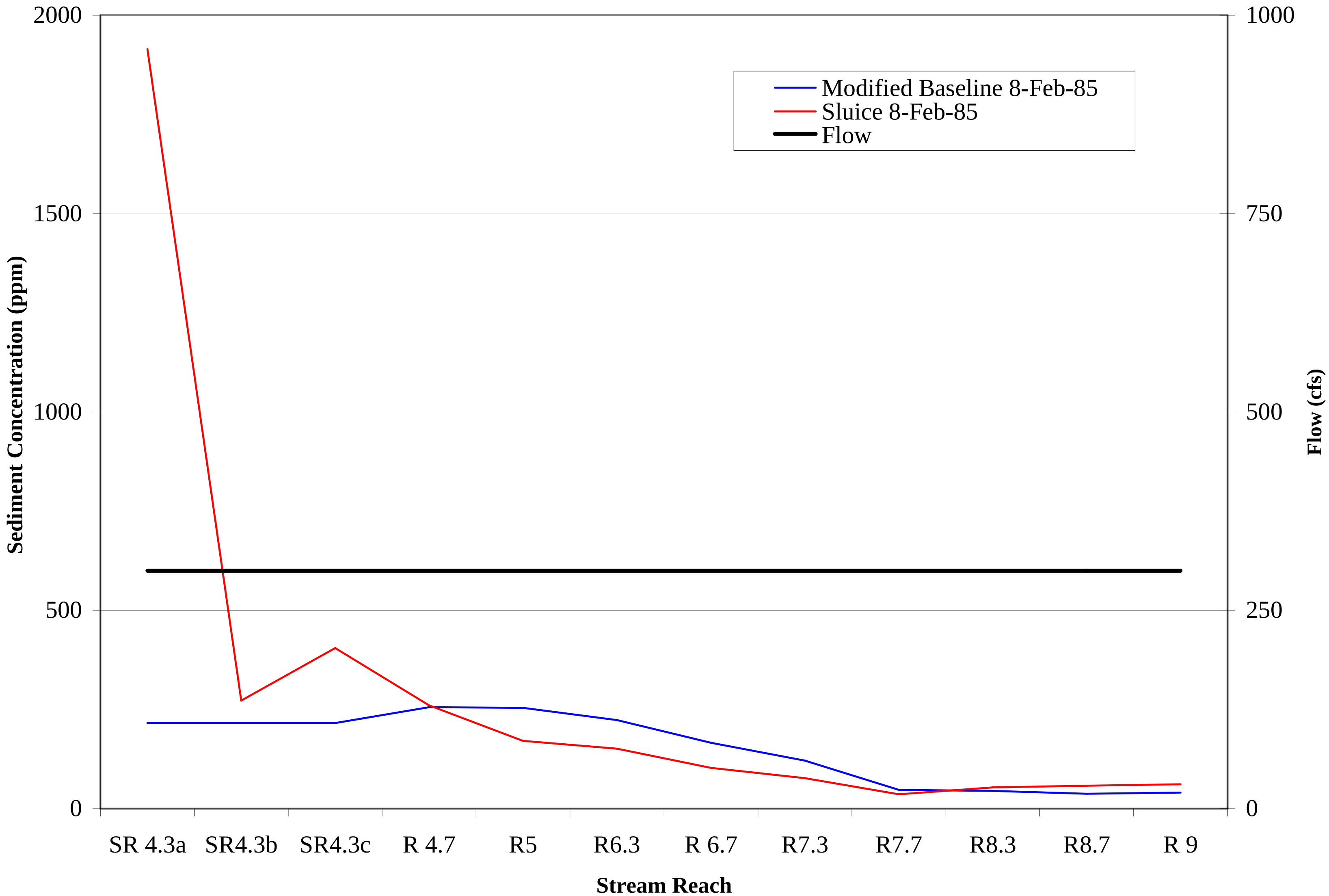


Figure O-25: Simulated Suspended Sediment Concentration along Carmel River for Day 1 of a Dry Year Sluice Event

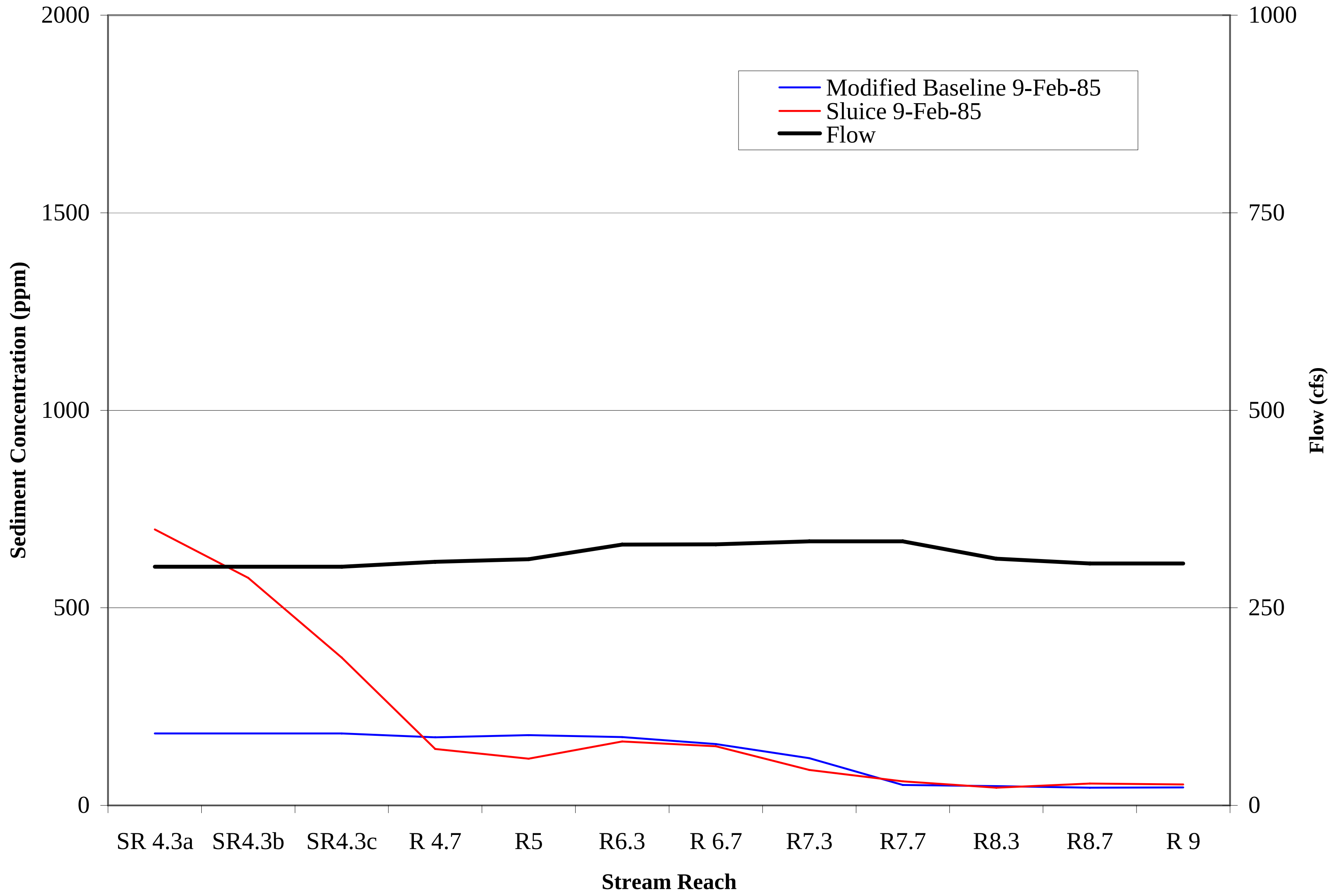


Figure O-26: Simulated Suspended Sediment Concentration along Carmel River for Day 2 of a Dry Year Sluice Event

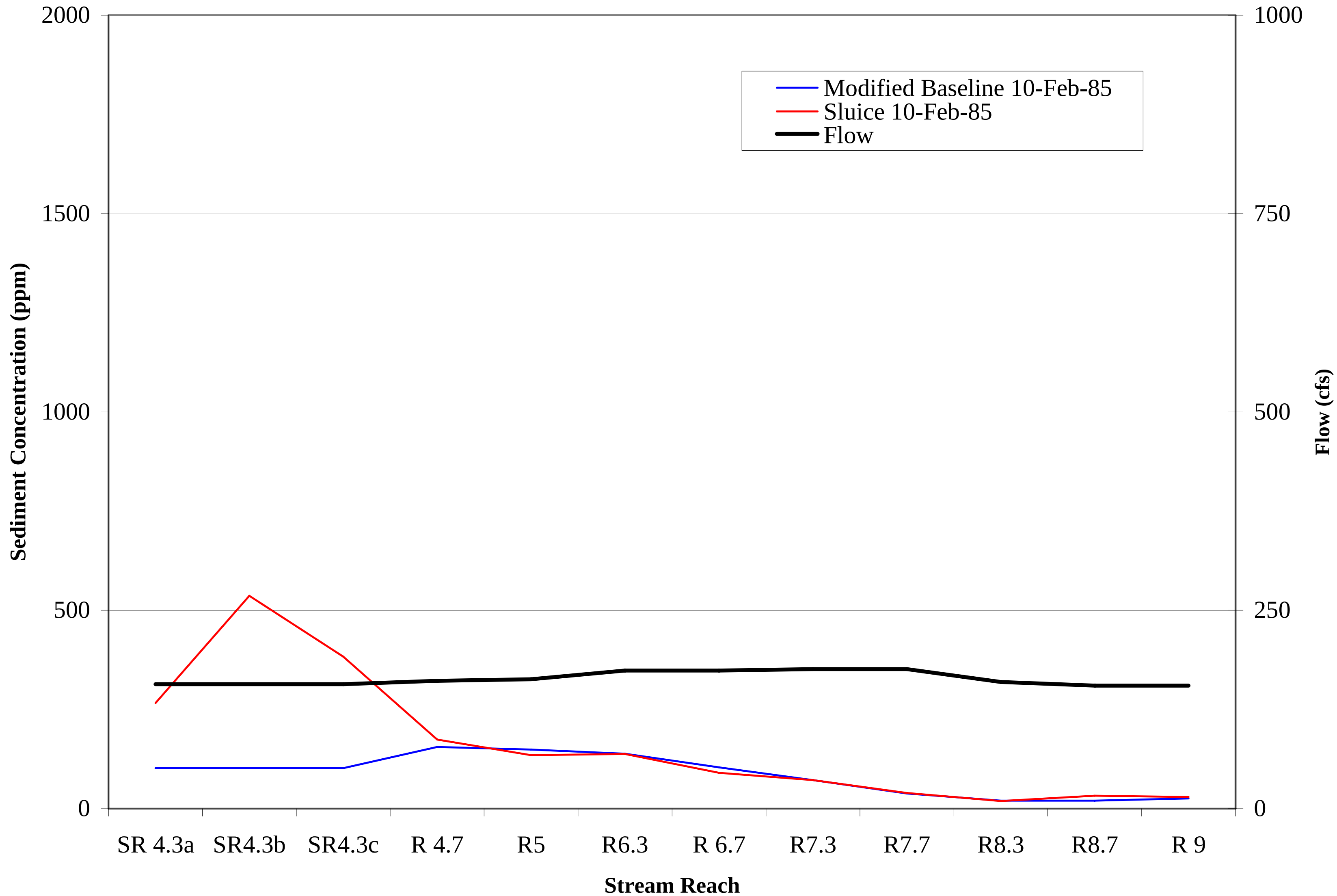


Figure O-27: Simulated Suspended Sediment Concentration along Carmel River for Day 3 of a Dry Year Sluice Event

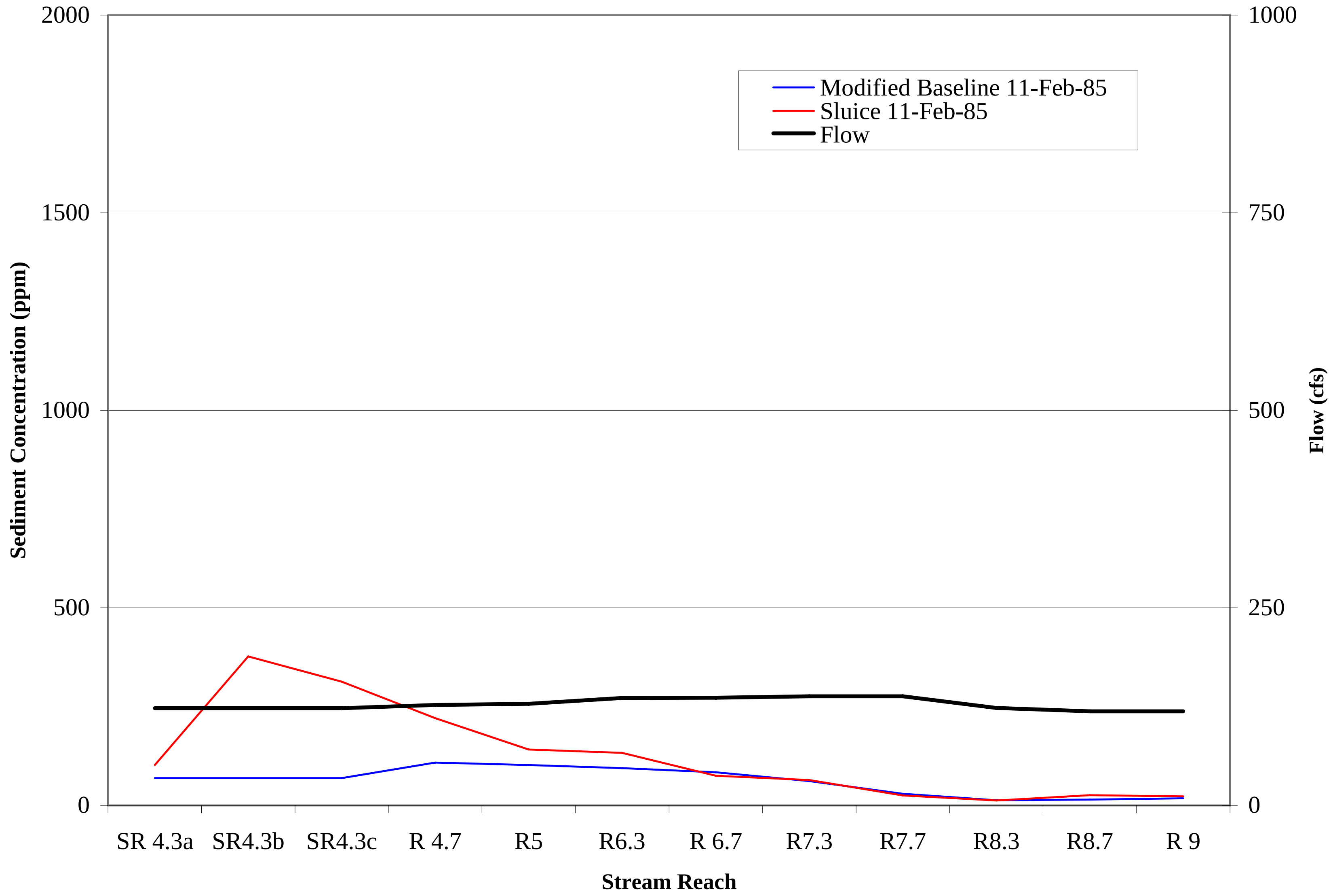


Figure O-28: Simulated Suspended Sediment Concentration along Carmel River for Day 4 of a Dry Year Sluice Event

Appendix P

SUSPENDED SEDIMENT CONCENTRATION EXCEEDANCE FOR THE ALTERNATIVES

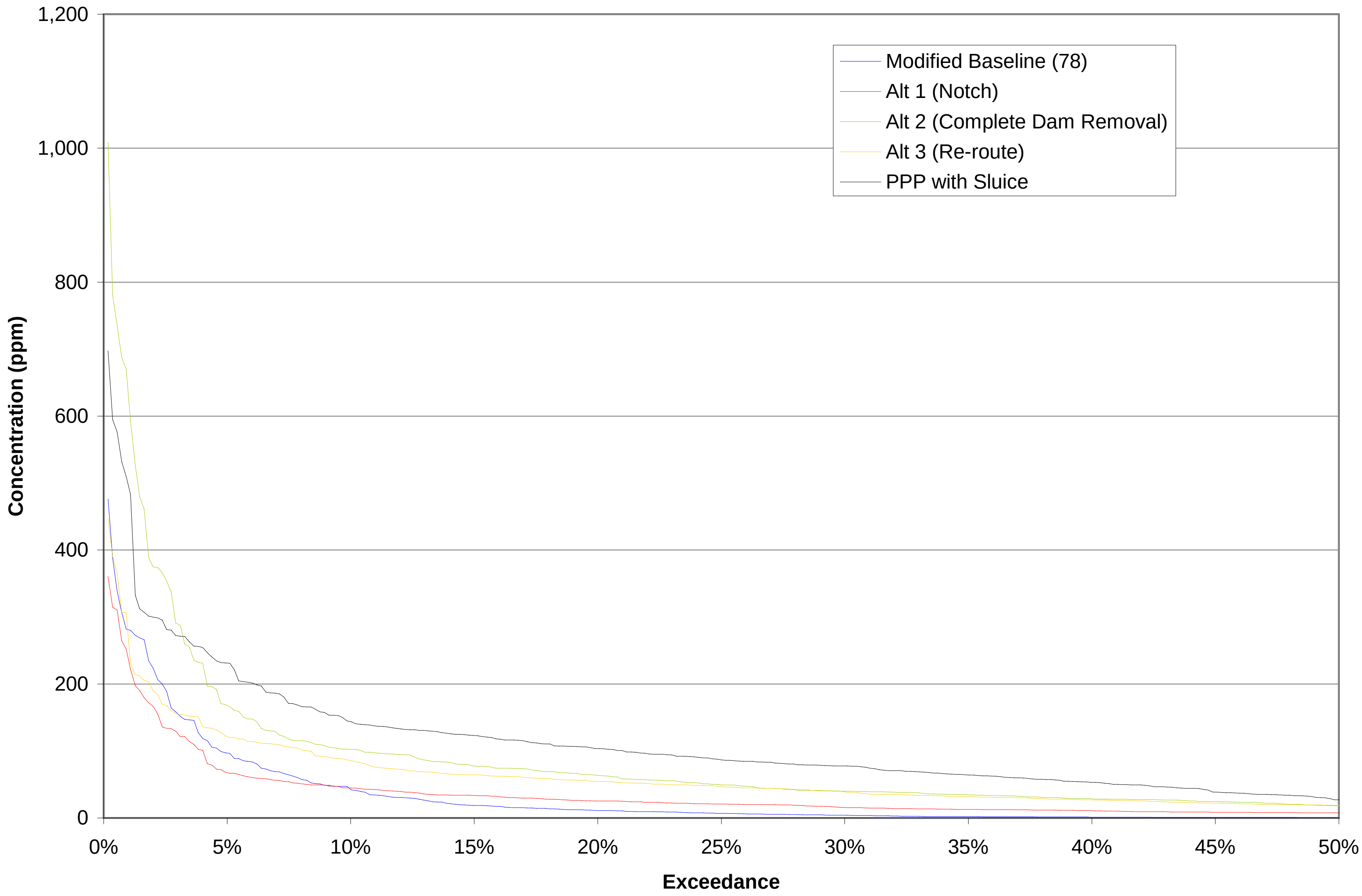


Figure P-1: Simulated Suspended Sediment Concentration Exceedance at Reach 4.3 for a Wet Year

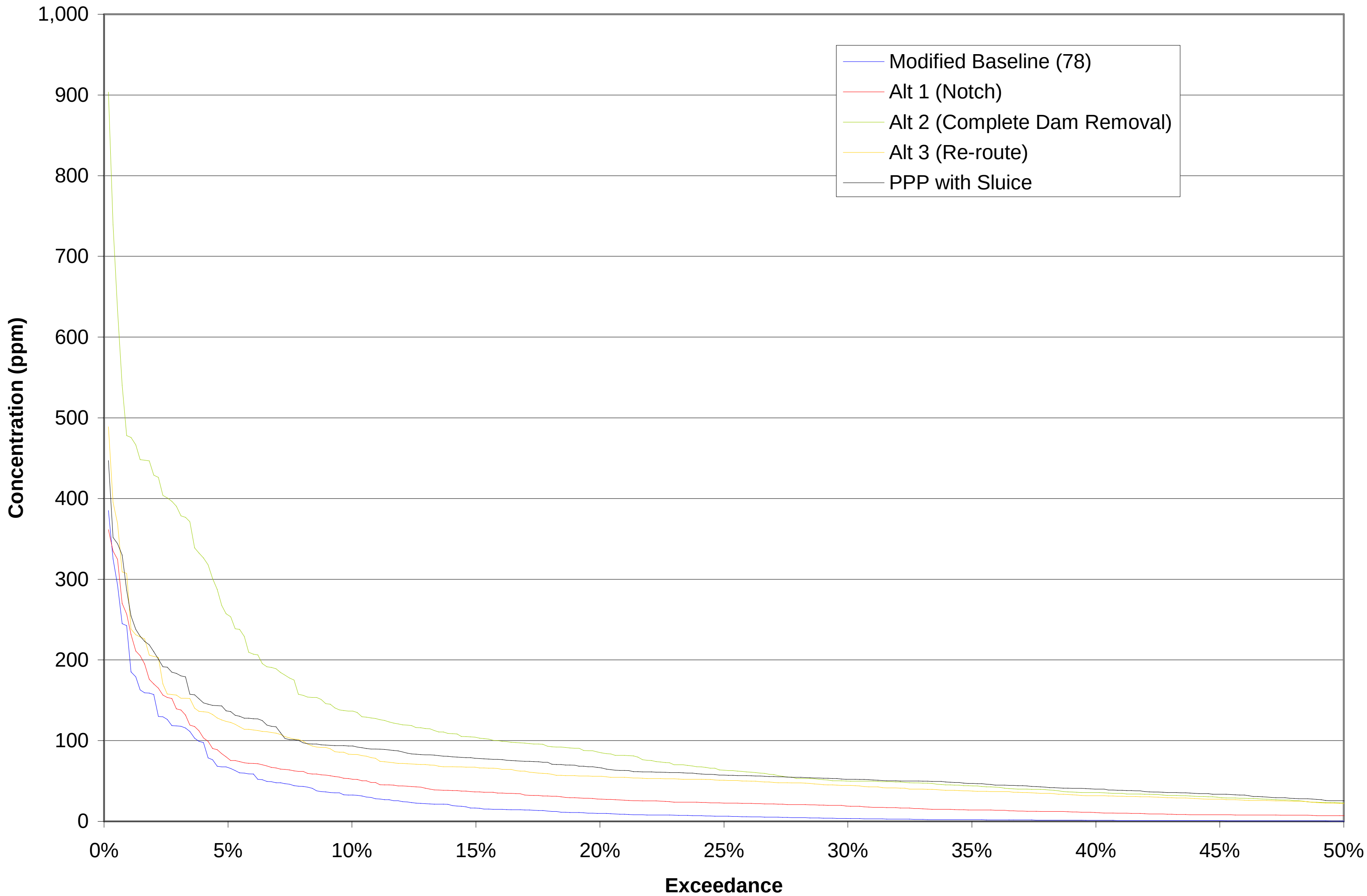


Figure P-2: Simulated Suspended Sediment Concentration Exceedance at Reach 4.7 for a Wet Year

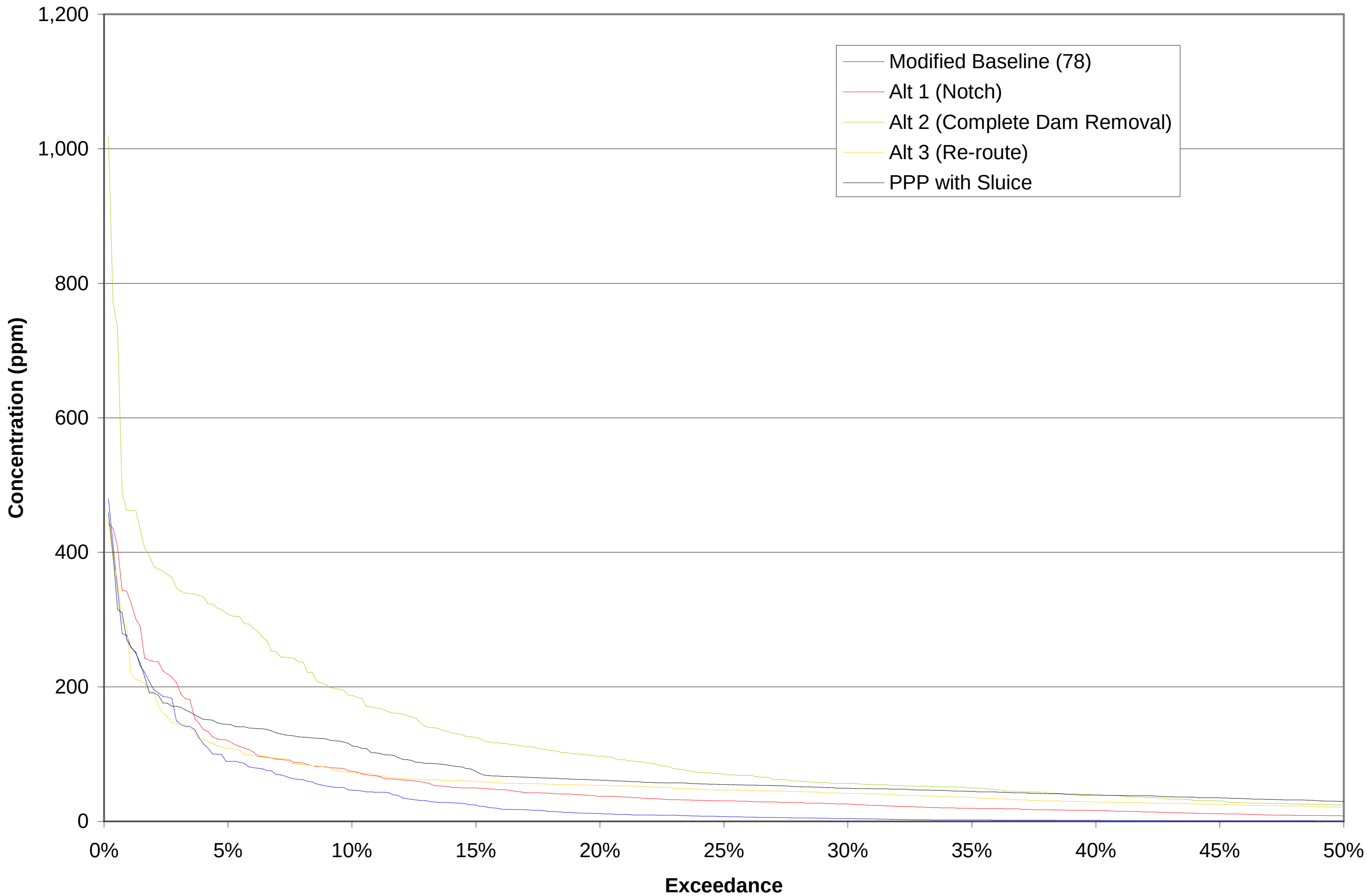


Figure P-3: Simulated Suspended Sediment Concentration Exceedance at Reach 5 for a Wet Year

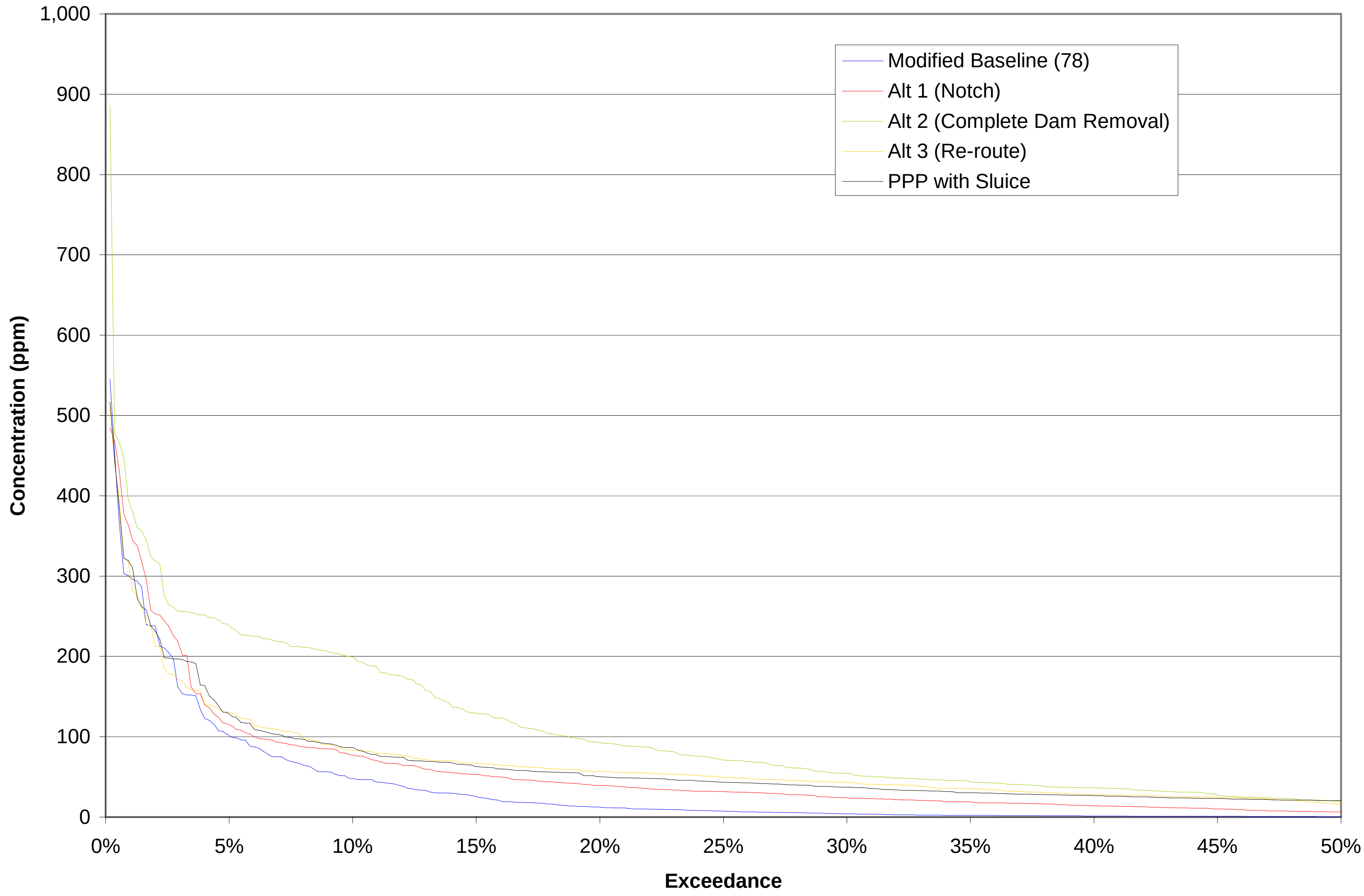


Figure P-4: Simulated Suspended Sediment Concentration Exceedance at Reach 6.3 for a Wet Year

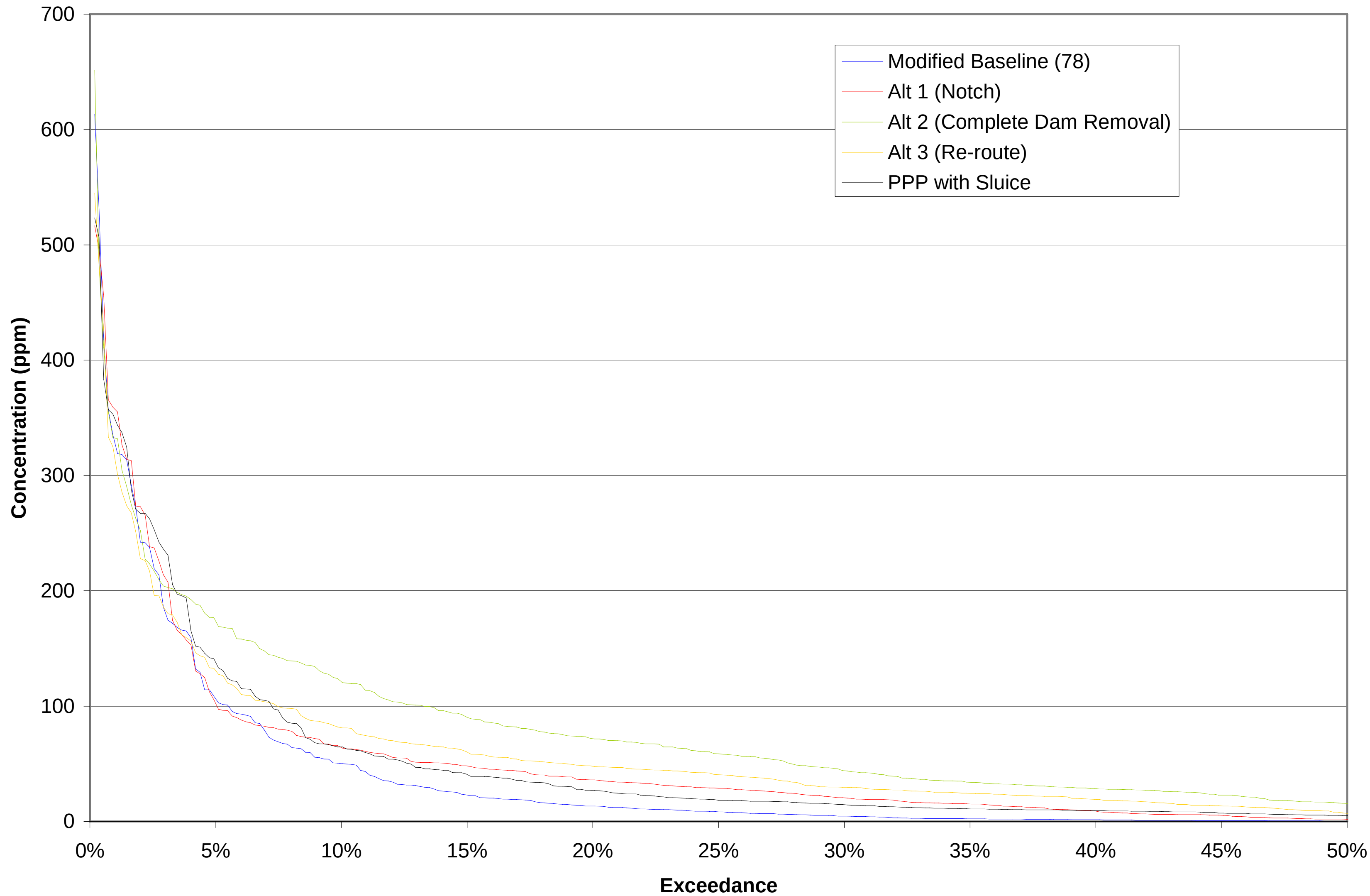


Figure P-5: Simulated Suspended Sediment Concentration Exceedance at Reach 6.7 for a Wet Year

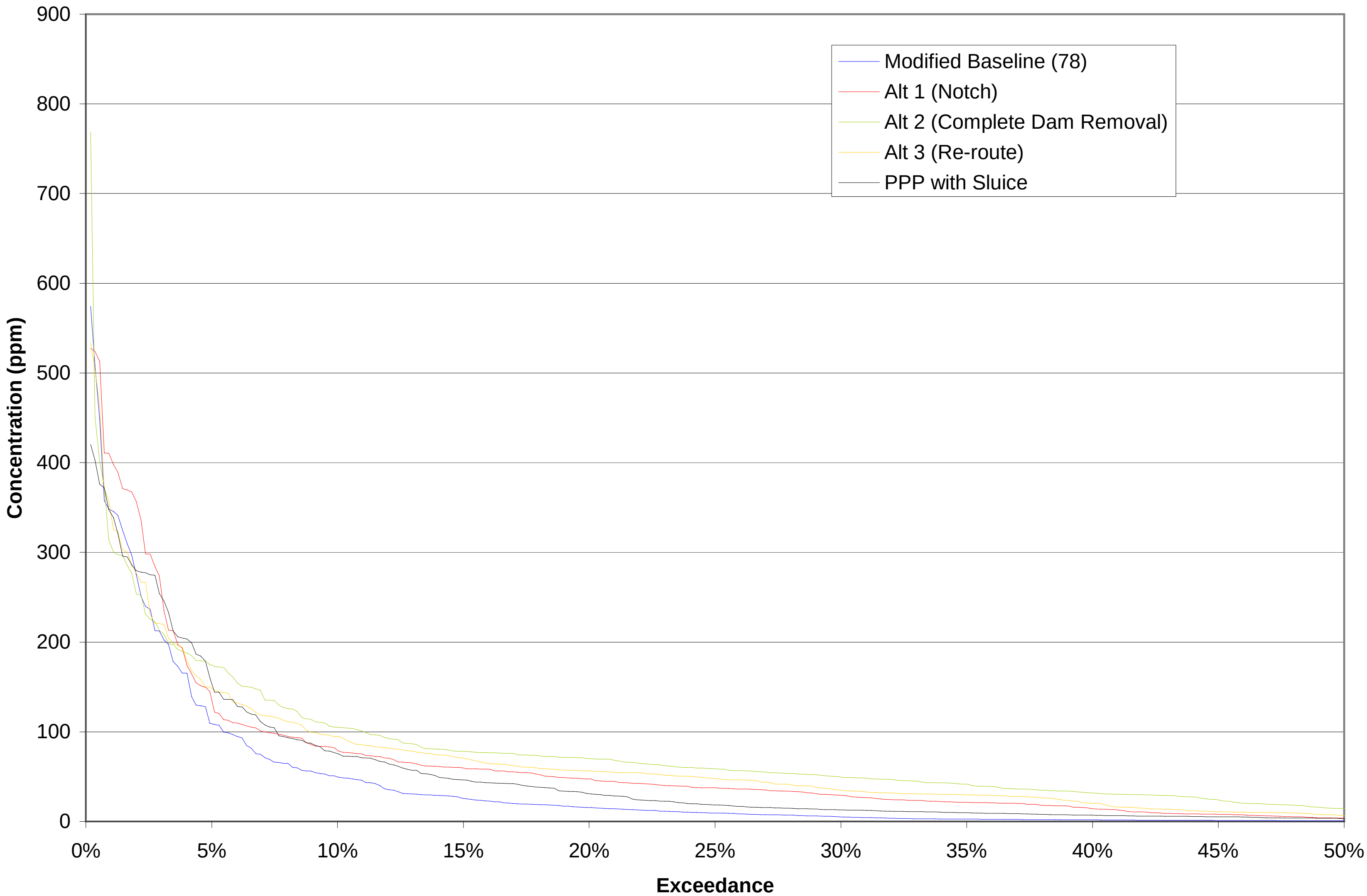


Figure P-6: Simulated Suspended Sediment Concentration Exceedance at Reach 7.3 for a Wet Year

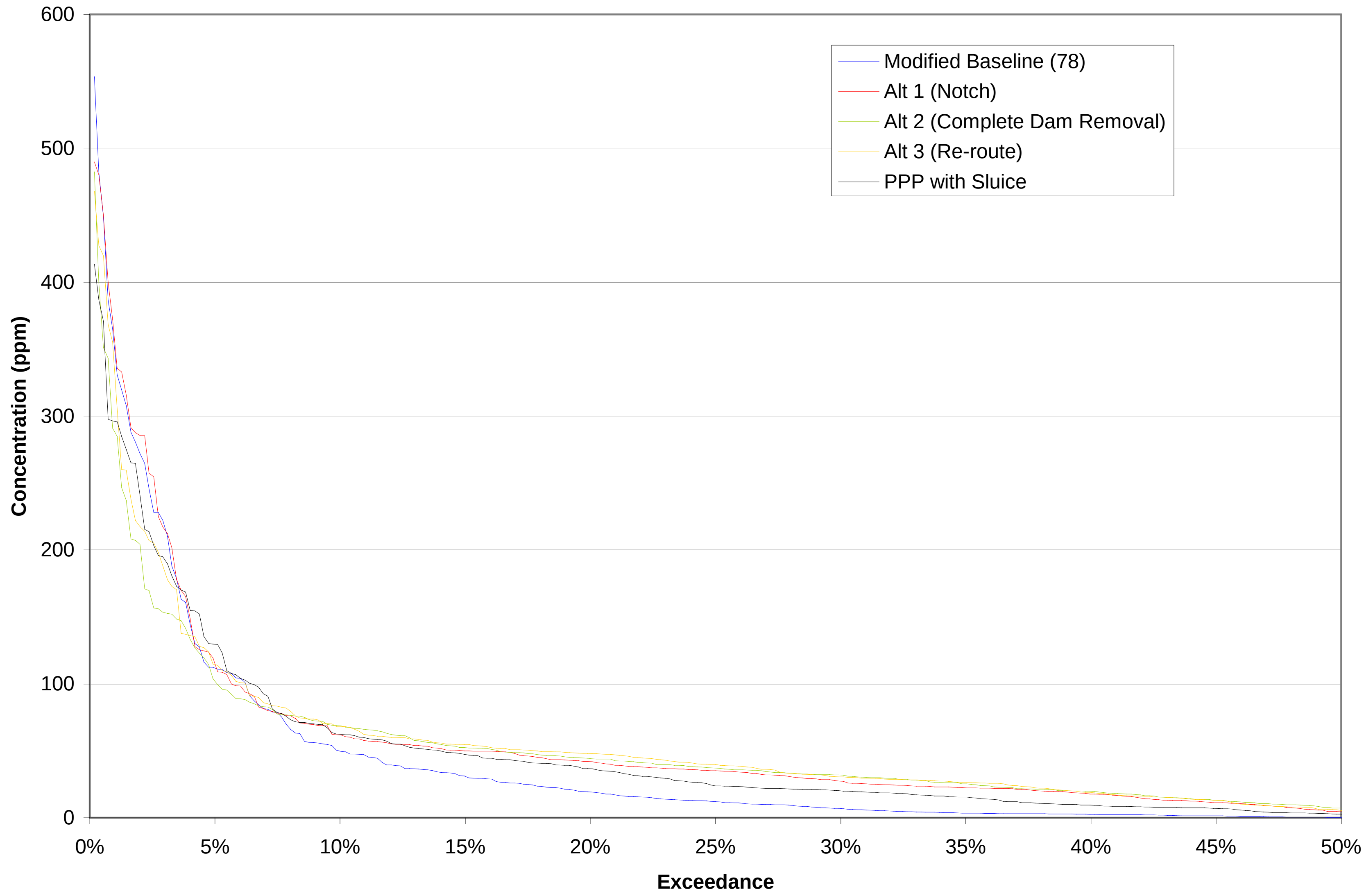


Figure P-7: Simulated Suspended Sediment Concentration Exceedance at Reach 7.7 for a Wet Year

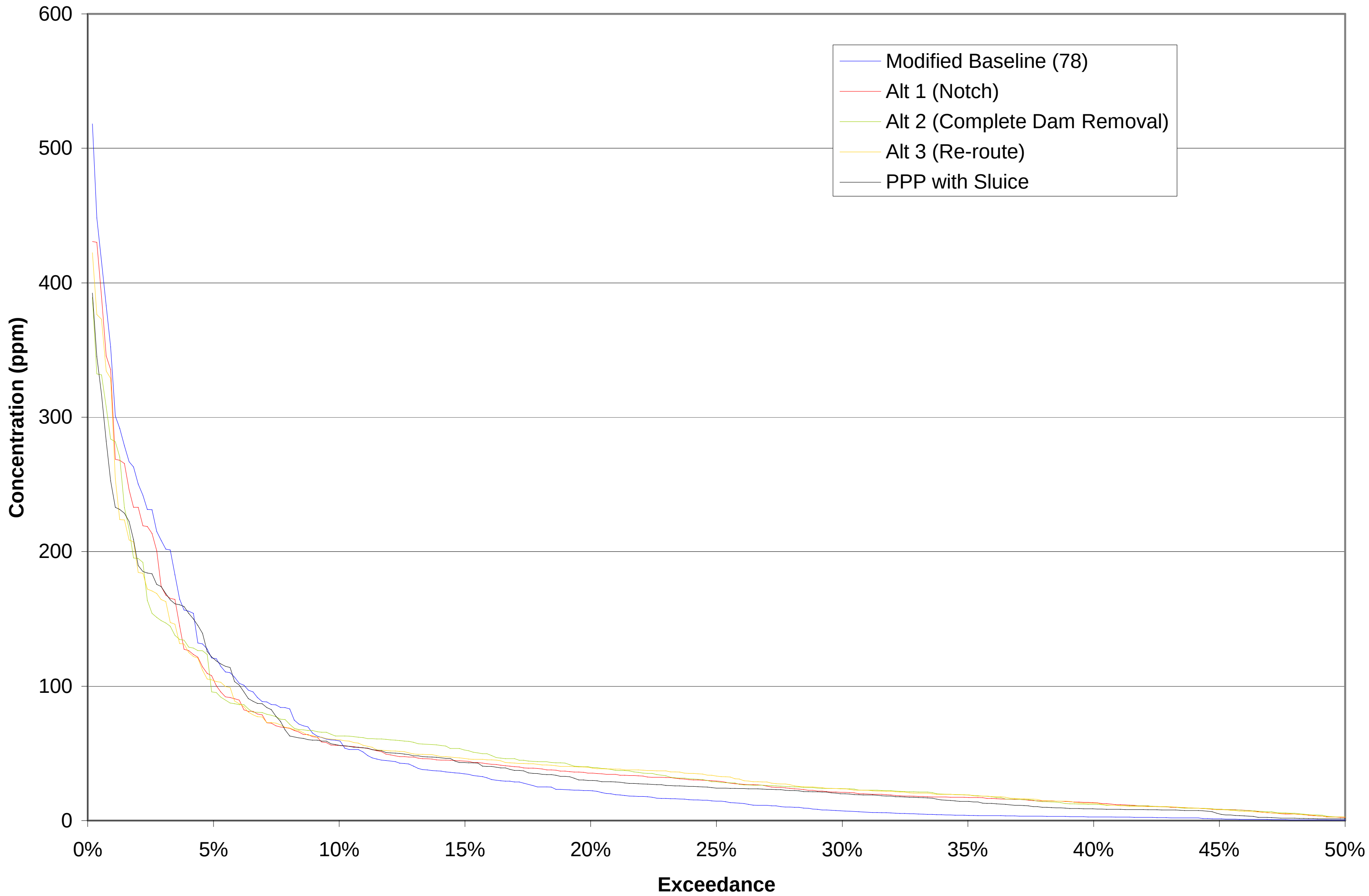


Figure P-8: Simulated Suspended Sediment Concentration Exceedance at Reach 8.3 for a Wet Year

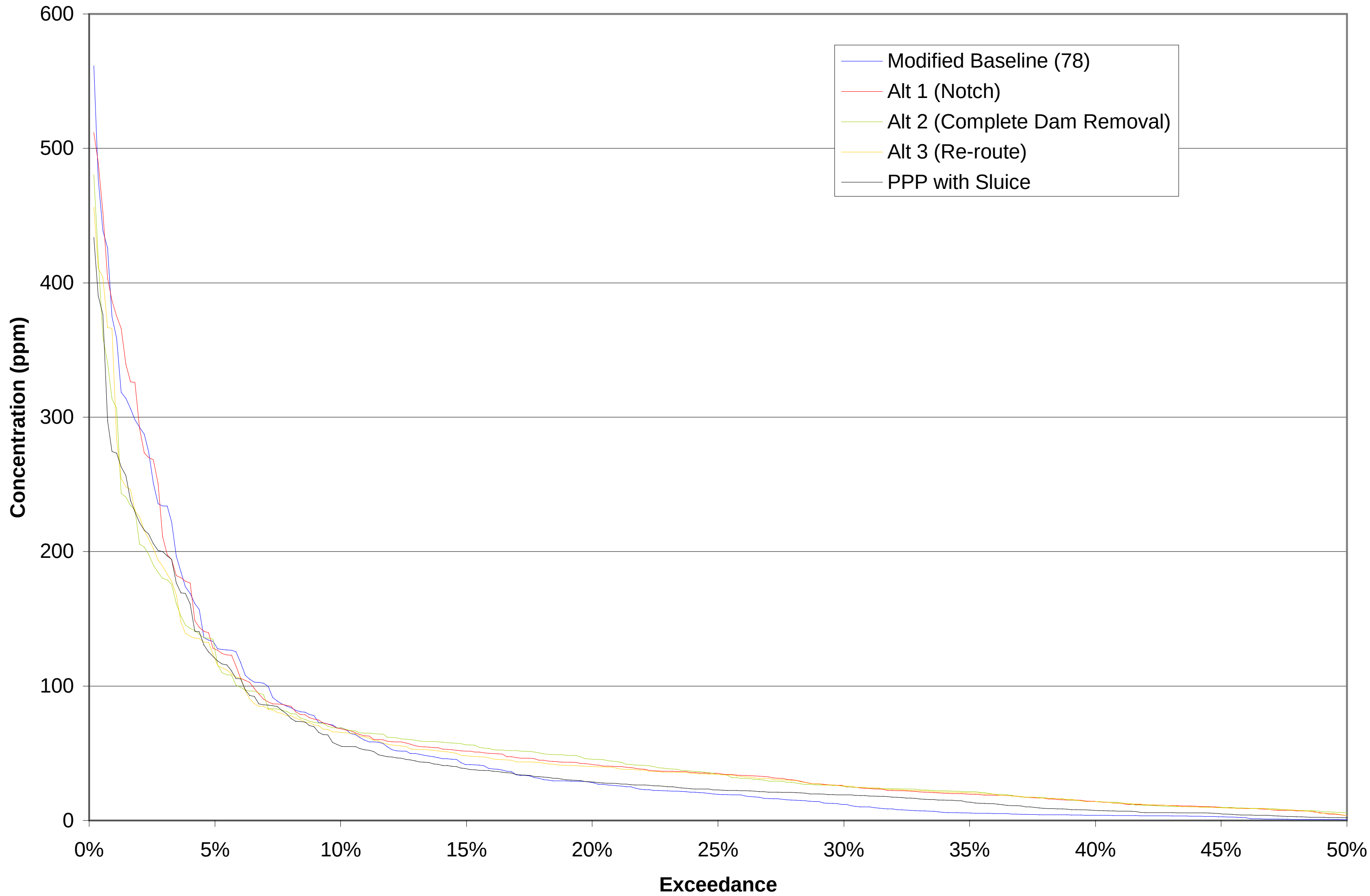


Figure P-9: Simulated Suspended Sediment Concentration Exceedance at Reach 8.7 for a Wet Year

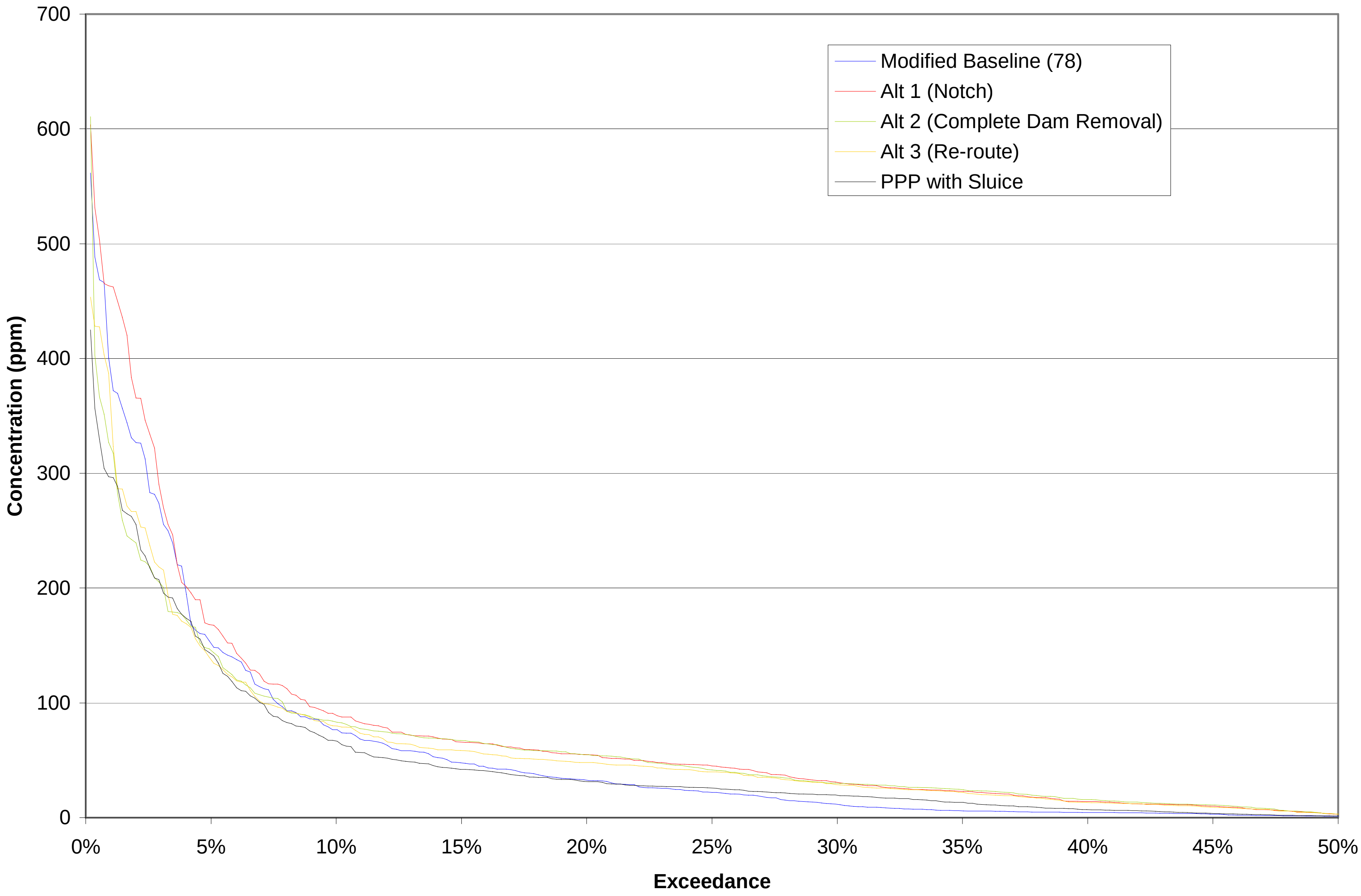


Figure P-10: Simulated Suspended Sediment Concentration Exceedance at Reach 9 for a Wet Year

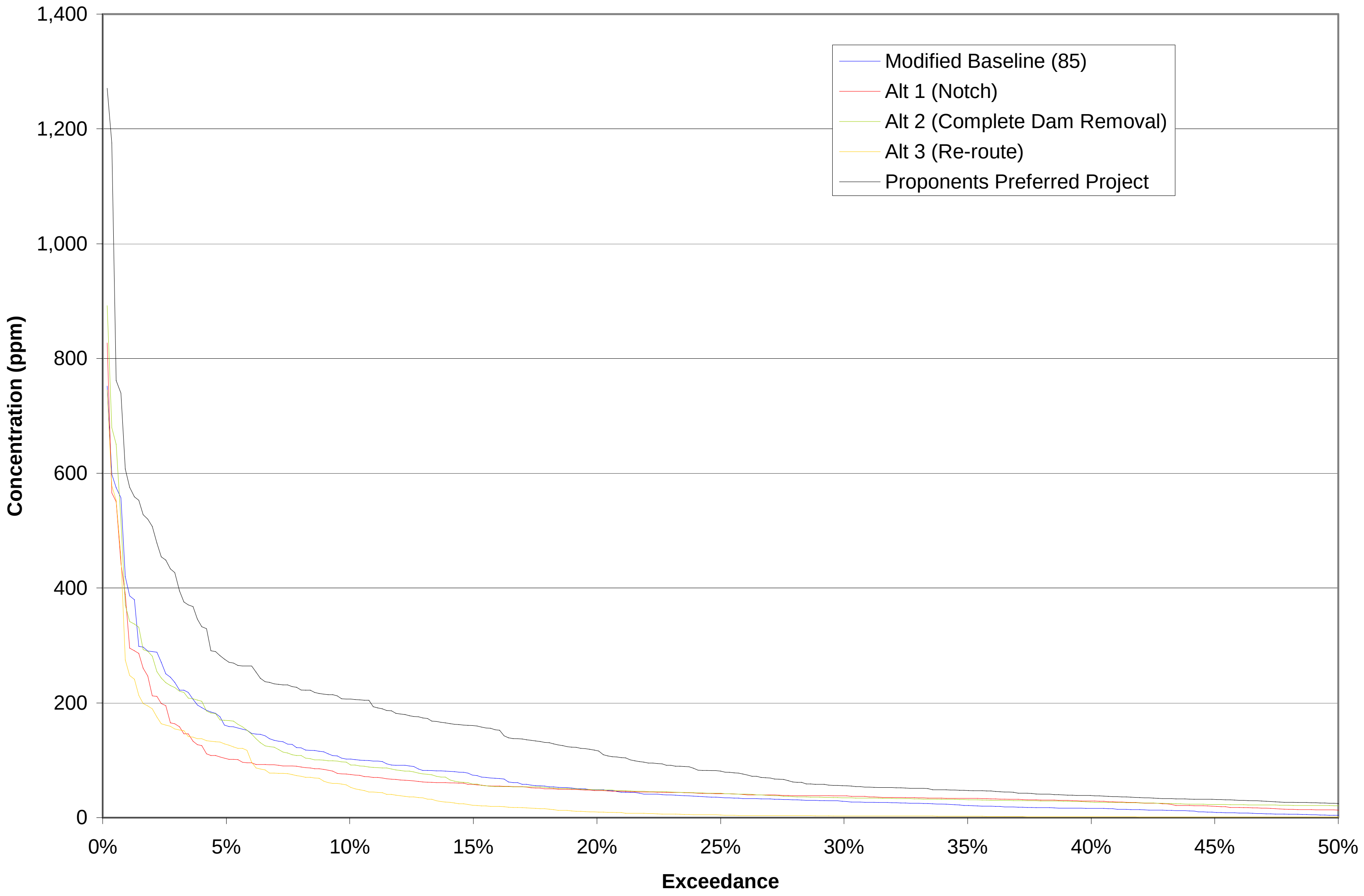


Figure P-11: Simulated Suspended Sediment Concentration Exceedance at Reach 4.3 for a Dry Year

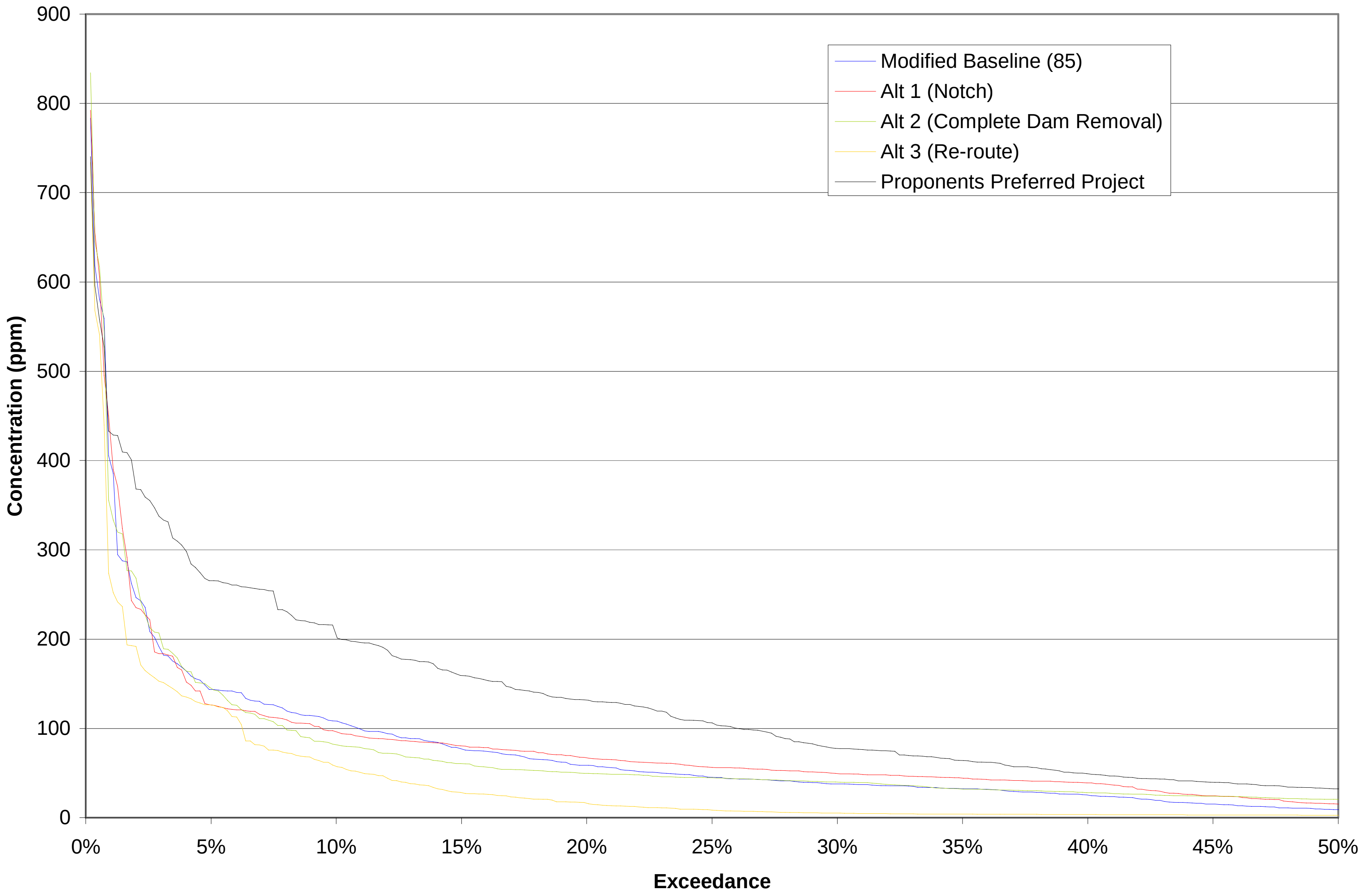


Figure P-12: Simulated Suspended Sediment Concentration Exceedance at Reach 4.7 for a Dry Year

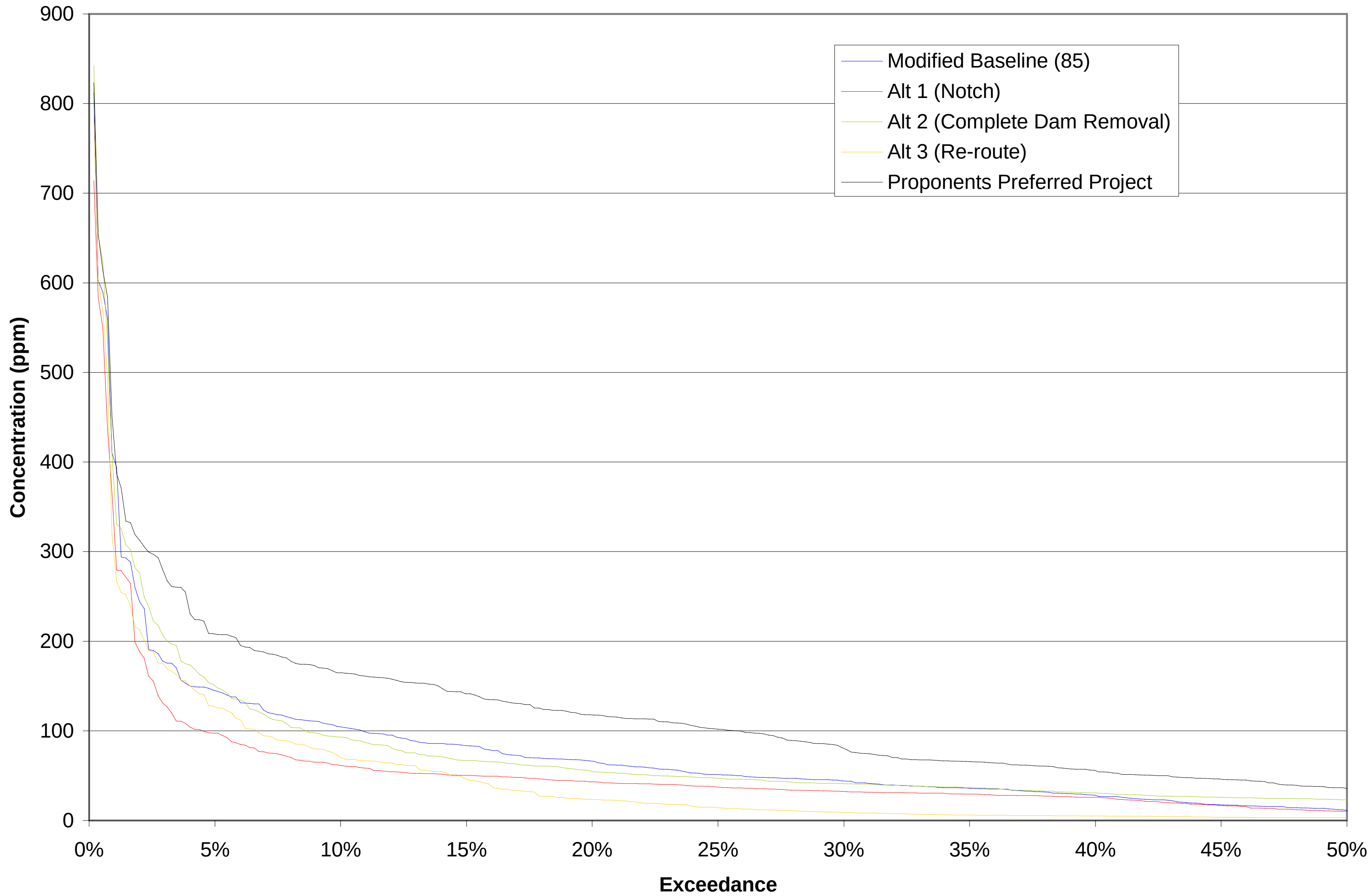


Figure P-13: Simulated Suspended Sediment Concentration Exceedance at Reach 5 for a Dry Year

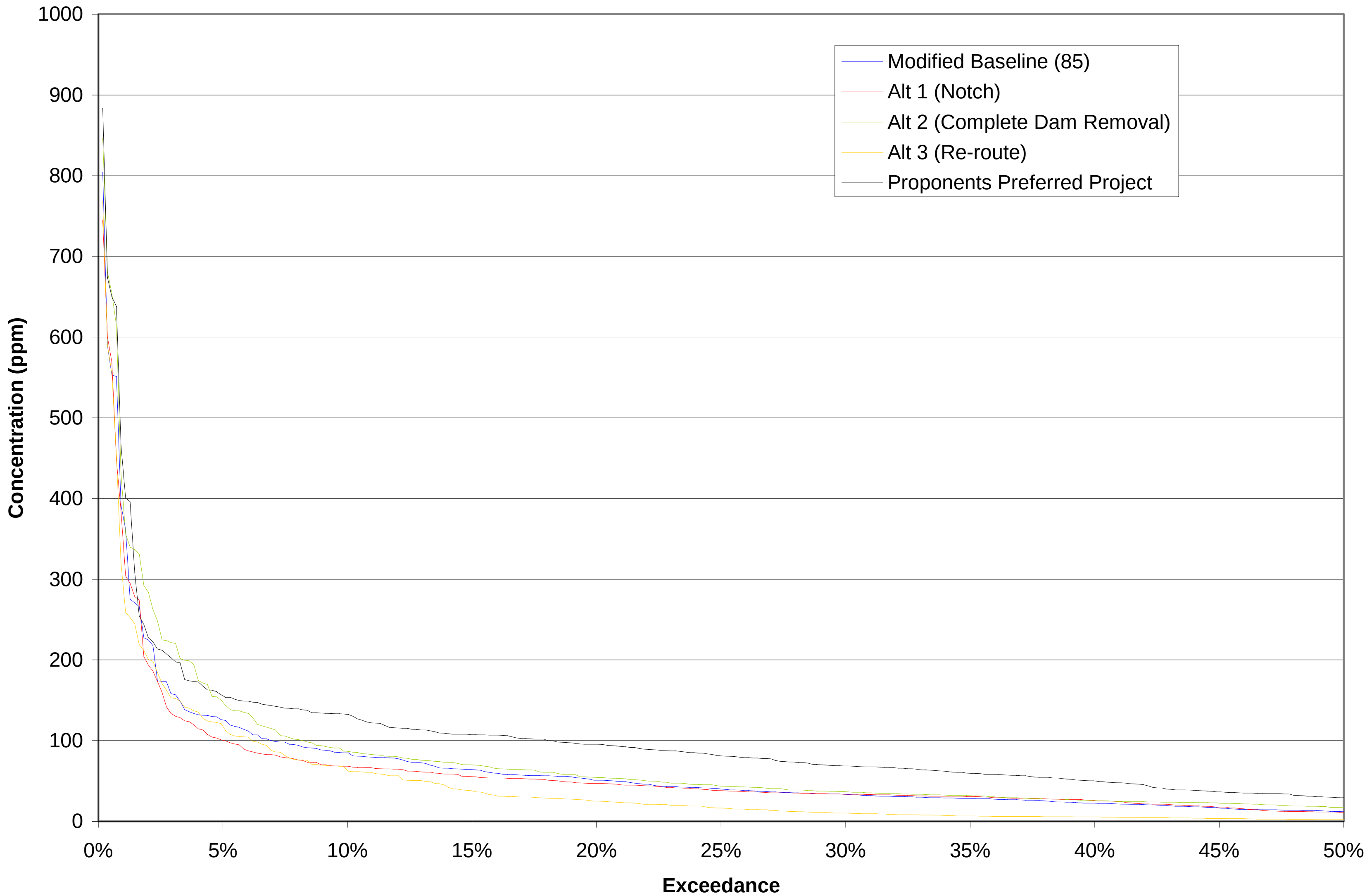


Figure P-14: Simulated Suspended Sediment Concentration Exceedance at Reach 6.3 for a Dry Year

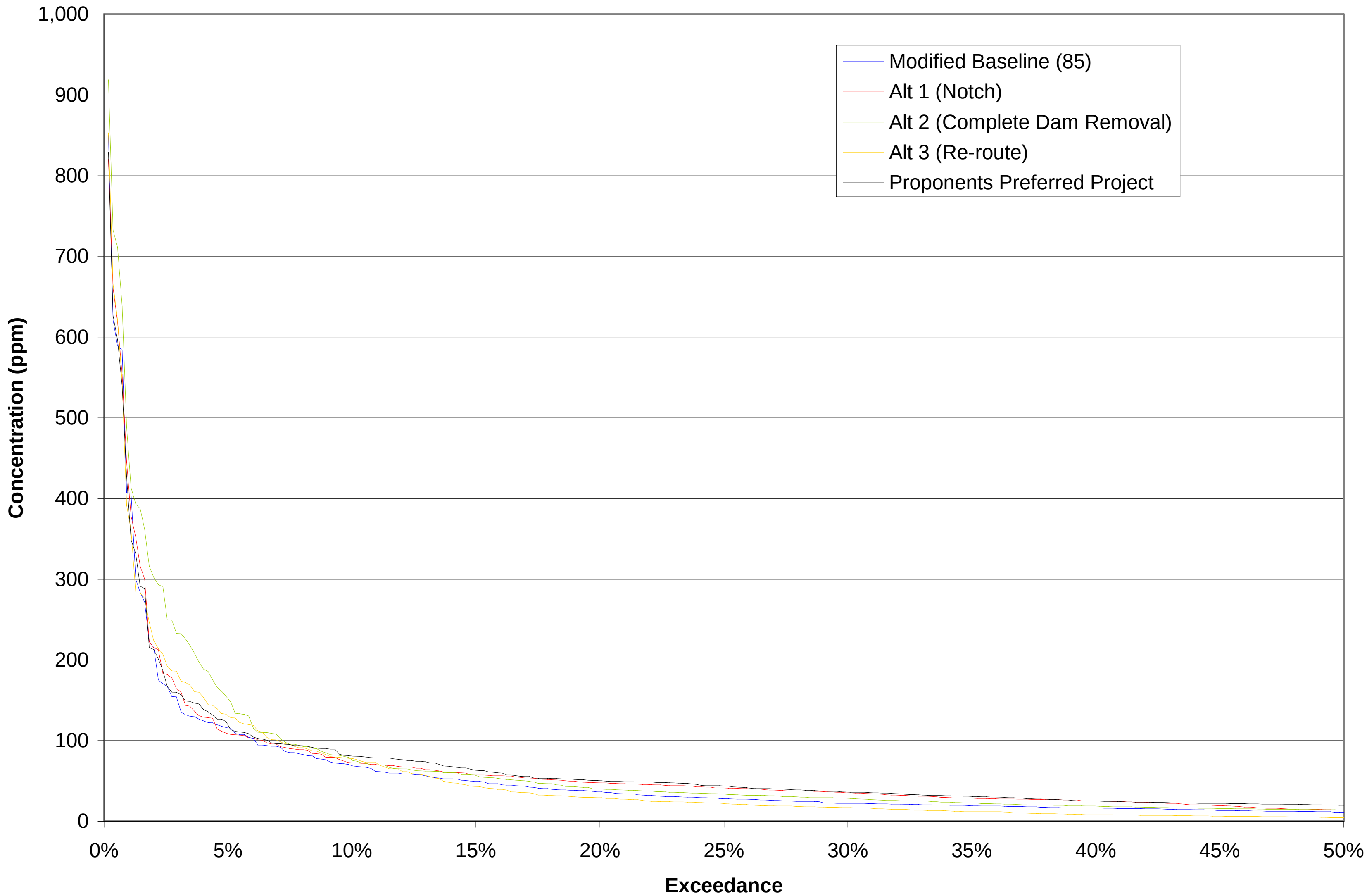


Figure P-15: Simulated Suspended Sediment Concentration Exceedance at Reach 6.7 for a Dry Year

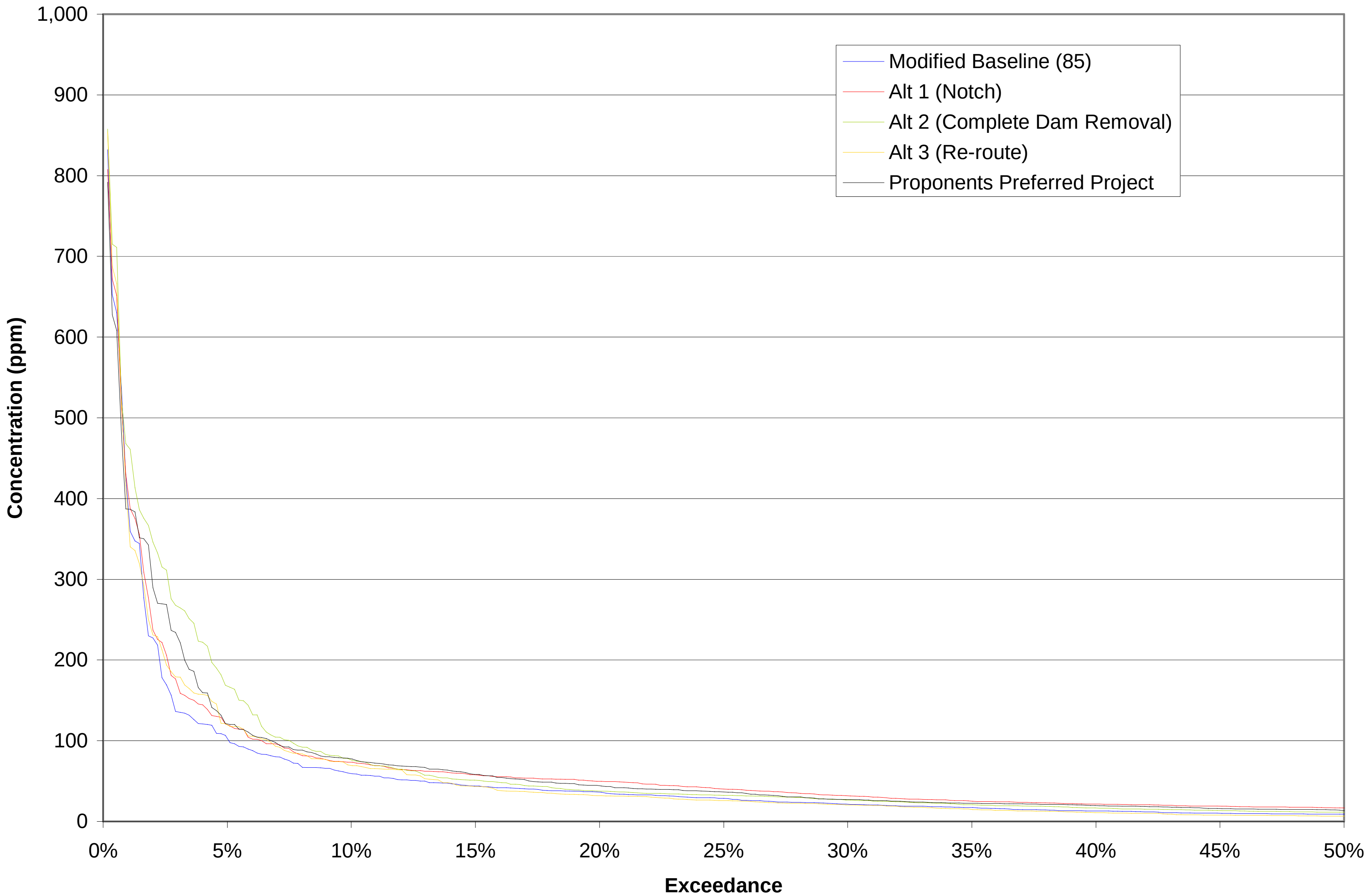


Figure P-16: Simulated Suspended Sediment Concentration Exceedance at Reach 7.3 for a Dry Year

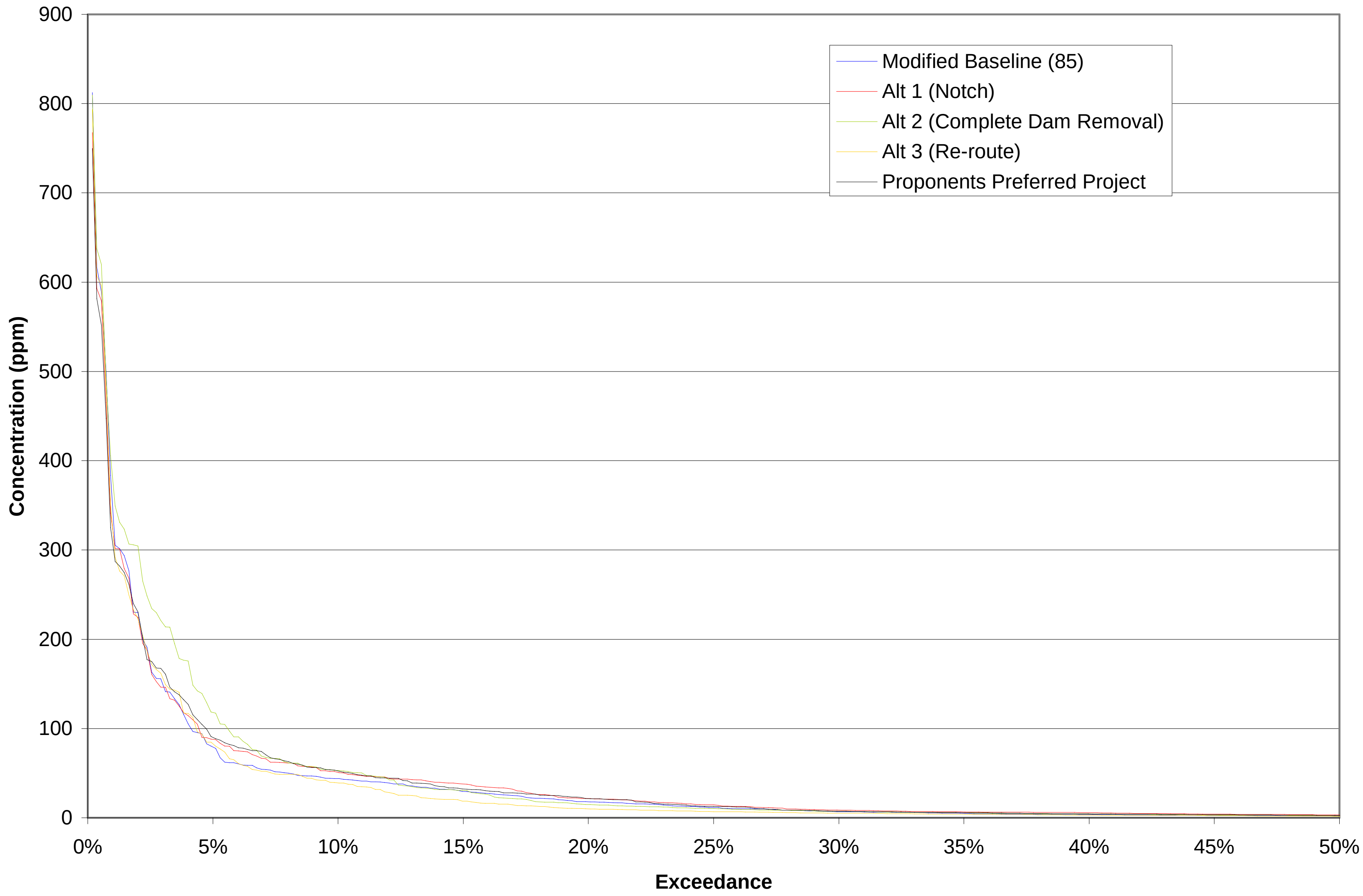


Figure P-17: Simulated Suspended Sediment Concentration Exceedance at Reach 7.7 for a Dry Year

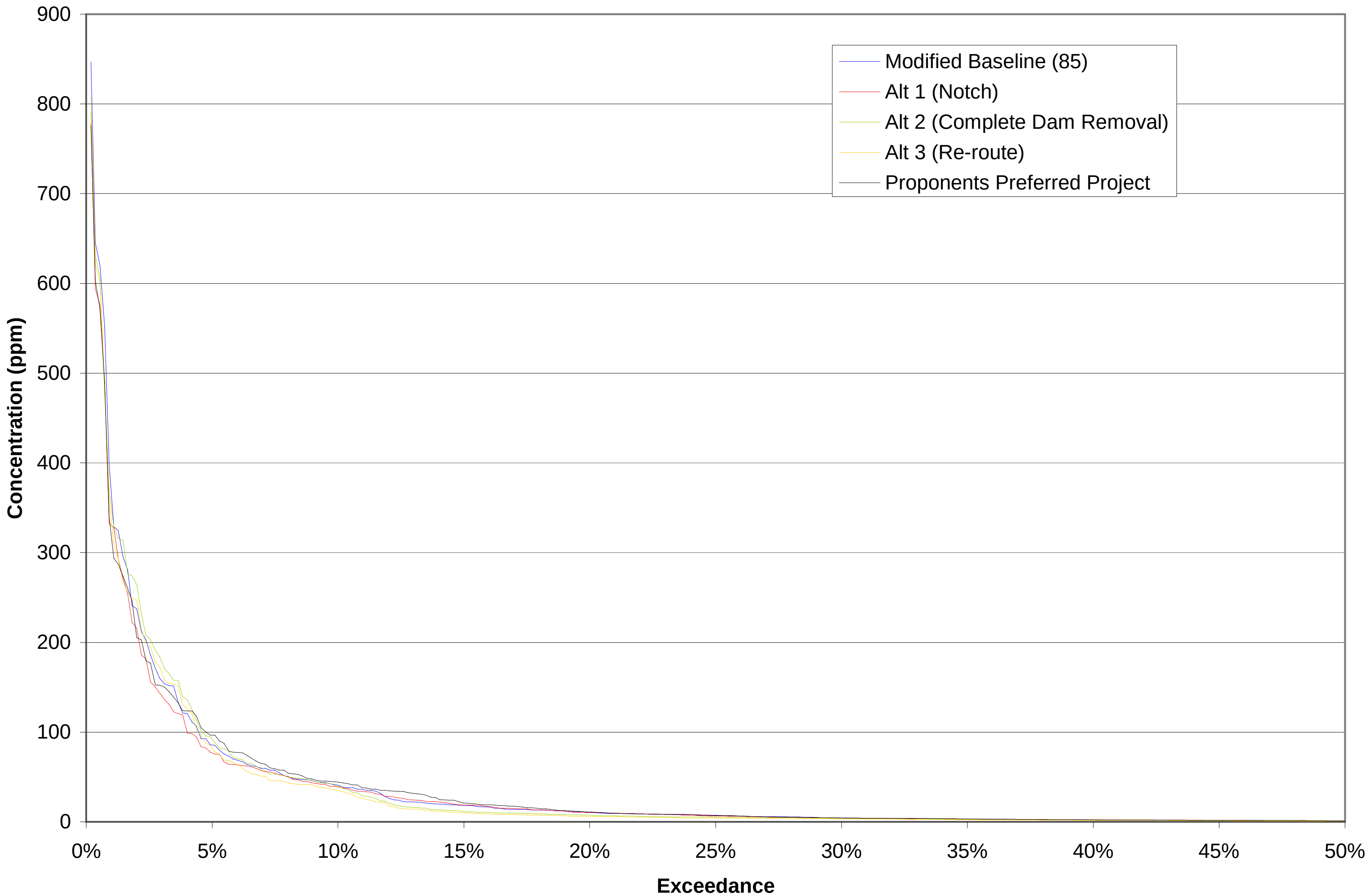


Figure P-18: Simulated Suspended Sediment Concentration Exceedance at Reach 8.3 for a Dry Year

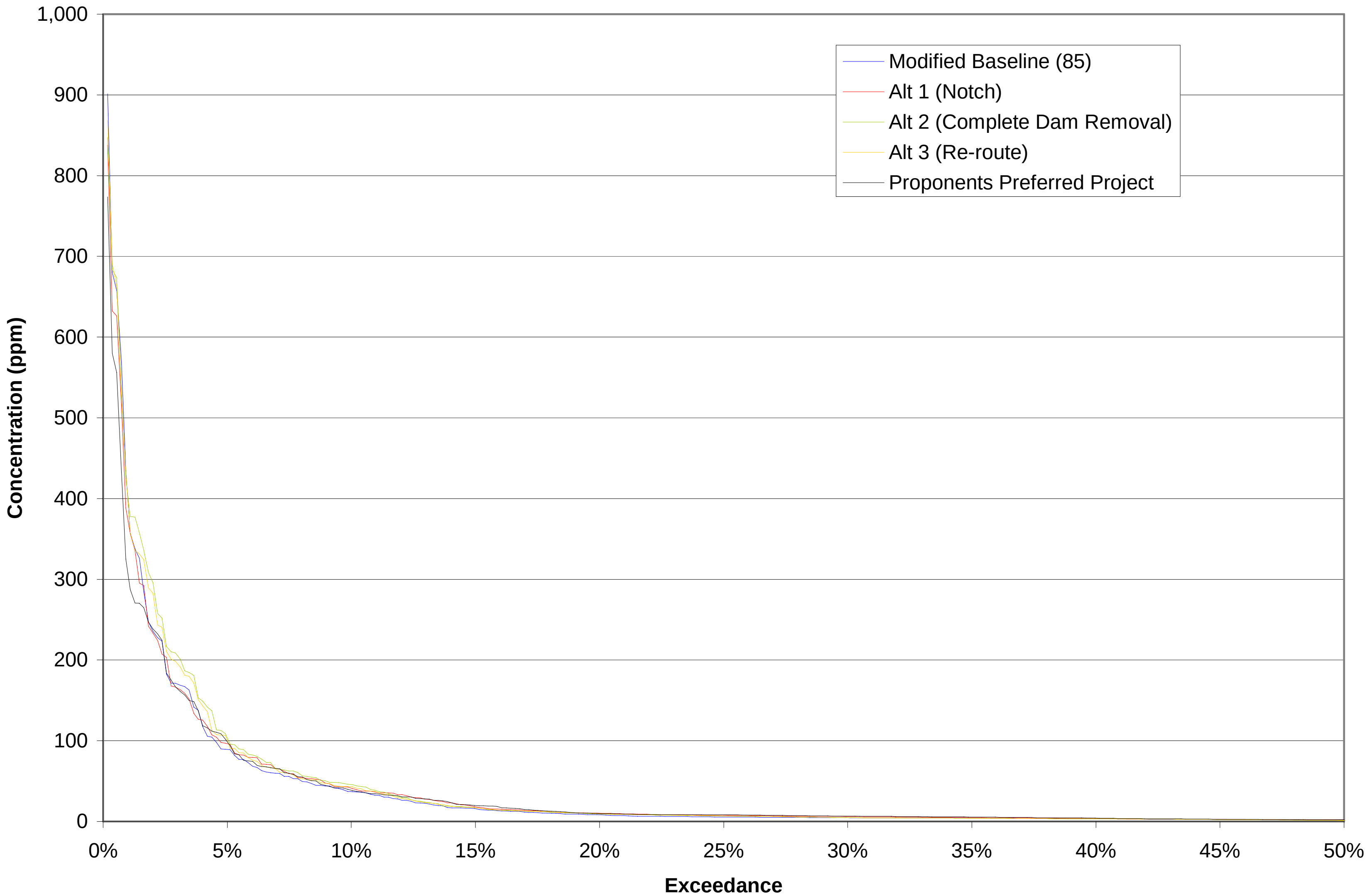


Figure P-19: Simulated Suspended Sediment Concentration Exceedance at Reach 8.7 for a Dry Year

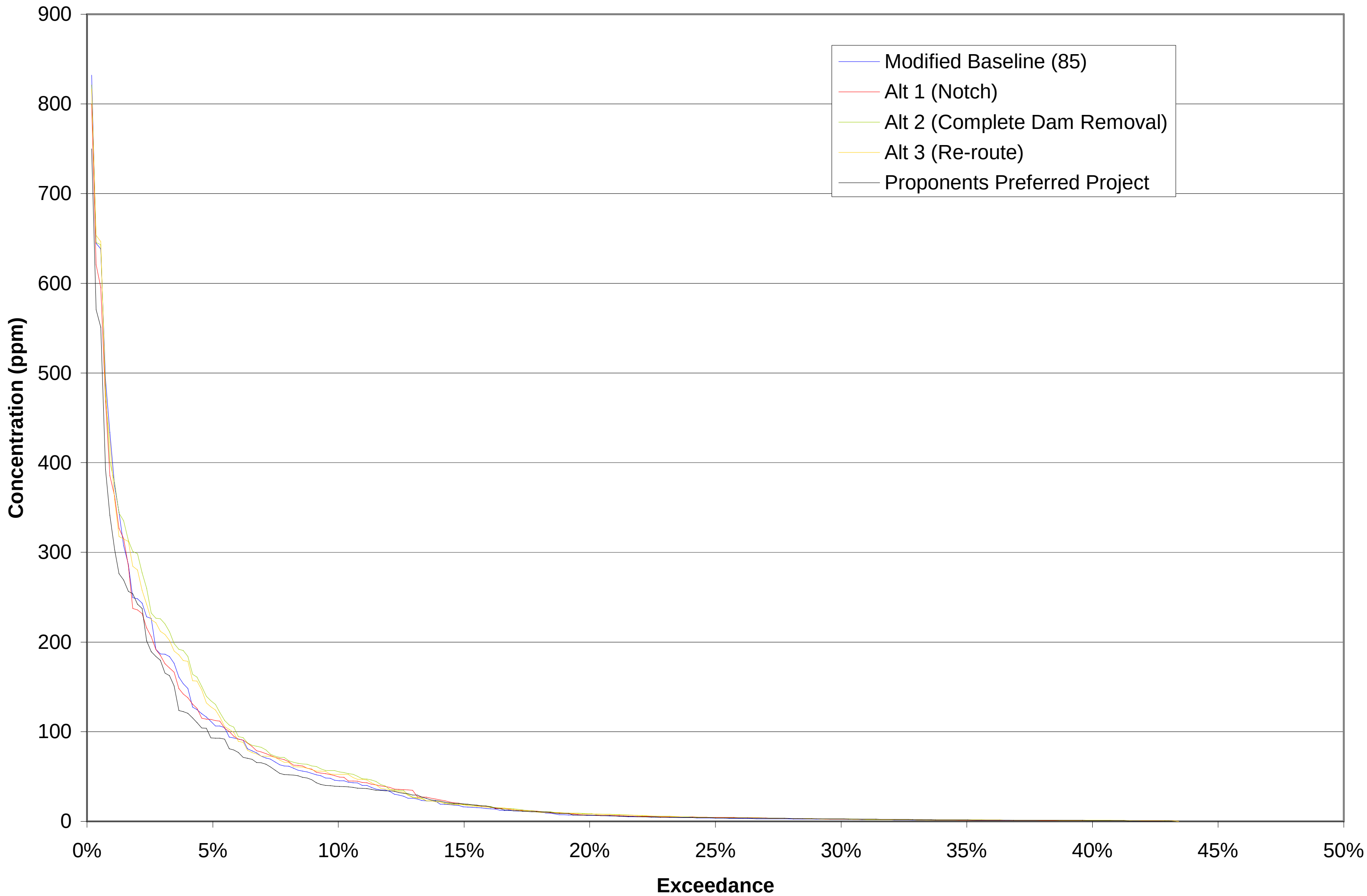


Figure B-20: Simulated Suspended Sediment Concentration Exceedance at Reach 9 for a Dry Year

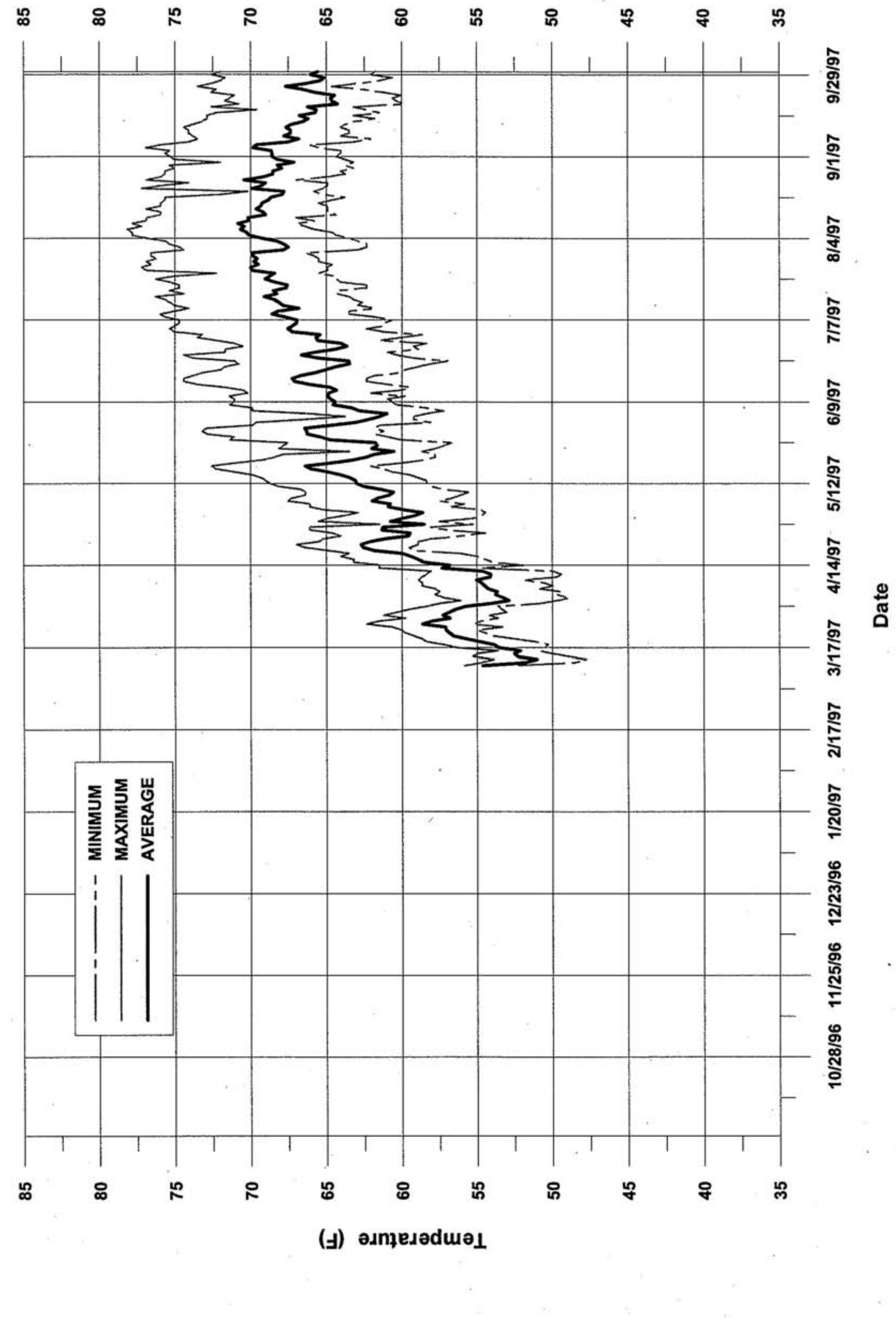
Appendix Q

WATER QUALITY

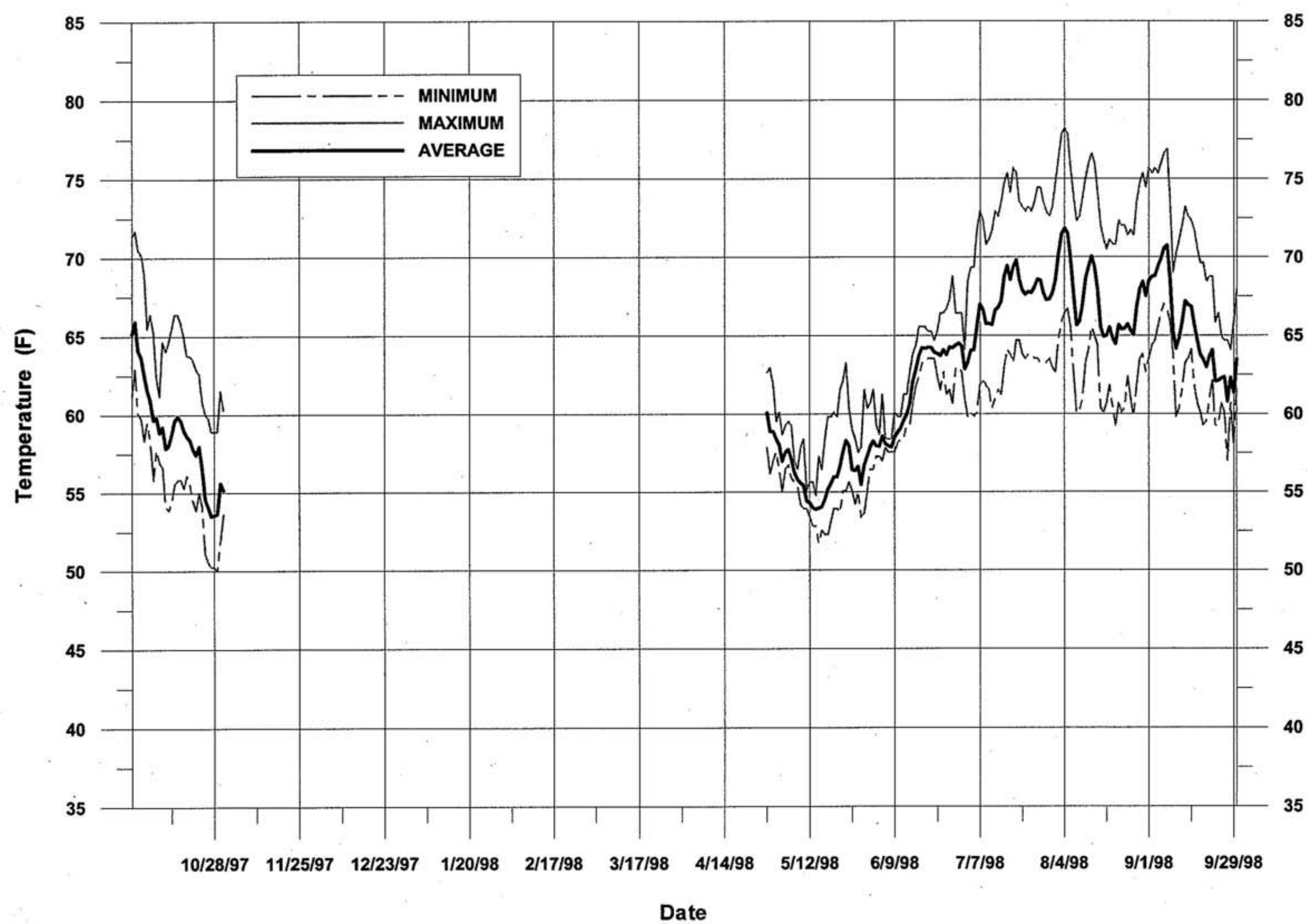
Appendix Q-1

MPWMD Temperature Data Graphs for Carmel River above San Clemente Reservoir, 1997-2003

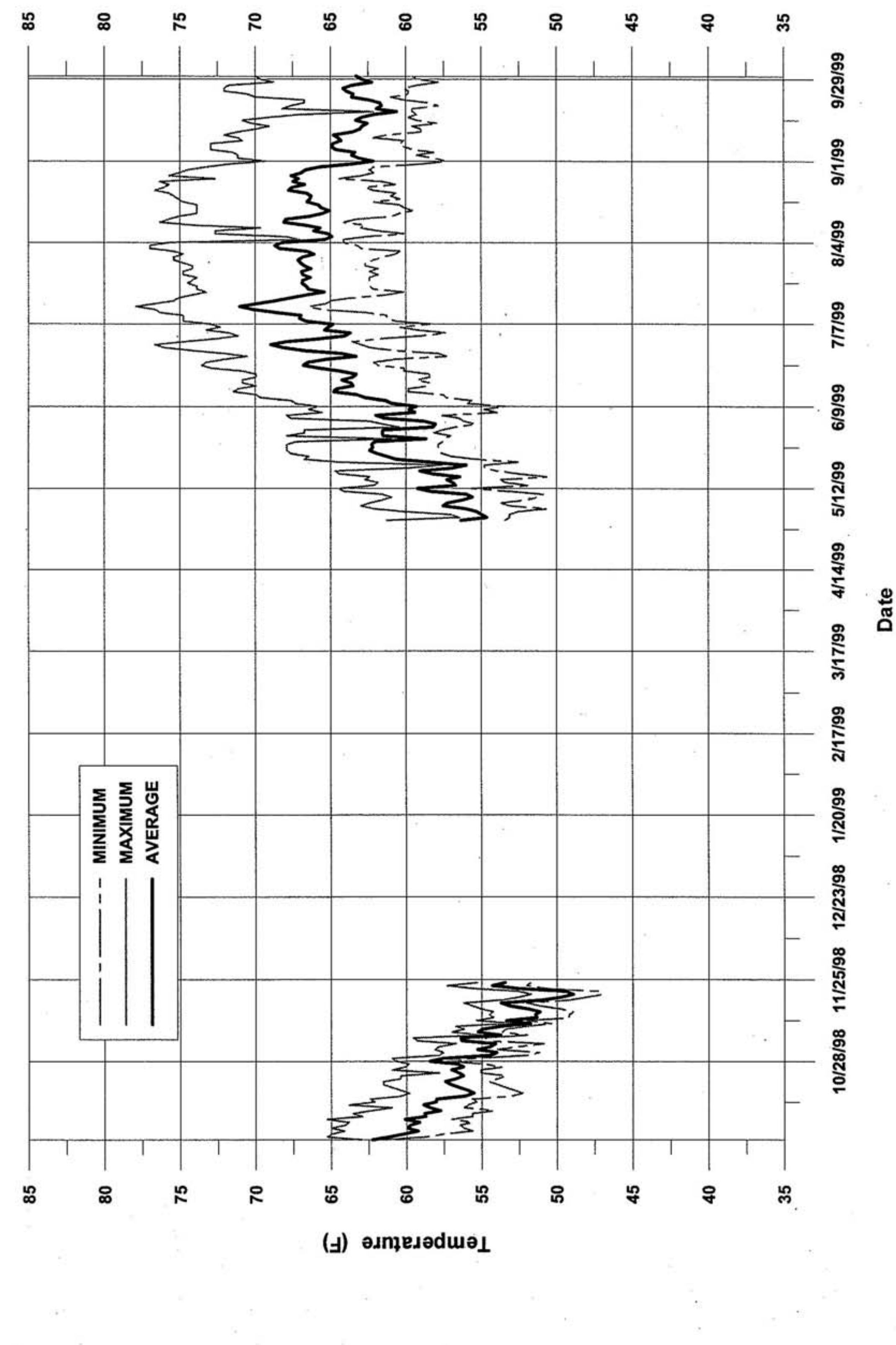
Carmel River Water Temperature at the Above San Clemente Site
WY 1997

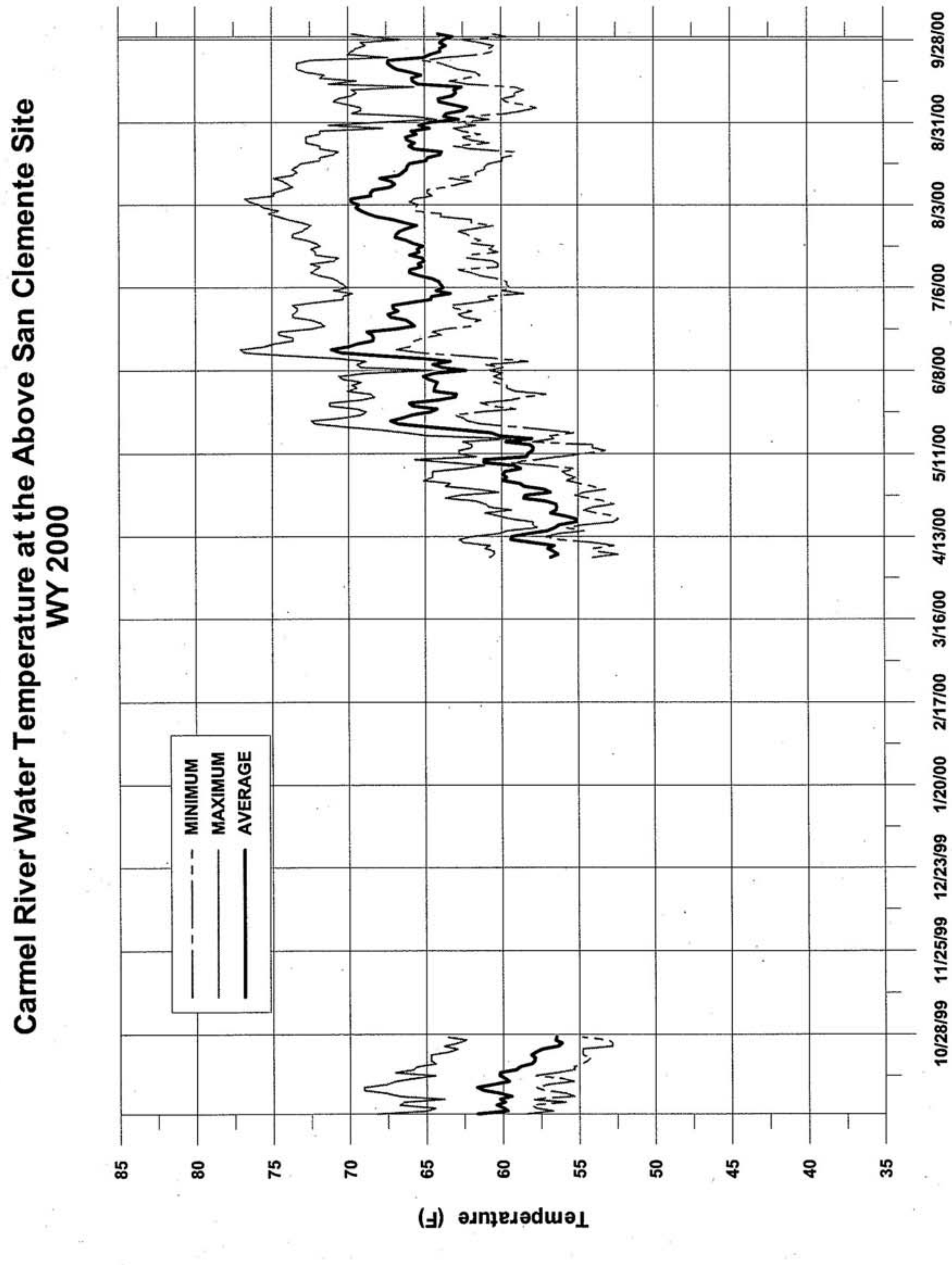


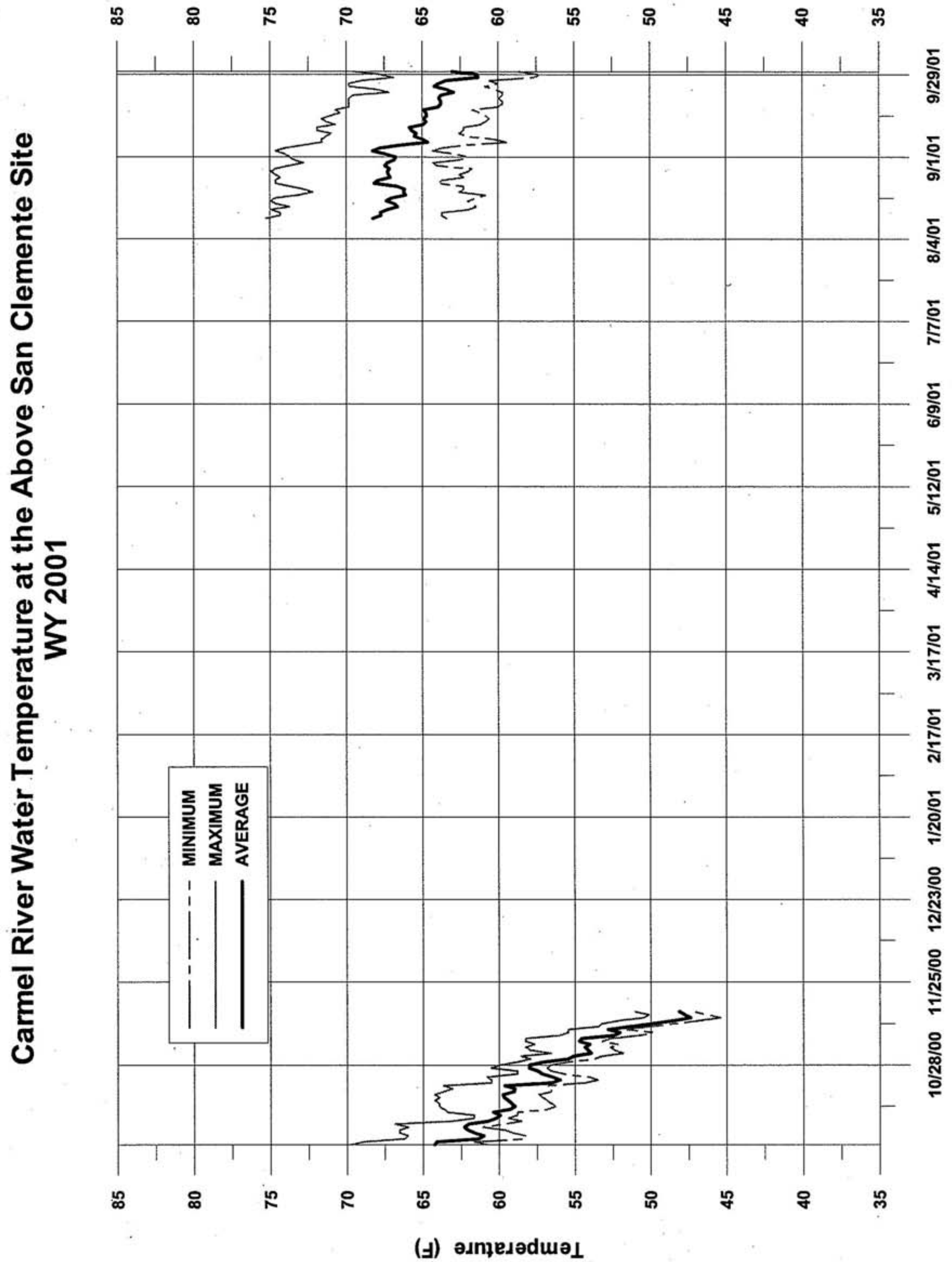
Carmel River Water Temperature at the Above San Clemente Site
WY 1998



Carmel River Water Temperature at the Above San Clemente Site
WY 1999

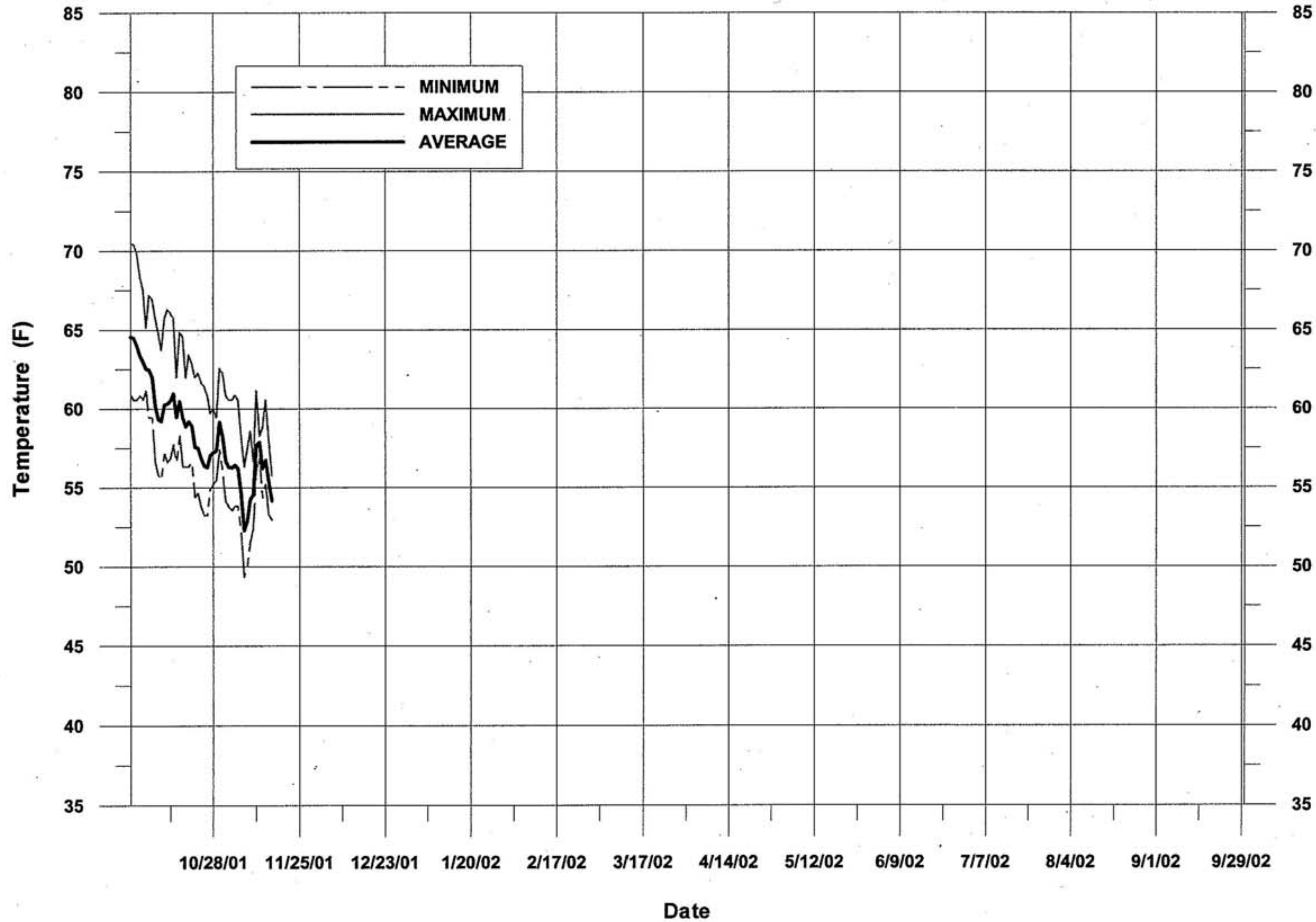



Carmel River Water Temperature at the Above San Clemente Site
WY 2000
MINIMUM
MAXIMUM
AVERAGE
Temperature (F)
85
80
75
70
65
60
55
50
45
40
35
10/28/99
11/25/99
12/23/99
1/20/00
2/17/00
3/16/00
4/13/00
5/11/00
6/8/00
7/6/00
8/3/00
8/31/00
9/28/00
Date

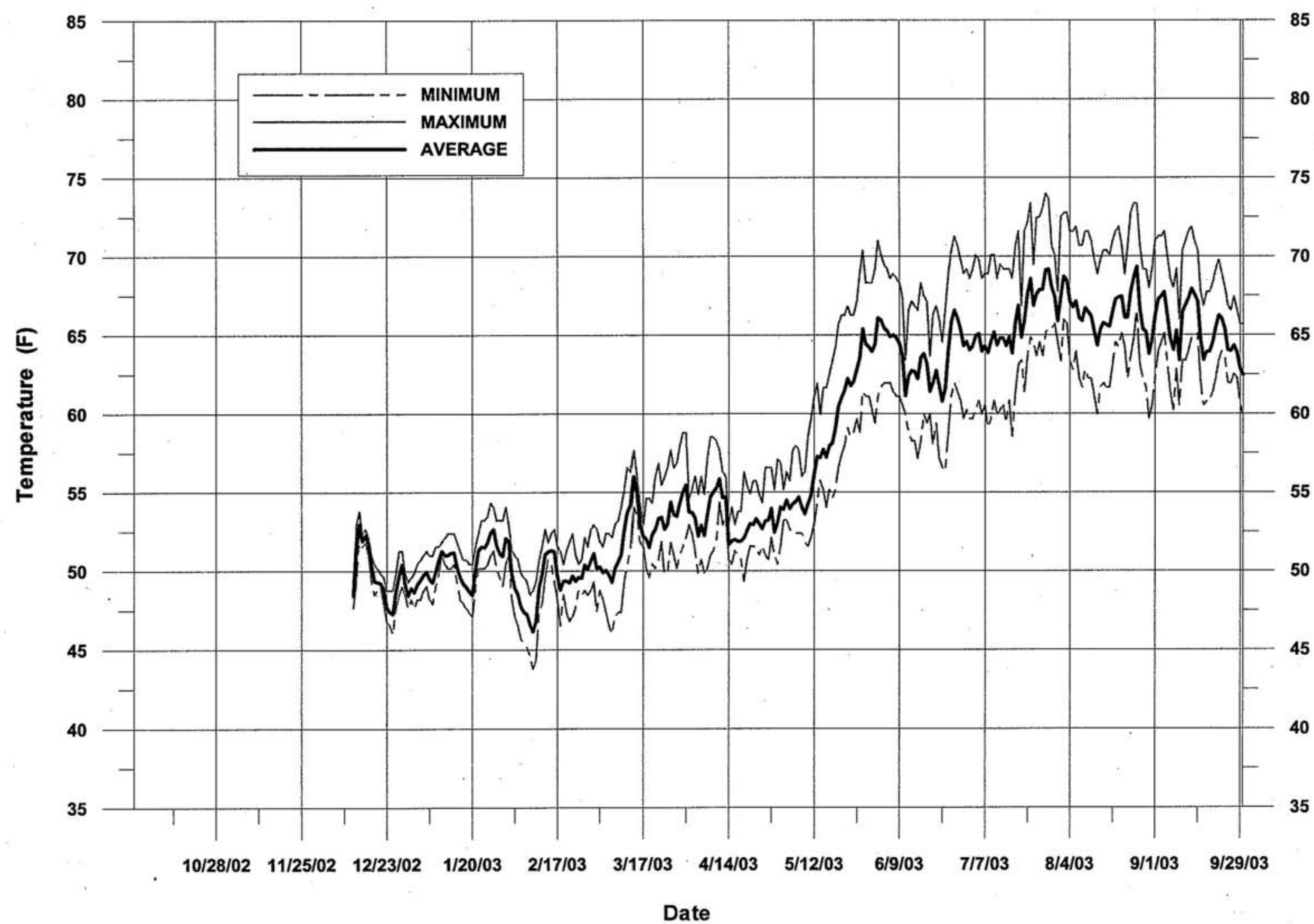


Carmel River Water Temperature at the Above San Clemente Site
WY 2001
MINIMUM
MAXIMUM
AVERAGE
Temperature (F)
85
80
75
70
65
60
55
50
45
40
35
Date
10/28/00
11/25/00
12/23/00
1/20/01
2/17/01
3/17/01
4/14/01
5/12/01
6/9/01
7/7/01
8/4/01
9/1/01
9/29/01

Carmel River Water Temperature at the Above San Clemente Site
WY 2002



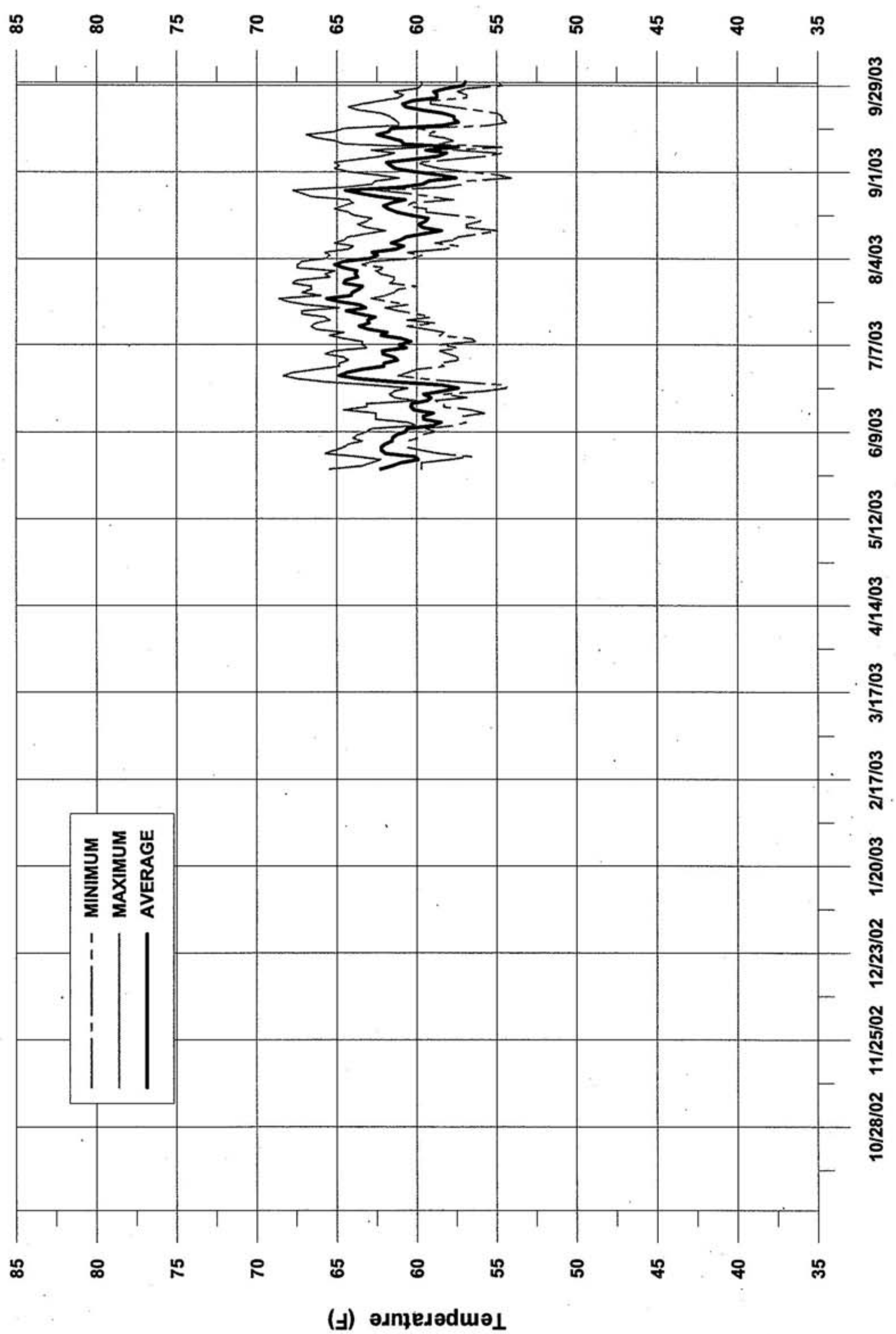
Carmel River Water Temperature at the Above San Clemente Site
WY 2003



Appendix Q-2

MPWMD Temperature Data Graphs for San Clemente Creek above San Clemente Reservoir, 2003

San Clemente Creek Water Temperature
WY 2003



Appendix Q-3. ENTRIX Surface Water and Porewater Characterization Results and Criteria Comparison, November 2002

Parameter	Units	Carmel River Arm Samples												San Clemente Creek Arm Samples					
		CRS-0-01	WQO[1]	SCR-1-01	WQO[1]	CRG-1-01	WQO[1]	CRG-2-01	WQO[1]	CRS-2-01	WQO[1]	TribPond-1-01	WQO[1]	SCCG-1-01	WQO[1]	SCCG-2-01	WQO	SCCS-2-01	WQO[1]
Antimony (An)	ug/L	<10		<10		<10		<10		<10		<10		<10		<10		<10	
Arsenic (As)	ug/L	<1.0		<1.0		**4.1**		<1.0		<1.0		**1.3**		**6.0**		**2.2**		<1.0	
Barium (Ba)	ug/L	**40**		**41**		**35**		**49**		**41**		**180**		**32**		**25**		**30**	
Beryllium	ug/L	<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50		<0.50	
Cadmium (Cd)	ug/L	<0.50	2.9	<0.50	3.0	<0.50	2.6	<0.50	3.0	<0.50	3.0	<0.50	7.8	<0.50	2.9	<0.50	2.2	<0.50	2.2
Chromium (Cr)	ug/L	<2.0	234	<2.0	248	**3.9**	207	**2.5**	248	<2.0	248	**4.7**	708	**2.5**	234	<2.0	178	<2.0	172
Cobalt (Co)	ug/L	<10		<10		<10		<10		<10		<10		<10		<10		<10	
Copper (Cu)	ug/L	<0.50	12	<0.50	13	<0.50	10	**0.66**	13	<0.50	13	<0.50	38	<0.50	12	<0.50	9.0	<0.50	8.6
Lead (Pb)	ug/L	<1.0	3.6	<1.0	3.9	<1.0	3.1	<1.0	3.9	<1.0	3.9	<1.0	15	<1.0	3.6	<1.0	2.5	<1.0	2.4
Mercury (Hg)	ug/L	<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010		<0.010	
Molybdenum (Mb)	ug/L	<10		<10		<10		<10		<10		<10		<10		<10		<10	
Nickel (Ni)	ug/L	<2.0	69	<2.0	73	<2.0	61	**2.2**	73	<2.0	73	<2.0	217	<2.0	69	<2.0	52	<2.0	50
Selenium (Se)	ug/L	<1.0		<1.0		<1.0		<1.0		<1.0		<1.0		<1.0		<1.0		<1.0	
Silver (Si)	ug/L	<0.20	6.2	<0.20	6.9	<0.20	4.7	<0.20	6.9	<0.20	6.9	<0.20	63	<0.20	6.2	<0.20	3.4	<0.20	3.2
Thallium (Th)	ug/L	<5.0		<5.0		<5.0		<5.0		<5.0		<5.0		<5.0		<5.0		<5.0	
Vanadium (Vn)	ug/L	<10		<10		<10		<10		<10		<10		<10		<10		<10	
Zinc (Zn)	ug/L	<5.0	157	<5.0	167	**5.0**	138	<5.0	167	<5.0	167	<5.0	493	**5.6**	157	**6.4**	118	<5.0	114
pH Value	pH units	8.1	6.5-9.0	8.1	6.5-9.0	6.7	6.5-9.0	6.5	6.5-9.0	8.3	6.5-9.0	7.6	6.5-9.0	6.9	6.5-9.0	6.6	6.5-9.0	6.9	6.5-9.0
Conductivity (EC)	umhos/cm	310	NA	290	NA	280	NA	350	NA	320	NA	1200	NA	320	NA	280	NA	280	NA
Carbonate Alkalinity ($CaCO_3$)	mg/L	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA	0	NA
Bicarbonatge Alkalinity ($CaCO_3$)	mg/L	150	NA	150	NA	160	NA	190	NA	150	NA	610	NA	170	NA	140	NA	130	NA
Total Alkalinity ($CaCO_3$)	mg/L	150	NA	150	NA	160	NA	190	NA	150	NA	610	NA	170	NA	140	NA	130	NA
Hardness ($CaCO_3$)	mg/L	140	NA	150	NA	120	NA	150	NA	150	NA	540	NA	140	NA	100	NA	96	NA
Total Dissolved Solids	mg/L	200	NA	190	NA	180	NA	230	NA	200	NA	790	NA	210	NA	180	NA	180	NA
Nitrate (as N)	mg/L	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1	
Nitrite (as N)	mg/L	<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1		<0.1	
Chloride (Cl)	mg/L	8		7.9		7.8		7.8		7.6		110		6.6		12		15	
Sulfate (SO_4)	mg/L	32		32		3.8		10		33		31		11		4.7		6.7	
Fluoride (F)	mg/L	0.21		0.25		0.14		0.17		0.21		0.51		0.15		0.16		0.53	
Calcium (Ca)	mg/L	37		38		32		41		38		110		30		23		21	
Magnesium (Mg)	mg/L	13		13		8.8		12		13		66		16		11		10	
Potassium (K)	mg/L	3.1		3.1		3.4		3.1		3.0		7.0		4.2		2.4		2.7	
Sodium (Na)	mg/L	15		15		13		15		15		99		17		18		25	
Iron (Fe)	mg/L	<0.05	1.0	<0.05	1.0	12	1.0	11	1.0	<0.05	1.0	<0.05	1.0	4.4	1.0	7	1.0	0.33	1.0
Manganese (Mn)	mg/L	<0.01		<0.01		1.8		0.75		<0.01		3.5		1.1		0.65		0.29	
Ammonia Nitrogen (as N)	mg/L	<0.01		<0.01		0.4		1.5		0.17		0.9		0.38		0.57		0.22	

[1]Water Quality Objective (WQO) for metals derived from CEPA; hardness-based chronic criteria for aquatic life.
WQO for Fe derived from CEPA.

Appendix Q-4. Reservoir Fixed Station Water Quality Summary - Summer 2003 Drawdown

Daily Minimum, Maximum, and Mean Values of Temperature, Conductivity, Dissolved Oxygen, pH, and Turbidity

	Temperature (C)			Conductivity (mS/cm)			Dissolved Oxygen (mg/L)			pH			Turbidity (NTU)		
Date	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
6/11/03	16.81	17.05	16.95	0.232	0.236	0.233	6.96	7.32	7.14	7.85	7.90	7.88	0.00	1.00	0.14
6/12/03	16.18	16.77	16.48	0.229	0.233	0.232	6.83	7.43	7.07	7.78	7.88	7.83	0.00	1.00	0.27
6/13/03	16.31	16.94	16.60	0.231	0.235	0.234	6.77	7.52	7.13	7.76	7.91	7.85	0.00	1.00	0.19
6/14/03	16.39	17.05	16.70	0.231	0.236	0.235	6.57	7.55	7.13	7.72	7.91	7.84	0.00	1.00	0.33
6/15/03	16.21	17.20	16.60	0.234	0.236	0.235	6.60	7.38	7.09	7.73	7.92	7.82	0.00	1.00	0.46
6/16/03	16.42	16.96	16.67	0.234	0.237	0.236	6.75	7.60	7.14	7.74	7.91	7.83	0.00	5.00	0.42
6/17/03	16.71	17.28	16.93	0.232	0.236	0.234	6.75	8.48	7.60	7.76	7.94	7.85	0.00	0.60	0.32
6/18/03	16.80	17.42	17.06	0.233	0.236	0.234	7.16	8.34	7.74	7.71	7.90	7.80	0.20	1.80	0.66
6/19/03	16.93	17.41	17.11	0.232	0.238	0.235	6.87	8.10	7.47	7.64	7.93	7.77	0.60	1.50	0.91
6/20/03	16.24	17.00	16.67	0.235	0.238	0.236	6.98	7.75	7.46	7.71	7.82	7.77	0.50	1.20	0.87
6/21/03	16.67	17.08	16.86	0.235	0.246	0.240	7.17	7.97	7.53	7.72	7.87	7.79	0.60	1.10	0.82
6/22/03	16.34	17.12	16.73	0.243	0.246	0.245	6.93	7.81	7.39	7.71	7.88	7.80	1.00	2.00	1.02
6/23/03	16.07	17.61	16.69	0.245	0.251	0.248	6.96	7.98	7.45	7.70	7.95	7.81	0.00	2.00	1.09
6/24/03	16.11	17.84	16.90	0.248	0.255	0.252	6.86	7.63	7.32	7.53	7.77	7.67	1.00	3.00	1.67
6/25/03	16.73	18.73	17.67	0.255	0.271	0.262	5.31	6.87	6.36	7.17	7.52	7.34	2.00	8.00	4.59
6/26/03	17.88	24.31	18.84	0.269	0.460	0.275	4.65	7.93	5.17	7.15	7.89	7.20	8.00	9.00	8.67
6/27/03	18.75	20.69	19.55	0.274	0.282	0.277	4.39	5.38	4.84	7.10	7.23	7.16	9.00	12.00	10.18
6/28/03	19.14	20.82	19.95	0.276	0.285	0.279	4.38	5.56	4.94	7.06	7.23	7.15	8.00	13.00	10.50
6/29/03	19.13	20.61	19.89	0.278	0.287	0.282	4.54	5.78	5.12	7.07	7.24	7.15	7.00	15.00	9.46
6/30/03	19.02	20.10	19.57	0.278	0.287	0.282	4.87	6.14	5.41	7.09	7.27	7.18	7.00	11.00	8.50
7/1/03	18.67	20.06	19.41	0.276	0.283	0.280	5.59	6.49	6.02	7.17	7.30	7.22	6.00	8.00	7.00
7/2/03	18.49	19.73	19.17	0.279	0.283	0.281	5.78	6.59	6.18	7.18	7.26	7.22	7.00	10.00	8.38
7/3/03	18.35	19.96	19.11	0.278	0.282	0.280	5.97	6.76	6.33	7.20	7.31	7.24	7.00	11.00	8.71
7/4/03	18.38	20.25	19.29	0.277	0.283	0.279	6.15	6.94	6.53	7.22	7.36	7.27	7.00	10.00	7.39
7/5/03	18.60	20.55	19.50	0.278	0.283	0.281	5.98	6.99	6.44	7.19	7.38	7.27	6.00	10.00	6.98
7/6/03	18.70	20.05	19.39	0.278	0.284	0.282	5.91	6.90	6.37	7.22	7.36	7.28	4.00	8.00	5.88
7/7/03	18.76	20.08	19.40	0.279	0.284	0.282	5.91	6.74	6.32	7.25	7.35	7.28	5.00	9.00	5.90
7/8/03	18.66	20.05	19.27	0.280	0.285	0.282	6.13	7.03	6.45	7.27	7.39	7.31	6.00	10.00	6.96
7/9/03	18.63	19.98	19.28	0.282	0.286	0.284	5.98	6.81	6.28	7.22	7.32	7.27	6.00	10.00	7.56
7/10/03	18.83	20.37	19.51	0.279	0.287	0.283	5.98	6.86	6.31	7.22	7.34	7.27	8.00	11.00	8.92
7/11/03	18.99	20.45	19.65	0.275	0.285	0.280	5.99	7.08	6.36	7.24	7.39	7.30	8.00	11.00	9.25
7/12/03	19.02	20.65	19.70	0.272	0.281	0.277	6.12	6.98	6.38	7.25	7.39	7.31	8.00	12.00	8.67
7/13/03	19.22	20.52	19.80	0.274	0.279	0.277	5.64	6.53	6.01	7.26	7.32	7.29	8.00	14.00	9.56
7/14/03	19.10	20.30	19.67	0.251	0.278	0.275	5.50	5.82	5.66	7.26	7.34	7.30	8.00	13.00	10.69
7/15/03	19.11	20.28	19.79	0.274	0.277	0.275	5.28	5.70	5.56	7.27	7.33	7.30	8.00	14.00	10.00
7/16/03	19.04	20.12	19.61	0.273	0.276	0.275	5.11	5.51	5.30	7.22	7.29	7.26	10.00	23.00	14.19

Appendix Q-4. Reservoir Fixed Station Water Quality Summary - Summer 2003 (continued)

Daily Minimum, Maximum, and Mean Values of Temperature, Conductivity, Dissolved Oxygen, pH, and Turbidity

	Temperature (C)			**Conductivity (mS/cm)**			**Dissolved Oxygen (mg/L)**			**pH**			**Turbidity (NTU)**		
Date	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
7/17/03	19.16	20.40	19.76	0.275	0.279	0.277	4.86	5.58	5.17	7.19	7.26	7.22	10.00	95.00	16.40
7/18/03	19.37	20.82	20.12	0.278	0.283	0.280	4.80	5.70	5.27	7.13	7.21	7.17	11.00	17.00	13.69
7/19/03	19.80	20.54	20.07	0.282	0.285	0.283	4.75	5.35	5.07	7.12	7.22	7.14	16.00	20.00	17.14
7/20/03	19.07	20.36	19.73	0.285	0.294	0.289	4.51	5.53	4.93	7.04	7.11	7.07	19.00	29.00	23.00
7/21/03	19.54	20.99	20.27	0.291	0.296	0.294	4.50	5.65	4.91	7.04	7.09	7.06	26.00	38.00	29.23
7/22/03	20.11	21.52	20.82	0.292	0.299	0.295	4.72	5.74	5.03	7.06	7.12	7.09	33.00	165.00	81.35
7/23/03	20.42	21.25	20.81	0.292	0.297	0.295	4.81	5.97	5.30	7.09	7.15	7.12	46.00	193.00	93.52
7/24/03	20.09	21.24	20.67	0.294	0.298	0.296	5.25	6.11	5.57	7.13	7.18	7.15	52.00	117	79.708
7/25/03	20.28	21.44	20.89	0.295	0.298	0.297	5.39	6.30	5.80	7.15	7.21	7.18	55.00	98.00	74.65
7/26/03	20.31	21.54	20.97	0.294	0.300	0.298	5.64	6.34	5.87	7.16	7.21	7.19	65.00	123.00	94.10
7/27/03	20.74	21.82	21.30	0.290	0.303	0.300	5.46	6.48	5.80	7.18	7.26	7.22	22.00	88.00	32.92
7/28/03	20.95	21.96	21.50	0.296	0.304	0.302	5.46	6.45	5.91	7.19	7.24	7.22	13.00	25.00	17.10
7/29/03	20.94	21.75	21.32	0.301	0.304	0.303	5.84	6.46	6.06	6.94	7.26	7.20	13.00	23.00	15.15
7/30/03	20.64	21.35	21.01	0.301	0.304	0.302	5.82	6.53	6.14	7.04	7.08	7.05	15.00	16.00	15.33
7/31/03	20.38	20.98	20.62	0.299	0.303	0.302	5.95	6.81	6.27	7.06	7.11	7.08	14.00	16.00	14.65

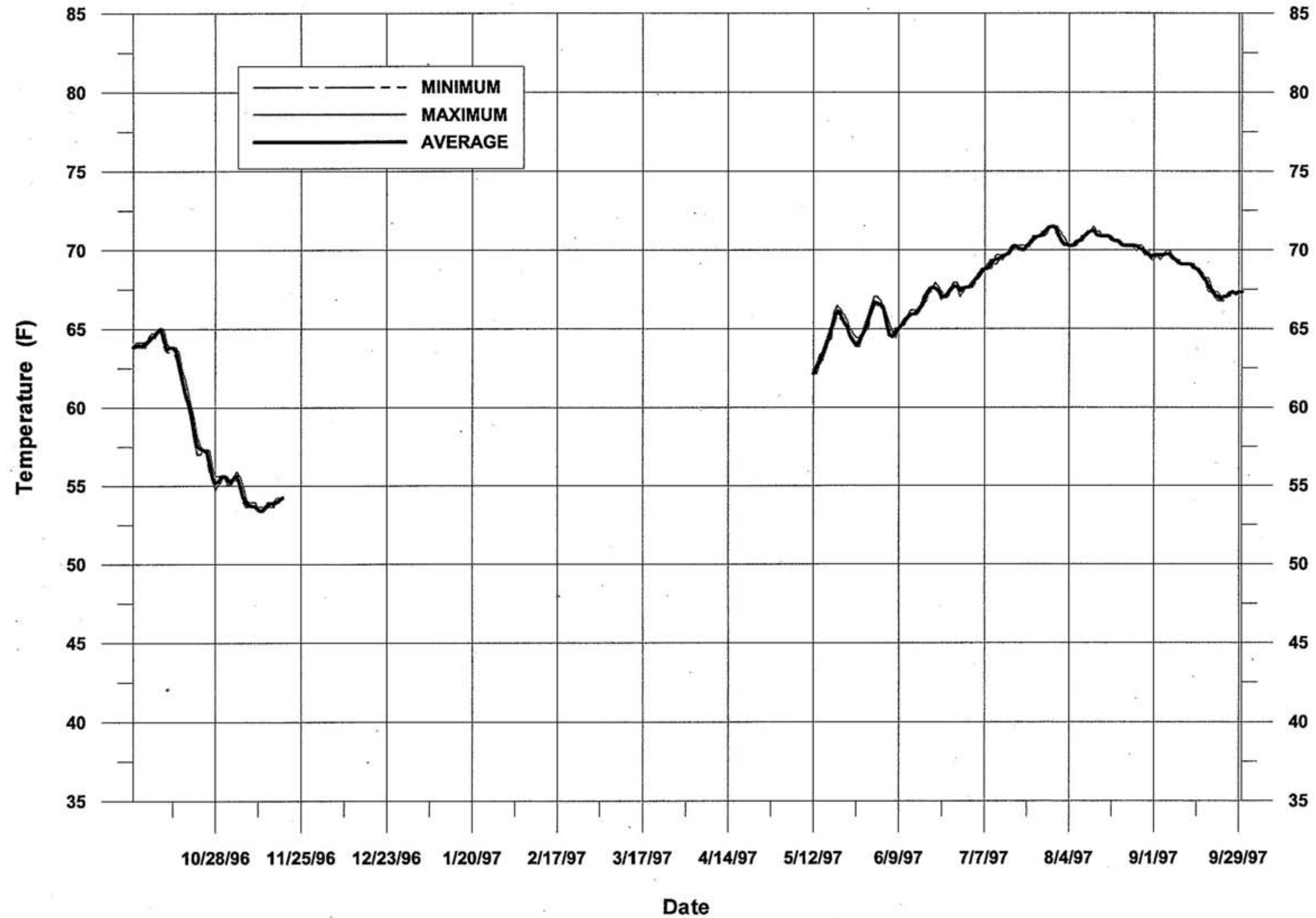
Appendix Q-5. Reservoir Fixed Station Water Quality Summary - Summer 2004 Drawdown
Daily Minimum, Maximum, and Mean Values of Temperature, Dissolved Oxygen, and Turbidity

	Temperature (C)			Dissolved Oxygen (mg/L)			Turbidity (NTU)		
Date	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
5-May	15.78	16.74	16.16	7.11	8.25	7.69	0	0	0
6-May	15.63	16.57	15.99	7.16	8.27	7.66	0	2	0
7-May	15.58	16.31	15.90	7.11	8.28	7.62	0	0	0
8-May	15.92	16.82	16.25	7.30	8.18	7.65	0	0	0
9-May	15.79	16.74	16.11	7.05	8.34	7.55	0	0	0
10-May	15.75	17.08	16.28	7.15	8.22	7.70	0	0	0
11-May	15.87	16.84	16.27	7.34	8.70	7.84	0	0	0
12-May	15.42	17.07	16.16	6.92	8.28	7.60	0	3	0
13-May	15.40	17.18	16.22	7.13	8.16	7.64	0	1	0
14-May	15.74	17.38	16.48	7.41	8.11	7.66	0	0	0
15-May	16.11	17.56	16.74	6.85	7.91	7.31	0	1	0
16-May	15.96	17.20	16.71	6.16	7.52	6.72	0	3	0
17-May	16.23	17.45	16.80	6.33	7.09	6.73	0	1	0
18-May	16.05	17.47	16.87	6.11	6.96	6.61	0	6	2
19-May	15.95	17.45	16.78	6.18	6.95	6.68	0	6	3
20-May	16.43	17.39	16.93	6.36	6.93	6.66	1	4	2
21-May	16.51	17.71	17.02	6.28	6.76	6.52	2	7	4
22-May	16.57	18.00	17.21	6.18	6.76	6.54	3	8	6
23-May	16.73	17.81	17.17	6.03	6.80	6.33	6	9	8
24-May	16.79	18.09	17.23	6.00	6.66	6.17	-	-	-
25-May	16.88	17.44	17.45	6.15	7.06	6.90	2	3	2
26-May	16.92	18.86	17.73	6.00	6.66	6.25	2	4	3
27-May	17.36	19.30	18.19	5.69	6.45	6.03	2	4	3
28-May	17.85	19.14	18.28	4.84	5.89	5.46	4	8	5
29-May	17.30	18.85	18.03	4.69	5.92	5.11	6	8	7
30-May	17.00	18.96	18.00	5.10	6.21	5.66	8	10	9
31-May	17.42	19.49	18.32	5.05	6.17	5.48	8	11	9
1-Jun	17.46	19.04	18.33	5.04	5.84	5.31	10	14	12
2-Jun	17.61	19.46	18.50	4.84	5.44	5.20	11	14	12
3-Jun	18.10	19.79	18.84	4.77	5.85	5.51	8	13	12
4-Jun	18.08	20.16	18.97	4.21	5.94	5.03	8	11	10
5-Jun	18.13	20.69	19.17	4.39	5.91	5.03	9	13	10
6-Jun	18.40	20.78	19.40	4.36	5.96	5.09	12	16	14
7-Jun	18.64	20.28	19.36	4.77	6.26	5.50	11	18	16
8-Jun	18.37	19.56	18.79	4.71	6.39	5.24	11	13	12
9-Jun	17.88	19.58	18.63	5.18	6.03	5.49	12	16	14

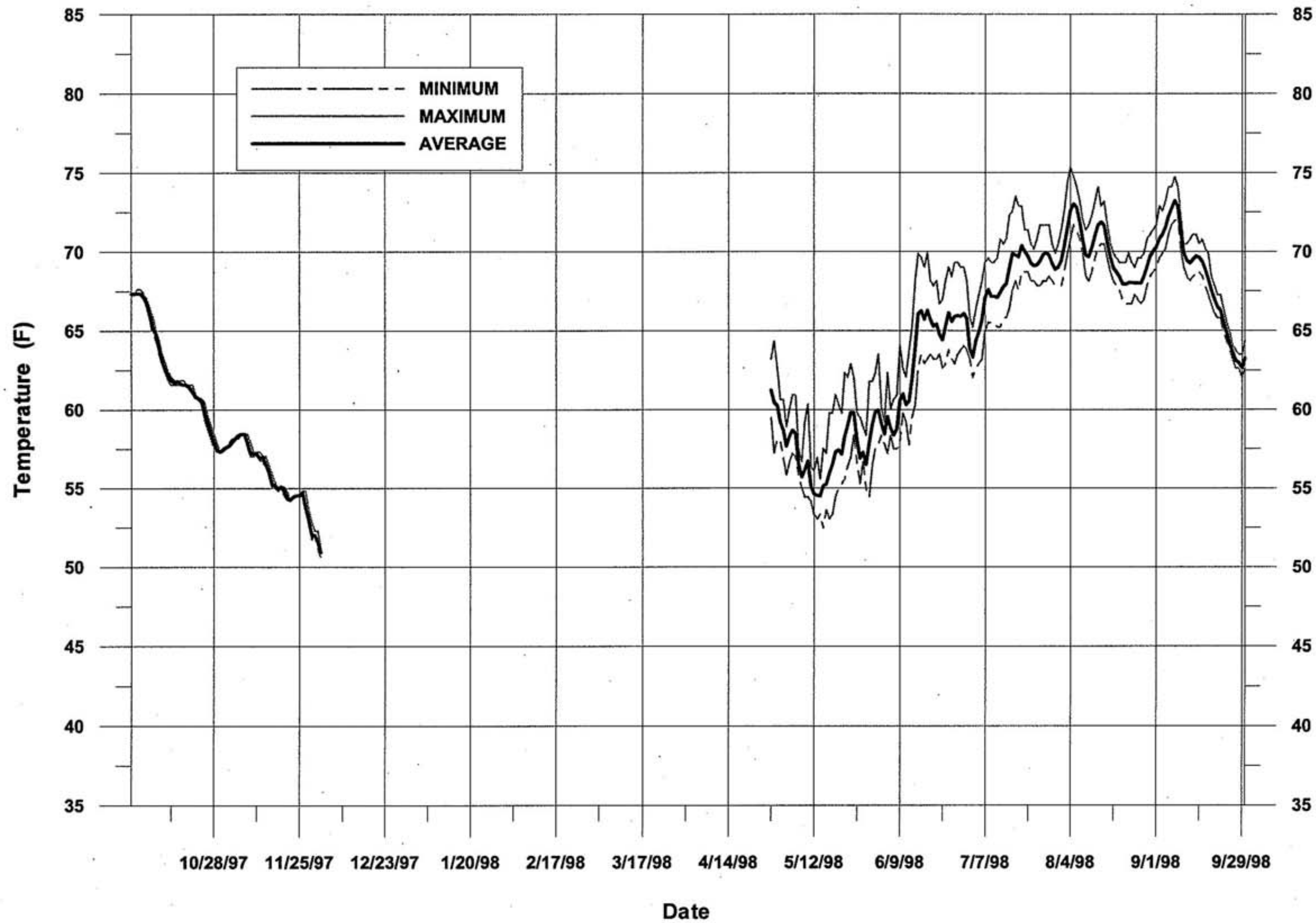
Appendix Q-6

MPWMD Temperature Data Graphs for Surface of San Clemente Reservoir, 1997-2003

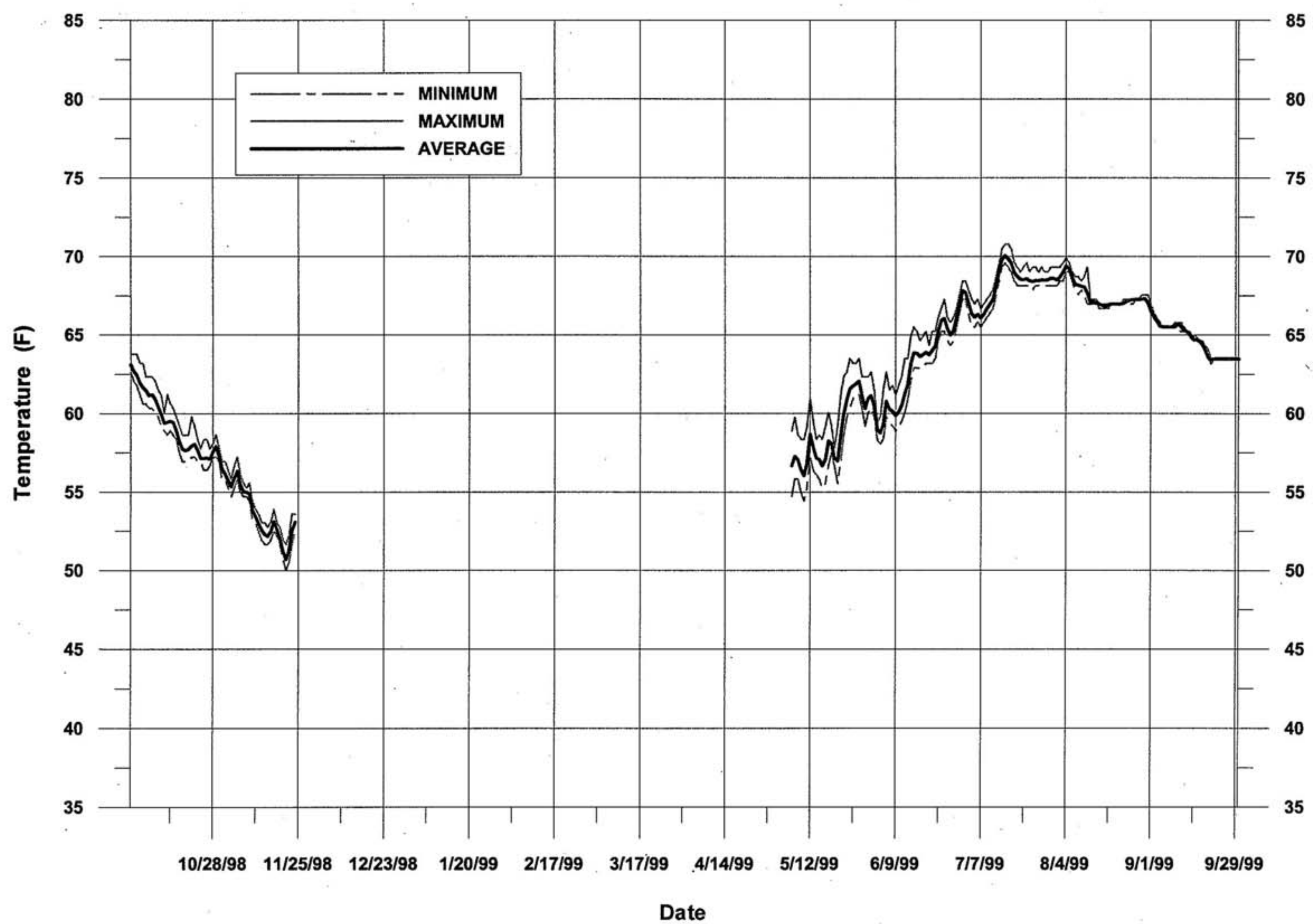
San Clemente Reservoir Surface Site
WY 1997



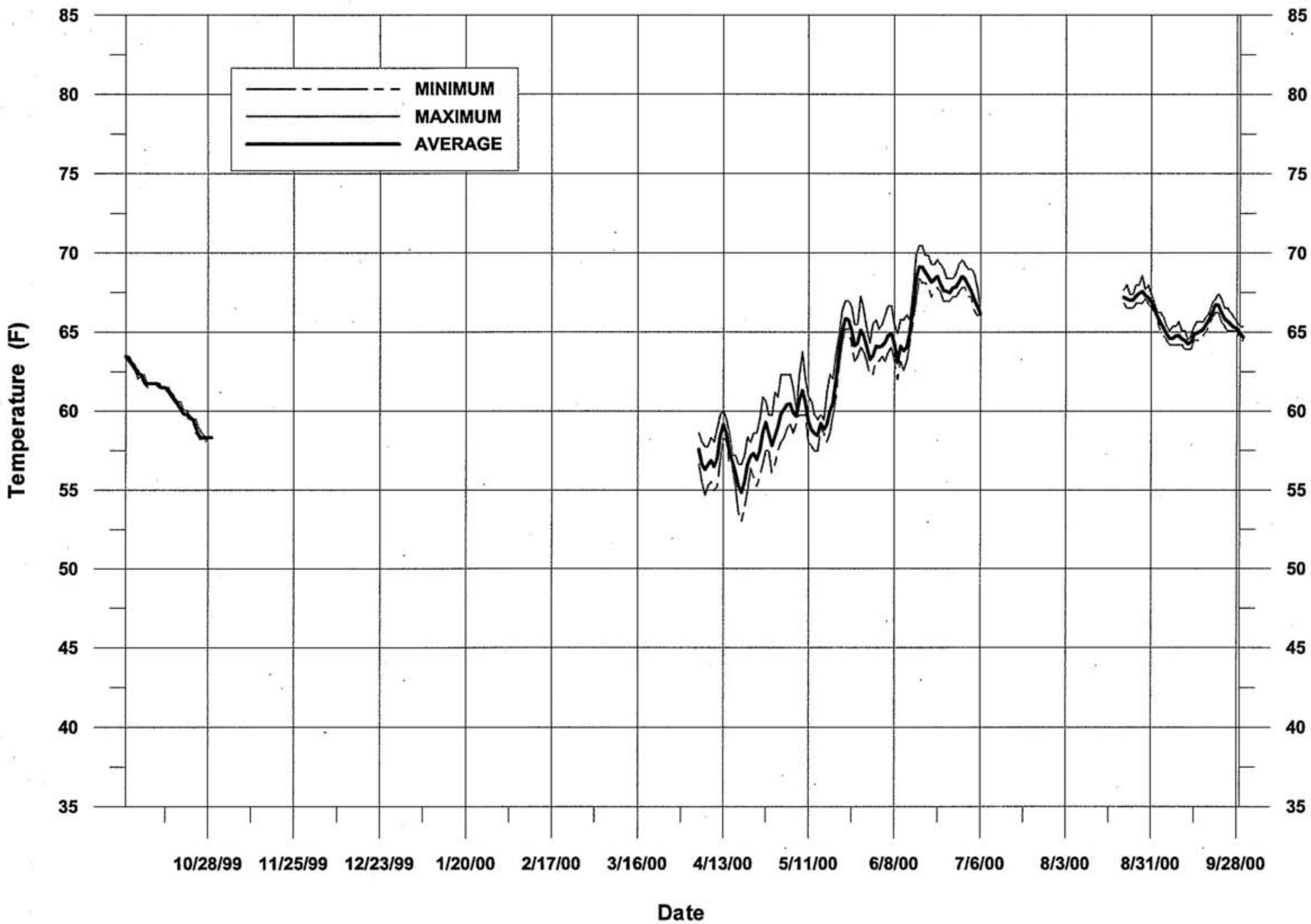
San Clemente Reservoir Surface Site
WY 1998



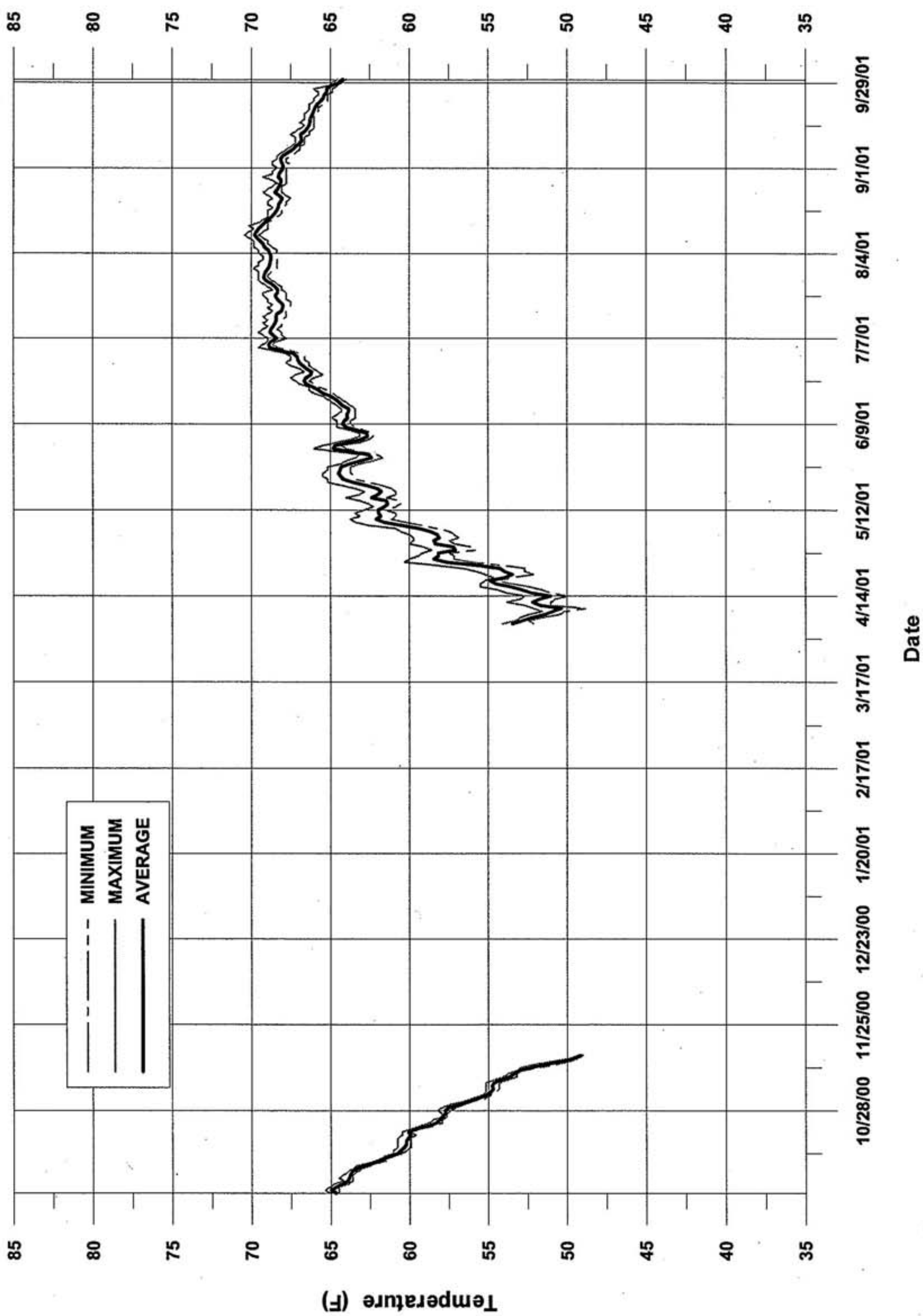
San Clemente Reservoir Surface Site
WY 1999

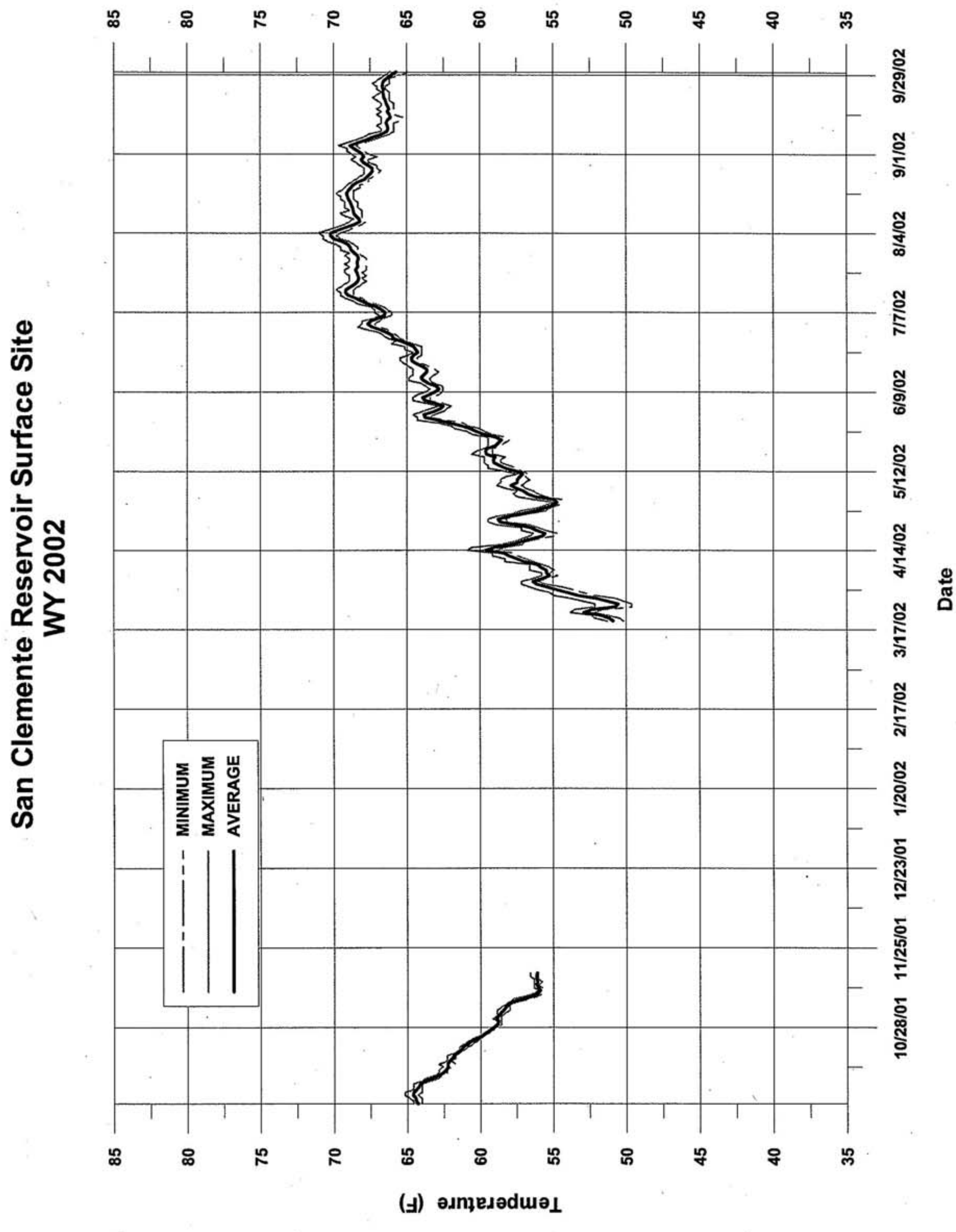


San Clemente Reservoir Surface Site
WY 2000

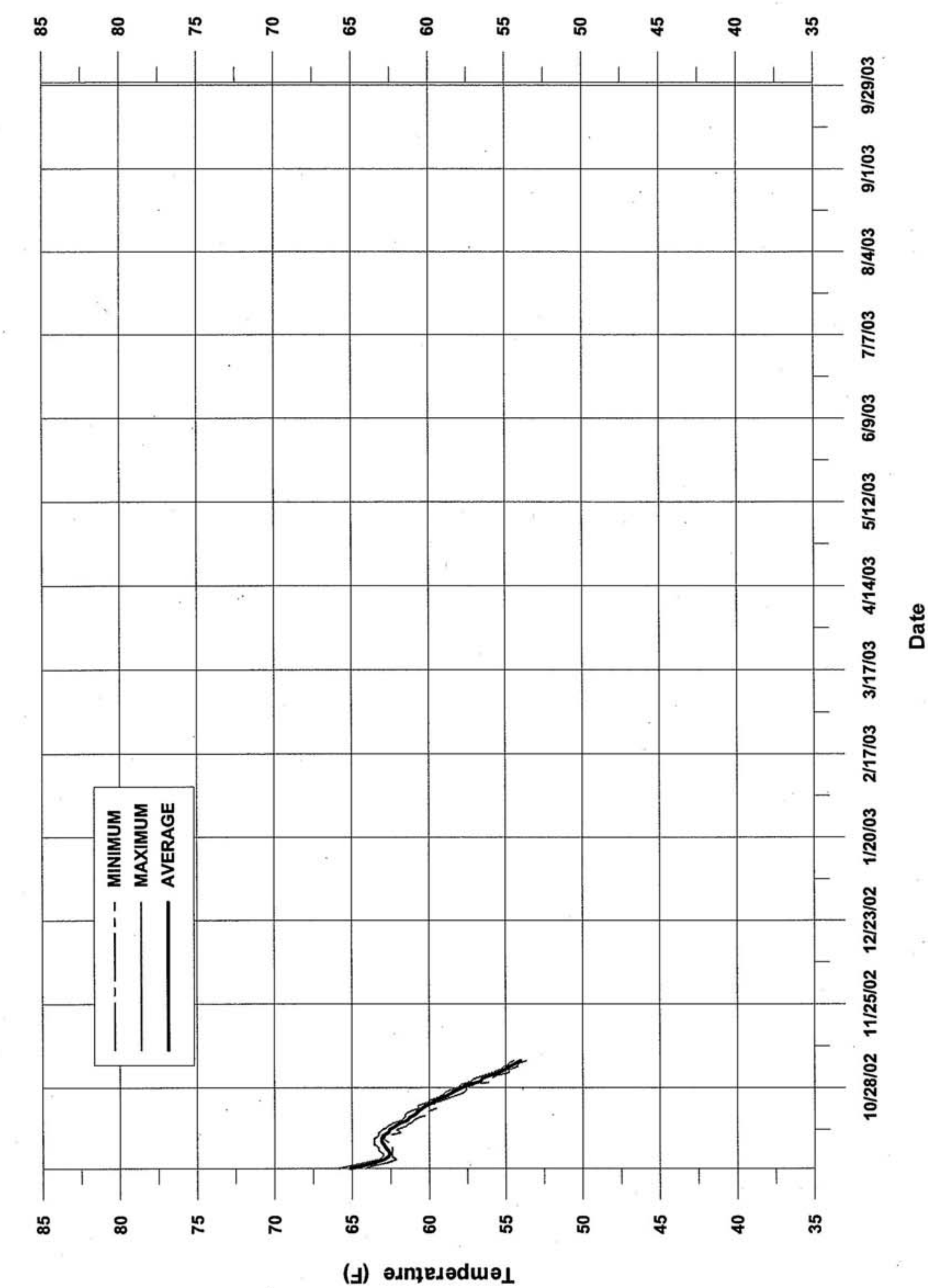


San Clemente Reservoir Surface Site
WY 2001



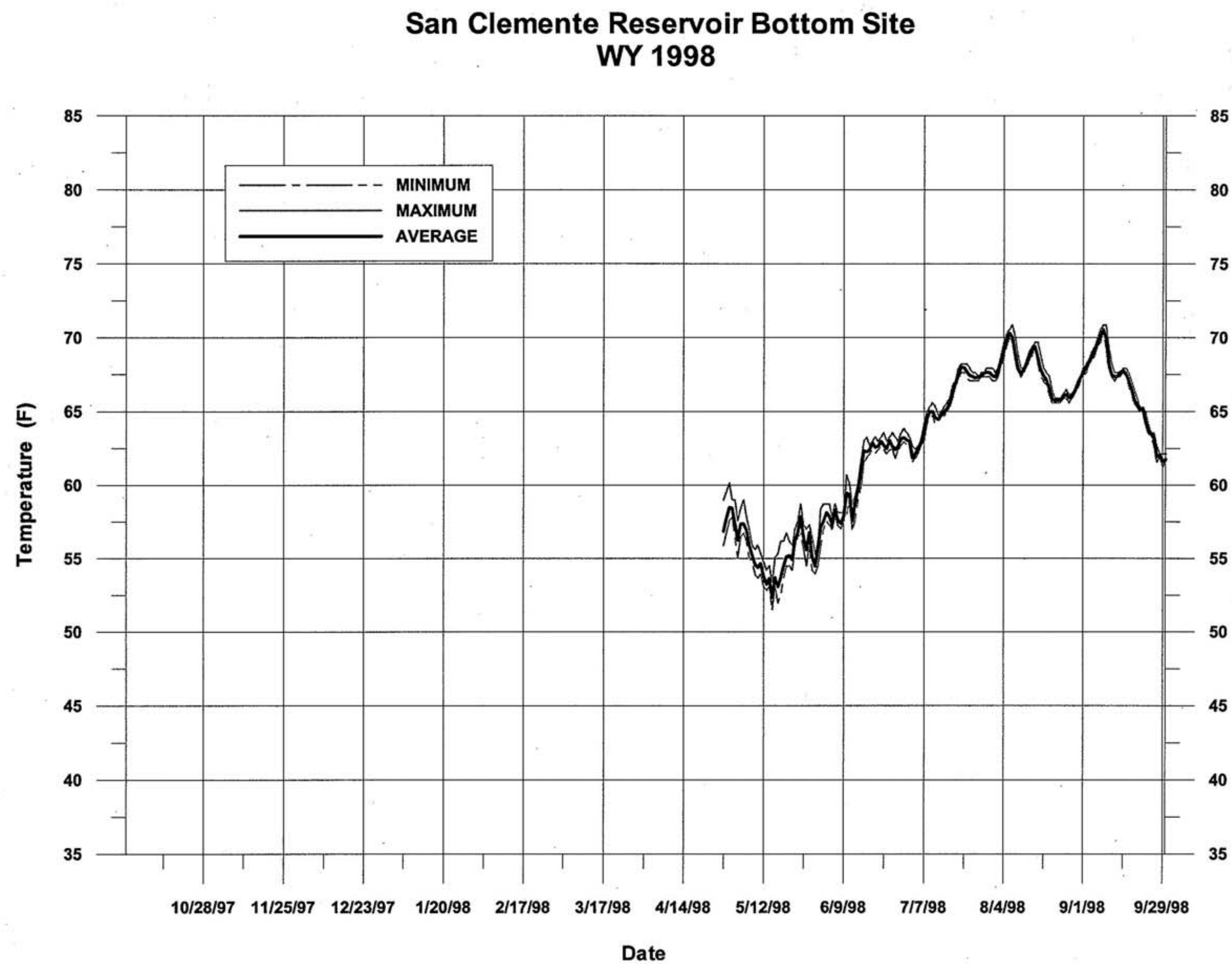

San Clemente Reservoir Surface Site
WY 2002
MINIMUM
MAXIMUM
AVERAGE
Temperature (F)
85
80
75
70
65
60
55
50
45
40
35
Date
10/28/01
11/25/01
12/23/01
1/20/02
2/17/02
3/17/02
4/14/02
5/12/02
6/9/02
7/7/02
8/4/02
9/1/02
9/29/02

San Clemente Reservoir Surface Site
WY 2003



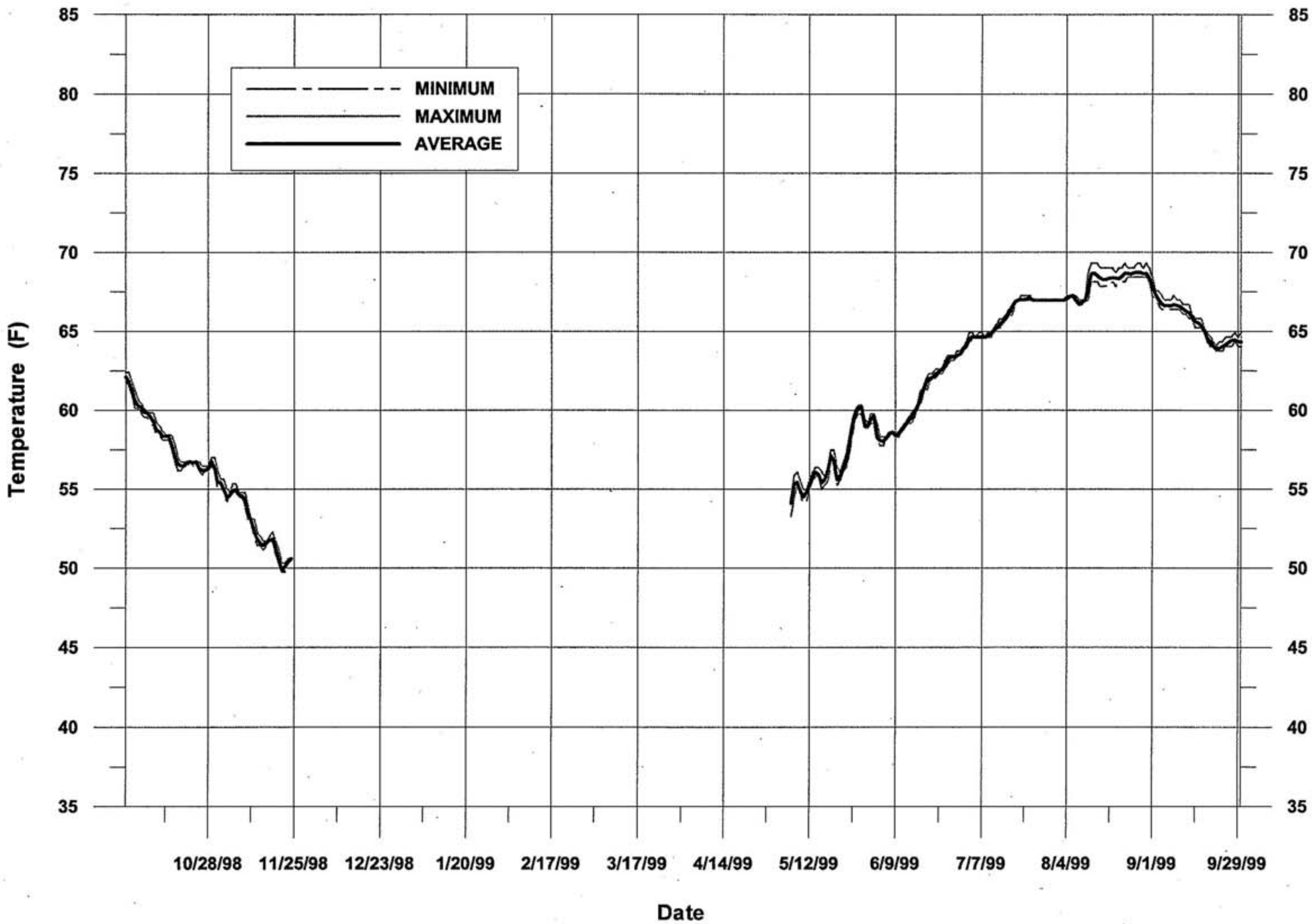
Appendix Q-7

MPWMD Temperature Data Graphs for Bottom of San Clemente Reservoir, 1998-2003

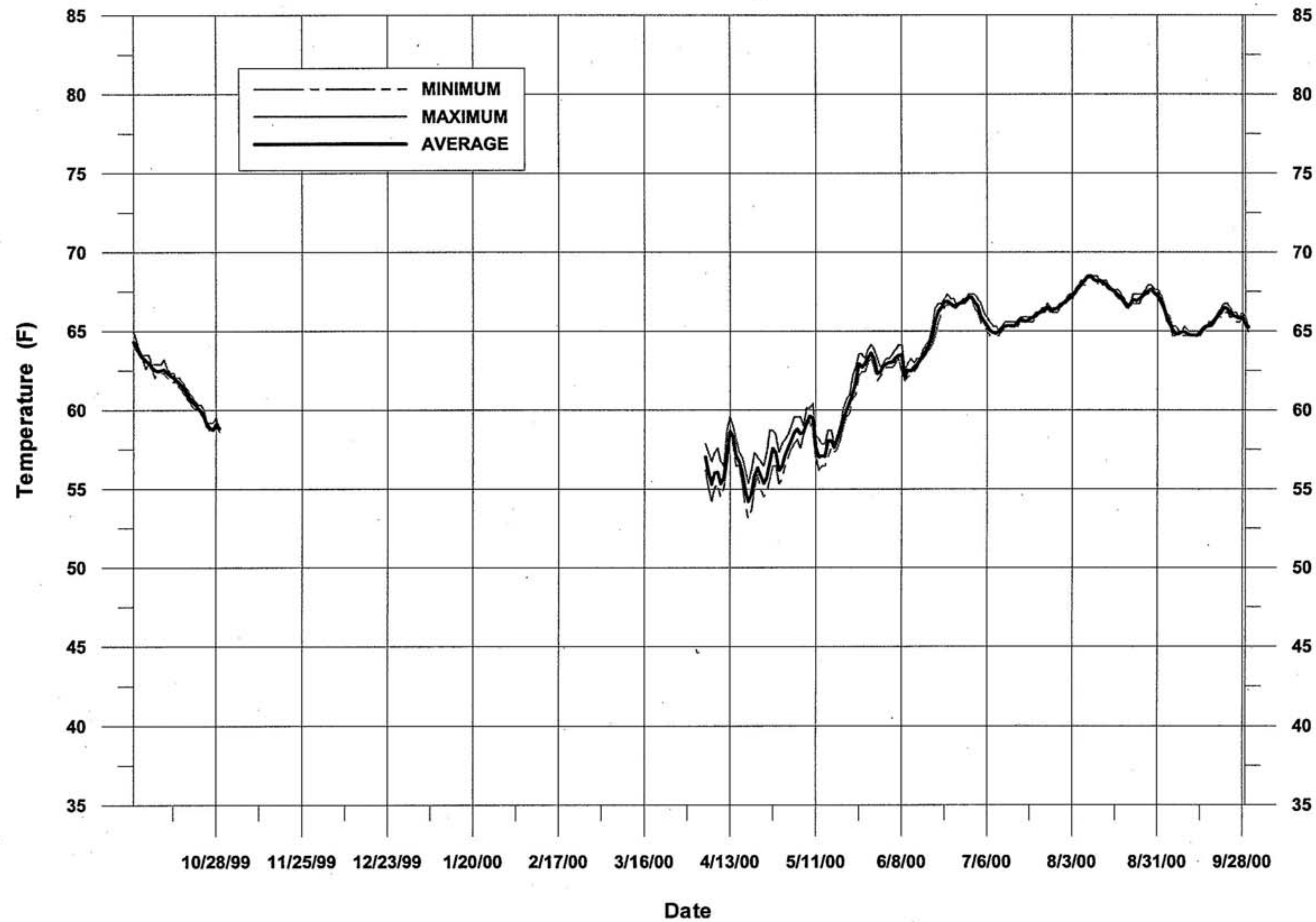


San Clemente Reservoir Bottom Site
WY 1998
MINIMUM
MAXIMUM
AVERAGE
Temperature (F)
85
80
75
70
65
60
55
50
45
40
35
10/28/97
11/25/97
12/23/97
1/20/98
2/17/98
3/17/98
4/14/98
5/12/98
6/9/98
7/7/98
8/4/98
9/1/98
9/29/98
Date

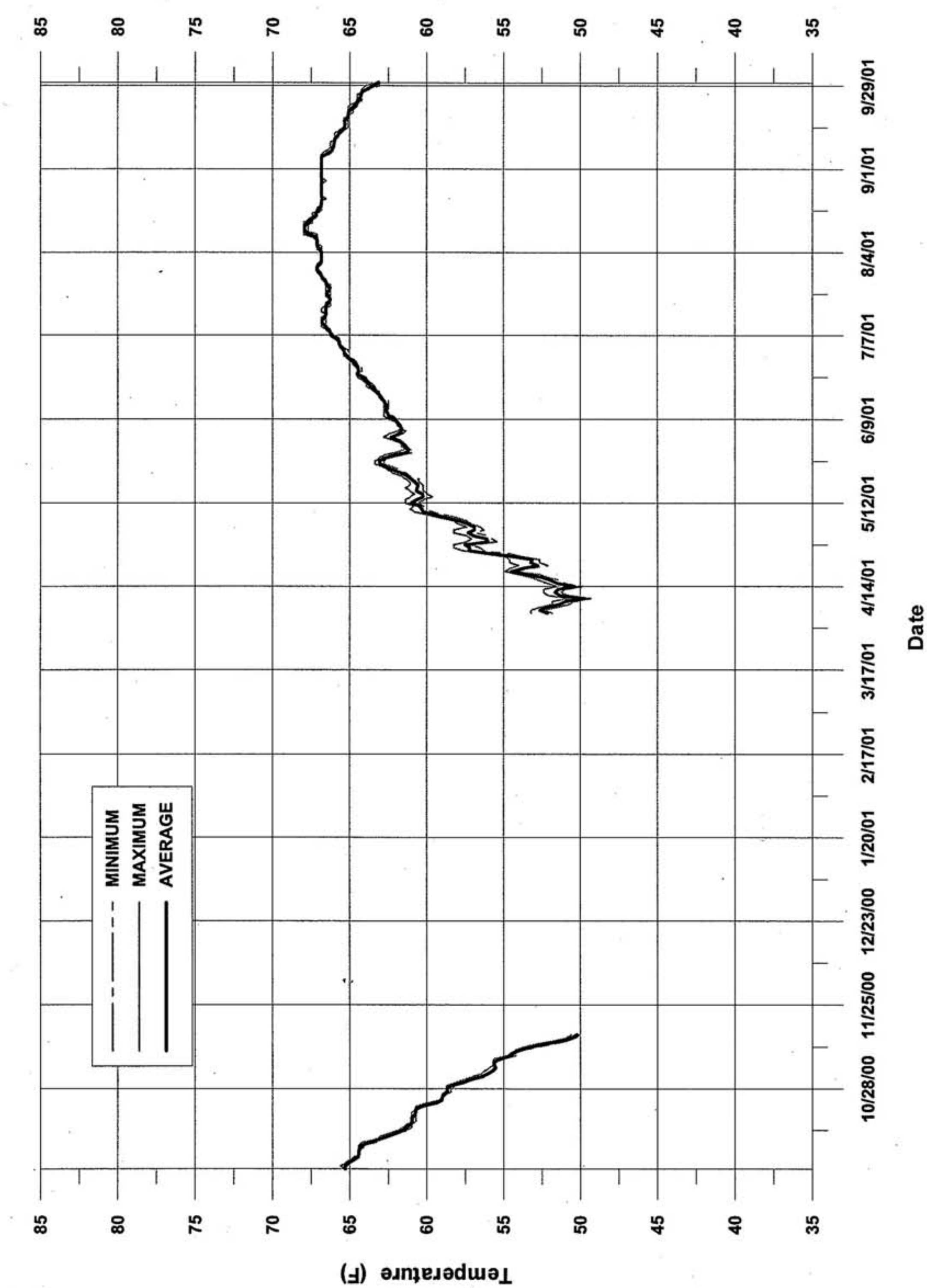
San Clemente Reservoir Bottom Site
WY 1999



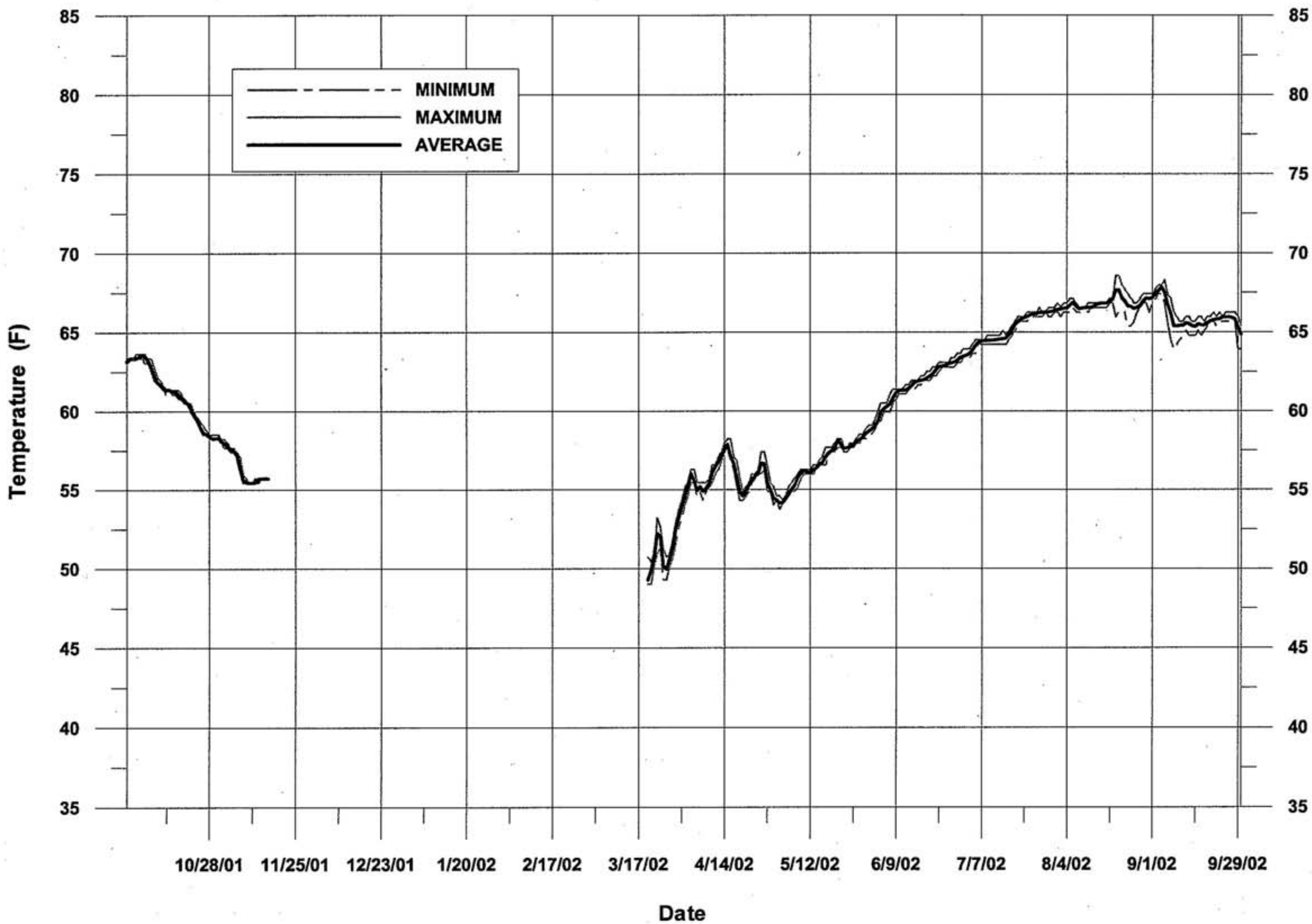
San Clemente Reservoir Bottom Site
WY 2000



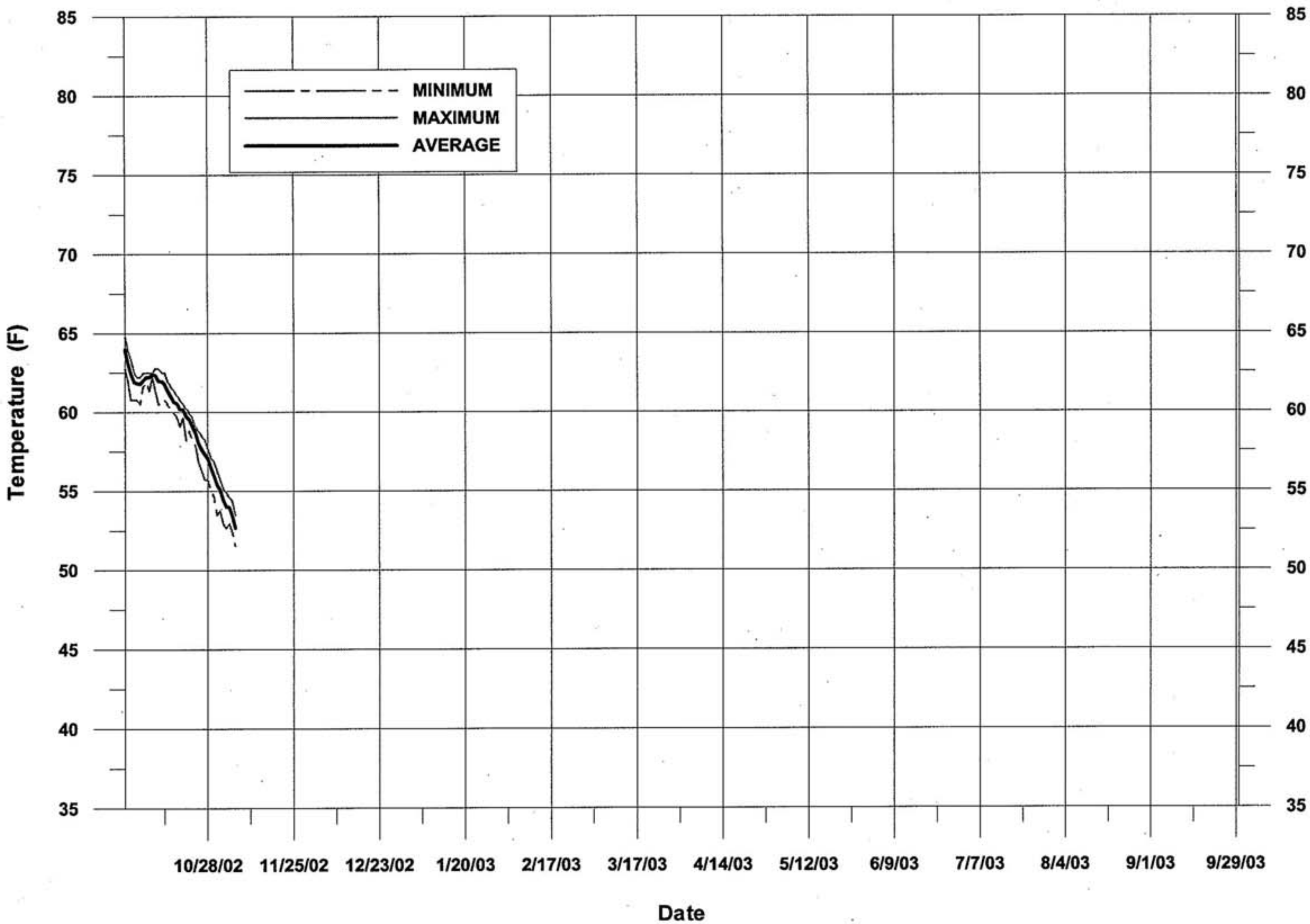
San Clemente Reservoir Bottom Site
WY 2001



San Clemente Reservoir Bottom Site
WY 2002



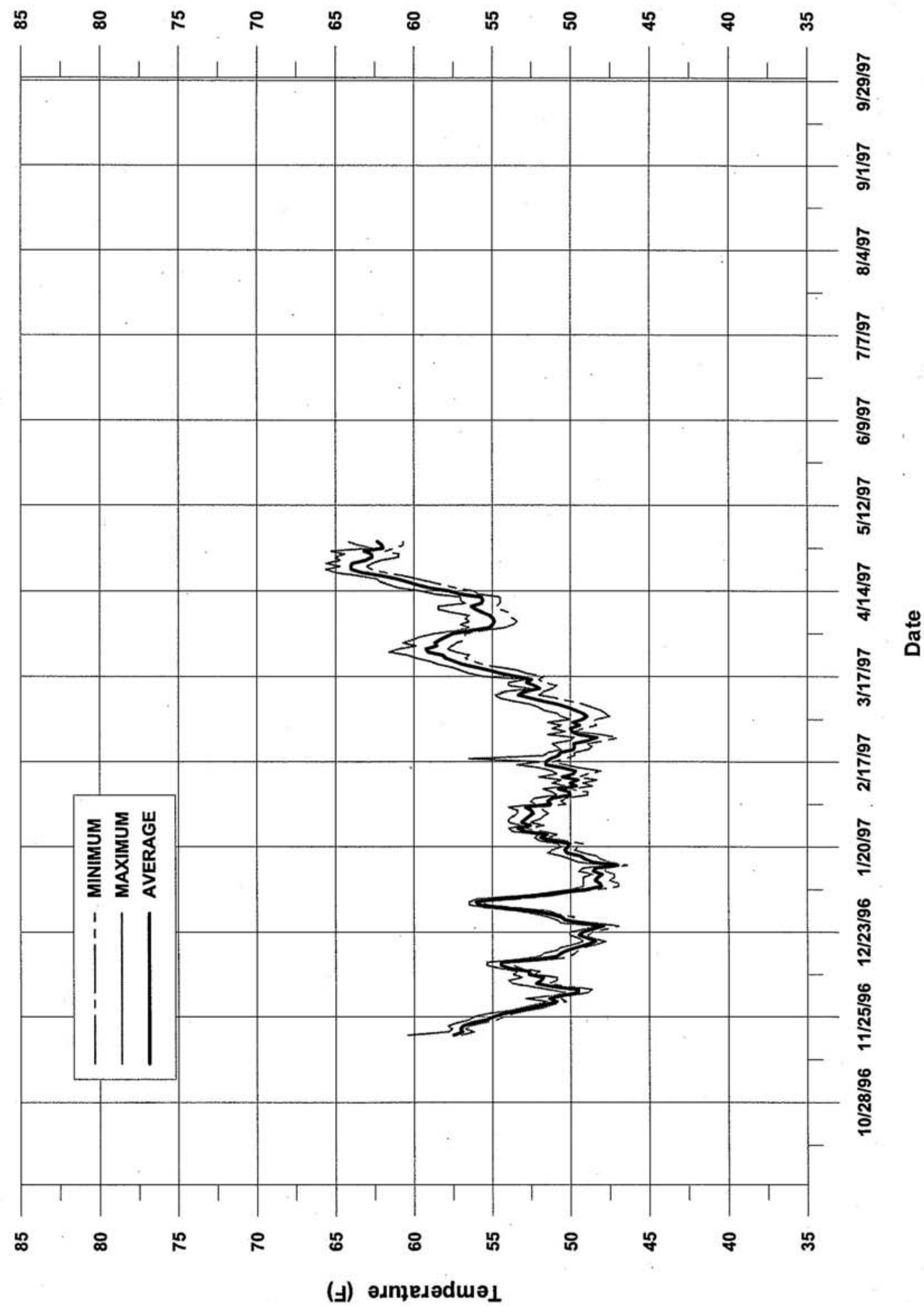
San Clemente Reservoir Bottom Site
WY 2003



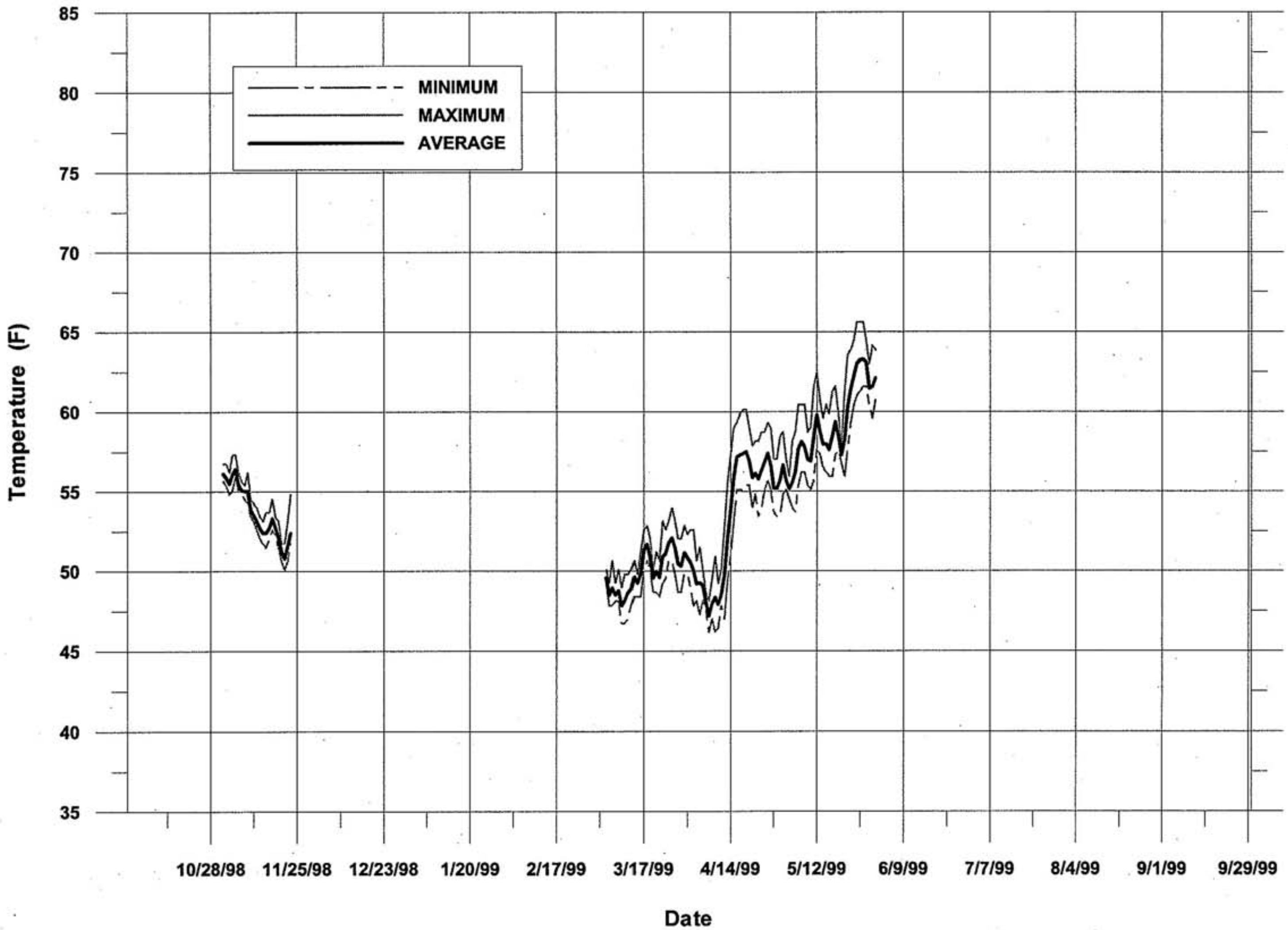
Appendix Q-8

MPWMD Temperature Data Graphs for Fish ladder, 1997-2003

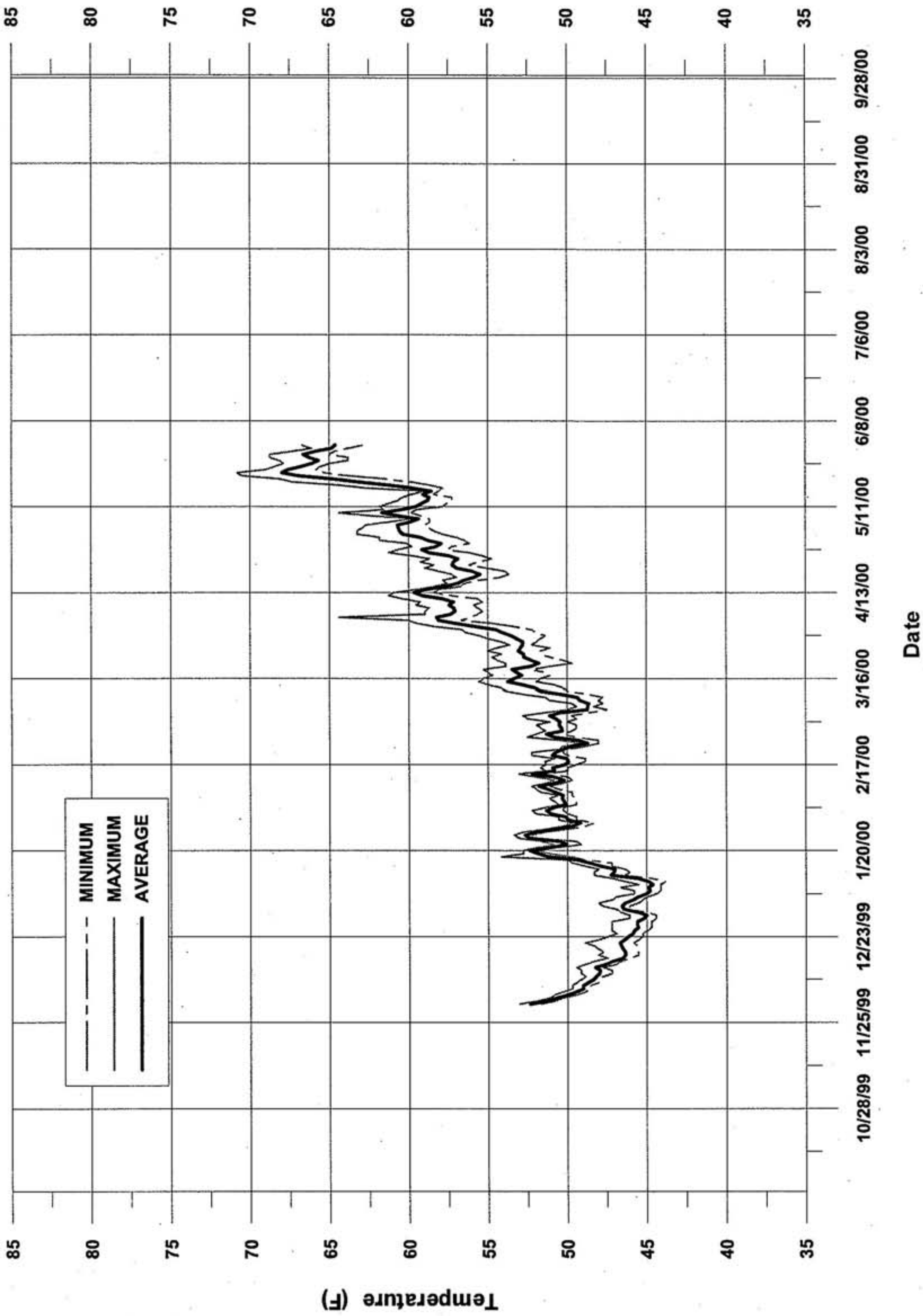
Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 1997



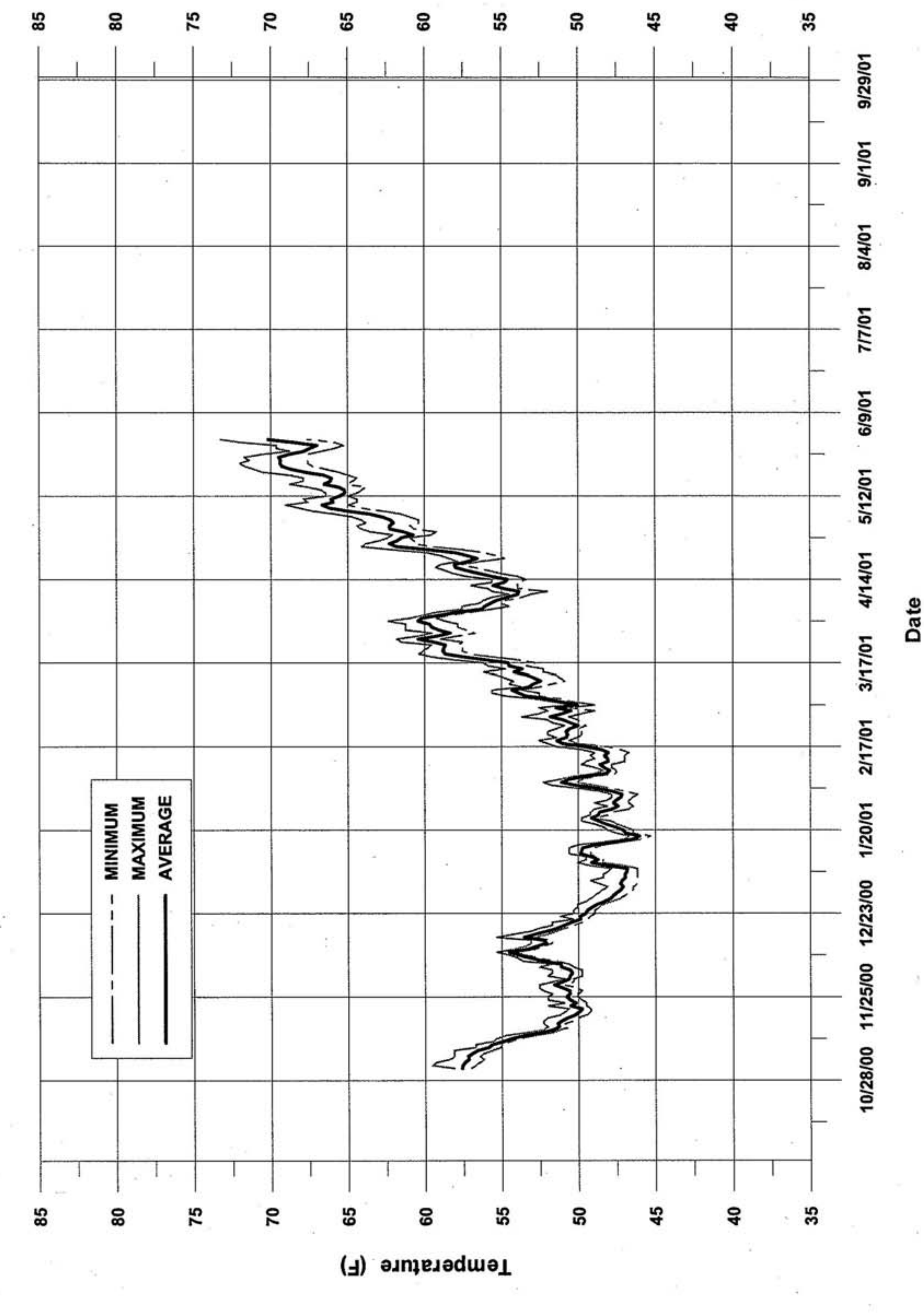
Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 1999



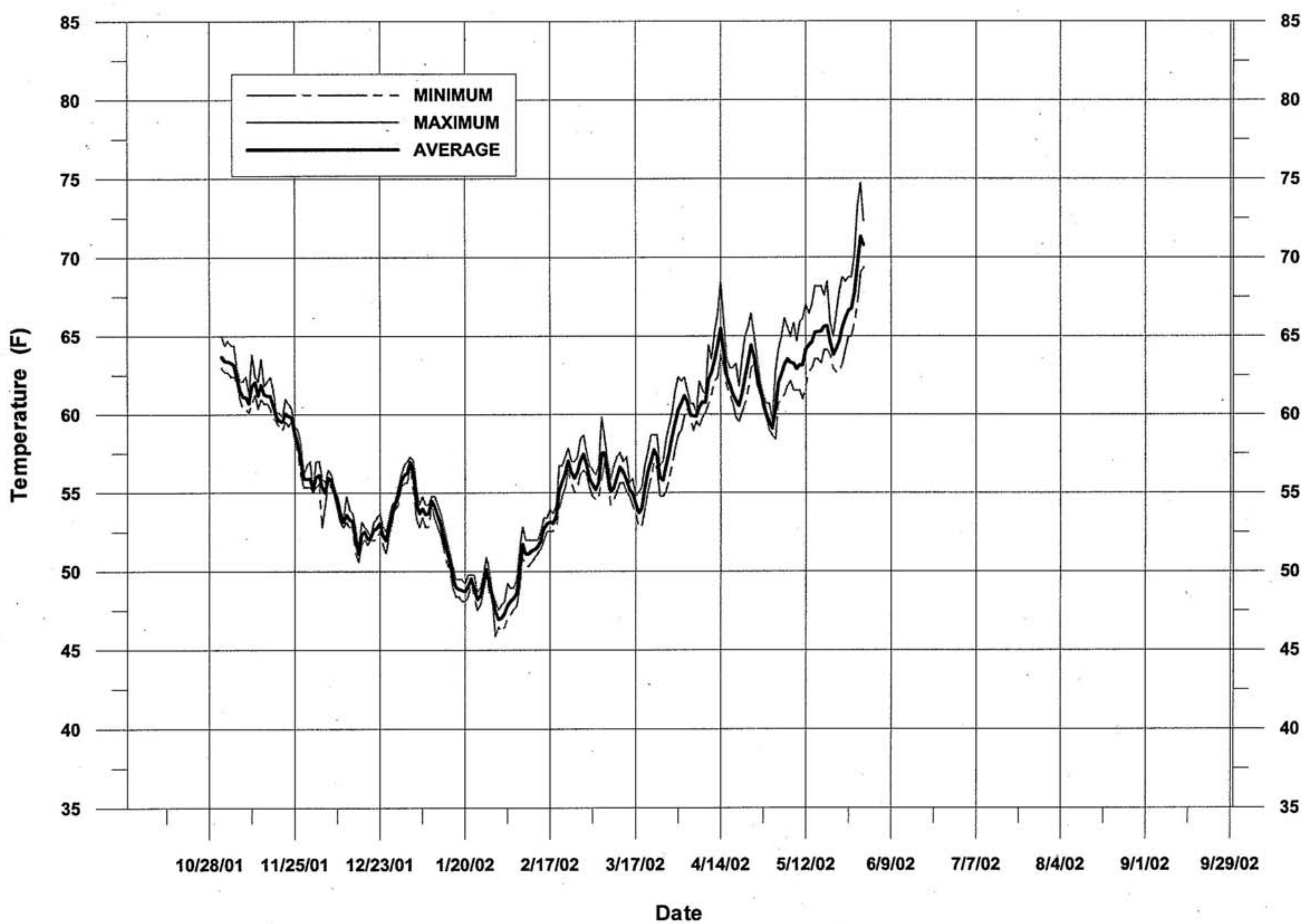
Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 2000



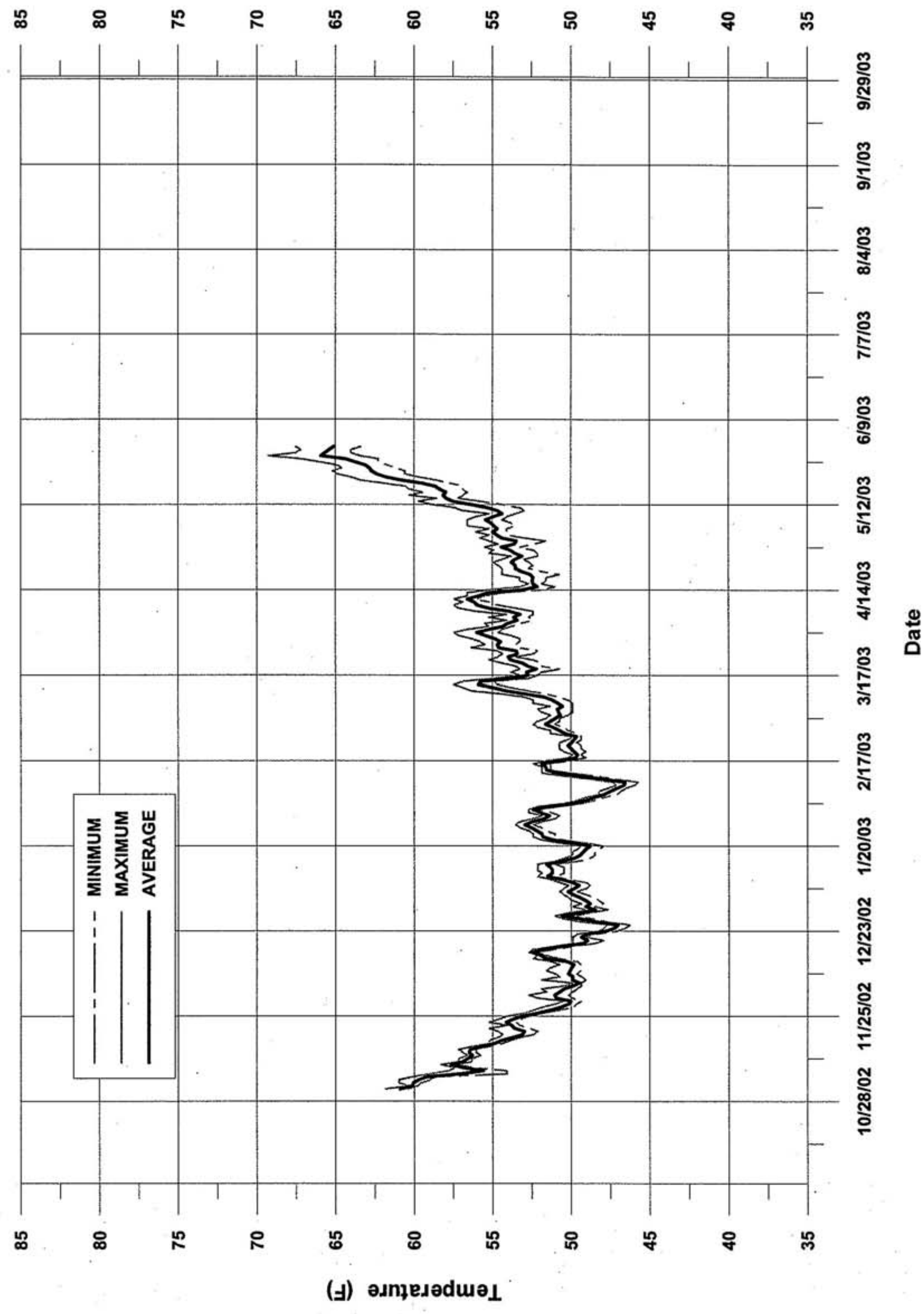
Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 2001



Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 2002



Carmel River Water Temperature at San Clemente Fish Ladder Site
WY 2003



Appendix Q-9. Daily Average Temperature, Dissolved Oxygen and Turbidity, 2003 and 2004 Drawdowns. First Riffle Below San Clemente Dam in the Carmel River.

2003 Daily Average Water Quality, First Riffle

	Temp (C)	DO (mg/L)	Turbidity (NTU)
16-Jun	19.11	9.00	1.3
17-Jun	18.17	8.97	1.9
18-Jun	17.71	8.95	2.1
19-Jun	17.22	9.00	2.4
20-Jun	16.65	9.25	2.6
21-Jun	17.18	9.26	2.2
22-Jun	16.03	9.00	2.8
23-Jun	16.40	9.37	3.6
24-Jun	16.72	9.31	4.7
25-Jun	17.72	9.01	9.6
26-Jun	18.72	8.70	17.4
27-Jun	19.53	8.50	14.5
28-Jun	19.84	8.56	14.4
29-Jun	19.71	8.62	12.8
30-Jun	19.37	8.68	13.5
1-Jul	19.17	8.78	14.1
2-Jul	18.91	8.85	14.8
3-Jul	18.75	9.00	11.8
4-Jul	18.89	9.05	10.7
5-Jul	19.09	9.06	10.9
6-Jul	18.99	9.10	11.1
7-Jul	19.02	9.27	10.7
8-Jul	18.82	9.42	11.8
9-Jul	18.95	9.11	12.5
10-Jul	19.28	8.90	11.9
11-Jul	19.34	8.86	10.2
12-Jul	19.51	8.83	9.6
13-Jul	19.39	8.91	9.9
14-Jul	19.44	9.39	9.4
15-Jul	19.45	9.33	9.7
16-Jul	19.31	9.32	9.6
17-Jul	19.57	9.34	10.4
18-Jul	19.91	9.23	13.2
19-Jul	19.78	9.06	16.4
20-Jul	19.37	9.19	23.4
21-Jul	20.03	9.13	26.2
22-Jul	20.43	8.85	24.3
23-Jul	20.32	8.89	21.4
24-Jul	20.19	9.05	19.3
25-Jul	20.38	9.04	17.3
26-Jul	20.39	8.99	15.8
27-Jul	20.81	8.98	15.0
28-Jul	20.96	8.8	15.2
29-Jul	20.78	8.83	15.7
30-Jul	20.59	9.05	16.0
31-Jul	20.33	9.05	15.8

2004 Daily Average Water Quality, First Riffle

	Temp (C)	DO (mg/L)	Turbidity (NTU)
6-May	16.0	9.5	1.6
7-May	15.7	9.6	0.9
8-May	16.3	9.6	1.7
9-May	15.7	9.4	0.8
10-May	16.2	9.5	0.5
11-May	16.3	9.6	1.3
12-May	16.0	9.6	1.0
13-May	16.1	9.6	1.3
14-May	16.3	9.5	1.9
15-May	16.5	9.5	1.6
16-May	16.3	9.5	2.8
17-May	16.5	9.4	1.9
18-May	16.5	9.4	2.3
19-May	16.3	9.4	2.2
20-May	16.6	9.3	2.0
21-May	16.6	9.6	2.4
22-May	17.0	9.2	2.5
23-May	16.8	9.3	3.5
24-May	17.0	8.9	4.1
25-May	17.1	8.9	4.5
26-May	17.4	8.8	5.8
27-May	17.9	8.9	6.4
28-May	18.0	9.0	7.5
29-May	17.6	8.9	9.6
30-May	17.5	9.0	10.6
31-May	17.8	8.9	11.8
1-Jun	17.8	8.9	11.7
2-Jun	18.2	8.9	11.8
3-Jun	18.4	8.8	12.1
4-Jun	18.4	8.6	11.6
5-Jun	18.6	8.5	11.3
6-Jun	18.7	8.6	11.3
7-Jun	18.9	8.5	11.4
8-Jun	18.3	8.7	12.3
9-Jun	18.2	8.9	11.6
10-Jun	18.6	8.7	12.0

Appendix Q-10. 2004 Temperature, Dissolved Oxygen and Turbidity Values Collected near Old Carmel River Dam Bridge (OCRD) and Sleepy Hollow Ford During Drawdown Period

	OCRD			Sleepy Hollow Ford		
	Temperature (C)	DO (mg/L)	Turbidity (NTU)	Temperature (C)	DO (mg/L)	Turbidity (NTU)
11-May	16.1	9.2	0.5	15.7	9.3	1.1
12-May	16.2	9.5	0.6	16.9	9.3	1.2
17-May	16.4	9.1	2.2	17.0	9.0	1.7
20-May	16.3	9.3	2.5	16.1	9.3	2.6
23-May	16.5	8.9	3.3	16.3	9.1	2.7
26-May	18.2	8.7	4.1	19.1	8.9	3.2
29-May	16.8	8.8	8.5	16.6	9.0	6.1
1-Jun	18.6	8.7	8.6	19.6	9.0	4.5
5-Jun	17.2	8.4	9.9	16.4	8.5	6.5
7-Jun	19.5	8.3	9.2	20.4	8.9	6.0
10-Jun	17.8	8.6	11.9	17.4	8.6	8.6

Appendix Q-11

MPWMD Water Quality Data Summary Tables at SHW, 1991-2003

Table 7. Sleepy Hollow Weir Water Quality Data For WY 1992.

Date	Time	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Specific Conductance (umhos)	Color	Odor	Turbidity
21-Nov-91		54.0	9	10.0	7.5	350	clear	none	none
20-Dec-91		45.0	11	10.0	7.8	NA	clear	none	none
02-Jan-92		45.5	11	5.0	7.8	NA	yllw/brn	earthy	none
14-Jan-92		43.5	12	7.5	7.5	260	clear	none	none
30-Jan-92		46.5	12	10.0	7.8	NA	clear	none	none
19-Feb-92		50.0	11	5.0	7.5	NA	clear	none	none
02-Mar-92		51.5	10	10.0	7.5	NA	clear	none	none
17-Mar-92		50.5	11	7.8	7.5	220	clear	none	none
01-Apr-92		56.5	10	7.5	7.8	245	clear	none	slight
15-May-92		68.0	9	5.0	7.8	265	clear	none	none
11-Jun-92		68.0	10	5.0	7.8	265	clear	none	none
01-Jul-92		67.0	8	5.0	7.8	285	clear	sl.oranic	slight
13-Jul-92		70.5	9	10.0	7.8	285	clear	none	none
03-Aug-92		69.5	9	5.0	7.8	300	clear	none	none
14-Aug-92		68.5	8	7.5	7.5	305	clear	sl.earthy	slight
02-Sep-92		67.5	8	7.5	7.5	330	clear	none	slight
17-Sep-92		65.5	9	10.0	7.8	335	clear	none	slight
Minimum		43.5	8	5.0	7.5	220	NA	NA	NA
Maximum		70.5	12	10.0	7.8	350	NA	NA	NA
Mean		58.1	9.8	7.5	7.6	287.1	NA	NA	NA

Table 8. Sleepy Hollow Weir Water Quality Data For WY 1993.

Date	Time	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Specific Conductance (umhos)	Color	Odor	Turbidity
01-Oct-92		64.5	9	10.0	7.5	340	clear	none	slight
30-Oct-92		61.0	8	10.0	7.5	350	clear	none	slight
16-Nov-92		53.0	9	5.0	7.8	345	clear	none	slight
02-Dec-92		48.0	11	5.0	7.8	350	clear	none	slight
15-Dec-92		48.0	11	10.0	7.5	325	clear	none	none
28-Dec-92		45.5	11	7.5	7.5	310	clear	none	none
19-Jan-93		50.0	12	5.0	7.5	165	brownish	none	moder.
02-Feb-93		45.5	11	6.0	7.5	195	clear	none	none
16-Feb-93		47.5	11	5.0	7.8	215	clear	none	none
03-Mar-93		49.5	10	5.0	7.5	200	clear	sl.earthy	moder.
15-Mar-93		53.5	10	5.0	7.8	235	clear	none	none
30-Mar-93		52.0	10	5.0	7.8	235	clear	none	moderate
15-Apr-93		49.0	11	7.5	7.5	250	clear	none	none
30-Apr-93		59.0	10	5.0	7.5	260	clear	none	none
17-May-93		61.0	11	10.0	7.8	275	clear	none	none
01-Jun-93		65.0	10	5.0	7.8	280	clear	none	none
24-Jun-93		68.0	8	5.0	8.0	295	clear	none	none
08-Jul-93		69.0	8	5.0	8.0	290	clear	none	none
28-Jul-93		67.0	9	5.0	8.0	NA	clear	none	none
17-Aug-93		69.0	10	10.0	8.0	320	clear	none	slight
31-Aug-93		67.5	9	10.0	7.5	305	clear	none	none
23-Sep-93		62.5	9	10.0	8.0	315	clear	none	none
Minimum		45.5	8	5.0	7.5	165			
Maximum		69.0	12	10.0	8.0	350			
Mean		57.0	9.9	6.9	7.69	278.8			

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Table 9. Sleepy Hollow Weir Water Quality Data For WY 1994.

Date	Time	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Specific Conductance (umhos)	Color	Odor	Turbidity
01-Oct-93		63.0	9	10.0	8.0	350	clear	none	none
15-Oct-93		64.0	10	10.0	8.0	360	clear	none	none
01-Nov-93		57.0	10	10.0	7.8	375	clear	none	none
15-Nov-93		49.0	10	15.0	8.0	355	clear	none	none
01-Dec-93		47.5	10	10.0	7.5	355	clear	none	none
15-Dec-93		48.5	11	10.0	8.0	340	clear	none	none
29-Dec-93		47.0	11	10.0	7.5	365	clear	none	none
17-Jan-94		45.5	11	10.0	7.5	350	clear	none	none
01-Feb-94		47.5	12	10.0	8.0	320	clear	none	none
14-Feb-94		45.5	12	10.0	8.0	300	clear	none	none
01-Mar-94		47.0	11	5.0	8.0	260	clear	none	none
15-Mar-94		56.0	11	5.0	8.0	265	clear	none	none
01-Apr-94		57.0	10	10.0	8.0	310	clear	none	none
21-Apr-94		62.0	10	10.0	8.0	310	clear	none	none
23-May-94		63.0	9	5.0	8.0	300	clear	sweet	none
28-Jun-94		66.0	9	10.0	7.5	330	clear	none	none
13-Jul-94		65.0	9	5.0	8.0	330	clear	none	none
03-Aug-94		63.0	10	5.0	8.0	320	clear	none	none
15-Aug-94		68.0	10	10.0	7.5	310	clear	none	none
02-Sep-94	13:00	63.0	9	5.0	8.0	335	clear	none	none
08-Sep-94	13:30	65.0	8	7.5	8.0	345	clear	none	none
30-Sep-94	11:00	62.0	8	5.0	7.5	340	clear	none	none
Minimum		45.5	8	5.0	7.5	260			
Maximum		68.0	12	15.0	8.0	375			
Mean		56.9	10	8.5	7.9	328.4			

Table 10. Sleepy Hollow Weir Water Quality Data For WY 1995

Date	Time	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Specific Conductance (umhos)	Color	Odor	Turbidity
20-Oct-94	11:00	54.0	9	5.0	8.0	345	clear	none	none
31-Oct-94	15:30	57.0	9	10.0	8.0	335	clear	none	none
14-Nov-94	10:00	50.0	11	10.0	8.0	390	clear	none	none
01-Dec-94	13:00	48.0	11	5.0	8.0	370	clear	none	none
15-Dec-94	12:00	45.0	10	10.0	8.0	350	clear	none	none
29-Dec-94	13:30	46.5	11	5.0	8.0	360	clear	none	none
16-Jan-95	10:30	50.0	12	5.0	7.5	150	brownish	none	mod.
30-Jan-95	14:00	52.0	10	5.0	7.5	175	clear	none	slight
17-Feb-95	15:00	49.5	12	5.0	7.5	215	clear	none	none
30-Mar-95	11:00	51.0	11	5.0	8.0	215	grn/grey	none	mod.
13-Apr-95	15:00	55.0	10	5.0	8.0	245	none	none	slight
01-May-95	14:15	58.0	11	NA	7.8	225	clear	none	mod.
15-May-95	14:30	54.0	10	5.0	8.0	240	grey/grn.	none	mod.
30-May-95	11:30	62.0	11	10.0	8.0	240	clear	none	slight
16-Jun-95	12:15	60.0	11	5.0	8.0	225	olive grn	none	mod.
03-Jul-95	14:00	70.0	8	5.0	7.5	NA	clear	none	none
14-Jul-95	13:30	72.0	9	7.5	8.0	285	clear	none	none
28-Jul-95	13:30	73.0	9	5.0	8.0	300	clear	none	none
25-Aug-95	14:45	70.0	9	10.0	8.0	310	clear	none	none
01-Sep-95	09:30	63.0	8	10.0	8.0	310	clear	metalic	none
15-Sep-95	13:00	70.0	11	10.0	8.0	310	clear	none	none
29-Sep-95	10:40	66.0	10	10.0	8.0	325	clear	none	none
Minimum		45.0	8	5.0	7.5	150			
Maximum		73.0	12	10.0	8.0	390			
Mean		58.0	10.1	7.0	7.9	281.9			

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Table 11. Sleepy Hollow Weir Water Quality Data For WY 1996

Date	Time	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Specific Conductance (umhos)	Color	Odor	Turbidity
13-Oct-95	12:30	63.0	13.0	10.0	8.0	330	clear	none	none
2-Nov-95	12:35	59.0	11.0	5.0	8.0	335	clear	none	none
15-Nov-95	13:30	57.0	10.0	10.0	8.0	350	clear	none	none
01-Dec-95	13:30	53.0	11.0	10.0	8.0	355	clear	none	none
14-Dec-95	15:00	53.0	11.0	10.0	8.0	325	yellow/brwn	none	high
02-Jan-96	15:30	50.0	10.0	5.0	8.0	305	clear	none	none
16-Jan-96	12:35	50.0	11.0	5.0	8.0	320	clear	none	moderate
01-Feb-96	10:05	52.0	12.0	5.0	8.0	175	slightly brwn	none	high
15-Feb-96	10:45	53.0	11.0	10.0	8.0	205	clear	none	none
01-Mar-96	14:00	50.0	12.0	10.0	7.5	175	clear	none	slight/mod
18-Mar-96	14:15	56.0	12.0	10.0	8.0	200	clear	none	none
03-Apr-96	14:00	55.0	12.0	NA	8.0	210	clear	none	none
17-Apr-96	10:25	56.0	10.0	5.0	8.0	225	clear	none	none
30-Apr-96	12:50	64.0	11.0	5.0	8.0	230	clear	none	none
20-May-96	12:00	62.0	10.0	10.0	8.0	220	clear	none	none
03-Jun-96	13:45	70.0	10.0	10.0	8.0	230	clear	none	none
18-Jun-96	13:00	68.0	10.0	10.0	8.0	245	clear	none	none
01-Jul-96	12:15	72.0	9.0	10.0	8.0	245	clear	none	none
15-Jul-96	11:20	71.0	9.0	5.0	8.0	255	clear	none	none
07-Aug-96	16:15	74.0	9.0	5.0	8.0	275	clear	none	none
14-Aug-96	15:00	76.0	10.0	10.0	8.0	275	clear	none	none
29-Aug-96	16:00	74.0	8.0	7.5	7.5	310	clear	none	none
Minimum		50.0	8.0	5.0	7.5	175			
Maximum		76.0	13.0	10.0	8.0	355			
Mean		60.8	10.5	8.0	8.0	263.4			

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Table II-B-1. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 1997.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
01-Oct-96	13:50	64.0	11.0	5.0	8.0	380	none
17-Oct-96	12:00	57.0	10.0	5.0	8.0	335	none
06-Nov-96	10:00	50.0	10.0	5.0	8.0	380	none
16-Nov-96	15:00	53.0	10.0	5.0	8.0	380	none
02-Dec-96	13:30	48.0	11.0	5.0	8.0	260	none
14-Jan-97	15:30	46.0	12.0	5.0	8.0	175	none
03-Feb-97	15:00	51.0	11.0	5.0	7.5	180	none
14-Feb-97	13:00	49.0	12.0	5.0	8.0	190	slight
28-Feb-97	13:30	50.0	10.0	5.0	8.0	215	none
13-Mar-97	11:15	51.0	12.0	5.0	8.0	225	none
31-Mar-97	12:30	57.0	11.0	5.0	8.0	250	none
15-Apr-97	13:45	60.0	10.0	5.0	8.0	255	none
01-May-97	12:50	60.0	10.0	5.0	8.0	265	none
14-May-97	11:20	63.0	11.0	5.0	8.0	275	none
30-May-97	12:35	69.5	10.0	5.0	8.0	295	none
17-Jun-97	13:00	72.5	8.0	5.0	8.0	320	none
01-Jul-97	13:10	69.5	10.0	5.0	8.0	305	none
17-Jul-97	12:15	71.5	10.0	5.0	8.0	320	none
01-Aug-97	11:40	68.0	10.0	5.0	8.0	350	none
14-Aug-97	13:25	75.0	10.0	5.0	8.0	330	none
04-Sep-97	15:30	74.0	8.0	5.0	8.0	340	none
16-Sep-97	13:30	68.0	9.0	5.0	8.0	N/A	none
Minimum		46.0	8.0	5.0	7.5	175	
Maximum		75.0	12.0	5.0	8.0	380	
Average		60.3	10.3	5.0	8.0		

Table II-B-2. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 1998.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
01-Oct-97	10:25	65.0	9.0	5.0	8.0	365	none
15-Oct-97	10:20	59.0	10.0	5.0	8.0	370	none
31-Oct-97	12:10	60.5	10.0	5.0	8.0	410	none
17-Nov-97	13:00	56.0	9.0	5.0	8.0	400	slight
02-Dec-97	11:45	51.0	11.0	5.0	8.0	280	slight
15-Dec-97	10:45	49.5	12.0	5.0	8.0	255	moderate
31-Dec-97	14:00	44.0	12.0	5.0	8.0	300	slight
14-Jan-98	10:30	50.0	11.0	5.0	7.5	175	moderate
29-Jan-98	14:30	52.0	10.0	5.0	7.5	190	high
13-Feb-98	13:25	54.0	12.0	5.0	8.0	180	moderate
27-Feb-98	9:30	52.5	12.0	5.0	8.0	205	moderate
17-Mar-98	14:30	57.0	11.0	5.0	8.0	245	slight
02-Apr-98	11:10	51.5	11.0	5.0	8.0	235	high
15-Apr-98	15:15	53.0	11.0	5.0	8.0	240	slight
30-Apr-98	12:00	60.0	11.0	5.0	8.0	270	none
14-May-98	13:30	55.0	10.0	5.0	7.5	260	none
29-May-98	11:15	56.0	11.0	5.0	8.0	295	moderate
15-Jun-98	13:30	67.5	10.0	5.0	7.5	330	slight
01-Jul-98	15:30	66.5	10.0	5.0	7.5	340	none
16-Jul-98	14:05	72.5	10.0	5.0	8.0	340	none
29-Jul-98	12:15	69.5	10.0	5.0	8.0	310	none
17-Aug-98	10:25	67.0	9.0	10.0	8.0	330	none
31-Aug-98	12:15	71.0	9.0	5.0	8.0	325	none
14-Sep-98	15:15	72.0	10.0	5.0	8.0	330	none
30-Sep-98	12:15	64.0	9.0	5.0	7.5	345	none
Minimum		44.0	9.0	5.0	7.5	175	
Maximum		72.5	12.0	10.0	8.0	410	
Average		59.0	10.4	5.2	7.9		

Table II-B-3. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 1999.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
30-Oct-98	13:30	57.0	11.0	5.0	8.0	340	none
03-Dec-98	11:40	53.0	10.0	5.0	8.0	295	slight
04-Jan-99	13:10	44.5	13.0	5.0	8.0	325	none
19-Jan-99	15:05	53.0	13.0	5.0	8.0	325	none
01-Feb-99	10:35	46.0	13.0	5.0	8.0	220	high
16-Feb-99	12:00	48.0	13.0	10.0	7.5	195	slight
05-Mar-99	11:40	49.5	14.0	5.0	8.0	210	none
18-Mar-99	7:20	51.0	12.0	5.0	7.5	205	none
01-Apr-99	11:40	51.0	13.0	5.0	8.0	185	slight
14-Apr-99	13:00	55.0	12.0	5.0	8.0	185	moderate
30-Apr-99	11:10	55.0	12.0	5.0	7.5	205	none
14-May-99	12:15	58.0	11.0	5.0	8.0	215	none
28-May-99	13:40	65.0	12.0	5.0	7.5	230	none
15-Jun-99	15:45	68.0	10.0	5.0	8.0	250	none
01-Jul-99	12:00	71.5	11.0	5.0	8.0	245	none
17-Jul-99	15:15	73.5	11.0	5.0	8.0	260	none
30-Jul-99	10:35	66.5	10.0	5.0	7.5	275	none
21-Aug-99	12:00	69.0	12.0	5.0	8.0	370	none
01-Sep-99	11:30	68.0	10.0	10.0	8.0	322	none
14-Sep-99	13:00	69.0	11.0	10.0	8.0	318	none
30-Sep-99	13:00	67.0	11.0	10.0	8.0	314	none
Minimum		44.5	10.0	5.0	7.5	185	
Maximum		73.5	14.0	10.0	8.0	370	
Average		59.0	11.7	6.0	7.9		

Table II-B-4. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 2000.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
15-Oct-99	13:15	65.0	11.0	10.0	8.0	321	none
29-Oct-99	14:05	61.0	11.0	5.0	8.0	445	none
16-Nov-99	10:30	57.0	11.0	10.0	8.0	365	none
30-Nov-99	14:30	54.0	13.0	5.0	8.0	354	none
20-Dec-99	15:25	48.0	13.0	5.0	7.5	368	none
05-Jan-00	13:30	48.0	13.0	5.0	8.0	359	none
19-Jan-00	9:30	53.0	12.0	5.0	8.0	290	slight
02-Feb-00	13:00	54.0	13.0	5.0	8.0	203	none
15-Feb-00	12:45	54.0	12.0	5.0	7.5	129	high
01-Mar-00	11:25	53.0	13.0	5.0	7.5	166	moderate
15-Mar-00	13:30	58.0	13.0	5.0	8.0	184	none
05-Apr-00	11:00	59.0	10.0	5.0	8.0	229	none
18-Apr-00	11:30	58.0	12.0	10.0	8.0	224	slight
02-May-00	11:35	62.0	11.0	5.0	7.5	234	none
16-May-00	12:35	60.0	12.0	5.0	8.0	232	none
31-May-00	13:00	68.0	14.0	10.0	7.5	258	none
16-Jun-00	13:45	74.5	11.0	5.0	8.0	258	none
19-Jul-00	14:30	71.6	10.0	5.0	8.0	265	none
31-Jul-00	14:20	74.0	14.0	5.0	8.0	274	none
22-Aug-00	11:00	66.0	12.0	5.0	8.0	293	none
31-Aug-00	11:00	66.0	11.0	5.0	8.0	297	none
14-Sep-00	12:10	67.0	11.0	5.0	8.0	306	none
28-Sep-00	10:55	65.0	12.0	5.0	8.0	316	none
Minimum		48.0	10.0	5.0	7.5	129	
Maximum		74.5	14.0	10.0	8.0	445	
Average		60.7	12.0	5.9	7.9		

Table II-B-5. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 2001.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
23-Oct-00	12:35	59.0	11.0	5.0	8.0	319	slight
07-Nov-00	10:00	53.0	11.0	5.0	8.0	297	slight
14-Nov-00	12:00	49.0	13.0	5.0	7.5	294	none
30-Nov-00	12:45	49.0	11.0	5.0	7.5	280	none
14-Dec-00	11:00	50.0	11.0	5.0	8.0	283	none
02-Jan-01	10:45	45.0	13.0	5.0	8.0	277	none
12-Jan-01	13:15	48.0	14.0	5.0	8.0	191	high
05-Feb-01	14:00	51.0	12.0	5.0	8.0	221	none
13-Feb-01	14:00	46.0	13.0	5.0	8.0	183	slight
27-Feb-01	12:15	50.5	12.0	5.0	8.0	171	slight
20-Mar-01	9:50	55.5	12.0	5.0	7.5	192	none
05-Apr-01	12:25	54.0	13.0	5.0	8.0	204	none
17-Apr-01	10:00	54.0	12.0	5.0	8.0	183	none
03-May-01	12:20	61.0	11.0	5.0	8.0	203	none
14-May-01	14:30	64.0	9.0	5.0	8.0	199	none
04-Jun-01	15:10	67.5	11.0	5.0	8.0	206	none
21-Jun-01	14:45	73.0	9.0	5.0	8.0	277	none
12-Jul-01	15:30	72.0	10.0	5.0	8.0	220	none
07-Aug-01	15:30	74.0	8.0	5.0	8.0	232	slight
29-Aug-01	15:00	73.0	11.0	5.0	8.0	289	none
15-Sep-01	14:30	70.5	12.0	5.0	8.0	292	none
Minimum		45.0	8.0	5.0	7.5	171	
Maximum		74.0	14.0	5.0	8.0	319	
Average		58.0	11.4	5.0	7.9		

Table II-B-6. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 2002.

Date	Time (24 hr)	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity
06-Oct-01	13:30	65.5	12.0	5.0	8.0	270	none
23-Oct-01	13:45	61.5	12.0	10.0	8.0	309	none
29-Nov-01	11:00	52.0	11.0	10.0	8.0	267	slight
11-Jan-02	15:30	50.5	12.0	5.0	8.0	N/A	none
30-Jan-02	12:00	43.0	11.0	5.0	8.0	199	none
11-Feb-02	15:20	49.0	14.0	5.0	8.0	186	none
27-Feb-02	11:40	54.0	13.0	5.0	8.0	190	none
15-Mar-02	10:35	52.0	13.0	5.0	8.0	206	low
28-Mar-02	11:40	54.0	12.0	5.0	7.5	189	none
15-Apr-02	13:15	60.0	11.0	5.0	8.0	208	low
30-Apr-02	13:20	56.0	12.0	5.0	8.0	213	low
15-May-02	12:41	65.0	13.0	5.0	8.0	222	none
29-May-02	9:45	65.0	11.0	5.0	8.0	226	none
17-Jun-02	13:15	69.0	12.0	5.0	8.0	224	low
01-Jul-02	12:20	74.0	12.0	5.0	8.0	238	none
16-Jul-02	16:00	73.0	10.0	5.0	8.0	242	none
31-Jul-02	13:30	74.0	12.0	5.0	7.5	269	none
16-Aug-02	13:38	69.0	10.0	5.0	8.0	276	none
02-Sep-02	11:35	69.5	10.0	5.0	8.0	283	none
20-Sep-02	8:45	65.0	9.0	5.0	8.0	297	none
Minimum		43.0	9.0	5.0	7.5	186	
Maximum		74.0	14.0	10.0	8.0	309	
Average		61.1	11.6	5.5	8.0		

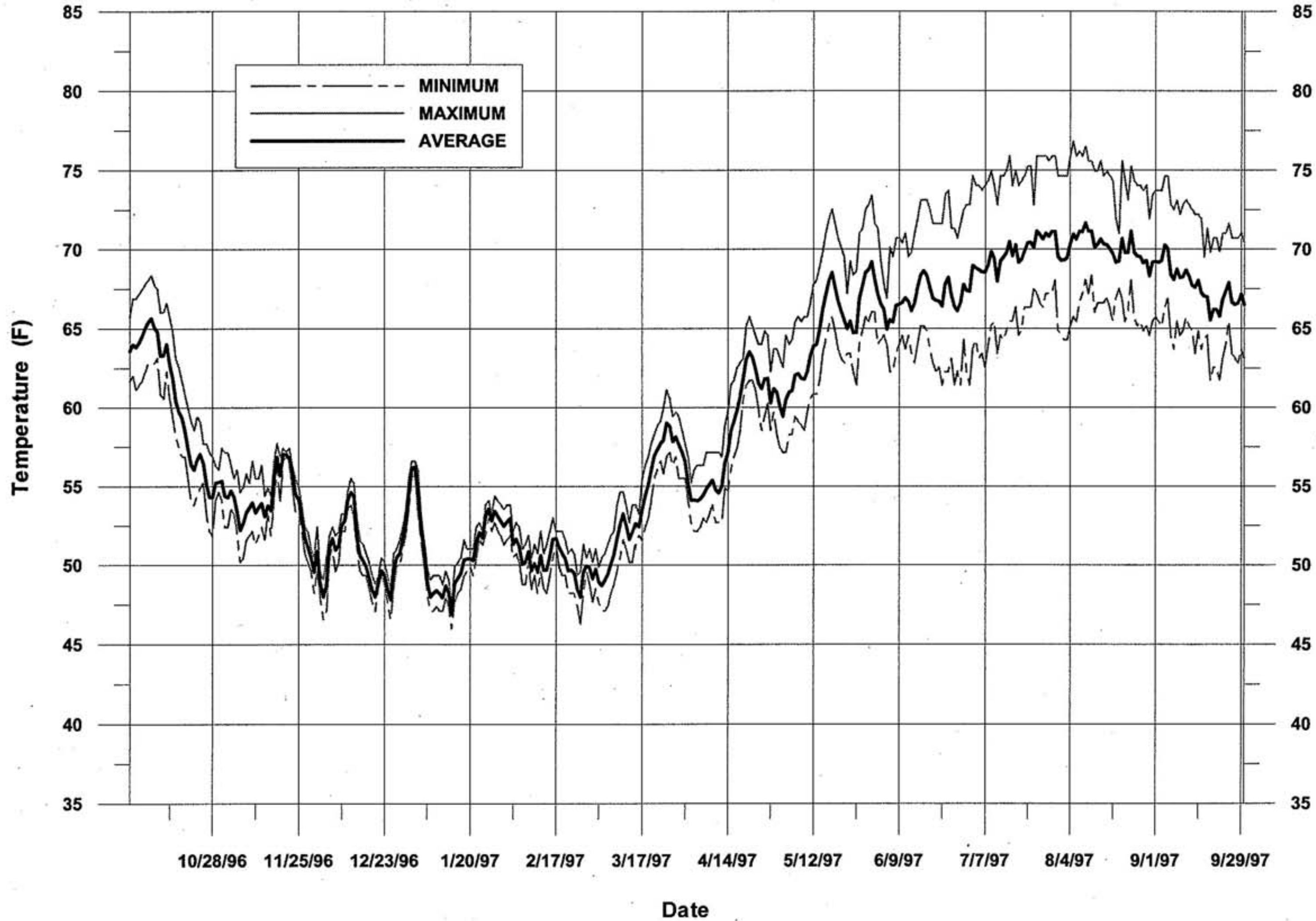
Table II-B-7. Semi-monthly water quality data collected at Sleepy Hollow Weir Site for WY 2003.

Date	Time 24 hr	Temperature (F)	Dissolved Oxygen (mg/L)	Carbon Dioxide (mg/L)	pH	Conductivity (uS/cm)	Turbidity (NTU)
3-Oct-02	11:08	61.0	12.0	5.0	8.0	304	N/A
18-Oct-02	10:55	59.0	11.0	5.0	8.0	306	N/A
1-Nov-02	10:45	53.0	11.0	5.0	8.0	317	N/A
15-Nov-02	10:30	56.0	10.0	10.0	8.0	229	N/A
27-Nov-02	10:15	51.0	11.0	5.0	8.0	234	N/A
12-Dec-02	10:20	50.0	12.0	10.0	8.0	244	N/A
27-Dec-02	9:50	50.0	11.0	5.0	8.0	187	0.5
10-Jan-03	10:30	53.0	11.0	5.0	7.5	179	3.8
24-Jan-03	10:35	53.0	12.0	10.0	8.0	198	0.15
7-Feb-03	10:05	48.0	13.0	10.0	8.0	206	0
21-Feb-03	10:15	51.0	12.0	10.0	8.0	211	0
5-Mar-03	12:55	53.0	12.0	5.0	8.0	216	0.15
8-Apr-03	13:20	58.0	11.0	10.0	8.0	226	0.45
22-Apr-03	12:00	55.0	10.0	5.0	8.0	208	0.1
9-May-03	10:30	55.0	10.0	10.0	7.5	203	0.1
23-May-03	11:15	63.0	10.0	10.0	8.0	221	0.35
6-Jun-03	10:35	65.0	9.0	10.0	8.0	232	0.35
20-Jun-03	10:45	64.0	9.0	10.0	8.0	239	0.55
3-Jul-03	9:45	67.0	10.0	20.0	8.0	279	6.8
23-Jul-03	12:10	70.0	10.0	15.0	7.5	289	11
6-Aug-03	14:25	73.0	10.0	15.0	8.0	298	9.2
22-Aug-03	10:20	68.0	9.0	15.0	8.0	303	11
5-Sep-03	10:50	67.0	10.0	30.0	8.0	323	11
19-Sep-03	10:45	64.0	10.0	15.0	8.0	331	19
Minimum		48.0	9.0	5.0	7.5	179	0.0
Maximum		73.0	13.0	30.0	8.0	331	19.0
Average		58.6	10.7	10.4	7.9		

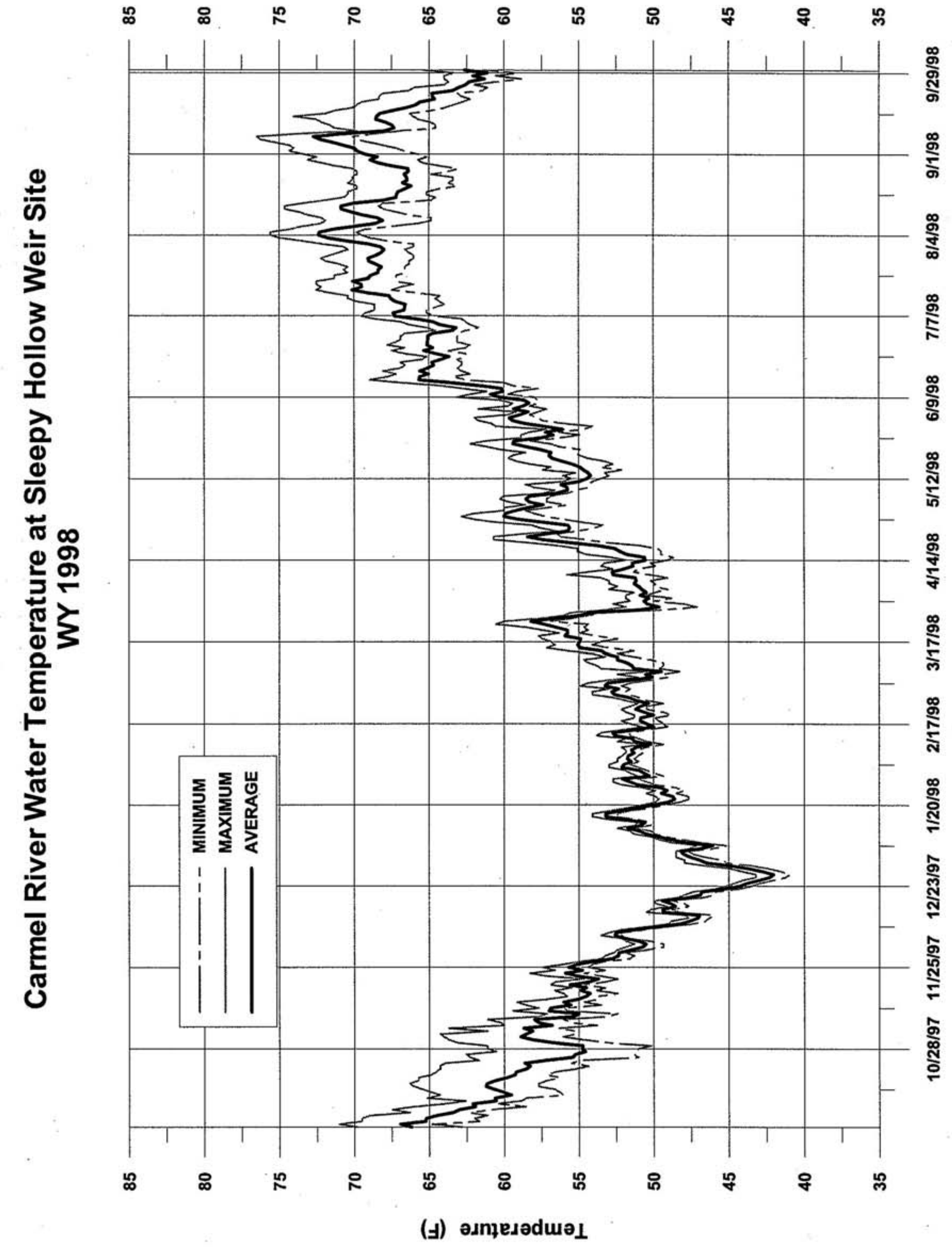
Appendix Q-12

MPWMD Continuous Temperature Data Graphs at SHW, 1996-2003

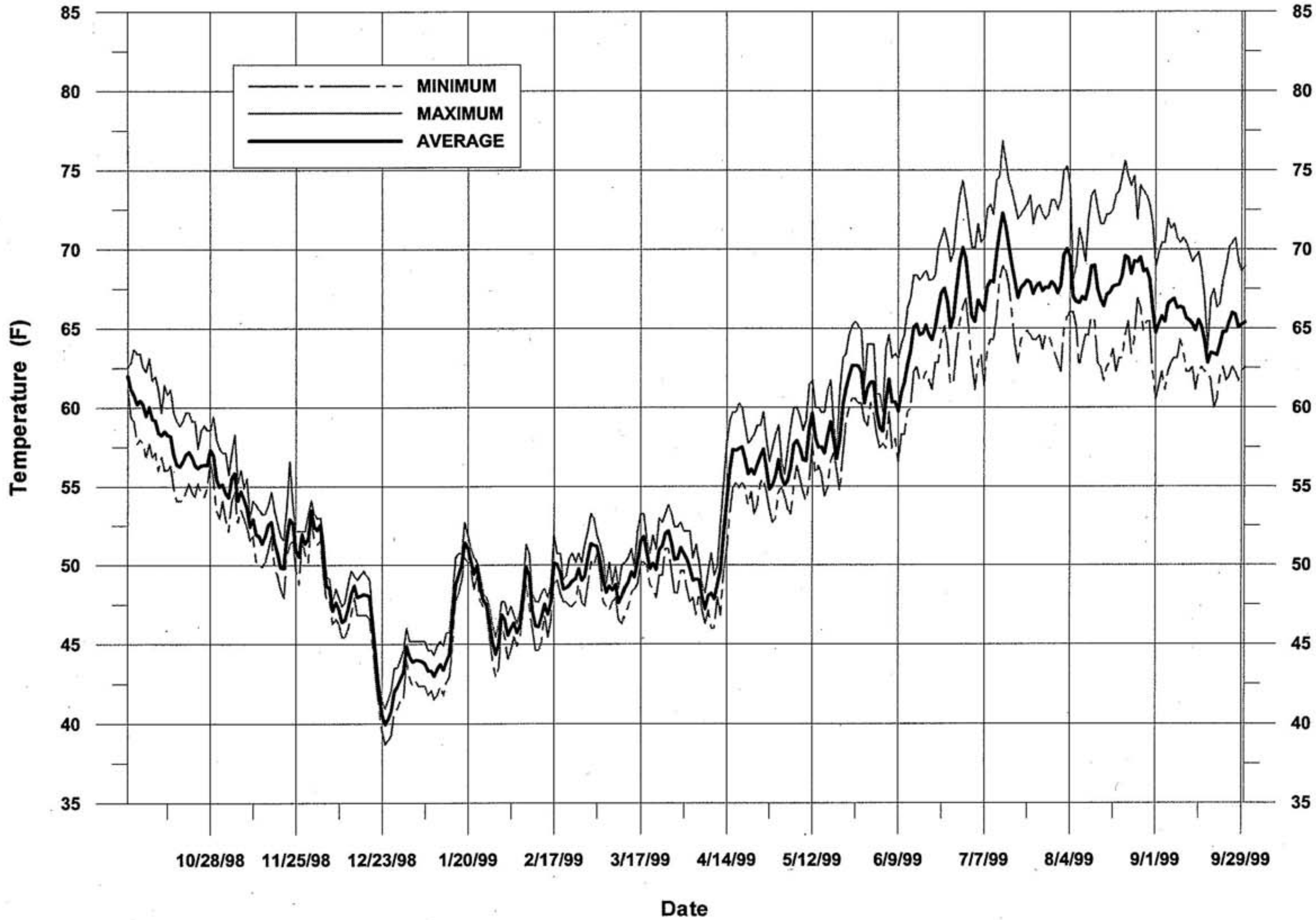
Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 1997



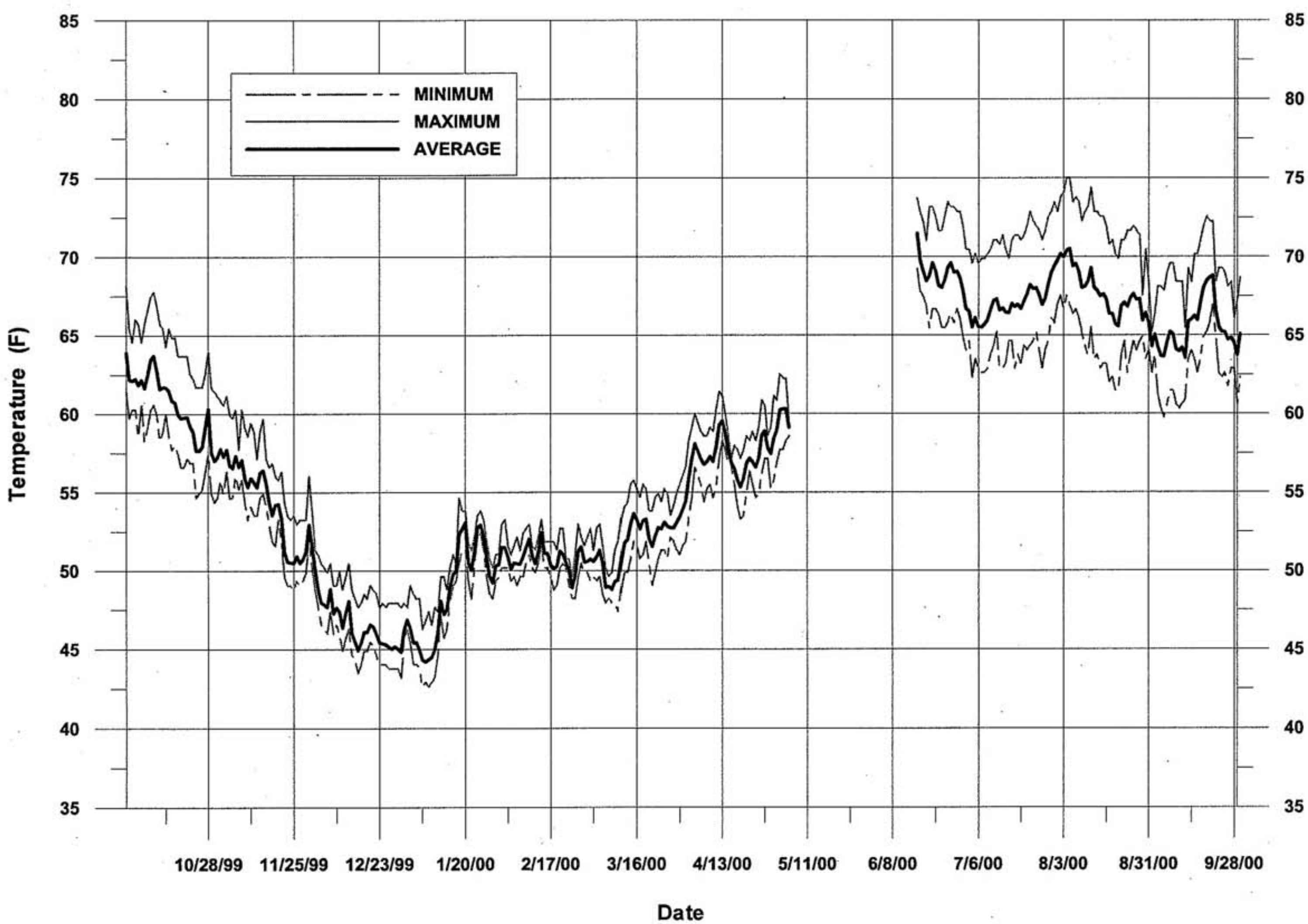
Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 1998

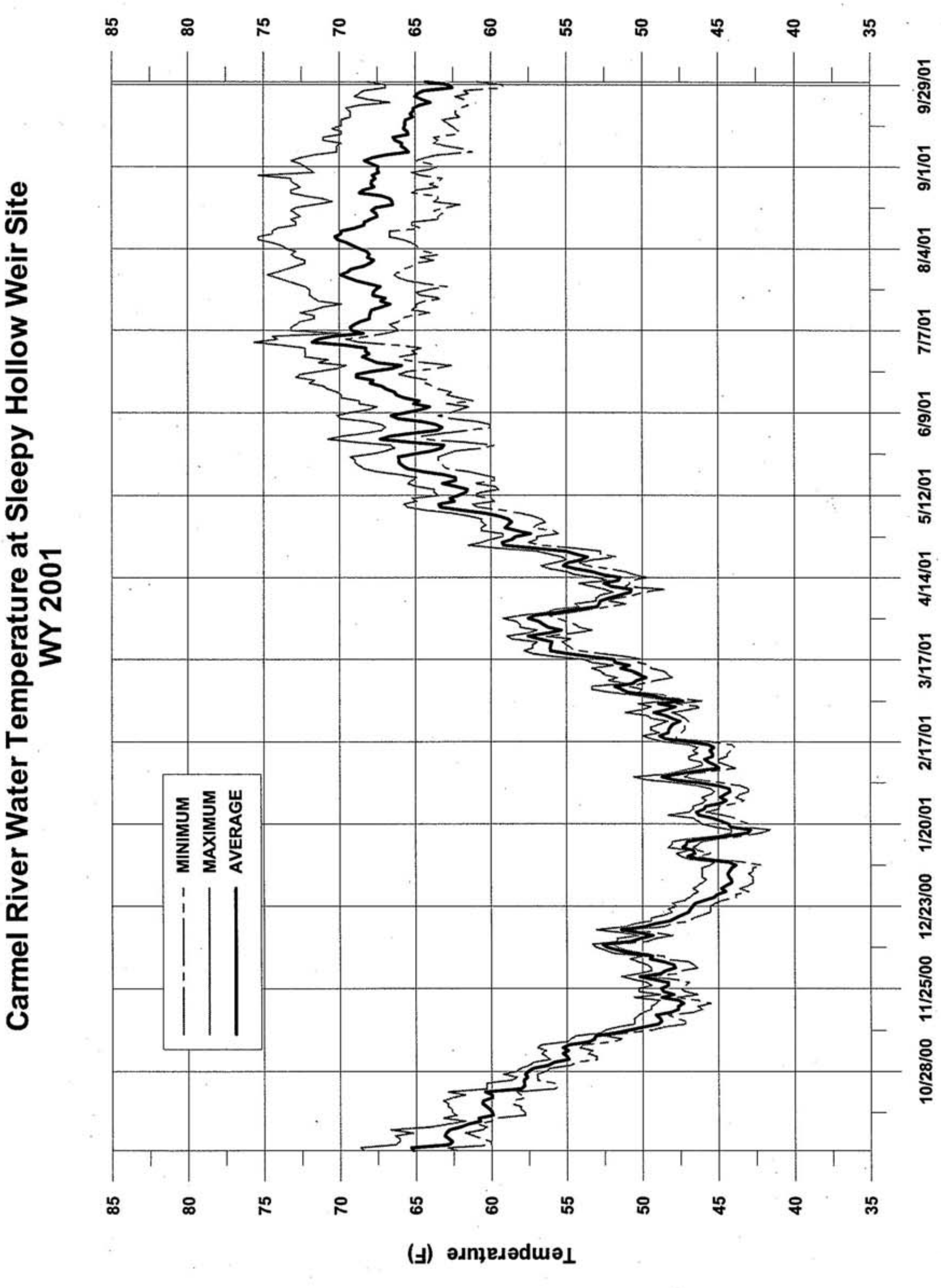


Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 1999



Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 2000




Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 2001
MINIMUM
MAXIMUM
AVERAGE
Temperature (F)
Date
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11/25/00
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1/20/01
2/17/01
3/17/01
4/14/01
5/12/01
6/9/01
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8/4/01
9/1/01
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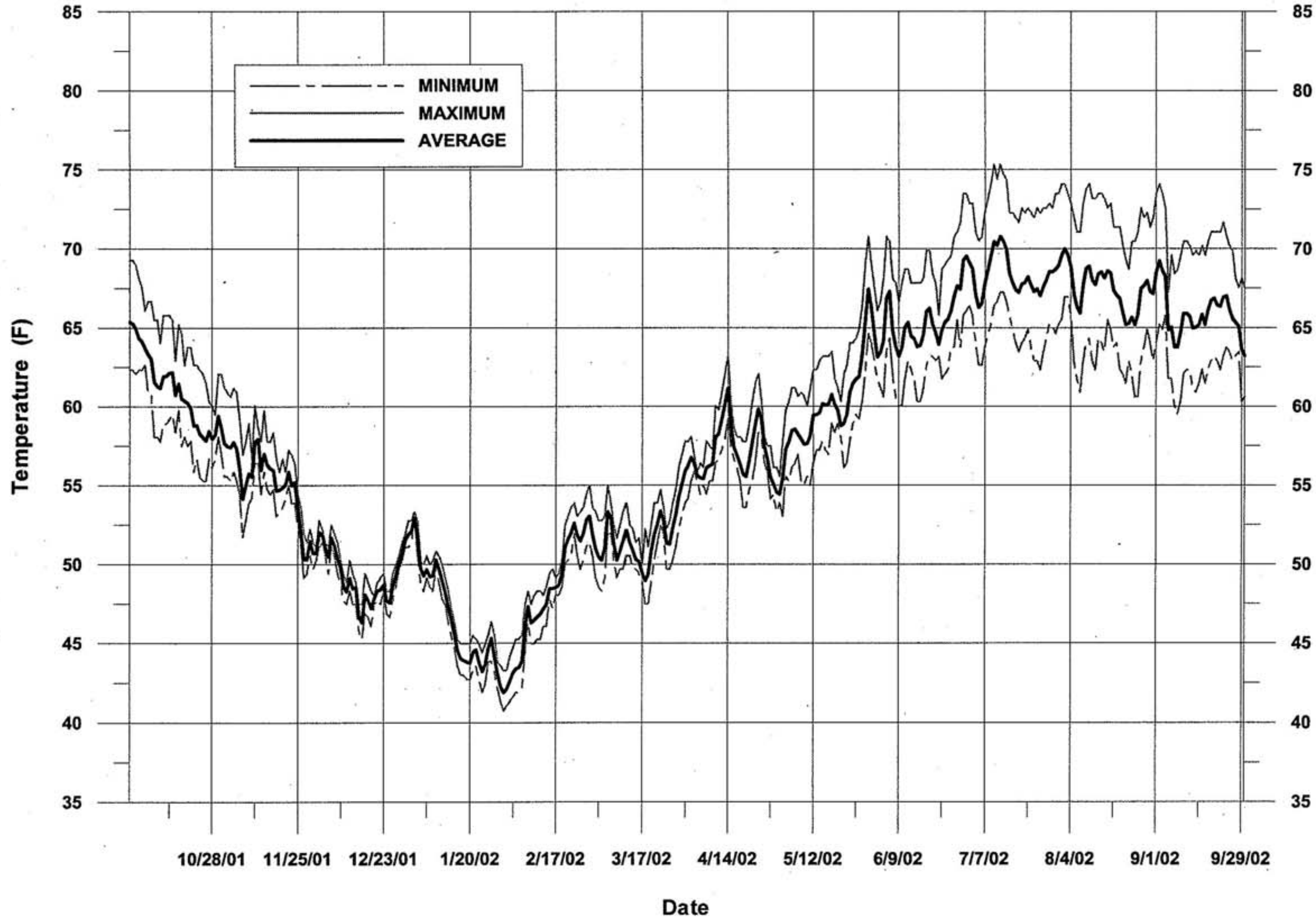
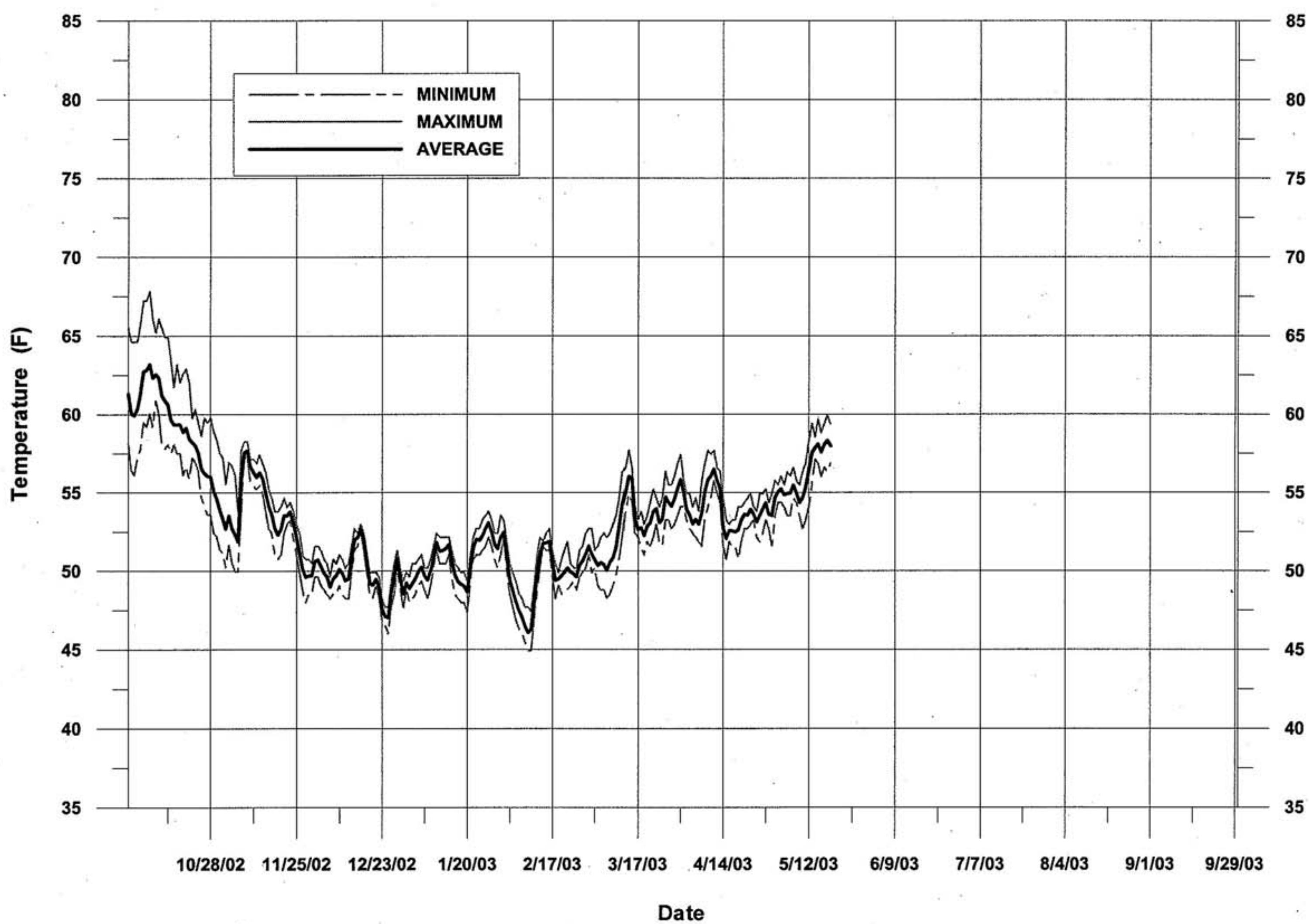
55
50
45
40
35

Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 2002



Carmel River Water Temperature at Sleepy Hollow Weir Site
WY 2003



Appendix R

SPILL PREVENTION AND CONTAINMENT PLAN

San Clemente Dam Seismic Retrofit Project

SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN

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SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE PLAN

1. INTRODUCTION

The California-American Water Company (CAW) has prepared this Spill Prevention, Containment, and Countermeasure (SPCC) Plan to be implemented during construction of improvements to the San Clemente Dam Seismic Retrofit Project. This SPCC Plan outlines specific preventive measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and to expedite cleanup of any release that may occur during construction activities.

This SPCC Plan restricts the location of fuel storage, fueling activities, and construction equipment maintenance within the construction area and provides procedures for these activities. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities are also outlined. The goals of this plan are to minimize the potential for a spill of these materials, to contain any spillage to the smallest area possible, and to protect areas that are considered environmentally sensitive (e.g., streams, reservoirs, groundwater wells, wetlands, etc.).

All contractor and subcontractor personnel working on San Clemente Dam are responsible for implementation of the measures and procedures defined in this SPCC Plan. This plan will be included as written herein in both the bid and the contract documents as contractual requirements and instructions to the contractor.

2. PREVENTATIVE MEASURES

CAW will require that the contractor will do everything practicable to minimize the potential for a spill during construction of the San Clemente Dam facilities. CAW will require the contractor to comply with applicable environmental and safety laws and regulations, including compliance by its subcontractors. The contractor will be required to ensure that a copy of this plan is available onsite to all contractor and subcontractor personnel.

2.1 TRAINING

All contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment will be required to complete spill training before they commence work on the project site. CAW will audit contractor compliance with this requirement and instruct the contractor to replace any of its (or its subcontractors') employees found to be working on the project site prior to having spill training. Spill training will also be required for contractor supervisory personnel and subcontractor supervisory personnel prior to commencement of work on the project site.

Spill training programs will be conducted by the construction contractor and a representative of CAW and will:

- provide information concerning pollution control laws;
- inform personnel concerning the proper operation and maintenance of fueling equipment; and

- Inform personnel of spill prevention and response requirements.

Measures, responsibilities, and provisions of this SPCC Plan and identification of response team individuals (Attachment A) will be incorporated into the training.

Training for other workers will be provided through ongoing weekly meetings, which will be held to discuss safety and spill handling, including informing them of their personal responsibility to initiate appropriate procedures. These weekly sessions will be held by the contractor as crew "tail gate" meetings. CAW will audit the contractor compliance with this requirement and instruct the contractor to replace any of its (or its subcontractors') foremen found to not be holding such meetings following the receipt of one warning.

2.2 RELEASE RESPONSE EQUIPMENT

The contractor will supply each construction crew with a sufficient quantity of absorbent and barrier materials to adequately contain and recover spills of on-board fuel and lubricants for the piece of equipment with the largest volume of fuel plus lubricant. These materials may include drip pans, buckets, absorbent pads, containment booms, straw bales, absorbent clay, sawdust, floor-drying agents, spill containment barriers, plastic sheeting, skimmer pumps, covered holding tanks, fire extinguishers, and other materials as necessary.

The contractor's Spill Coordinator (Section 4.1) will make known to all personnel involved with construction (foremen, laborers, inspectors), the contractor's yard, and warehouse locations of spill response equipment and materials. Spill response material will be readily accessible during construction.

2.3 EQUIPMENT INSPECTION

Prior to moving any equipment onto the construction site, the contractor will visually inspect each piece of equipment for cracks, excessive corrosion, or other flaws that may compromise the integrity of its fuel, hydraulic, or cooling systems. The contractor will repair or replace leaking equipment immediately after a leak is detected.

3. REGULATED MATERIALS STORAGE AND HANDLING

3.1 CONTRACTOR YARDS

Contractors will store fuel, petroleum products, and hazardous materials at the construction yards in safe locations within secondary containment structures. The secondary containment system normally consists of lining a bermed area with an impervious liner material to provide a minimum containment volume equal to 150 percent of the volume of the largest storage vessel contained within the bermed area. The contractor will construct these containment structures to contain spilled or leaked liquids within the structures. If earthen containment dikes are used, they will be constructed with slopes no steeper than 3:1 (horizontal to vertical) to limit erosion and provide structural stability. Containment areas will not have drains.

Bulk storage tanks will not be placed in areas subject to periodic flooding or erosion. Accumulated rainwater may be removed if authorized by an Environmental Inspector under specific situations. Specifically, if visual inspection indicates that no spillage has occurred in the containment structure and if no sheen is present on the accumulated rainwater, the CAW Environmental Inspector may approve the accumulated water to be pumped out and released on surrounding upland areas. If hydrocarbon spillage has occurred in the structure, accumulated wastewater will be drawn off and pumped into a storage vessel for proper disposal.

The contractor will visually inspect aboveground bulk tanks frequently and whenever the tank is refilled. Drain valves on temporary storage tanks will be locked to prevent accidental or unauthorized discharges from the tank. The Contractor will correct visible leaks in tanks as soon as possible.

All fuel nozzles will be equipped with functional automatic shut-off valves. Prior to departure of any fuel tank truck, all outlets on the vehicle will be examined by the driver for leakage and tightened, adjusted, or replaced to prevent liquid leaking while in transit.

Routine equipment maintenance of wheel-mounted vehicles such as oil changes will be accomplished at the contractor yards or staging areas to the greatest extent practical. Routine maintenance of track-mounted equipment will be conducted in a manner to gather all oil and other discharges and removed from the project site to a suitable recycling or disposal site.

Storage containers will display labels that identify the contents of the container and whether the contents are hazardous. The contractor will provide and maintain copies of Material Safety Data Sheets (MSDS) for all materials accessible to all contractor personnel including subcontractors.

Attachment B presents typical vehicle and equipment fuels, lubricants, and hazardous materials stored or used during construction and briefly describes the location, typical quantities, and usual methods of storage. Storage methods and quantities vary with length of construction spread, time of year, and type of terrain. The contractor will provide, maintain, and make available the appropriate MSDS documents for all hazardous or controlled materials utilized on the PROJECT SITE or in the contractor yards at a location accessible to all contractor, subcontractor, and CAW employees.

3.2 IN THE CONSTRUCTION AREA

The contractor will undertake preventative measures to avoid environmental impacts from refueling and lubrication activities in the construction area.

Refueling and lubricating of construction equipment will be restricted to upland areas at least 100 feet away from the edge of any streams, wetlands, ditches, and other waterbodies and 150 feet from water supply wells wherever possible. Wheeled and tracked construction equipment will be moved to an upland area more than 100 feet away from streams, wetlands, ditches, and other waterbodies for refueling and at the end of each work day. Fuel and service truck drivers will be responsible for spill prevention during fueling and service activities and drivers will be held responsible for observing and controlling fueling operations at all times to prevent overfilling.

Fuels and lubricants will be stored in designated areas and in appropriate service vehicles. Storage sites for fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in uplands. To prevent these materials and other contaminants from reaching waterways, no hazardous substances will be stored within 100 feet of streams and/or within 200 feet of groundwater wells (400 feet for public wells). The contractor will confirm with the Environmental Inspector the locations of areas where these activities are prohibited prior to construction crews entering the area with equipment.

The contractor will maintain a minimum of 20 lbs. of suitable commercial absorbent and barrier materials at each contractor yard and on fuel and service trucks to allow rapid containment and recovery of a spill. Absorbent and barrier materials will also be utilized to contain runoff from spill areas. Fuel trucks will also be equipped with shovels and an assortment of hand tools to aid in the containment of a spill.

Equipment will not be washed in streams, wetlands, ditches, or other waterbodies. Equipment operators will be held responsible for prompt reporting and mitigation of any fuel or lubricant spills from their equipment.

3.3 RESTRICTED REFUELING AREAS

Restricted refueling areas include areas where the buffer zone for refueling activities (100 feet from a wetland or waterbody, 200 and 400 feet from private and public water wells, respectively) cannot be maintained. Potential situations where plans may be approved by the Environmental Inspector to allow refueling in restricted areas include extensive wetland crossings with limited access, continuous construction at stream/river crossings, and the required placement and operation of stationary equipment such as dewatering pumps, generators, and boring/drilling equipment. The requirement for any refueling and equipment service within restricted areas will be verified and approved by the Environmental Inspector prior to carrying out such activity.

3.3.1 Tracked Equipment

Only a fuel truck with a maximum of 300 gallons of fuel may enter restricted areas to refuel construction equipment. Two trained personnel will be present during refueling to reduce the potential for spills or accidents.

3.3.2 Stationary Equipment

Equipment such as large stationary pumps may be fitted with auxiliary tanks as appropriate. Such auxiliary tanks will be placed within a secondary containment structure. Refueling of dewatering pumps, generators, and other small portable equipment will be performed using approved containers with a maximum volume of 10 gallons. Non-empty fuel containers will be stored in an upland area at least 100 feet from wetlands and waterbodies.

3.4 VEHICLE AND EQUIPMENT MAINTENANCE

All vehicle and equipment maintenance on the project site involving fluid replacement will be conducted outside the boundary restrictions for wetlands, waterbodies, and water wells. Before lubricants are drained from the construction equipment, a suitable containment vessel and plastic sheeting will be placed under the equipment to collect any spilled material. The contractor will take necessary precautions to ensure that material that might accumulate on the liner does not spill on the ground surface. Vehicle maintenance wastes, including used oils and other fluids, will be handled and managed by personnel trained in the procedures outlined in this plan. Vehicle maintenance wastes will be stored and disposed of in accordance with applicable environmental regulations.

4. SPILL RESPONSE

In the event of a spill, the release will be contained and cleaned up as soon as possible. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and control costs associated with cleanup and remediation. The initial response to an emergency will be to protect human health and safety, and then the environment. If a spill is not contained within a dike, an area of isolation will be established around the spill. The size of this area will depend on the size of the spill and the materials involved. The contractor will take precautions in the area of a spill to eliminate possible sources of ignition.

4.1 SPILL COORDINATOR

The contractor will appoint a Spill Coordinator who will be responsible for the reporting of spills, coordinating contractor personnel for spill cleanup, subsequent site investigations, and associated incident reports. The Spill Coordinator will report to the Environmental Inspector and may be removed from that role by CAW at CAW's discretion. In the event of a spill, the Spill Coordinator, along with the Environmental Inspector, will be responsible for determining the extent of the isolation area.

4.2 IMMEDIATE RESPONSE

All spills regardless of size must be reported to the spill coordinator and/or the CAW environmental inspector. The person observing the incident will take the following actions:

- Assess the safety of the situation (including the risk to the surrounding public).
- If safe to do so, make every effort to remove potential ignition sources and stop the source of the spill.
- Promptly notify the contractor's Spill Coordinator and/or CAW Environmental Inspector. Report your name, the spill location, and the extent of the incident.

Upon learning of the spill, the Spill Coordinator will implement the following measures:

- For an upland spill, if necessary, berms will be constructed with available equipment to physically contain the spill.
- Sorbent materials will be applied to the spill area. Contaminated soils and vegetation will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.
- If a spill is beyond the scope of on-site equipment and personnel, an Emergency Response Contractor will be secured to further contain and clean up the spill.

4.3 WETLAND OR WATERBODY RESPONSE

Regardless of size, the following conditions apply if a spill occurs near or into a stream, wetland, or other waterbody:

- For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.

- For a spill threatening a waterbody, berms and/or trenches will be constructed to contain the spill before it reaches the waterbody. Deployment of booms, sorbent materials, and skimmers may be necessary if the spill reaches the water. The spilled product will be collected and the affected area cleaned up in accordance with appropriate state or federal regulations.

- Contaminated soils in wetlands must be excavated, and placed on and covered by plastic sheeting in approved containment areas a minimum of 100 feet away from the wetland or waterbody. Contaminated soil will be disposed of as soon as possible in accordance with appropriate state or federal regulations.

5. REPORTING

With assistance from the Environmental Inspector, the Spill Coordinator is responsible for the completion of the San Clemente Dam Seismic Retrofit Project Spill Report Form (Attachment C). Completion of this form will assist in the assessment of the spill and provide information necessary for agency notification. The form will be completed and submitted to the CAW representative within 24 hours of the occurrence. The CAW representative will also notify the appropriate agencies (see Section 6.0).

6. NOTIFICATIONS

In the event of an accidental release of a reportable quantity, CAW or its representative will notify the appropriate federal, state, and local agencies.

6.1 FEDERAL AND STATE AGENCIES

National Response Center (Washington, D.C.)
Phone: (800) 424-8802 (24 hours)

California Office of Emergency Services
Phone: (800) 852-7550 or (916) 262-1621

24-hour Warning Center
Phone: (916) 262-1621

Central Coast Regional Water Quality Control Board
(805) 549-3147

Attachment A: Response Team Contacts

SAN CLEMENTE DAM SEISMIC RETROFIT PROJECT
RESPONSE TEAM CONTACTS

NAME:

TITLE/POSITION: PHONE NUMBER:

CONSTRUCTION CONTRACTOR SPILL COORDINATOR:

ENVIRONMENTAL INSPECTOR:

AUTHORIZED ALTERNATE (Contact only if you are unable to reach the EI):

CONSTRUCTION CONTRACTOR SUPERINTENDENT:

CHIEF INSPECTOR:

OTHER SAN CLEMENTE DAM REPRESENTATIVES:

Attachment B: Typical Fuel, Lubricants, and Hazardous Materials

Typical Fuel, Lubricants, and Hazardous Materials

Fluid Uses	Fluids	Typical Quantity Per Site in Gallons	Method of Storage	Storage Location
Fuels	Diesel	5,000-10,000	Tanks or Tankers	Contractor Yard, Warehouse/fuel vehicle parking areas
	Gasoline	5,000-10,000	Tanks or Tankers, 10-Gallon Containers, or Pick-up Tanks	Contractor Yard, Warehouse/fuel vehicle parking areas
Lubricants	Engine Oil	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse
	Transmission/ Drive Train Oil	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Hydraulic Oil	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Gear Oil	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Lubricating Grease	<25	Tubes stored in Paper Cases	Contractor Yard Warehouse, Service Trucks
Misc./ Coolants, Hydraulic Fluids	Ethylene Glycol	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Propylene Glycol	<100	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Power Steering Fluid	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Brake Fluid	<50	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Propane	25-100	Pressurized Tanks	Contractor Yard Warehouse, Welding Trucks

Attachment C: Spill Report Form

SAN CLEMENTE DAM SEISMIC RETROFIT PROJECT
SPILL REPORT FORM

Date/time of spill: ____

Date/time of spill discovery: ____

Name and title of discoverer:____

Milepost/Legal Description:

____

Material spilled/Estimated volume:

____

Unique qualifier, if relevant, such as manufacturer:

____

Media in which the release exists: (circle: sand, silt, clay, upland, wetland, surface water, other):

____

Topography and surface conditions of spill site:

____

Proximity to wetlands and surface waters (including ditches):

____

Proximity to private or public water supply wells:

____

Directions from nearest community:

____

Weather conditions at the time of release:

____

Describe the causes and circumstances resulting in the spill:

____

____

Describe the extent of observed contamination, both horizontal and vertical (i.e., spill-stained soil in a 5-foot radius to a depth of 1 inch):

____

____

____

Describe immediate spill control and/or cleanup methods used and implementation schedule:

____

____

____

Location of any excavated/stockpiled contaminated soil:
____

Describe the extent of spill-related injuries and remaining risk to human health and environment:
____
____
____

Name, company, and telephone number of party causing spill (e.g., contractor):
____
____
____

Current status of cleanup actions:
____
____

Name and company for the following:
Construction Superintendent:
____

Spill Coordinator:
____

Environmental Inspector:
____

Chief Inspector:
____

Landowner notified (if appropriate): ______________________________

Date: ____

Form completed by:
____

Date: ____

Government agency notified (to be completed by CAW or CAW's Representative):
____

DATE: ____

Spill coordinator must complete this form for any spill, regardless of size, and submit the form to the CAW representative and environmental inspector within 24 hours of the occurrence.

Appendix S

*MEI STUDIES ON SEDIMENT SLUICING

***Additional Modeling studies to Evaluate Sediment Sluicing Options and Compare Downstream Sediment Concentrations include reports for March 2006 and August 2007 in response to comments from the Draft EIR/EIS.**

Evaluation of Sediment Sluicing Options Associated with the San Clemente Dam Fish Ladder

Prepared for
MWH Americas, Inc.
1340 Treat Blvd., Suite 300, Walnut Creek, CA 94597

Prepared By
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March 16, 2006

1. INTRODUCTION

The alternatives that are being considered to bring San Clemente Dam into compliance with California Division of Safety of Dams (DSOD) seismic safety standards include (1) thickening the existing approximately 80-foot high concrete arch dam (Dam Thickening Alternative), and (2) constructing a 19-foot deep notch in the dam that would to provide the necessary structural stability (Dam Notching Alternative). The existing reservoir is nearly filled with sediment; the most recent bathymetric surveys indicate that there is only about 100 ac-ft of available water storage, much of which is located in the San Clemente arm of the reservoir. Under the Dam Thickening Alternative, the water- and sediment-storage characteristics of the existing reservoir would remain essentially as they are today. Under the Dam Notching Alternative, the sediment above the elevation of the notch invert (Elevation 516) would be removed prior to constructing the notch to prevent unacceptable downstream sedimentation impacts.

Under both of these alternatives, a properly functioning fish ladder would be necessary to provide steelhead passage. The existing fish ladder at the dam, which was constructed in the 1920s, does not conform to current fish ladder criteria promulgated by the California Department of Fish and Game (CDFG) and the Southwest Region of NOAA Fisheries (NOAA-SWR) (FishPro and Entrix, 2003). FishPro and Entrix (2003) prepared a conceptual design for a new, vertical slot fish ladder for the Dam Thickening Alternative that would meet these criteria (**Figures 1 and 2**). To ensure that the ladder functions properly and that fish can pass through the dam into the upstream river, it will be necessary to maintain an open channel from the ladder inlet into the main river channel that crosses the surface of the upstream reservoir deposits. Because the invert of the proposed ladder is below the level of the sediment deposits, it is probable that sediment eroded from the upstream channel will be carried to the ladder, which could either block the entrance or pass into the ladder, affecting its hydraulic performance and effectiveness for fish passage. As a result, a sluice gate has been proposed that could be used to periodically flush sediment away from the ladder and provide flows and sediment transport capacity sufficient to maintain the desired open-channel conditions upstream from the dam.

Mussetter Engineering, Inc. (MEI) was retained by MWH Americas, Inc. (MWH) to assist the San Clemente Dam Seismic Retrofit EIS Team in identifying a reasonable configuration for the sluice gate, and to evaluate the potential behavior of the sluice gate, fish ladder and upstream channel under a range of hydrologic conditions. Results from the evaluation will be used by the team to develop an operations plan for the sluice gate that will provide adequate passage for upstream migrating Steelhead, while minimizing sedimentation problems in the fish ladder.

2. SLUICE GATE CONFIGURATION

Several configurations were considered for the sluice gate with the objective of providing a gate-opening size that would be practical and economical to construct, but would still be of sufficient size to erode the channel upstream from the gate and fish ladder rapidly enough to achieve the sediment flushing needs within a relatively short period of operation (assumed for purposes of this study to be on the order of 8 to 24 hours). Based on guidance from MWH, it was concluded that a gated, circular outlet would be the most practical (Vik Iso-Ahola, personal communication, December 2005). MWH also indicated that gate diameters up to 15 feet could potentially be feasible, and a 20-foot diameter opening would probably be the absolute maximum size that could be used, although there is considerable uncertainty about the feasibility of the larger sizes.

The sluice gate would function by eroding sediment from the vicinity of the fish ladder and creating a channel that would be incised into the upstream reservoir deposits. As a result, the gate should be constructed as close as possible to the fish ladder, subject to structural considerations, and the invert would be set below the invert of the ladder inlet. Again, based on guidance from MWH engineers, it was concluded that the minimum acceptable distance between the ladder and sluice gate would be approximately one diameter of the gate (i.e., for a 10-foot diameter gate, the edge of the gate and edge of fish ladder would be minimum 10 feet apart.) For purposes of this analysis, it was assumed that the incised channel in the vicinity of the sluice gate opening would have a bottom width of approximately 10 feet, with sideslopes of about 15 degrees (3.73H:1V), which is consistent with the combination of saturated angle of repose for the relatively fine-grained, noncohesive sediment and the tendency for the bed in this area of the channel to widen once it reaches the baselevel provided by the sluice gate invert.

The hydraulic capacities of four possible sluice gate diameters (5, 10, 15, and 20 feet) were initially evaluated to identify the size that would be most likely to meet the objectives (**Figure 3**). Based on the assumed channel geometry, the gates were set at approximately 1.5, 3.0, 4.0, and 5.5 feet below the invert of the fish ladder inlet, respectively, for the four diameters. As indicated in Figure 3, the 5-foot diameter gate would have capacity of only about 125 cfs when the upstream water surface is at the top of the pipe and the total capacity at the point where flow would begin to spill over the principal spillway would be only about 225 cfs, assuming that the fish ladder is closed during sluicing operations. At flows greater than 125 cfs, the channel upstream from the sluice gate inlet would be increasingly affected by backwater with increasing discharge; thus, the range of effective sluicing discharges would be very small. The 5-foot diameter gate is, therefore, not viable.

For the 10-foot diameter gate, the top of the gate would be slightly above the invert of the principal spillway (**Figure 4**), and the capacity of the gate would be about 675 cfs when the head is sufficient for flow over the spillway. Because the head available to drive flow through the sluice gate rises very slowly with increasing discharge above this level, the potential for significantly larger flows through the sluice gate is limited. With a reservoir water-surface elevation of 527 feet (2 feet above the spillway invert), for example, the discharge through the sluice gate would be only 750 cfs and the discharge over the spillway would be about 1,250 cfs (i.e., the total discharge in the river would be about 2,000 cfs). Based on the 41-year mean daily flow record from the CVSIM model that was used for the previous sediment-transport modeling studies (MEI, 2002 and 2003), flows equal or exceed 675 cfs about 6.2 percent of the time (about 11 days per year, on average) during the December 1 and May 31 fish passage period (FishPro and Entrix, 2003), and they equal or exceed 300 cfs about 15.8 percent of the time (about 28 days per year) during that period (**Figure 5**). (Mean daily flows of 2,000 cfs only occur about 1 percent of the time during the fish passage period.) Flows in the range of 300 to 700 cfs should be sufficient to cause substantial erosion of sediments that build up near the fish ladder entrance, and they occur relatively frequently; thus, the 10-foot diameter gate appears to have potential for an effective gate size.

With 15- and 20-foot diameter gates, the discharge through the gate would be about 1,255 and 1,950 cfs, respectively, when flow begins over the principal spillway. Mean daily flows equal or exceed these levels about 2.4 percent of the time (4 days per year) and about 1 percent of the time (1.9 days per year) during the fish passage period. While either diameter sluice gate could potentially be effective at flushing sediment from the fish ladder entrance, they would likely be very expensive to construct due to their large size.

Based on the above analysis, the potential behavior of the upstream channel with the 10-foot diameter sluice gate was evaluated in more detail, as described in the following sections.

3. SEDIMENT-TRANSPORT EVALUATION OF 10-FOOT DIAMETER SLUICE GATE

A simplified, one-dimensional sediment-transport model was developed to assess the aggradation/degradation characteristics of the channel that will develop in the reservoir deposits upstream from the sluice gate. One version of the model was used to evaluate the rate and longitudinal distance over which the upstream channel will develop, and the quantity of sediment delivered to the downstream river, under a range of potential sluicing discharges. For these analyses, it was assumed that the fish ladder would be closed during sluicing operations. A second version of the model was applied to assess the rate at which the incised channel would backfill (and, thus, the rate at which sediment would tend to build up near the fish ladder entrance), during subsequent periods when the sluice gate is closed and the fish ladder is operating. In addition, the sediment-transport capacity of the Carmel River downstream from the dam was compared with the amount of sediment delivered through the sluice gate at various discharges to assess the potential extent and duration of sediment deposition during sluicing operations.

3.1. Description of Modeling Approach

The sediment-transport model was developed by linking a sediment-routing and channel evolution algorithm with a 1-D hydraulic model in a manner that allows adjustment of the upstream channel geometry on a time-step by time-step basis. In general, the model functions by computing the hydraulic conditions for the initial channel configuration and sluice gate opening, computing the sediment transport capacity of the upstream channel using these hydraulic results, adjusting the upstream channel geometry based on the difference between the transport capacity and supply from the next upstream cross section, and then repeating the process for the duration of the simulation.

The Corps of Engineers (Corps) HEC-2 model was used for the hydraulic calculations (USACE, 1990) because it can be more easily linked to the sediment routing algorithms in an automated computer code than the HEC-RAS model that is currently used for most 1-D hydraulic calculations. Although HEC-2 is no longer supported by the Corps, it produces results that are comparable to the Windows-based HEC-RAS model for the conditions being analyzed here. The insure that the results are, in fact, comparable, several test runs were made in fixed-bed mode, and the results compared to those from a HEC-RAS model with identical geometry.

Sediment-transport capacities were estimated in the model using the Meyer-Peter, Müller bed-load equation (Meyer-Peter, Müller, 1948) linked to the Einstein integral for the suspended bed-material load (Einstein, 1950). This method has been used effectively in many previous studies (Vanoni, 1977; Simons, Li & Associates, Inc., 1982), and it is been shown to predict sediment-transport capacities that are within the correct range for the conditions being analyzed here (Mussetter et al., 1994). This method is also comparable to the MPM/Toffaleti relationship that was used in the previous modeling studies for the San Clemente Dam retrofit project (MEI, 2002 and 2003). Hydraulic information necessary to apply the sediment-transport equations was taken from the HEC-2 model results during each time-step in the simulation. A representative bed-material sediment gradation was developed by averaging the gradations for Zones 6, 7, and 8 from the stratigraphic profiles that were developed from the reservoir sediment characterization study that was performed for MEI (2003) (**Figure 6**). The representative gradation has a median (D_{50}) size of about 0.7 mm, it consists of about 85 percent sand and 15 percent medium to fine gravel, with maximum size of about 30 mm (**Figure 7**)

For the initial configuration, it was assumed that the front of the reservoir sediment deposits will have prograded essentially to the dam face, and a short section of incised channel immediately upstream from the sluice gate and fish ladder was assumed to provide initial numerical stability in the model. This channel had a trapezoidal shape with 10-foot bottom width and 3.73H:1V side slopes (Figure 4), and the longitudinal bed slope in the upstream direction was set at about 3.7H:1V (**Figure 8**). The initial-conditions cross sections, thus, rapidly become shallower and narrower in the upstream direction (**Figure 9**). To provide a reasonable approximation of the flow and sediment-transport conditions leading to the incised channel on the surface of the reservoir sediment deposits, a typical channel with a depth of about 2 feet, topwidth of about 25 feet and bed slope of 0.001, similar to the slope of the existing reservoir deposits, was assumed (Figure 7, XS5). It should be noted that the model results are very insensitive to the assumed configuration of the upstream, unincised channel because the transport capacity of the incised channel that develops during the sluicing operations is typically much higher than the inflowing sediment load.

The downstream control for the hydraulic model was established based on the rating curves that were discussed in the previous section (Figure 3), and channel encroachments were applied at the downstream cross sections to represent flow convergence into the sluice gate opening. Manning's *n*-values of 0.03 and 0.045 were used for the main channel and overbanks, respectively, to account for the energy loss characteristics of the incised and upstream channels.

During the incision process, the cross sections were adjusted to account for the estimated volume of erosion during each time-step by assuming a minimum bottom width of 10 feet and retaining the 3.7H:1V sideslopes; thus, the channel top width increases within increasing incision (**Figure 10**). For aggrading cross sections, it was assumed that the bottom of the channel would fill-in horizontally between the toe of the banks; thus, channel narrowing was not allowed under aggrading conditions.

3.2. Evaluation of Potential Sluicing Operations

The effects of sluicing operations were evaluated by making 10 separate simulations with constant discharges ranging from 100 and 1,000 cfs in 100-cfs increments. Each simulation was run for a 24-hour sluicing period, and the upstream channel profile and quantity of sediment delivered through the sluice gate were tracked on an hourly basis throughout the simulation.

The results indicate that the total quantity of sediment eroded from the reservoir and passed into the downstream river during the 24-hour sluicing period would range from about 1.8 ac-ft with a constant discharge of 800 cfs to about 9.9 ac-ft at a constant discharge of 400 cfs (**Figure 11**). The results also indicate that the maximum erosion (and thus, maximum potential sluicing of sediment from the vicinity of the fish ladder inlet) occurs in the range of flows between about 300 and 600 cfs. At lower discharges, the hydraulic conditions in the incising channel are favorable for sediment sluicing, but the amount of flushing is limited by the quantity of flow. At discharges above about 600 cfs, backwater caused by the limited capacity of the sluice gate reduces the hydraulic energy in the incising channel; thus limiting the sluicing potential. A similar relative relationship between the amount of sediment sluiced from the reservoir and the discharge occurs at other times during the simulation, but the total amount is obviously controlled by the length of time (**Figure 12**). During an 8-hour period, for example, about 4.5 ac-ft of sediment would be flushed from the reservoir at discharges in the range of 300 to 600 cfs, but only about 1 ac-ft would be removed at discharges in the range of 800 to 1,000 cfs.

The simulations indicate that the channel will incise very rapidly in the upstream direction early in the simulation, with the rate decreasing with time as the gradient of the incised channel decreases (**Figures 13 through 17**). The model results indicate that the upstream end of the incision would be about 1,600 feet upstream from the sluice gate after 8 hours at a constant discharge of 100 cfs, increasing to about 2,200 feet at 300 cfs and to about 2,900 feet at 500 cfs. At 800 cfs, the incision would be only about 320 feet upstream from the gate inlet after 2 hours, and it would remain at essentially this location due to the backwater effects described above. The ultimate control on the amount of incision in the area just upstream from the sluice gate inlet is controlled by the water-surface elevation at the inlet.

3.2.1. Impacts of Downstream River

The sediment sluicing operations will cause a short-term increase in the sediment load to the downstream river. The potential impact of the increased load was evaluated by initially comparing the rate at which the sediment will be delivered through the sluice gate for the various sluicing discharges with the transport capacity of the downstream river. To facilitate the comparison, transport capacity rating curves for the first two 0.5-mile segments of the river immediately downstream from the dam were developed based on reach-averaged hydraulic conditions predicted by the HEC-RAS model developed for MEI (2003) and the size-gradation of the eroded sediments (**Figure 18**). The model results indicate that the sediment outflow from the sluice gate will exceed the downstream transport capacity of the river by a factor of 2.5 to 3 during the early part of the sluicing operations at discharges up to about 600 cfs, but the river would be capable of transporting all of the delivered sediment at discharges above about 800 to 900 cfs (**Figure 19**). After 8 hours of sluicing, the sediment outflow from the sluice gate will decrease to substantially less than the transport capacity of the river at discharges above about

250 cfs. After 24 hours of sluicing, the sediment passing through the sluice gate will be less than the capacity of the river at all discharges greater than about 150 cfs.

To assess the potential for sediment accumulation in the 1-mile reach downstream from the dam, the sediment outflow from the sluice gate was compared to the transport capacity of the river on a time-step by time-step basis. The comparison indicates that worst-case conditions for a sluicing operation of 8 hours duration occur at a sluicing discharge of 200 cfs, where about 1.9 ac-ft of sediment would accumulate in the 0.5-mile reach downstream from the dam after about 8 hours (**Figure 20**). At this discharge, most of the sediment would be removed after about 16 hours as the sediment load from the sluice gate decreases to less than the capacity of the downstream river. The amount of sediment accumulation and the time required to transport it from the downstream reach decreases with increasing discharge.

For a 24-hour sluicing operation, worst-case conditions occur at a discharge of 100 cfs, where about 3.0 ac-ft of sediment would have accumulated the 0.5-mile reach downstream from the dam at the end of the sluicing period (**Figure 21**). If the discharge over the spillway remained at 100 cfs after the sluice gate is closed, most of the sediment would be moved through the reach over the next approximately 24-hour period. Similar to the 8-hour scenario, the maximum amount of sediment accumulation and the time required to move it through the downstream reach decreases with increasing discharge.

The rating curves in Figure 18 indicate that the transport capacity of the reach extending from about 0.5 to 1.0 miles downstream from the dam is somewhat higher than the reach immediately downstream from the dam; thus, significant sediment accumulation is not anticipated in this portion of the reach. It should be noted, however, that the sediment loads will increase during the period when the sluice gate is operating and the increased sediment load is being moved through the upstream reach. As a result, there will likely be increased amounts of sediment in low energy zones that occur on the downstream side of large boulders and other flow obstructions, and in eddy zones along the margins of the channel. This effect will also occur in reaches farther downstream, but the relative impact will decrease with increasing distance from the dam.

3.2.2. Depth and Velocity Profiles During Sluicing

Hydraulic conditions in the pool and incised channel upstream from the dam during the sluicing operations were evaluated to provide information that can be used to assess potential impacts to steelhead that are present in the area. The evaluation was performed by importing the modeled channel geometry in the reservoir after 2, 4, and 8 hours of sluicing at discharges of 300, 500, and 800 cfs into an HEC-RAS model and running to model to determine the cross-sectionally averaged velocities and maximum depths along the reach (**Figures 22 through 27**). Flow depths at the sluice gate inlet range from about 5.7 feet at a sluicing discharge of 300 cfs to about 11 feet at 800 cfs. In the incised reach, the flow depths range from 1.7 feet to about 3.4 feet at 300 cfs, from 2.2 feet to 4.5 feet at 500 cfs and from 2.5 to 11 feet at 800 cfs. In the reach upstream from the incision, the depths range from about 1.9 feet at 300 cfs to 2.7 feet at 800 cfs.

The velocity profiles (Figures 25 through 27) indicate the maximum velocity typically occurs near the inlet of the sluice gate, ranging from 6.3 fps (8 hours) to 7.3 fps (2 hours) at a sluicing discharge of 300 cfs, and 7.6 fps (4 hours and 8 hours) to 8.5 fps (2 hours) at 500-cfs simulation. The maximum velocity at 800 cfs is only about 3.7 fps due to the backwater conditions created by the hydraulic control at sluice gage inlet. At sluicing discharges of 300 and 500 cfs, the velocity generally decreases in the upstream direction through the incised portion of the channel. The locally high velocities indicated by the spikes in the velocity profiles occur at the downstream limit of the headcut, where the overbank flows in the less incised portions of the reach are drawn into the incised channel. Maximum velocities at these locations range from 5.2 fps (300-cfs simulation at 2 hours) to about 6 fps (500-cfs simulation at 2 hours). Under the 800-cfs simulation, relatively low velocities occur through the pool within 100 feet of the sluice gate inlet, with somewhat higher velocities in the range of 3.3 to 3.5 fps across the crest of the headcut.

3.3. Backfill Potential during Non-sluicing Periods

The potential rate at which the incised channel resulting from the sluicing operations will re-fill was evaluated by modifying the downstream boundary conditions in the hydraulic model to reflect the discharge capacity rating curve for the fish ladder rather than the rating curve for the sluice gate (Figure 3), and re-running the model for periods of up to 20 days duration for a range of discharges up to the capacity of the fish ladder. The incised channel after 8 hours of sluicing operations at 500 cfs was used as the initial channel geometry for these simulations. Results for the simulation with a discharge of 40 cfs passing through the fish ladder indicate that the front of the aggradation would prograde to near the fish ladder inlet in 5 to 6 days (**Figure 28**). The short duration over which this occurs is due, in part, to the relatively low water-surface elevation at the fish ladder inlet that allows continued incision at the head of the incised channel and transfer of the eroded sediment to the downstream end of the incised reach, even after the sluice gate is closed. At 60 cfs, flow would just begin to occur over the spillway, and the backwater would extend about 2,000 feet upstream in the incised channel (**Figure 29**). Under these conditions, the aggradation will prograde to near the fish ladder inlet within about 10 days. A total flow in the river of about 800 cfs would be required to pass 70 cfs through the fish ladder (Figure 3). Under these conditions, the reservoir water surface would be at about 526.7 feet, or about 1.7 feet above the crest of the principal spillway. Model simulations for these conditions indicate that a minimum of 15 to 20 days would be required for the sediment deposits in the incised channel to prograde to the vicinity of the fish ladder inlet.

4. SUMMARY AND RECOMMENDATIONS

A range of possible configurations for a sluice gate that could be used to flush sediment away from the inlet of the fish ladder that would be required under the Dam Thickening and Dam Notching Alternatives were evaluated to identify an appropriate configuration that would meet the sluicing objective, and would be practical and economical to construct. An initial evaluation of hydraulic capacities and the associated reservoir elevations indicates that a 10-foot diameter sluice gate with the invert about 3 feet below the invert of the fish ladder inlet would achieve this objective. A simplified sediment routing model was developed to analyze the behavior of the sluice gate over a range of possible sluicing discharges up to about 1,000 cfs . Results from the model indicate that a channel would rapidly incise into the upstream reservoir deposits at discharges up to about 800 cfs, and the incision would progress upstream at rates that depend on the total discharge in the river and the reservoir water-surface elevation. Other specific conclusions from the modeling include the following:

1. The rate of upstream progression of the incised channel depends on the discharge in the river, the hydraulic capacity of the sluice gate, and the resulting water-surface in the reservoir. For the discharges that were analyzed, the most rapid upstream progression occurs at about 500 cfs. At this discharge, the upstream end of the incision would be

located about 2,000 feet upstream from the dam after about 4 hours, about 2,900 feet upstream in 8 hours and about 1 mile upstream after 24 hours of sluicing operations. The incision rates are slower at lower discharges because they are limited by the amount of water that is available to move the sediment. The rates also decrease at higher discharges because of the backwater effects caused by the increasing water-surface elevation in the reservoir.

2. Based on the total quantity of the sediment that could be eroded from the reservoir, and thus the amount that would be evacuated from the channel feeding to the fish ladder over various durations of sluicing operations, the most effective range of sluicing discharges for the 10-foot diameter sluice gate is in the range of 300 to 600 cfs. For the reasons described in the previous item, the erosion potential diminishes rapidly at both higher and lower discharges. In the optimum range of discharges, about 4.5 ac-ft of sediment could be eroded over an 8-hour sluicing period, increasing to 9.5 to 10 ac-ft over a 24-hour period.

3. Based on the 41-year record of mean daily flows from the CVSIM modeling that was used in the previous sediment routing studies (MEI, 2003 and 2003), the optimum range of sluicing discharges occurs for 7 to 16 percent of the time, on average, during the fish passage period that generally extends from December 1 through May 31. This duration equates to about 11 to 28 days, during the 180-day period, on average. Of course, in wet years, this range of flows may occur for substantially longer periods of time and in dry years, it may occur for substantially shorter periods of time.

4. The sediment eroded from the reservoir will cause a temporary increase in the downstream sediment loads, and for the range of potential sluicing discharges up to 500 to 600 cfs, the sediment will temporarily accumulate in the reach immediately downstream from the dam. This sediment will typically be in the sand and fine gravel-size range; thus, the river will be capable of re-entraining and transporting the material farther downstream relatively rapidly. Of the sluicing discharges that were considered in the analysis, worst-case conditions for downstream sediment accumulation occur at 200 cfs for an 8-hour sluicing operation and at 100 cfs for a 24-hour operation. For the 8-hour operation, about 1.9 ac-ft of sediment will have accumulated in the approximately 0.5-mile reach downstream from the dam after 8 hours, and most of the accumulated sediment would be re-entrained and moved downstream within about 16 hours. For a 24-hour operation, about 3 ac-ft of sediment would accumulate in this reach and most of this sediment would be re-entrained and removed from the reach after an additional 24 hours.

5. The results described in the previous item are based on the assumption that the indicated sluicing discharge would continue to pass over the principal spillway for the amount of time necessary to remove any accumulated sediment from the stilling pool at the base of the dam. As a result, flows into the fish ladder should be limited through this period to insure that most of the flow passes over the spillway, because discharges from the fish ladder enter the river downstream from the stilling pool.

6. The sluicing operations will cause a temporary increase in sediment loads in the downstream river, with the magnitude of the effects diminishing with increasing distance downstream from the dam due to the effects of both temporary and more permanent storage of the relatively fine-grained sediment in eddy zones and other low energy areas along the reach.

7. The estimated baseline sediment yield to San Clemente Reservoir averages about 16.5 ac-ft per year, and results from the baseline conditions modeling from the previous analysis indicate that an average of about 12.2 ac-ft of sediment would pass over the dam

during the 41-year simulation period under the Dam Thickening Alternative (**Figure 30**, MEI, 2003 and 2005). The maximum sediment load from the sluicing operations of about 9.5 to 10 ac-ft over a 24-hour period, therefore, represents about 60 percent of the annual sediment load to the downstream river under the Complete Dam Removal Alternative, and about 80 percent of the average annual load under the Dam Thickening Alternative. Although the initial incision into the reservoir deposits during sluicing operations will cause a temporary increase in the total sediment load to the downstream river, the total load passing the dam over the long-term will be similar to that under the Complete Dam Removal Alternative, because the incised channel will store sediment during intervening periods when the sluice gate is closed.

8. Evaluation of the rate at which the incised channel will refill after the sluice gate is closed at the end of each sluicing period indicates that at relatively low discharges in the range of 30 to 50 cfs, the sediment deposits may prograde to near the fish ladder inlet within 5 to 7 days. This relatively rapid rate of refilling occurs because the downstream hydraulic control is lower than the channel bed at the head of the incision; thus, erosion will continue in this area with the sediment being transferred into the deposition zone closer to the dam. When the discharge through the fish ladder is in the range of 60 cfs, the sediment will prograde to near the inlet in about 10 days after the end of sluicing. A total discharge of 750 to 800 cfs is required to provide sufficient head to pass 70 cfs through the fish ladder. Under these conditions, the reservoir water-surface elevation is sufficient to slow the advance of the depositional wedge. Under these conditions, the deposition will reach the vicinity of the fish ladder inlet after a minimum of 15 to 20 days.

9. The results in the previous item represent conditions after the first few sluicing operations. After repeated operations, the incision will likely progress even farther upstream than is indicated by the analysis presented here, which should increase the time before sediment begins to affect the fish ladder during non-sluicing periods. Controlling the amount of flow into the fish ladder to maintain the reservoir level as high as possible would also lengthen the time between sluicing operations because of the increased effects of the backwater upstream from the dam.

10. The quantitative analyses that were performed for this study focused on conditions for the Dam Thickening Alternative. Similar results would be obtained for the Dam Notching Alternative. The sediment deposits at the lower level of the notch are somewhat finer than those at the surface; thus, the transport rates through the sluice gate would be somewhat higher and the incision would occur at a faster rate. This would remove more sediment from the upstream channel, increasing the area available for sediment deposition during the intervening periods between sluicing operations, but also increasing the sediment load to the downstream river. Because the eroded sediment will be finer, it will also be transported through the downstream reaches at a faster rate, limiting the potential for accumulation.

11. The analyses performed for this study considered only one of many possible invert elevations for the sluice gate. While the selected elevation is believed to be appropriate, other invert elevations should be evaluated during the design process to determine if they would provide more effective sluicing if the Dam Thickening or Dam Notching Alternatives is ultimately implemented.

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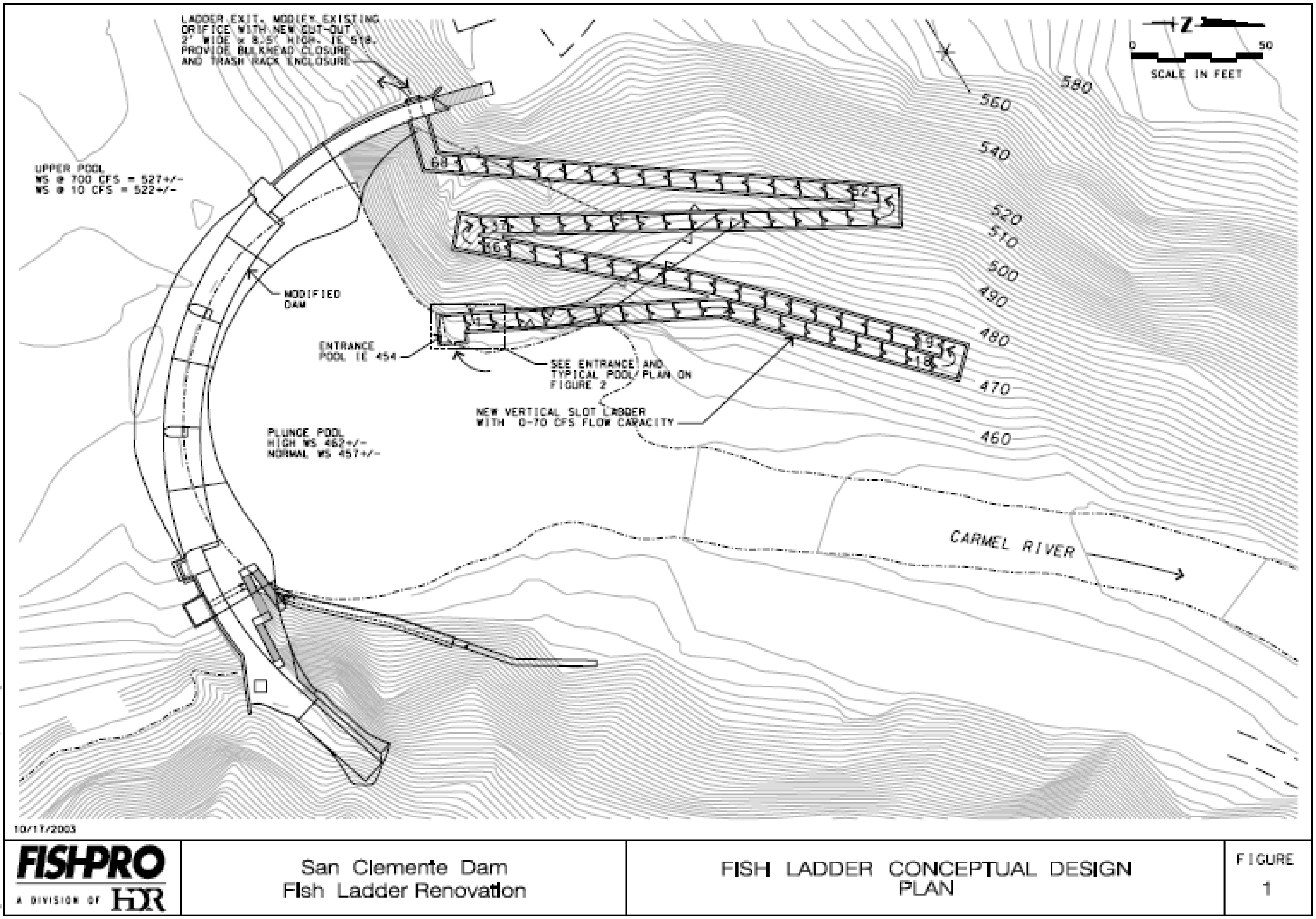
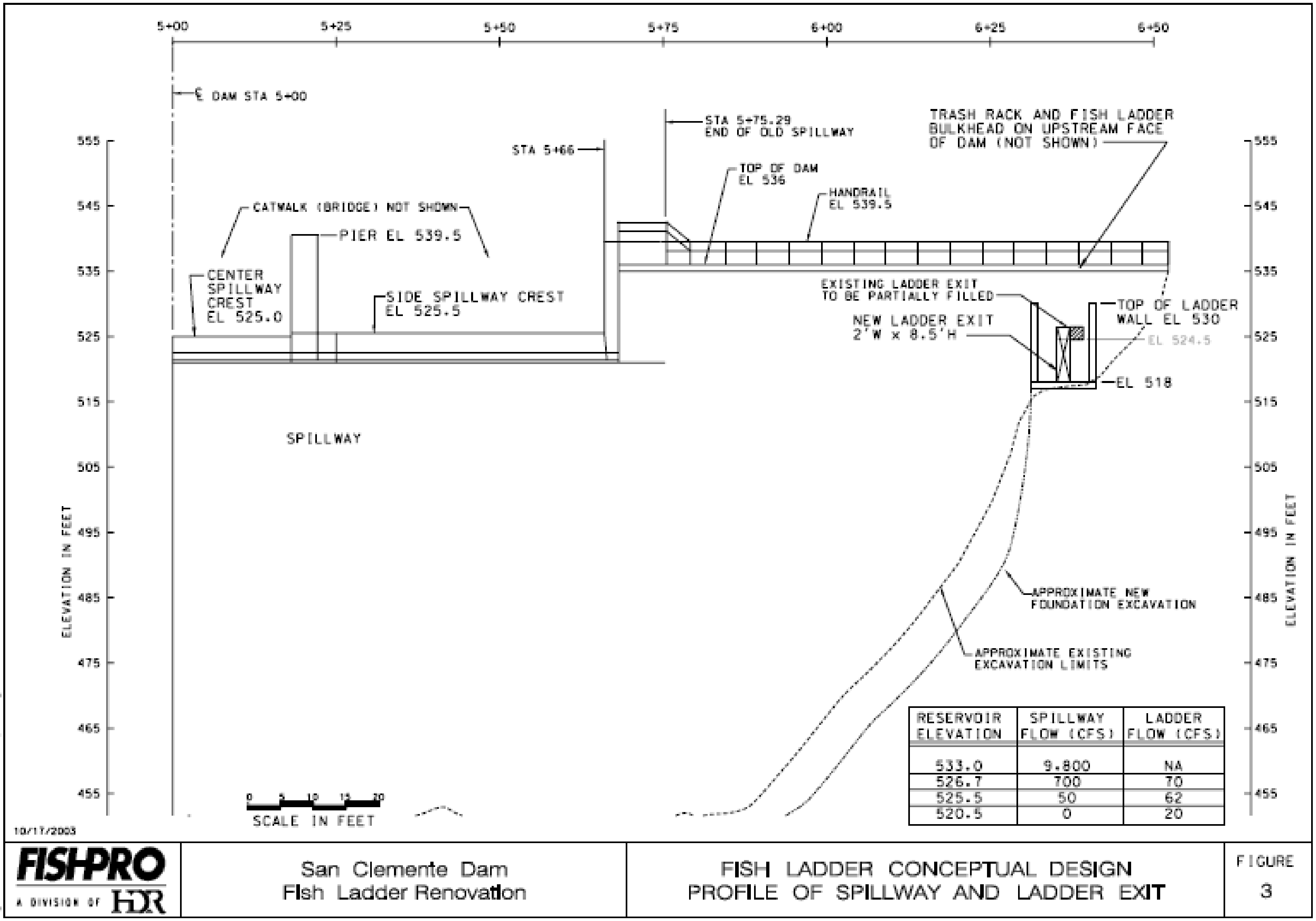


Figure 1. Fish ladder conceptual design, plan view of spillway and ladder exit (Figure 1 from FishPro and Entrix, 2003).



RESERVOIR ELEVATION	SPILLWAY FLOW (CFS)	LADDER FLOW (CFS)
533.0	9,800	NA
526.7	700	70
525.5	50	62
520.5	0	20

Figure 2. Fish ladder conceptual design, profile of spillway and ladder exit (Figure 3 from FishPro and Entrix, 2003).

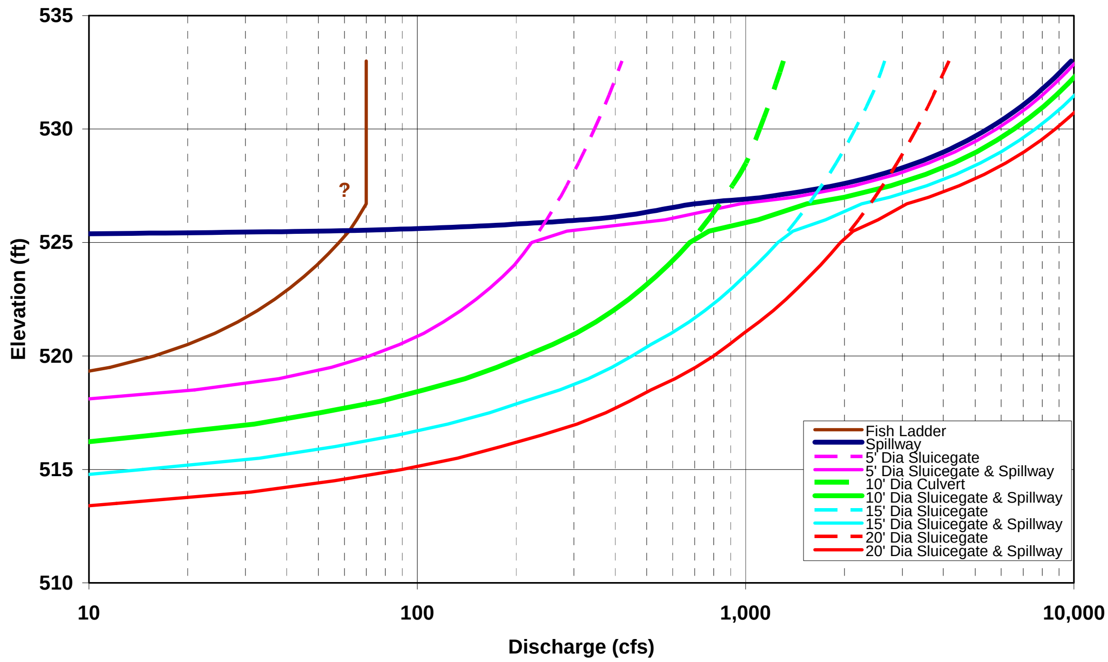


Figure 3. Hydraulic capacity rating curves for four potential sluice gate diameters (5, 10, 15, and 20 feet) and the principal spillway for the Dam Thickening Alternative. The hydraulic capacity rating curve for the fish ladder FishPro and Entrix (2003) is also shown.

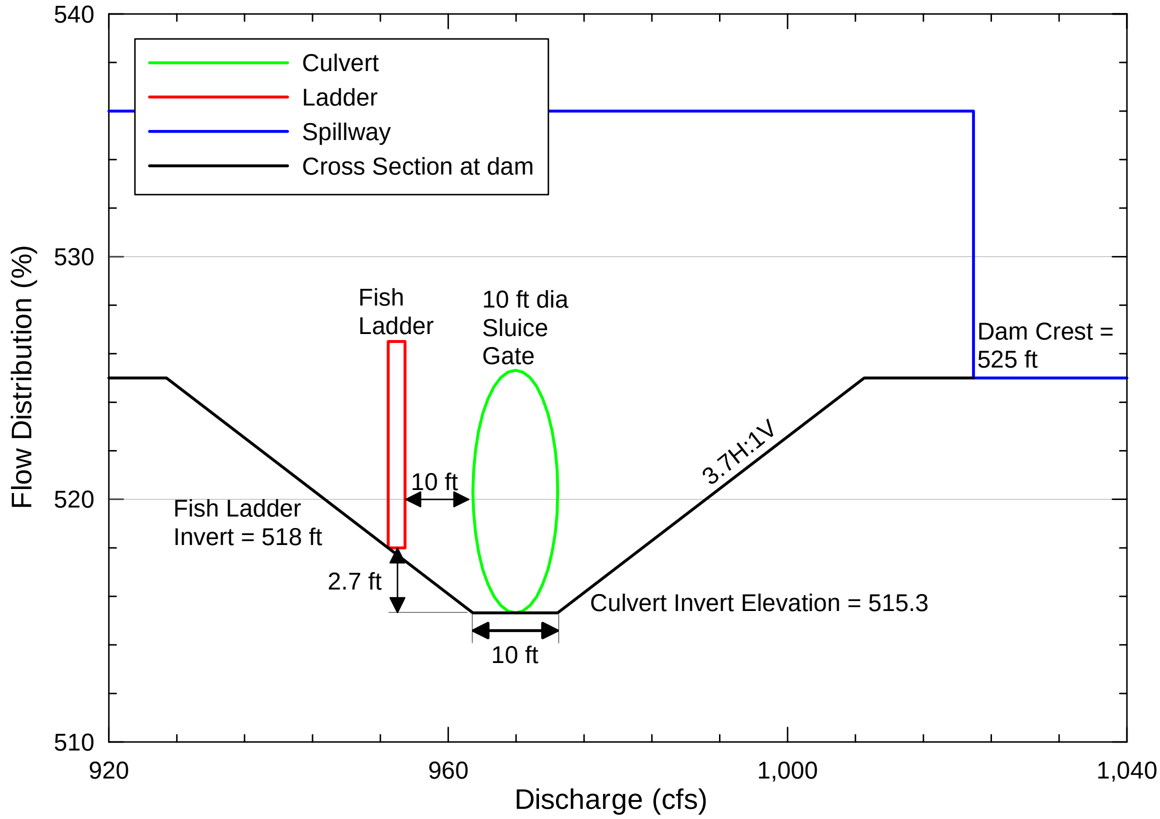


Figure 4. Conceptual sketch, looking downstream, of San Clemente Dam, the vertical slot fish ladder proposed by FishPro and Entrix (2003) and a 10-foot diameter sluice gate. Also shown is the approximate cross section of the channel upstream from the sluice gate when it has incised to the level of the sluice gate invert.

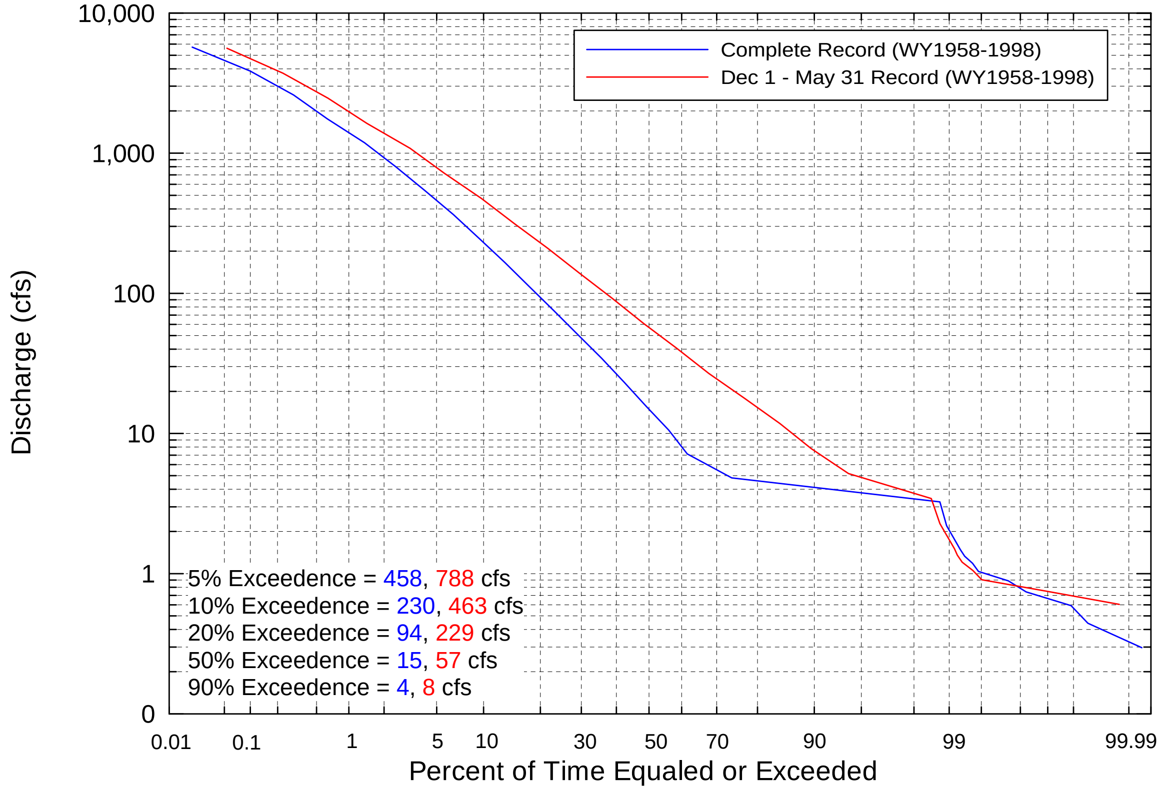


Figure 5. Mean daily flow-duration curve for the combined flows in the Carmel River and San Clemente Creek at San Clemente Dam for the full year and for the December 1 through May 31 fish-passage period, based on the CVSIM model results that were used to develop the 41-year period of record that was used in the previous sediment modeling studies (MEI, 2002 and 2003).

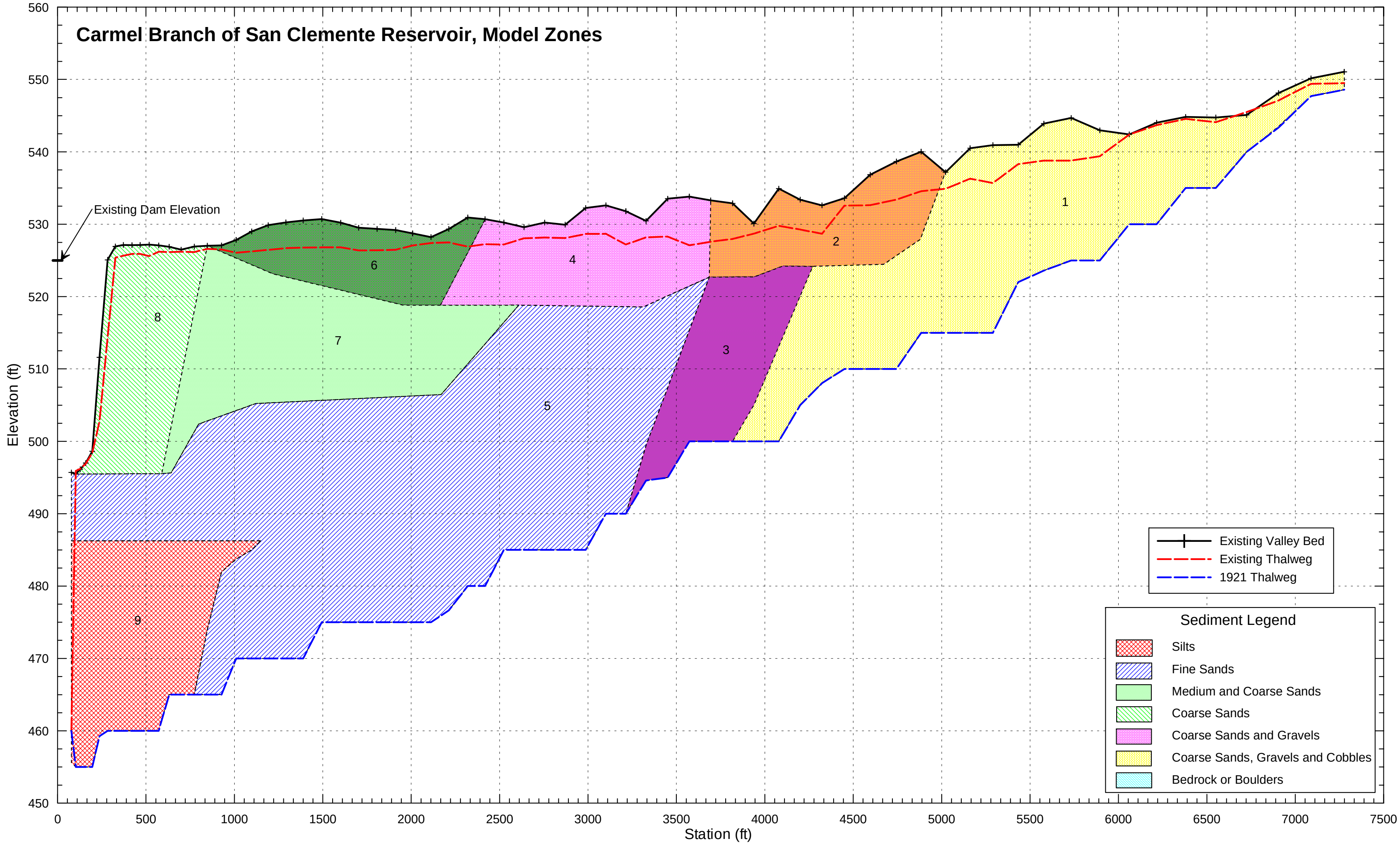


Figure 6. Simplified stratigraphic profile of the Carmel River Branch of the reservoir (from MEI, 2003).

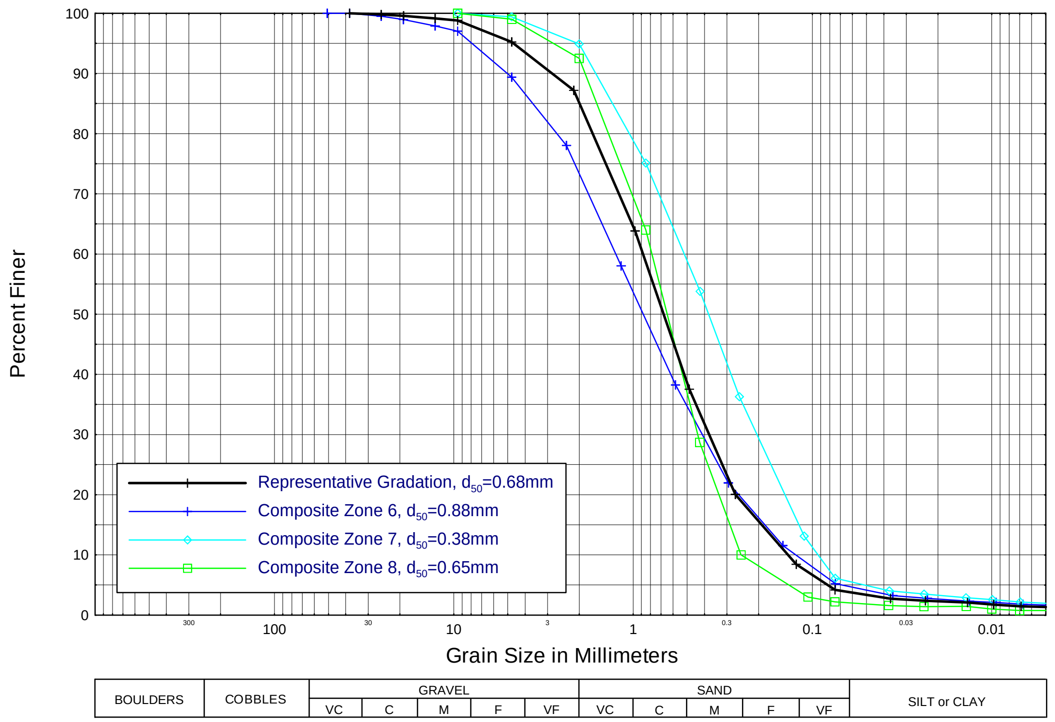


Figure 7. Representative sediment gradation for the sluicing analysis developed from the weighted average of Composite Zones 6, 7 and 8 shown in Figure 6.

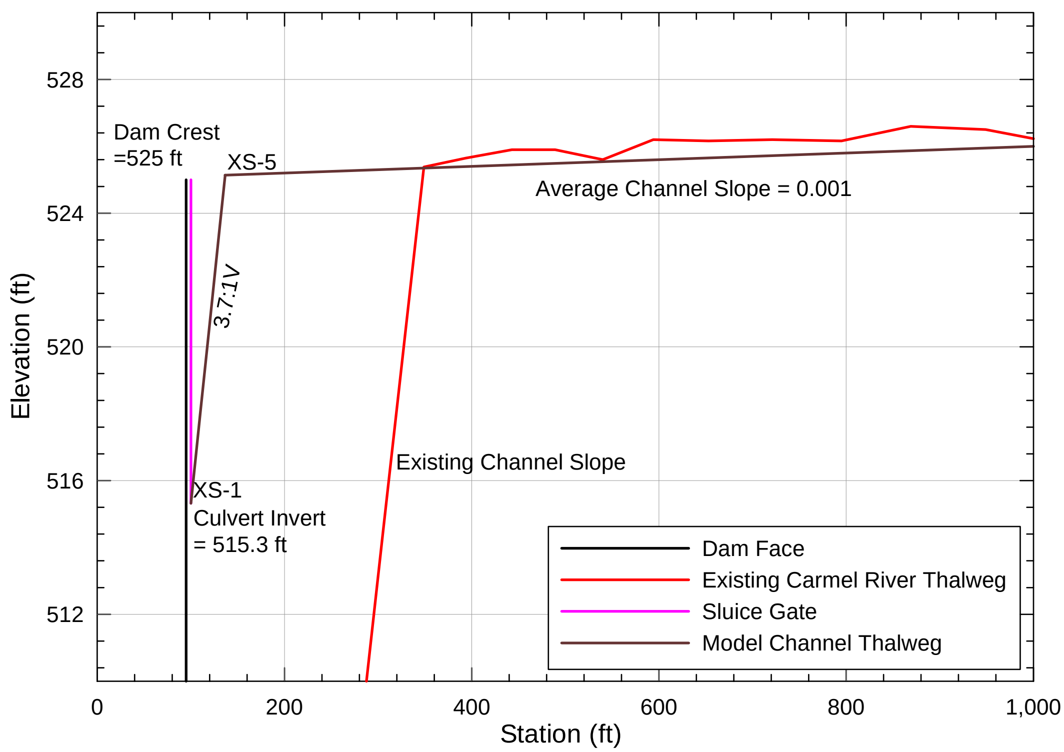


Figure 8. Longitudinal profile of the incised channel and reservoir sediment deposits that was assumed for the initial model conditions. Also shown for reference purposes is the profile of the existing reservoir deposits.

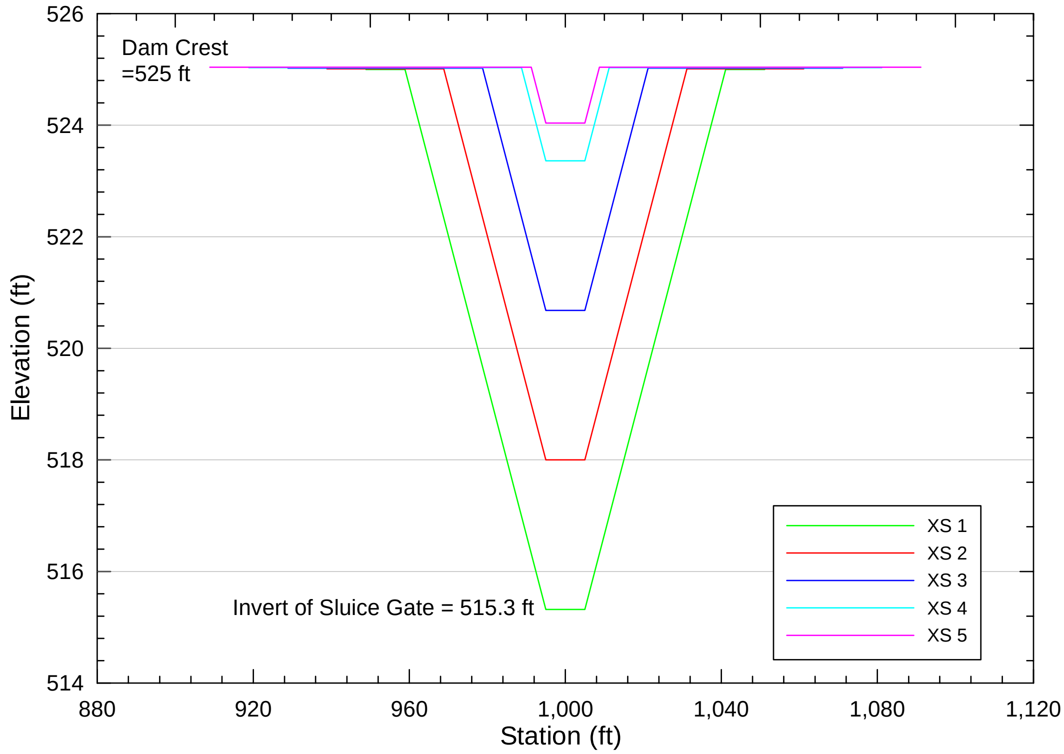


Figure 9. Geometry of initial cross sections immediately upstream from the sluice gate.

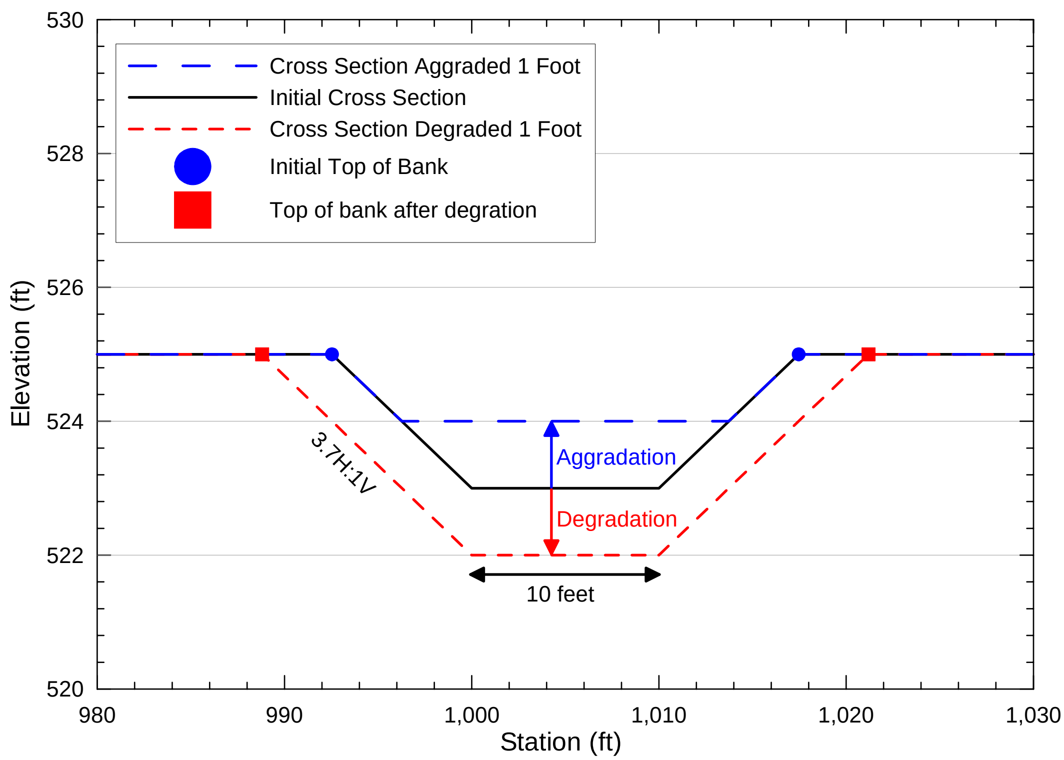


Figure 10. Conceptual sketch of channel modifications that were applied in the model during degradation and aggradation.

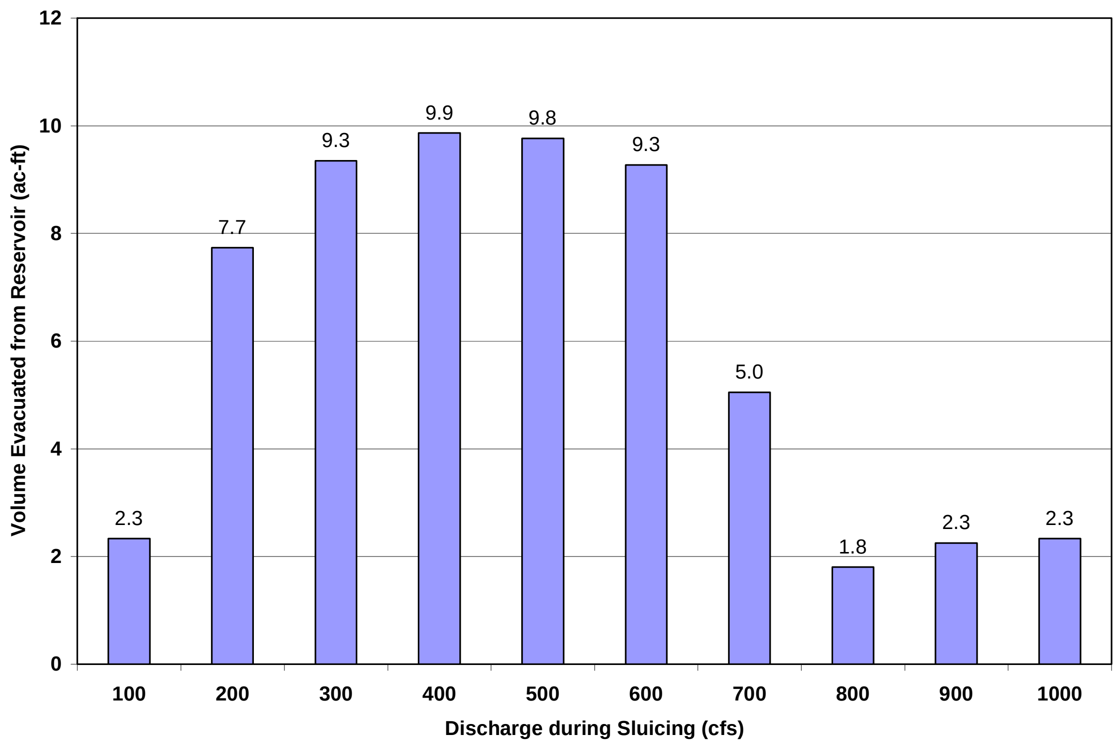


Figure 11. Total volume of sediment eroded from the reservoir deposits and passed into the downstream river after 24 hours at constant discharges ranging from 100 to 1,000 cfs.

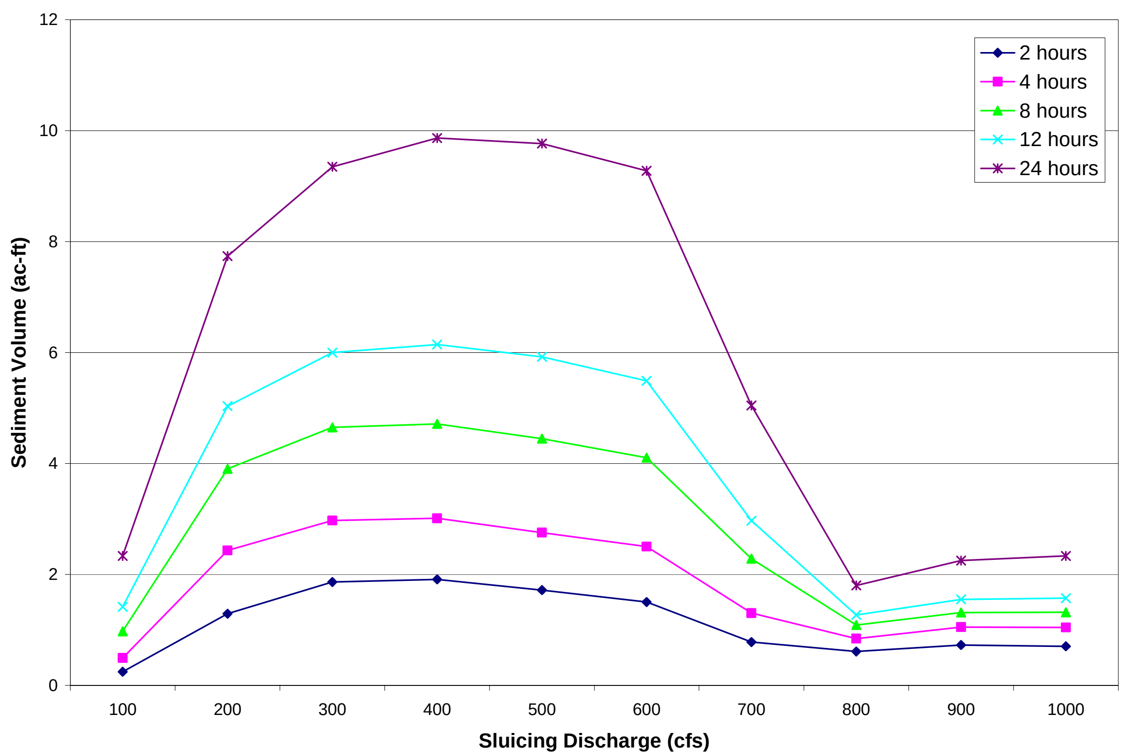


Figure 12. Volume of sediment delivered to the downstream river at constant discharge ranging from 100 to 1,000 cfs over sluicing durations of 2, 4, 8, 12, and 24 hours.

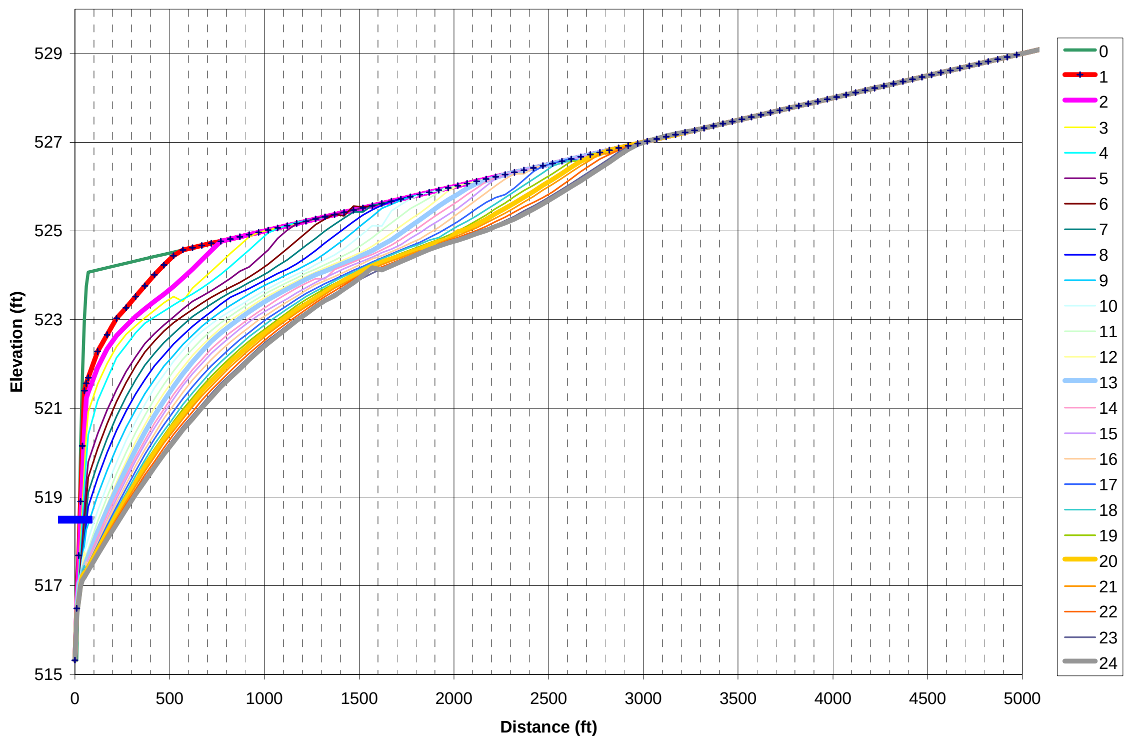


Figure 13. Estimated longitudinal profiles of the incised channel upstream from the sluice gate in 1-hour increments at a constant sluicing discharge of 100 cfs. Blue mark is water-surface elevation at sluice gate inlet.

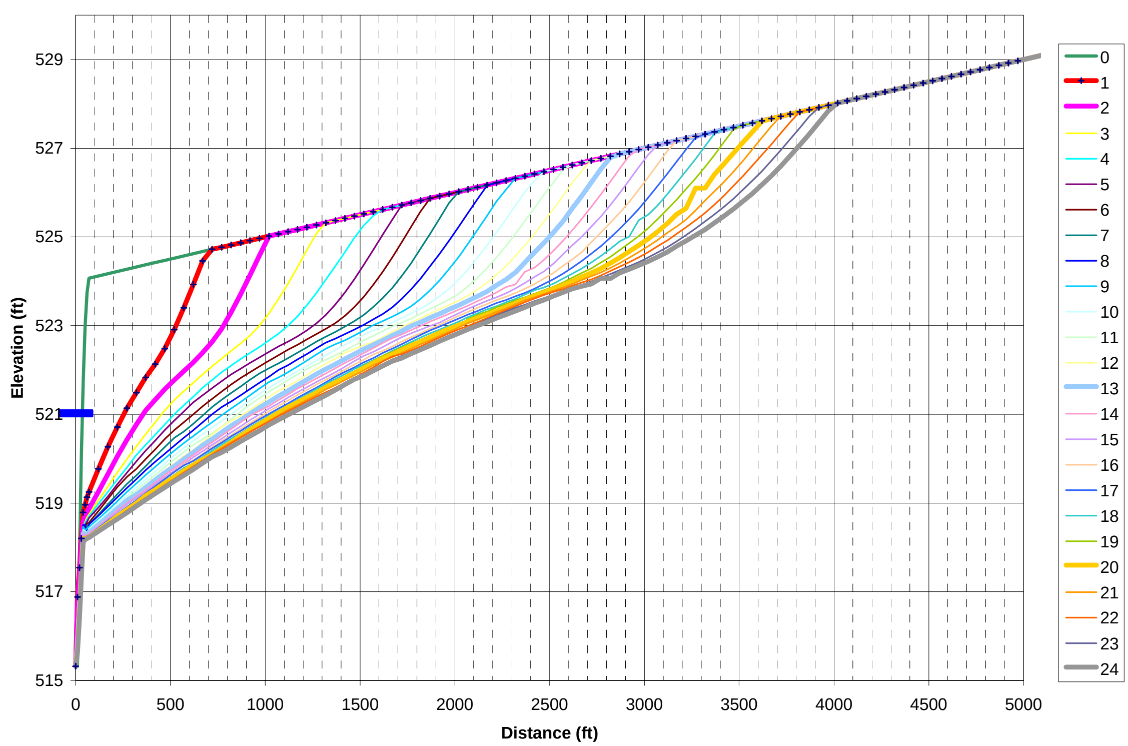


Figure 14. Estimated longitudinal profiles of the incised channel upstream from the sluice gate in 1-hour increments at a constant sluicing discharge of 300 cfs. Blue mark is water-surface elevation at sluice gate inlet.

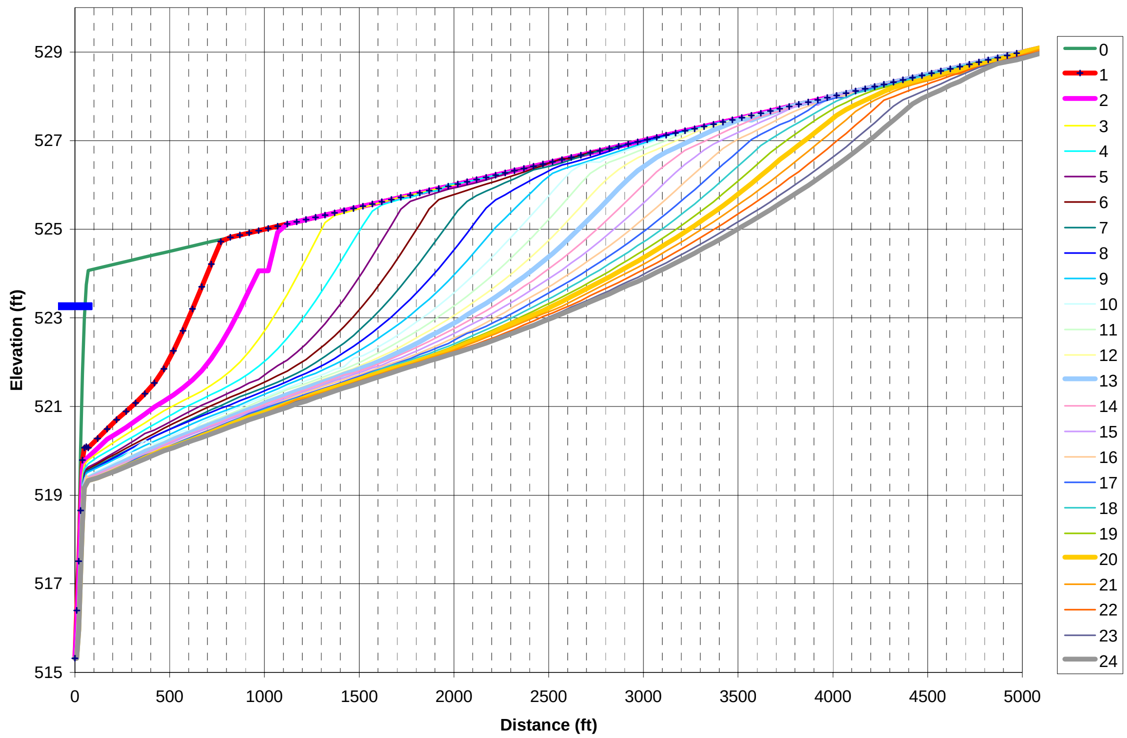


Figure 15. Estimated longitudinal profiles of the incised channel upstream from the sluice gate in 1-hour increments at a constant sluicing discharge of 500 cfs. Blue mark is water-surface elevation at sluice gate inlet.

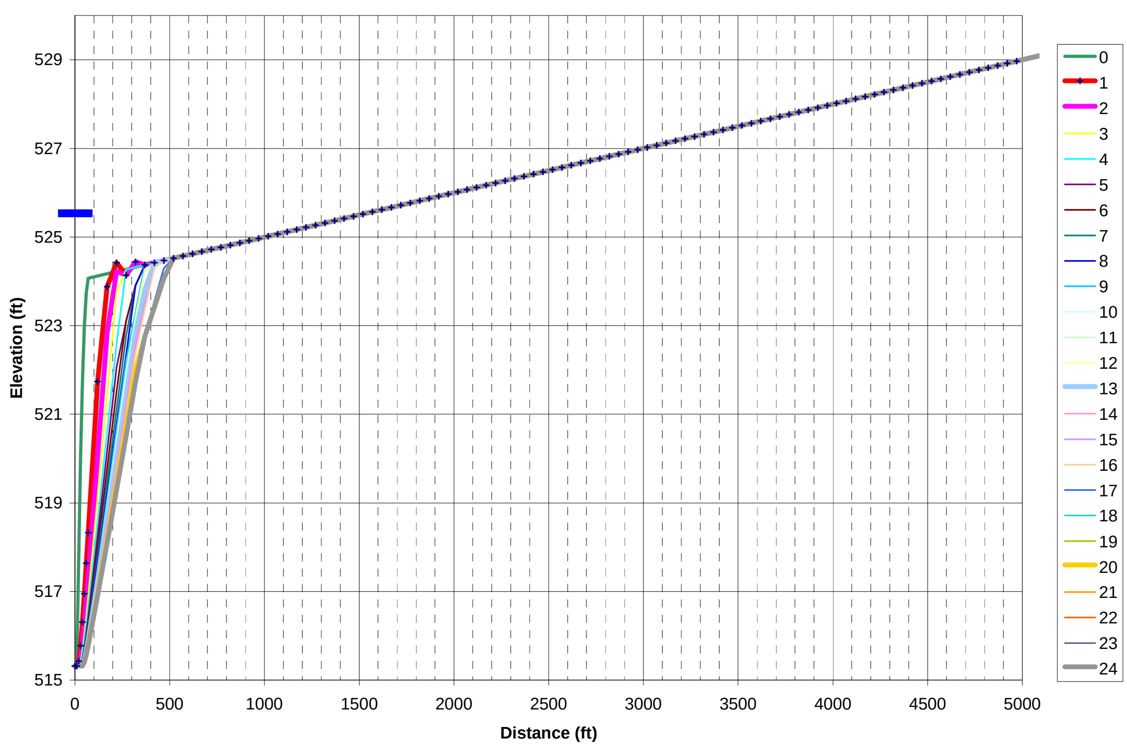


Figure 16. Estimated longitudinal profiles of the incised channel upstream from the sluice gate in 1-hour increments at a constant sluicing discharge of 800 cfs. Blue mark is water-surface elevation at sluice gate inlet.

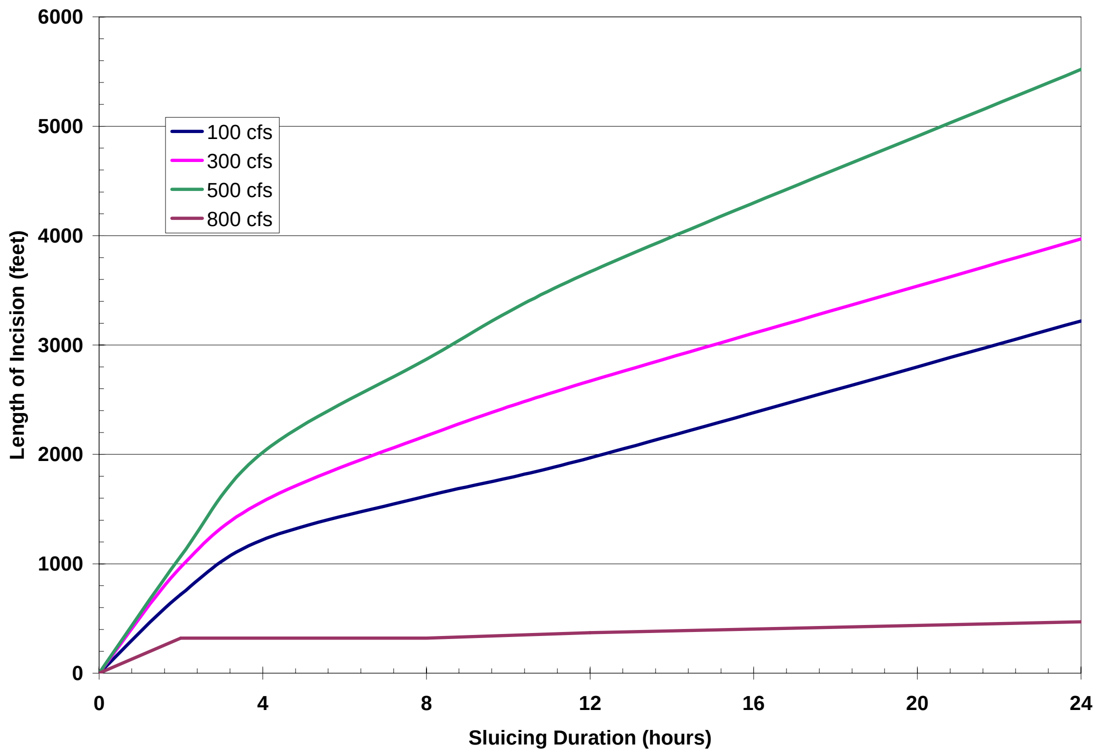


Figure 17. Estimated length of the incision upstream from the sluice gate at various points in the simulation at constant sluicing discharges of 100, 300, 500 and 800 cfs.

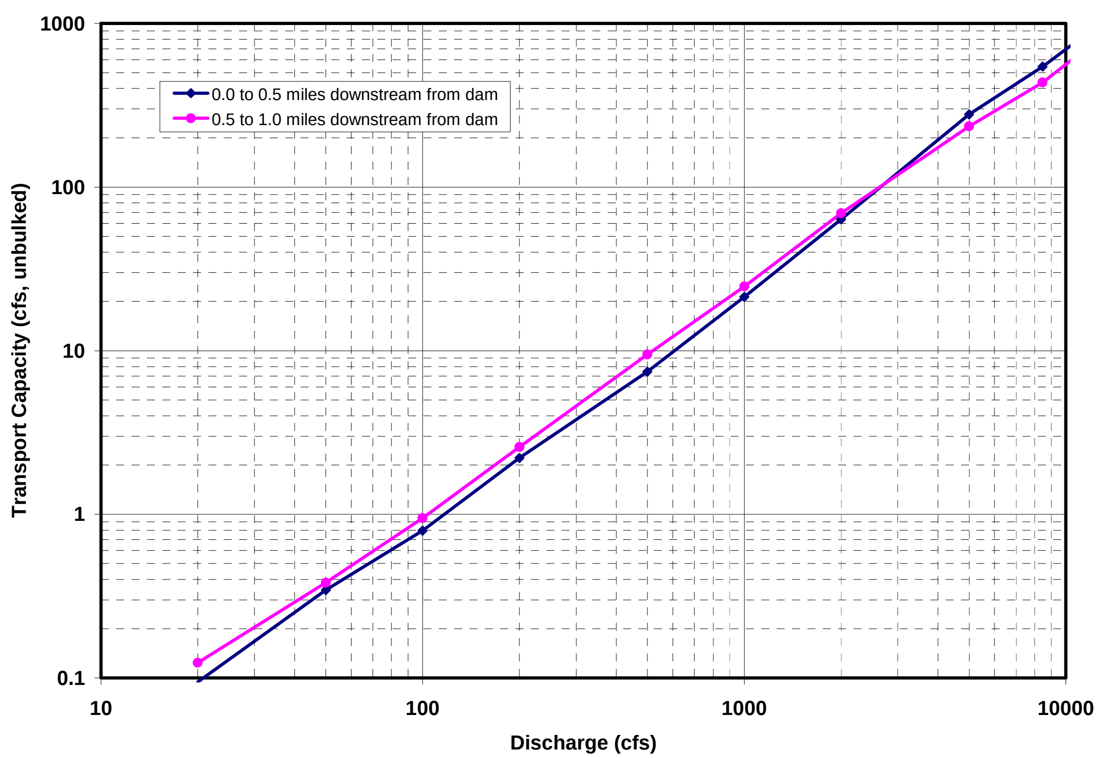


Figure 18. Sediment-transport capacity rating curves for the first two 0.5-mile segments of the Carmel River downstream from San Clemente Dam.

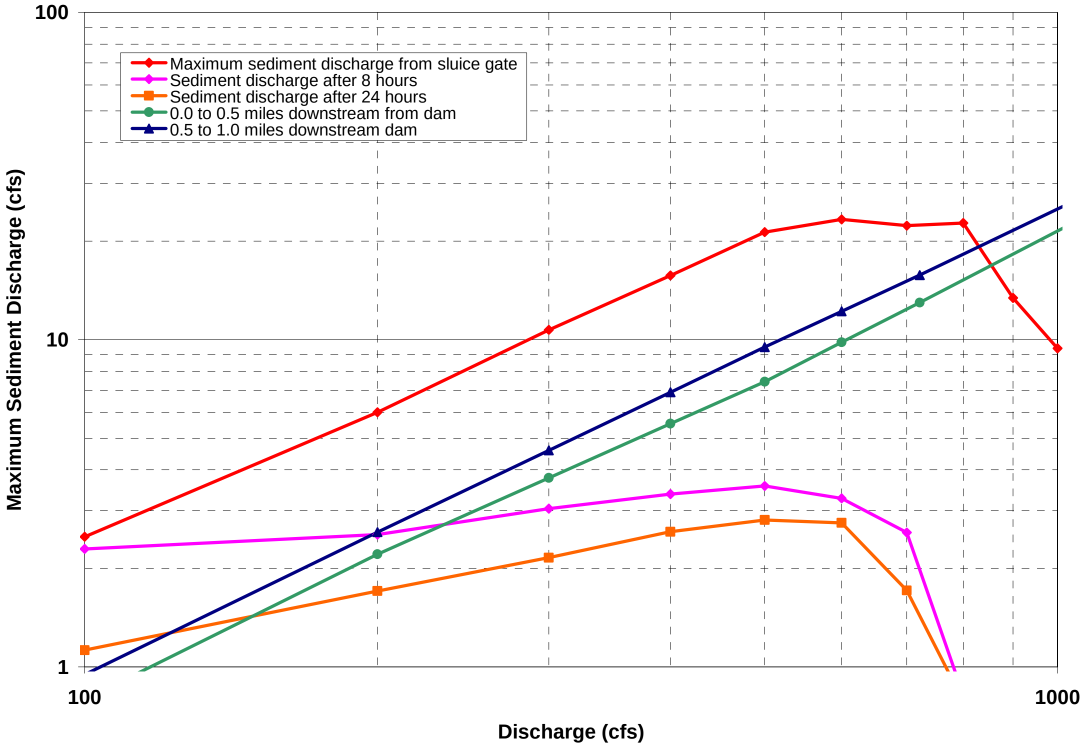


Figure 19. Sediment discharge passing through the sluice gate near the beginning of sluicing operations (maximum discharge curve), after 8 hours and after 24 hours of sluicing. Also shown are the transport capacity rating curves for the two 0.5-mile segments of river immediately downstream from the dam.

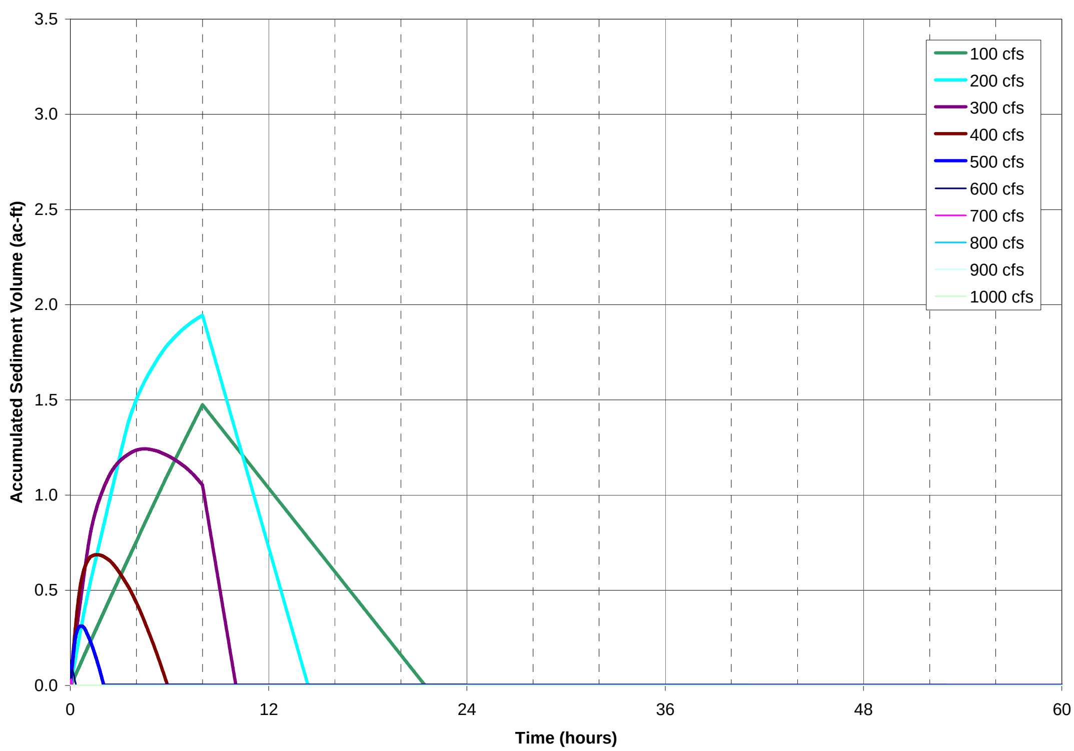


Figure 20. Volume of sediment accumulated in the 0.5-mile reach of the Carmel River immediately downstream from the dam for an 8-hour sluicing operation at discharges ranging from 100 to 1,000 cfs.

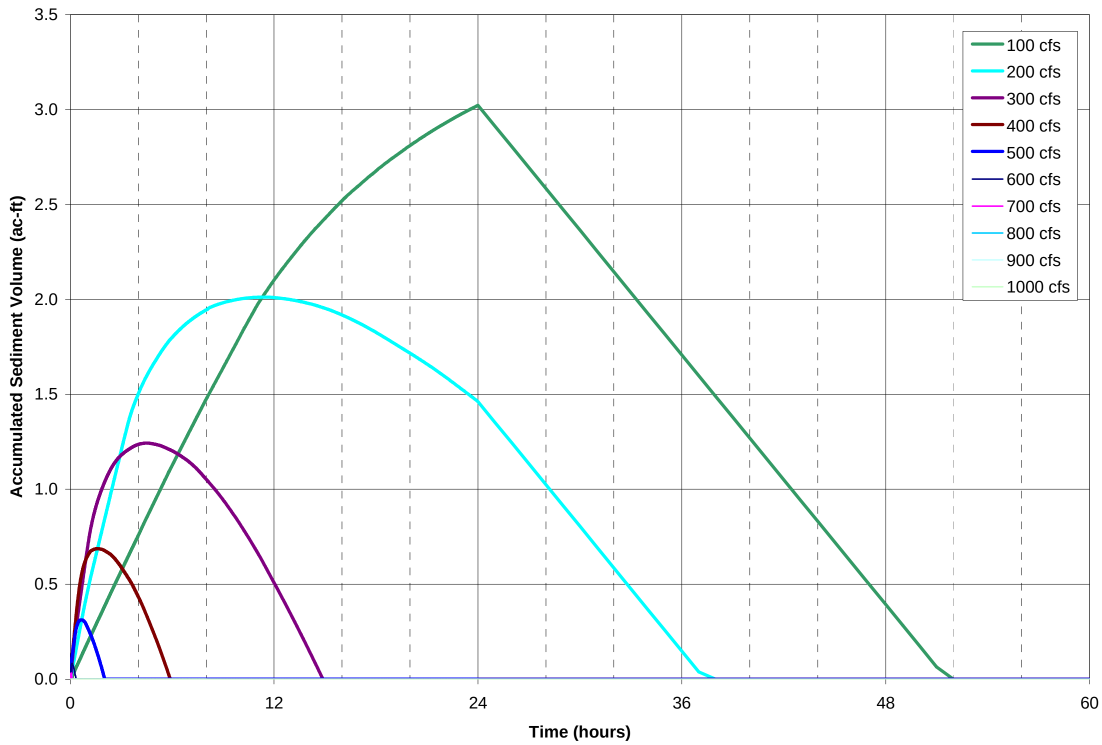


Figure 21. Volume of sediment accumulated in the 0.5-mile reach of the Carmel River immediately downstream from the dam for a 24-hour sluicing operation at discharges ranging from 100 to 1,000 cfs.

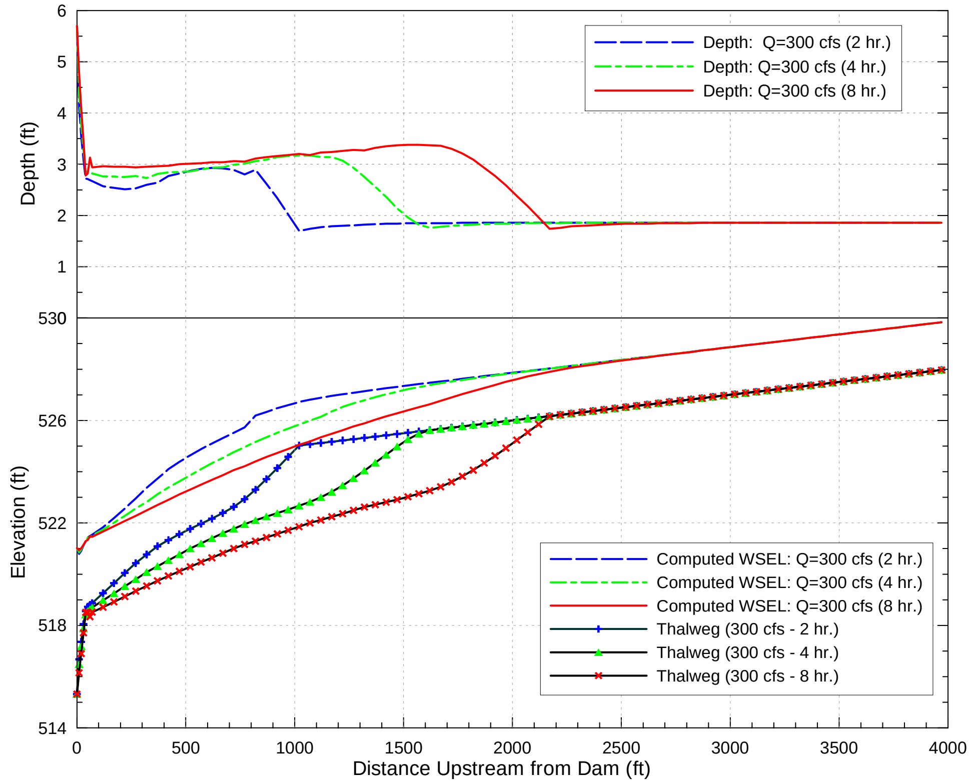


Figure 22. Simulated minimum bed elevation, water-surface elevation and maximum depth profiles at 2, 4, and 8 hours for a constant sluicing discharge of 300 cfs.

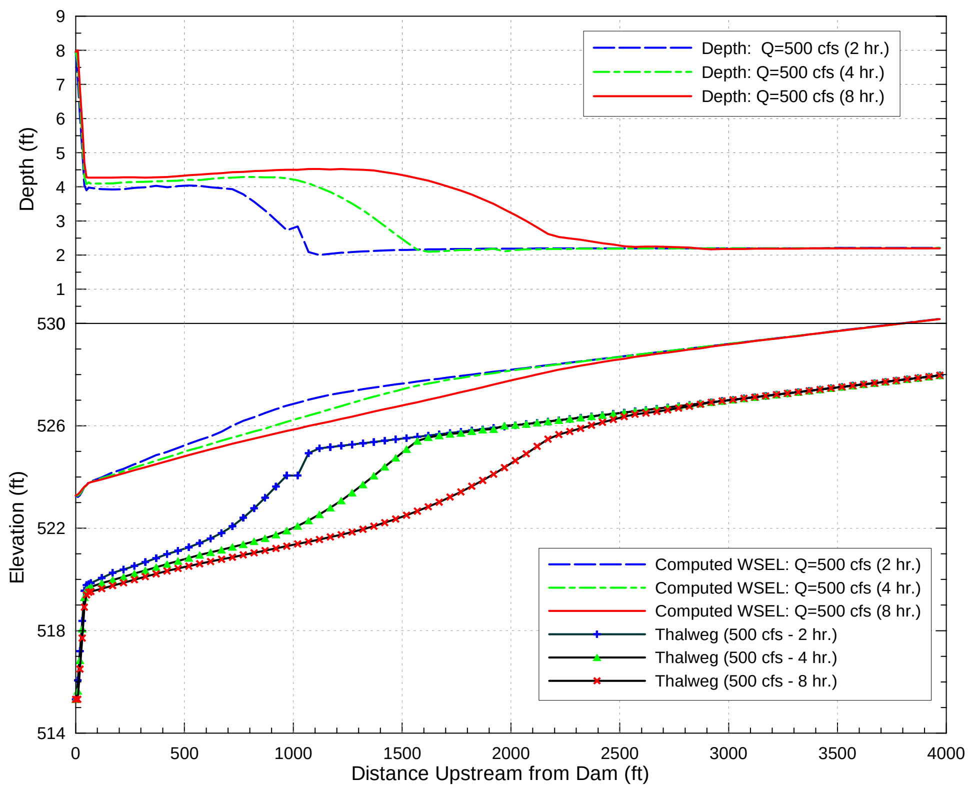


Figure 23. Simulated minimum bed elevation, water-surface elevation and maximum depth profiles at 2, 4, and 8 hours for a constant sluicing discharge of 500 cfs.

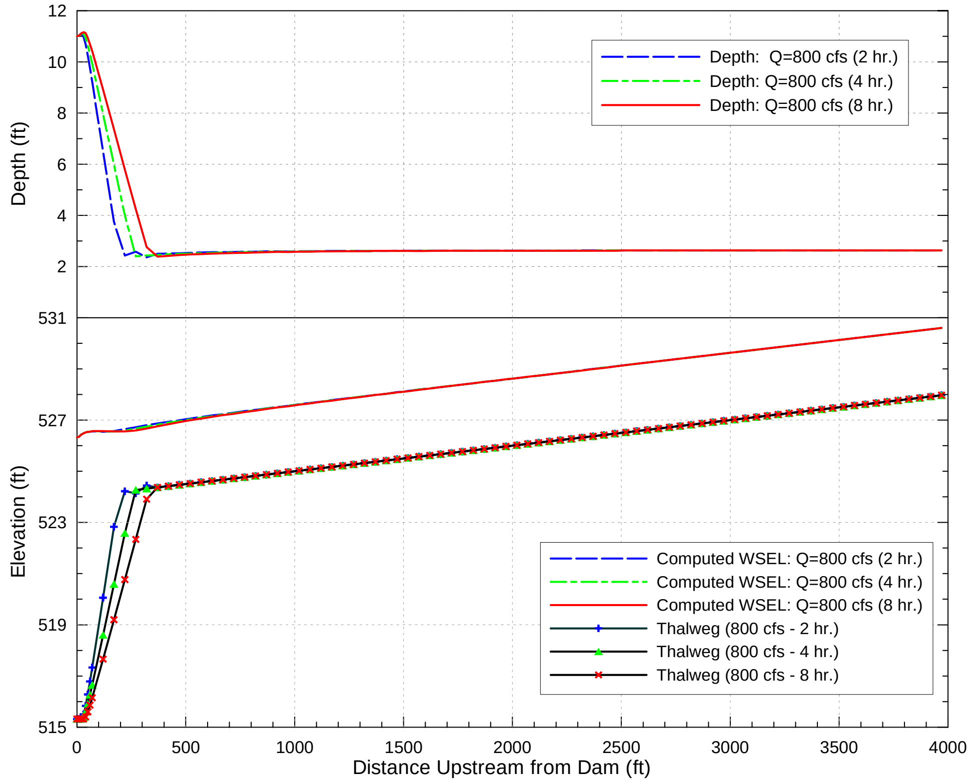


Figure 24. Simulated minimum bed elevation, water-surface elevation and maximum depth profiles at 2, 4, and 8 hours for a constant sluicing discharge of 800 cfs.

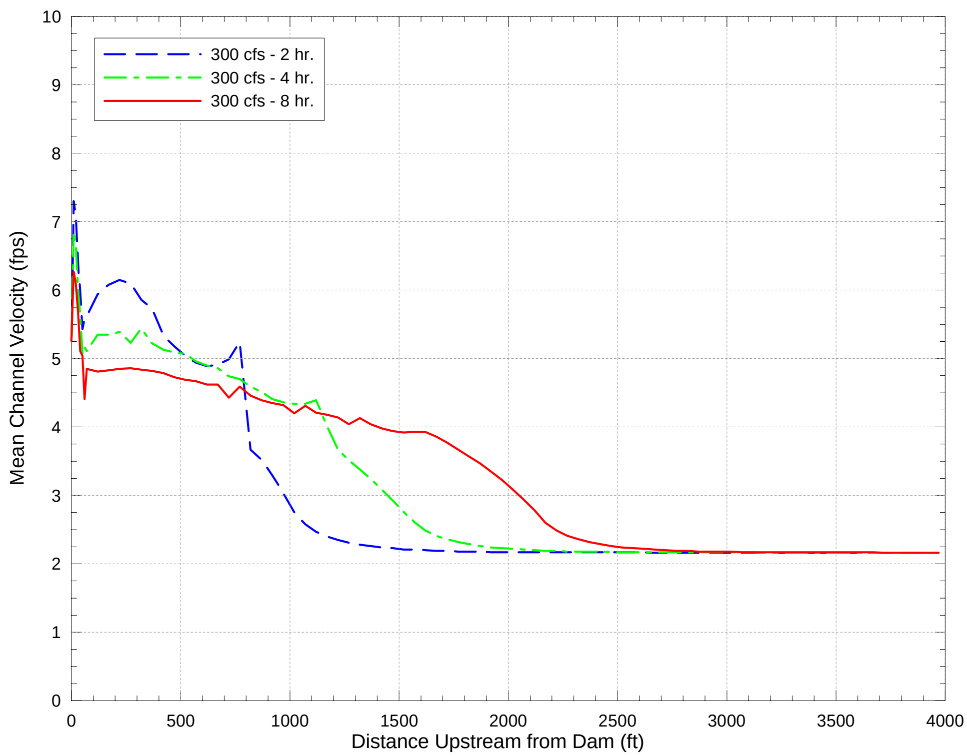


Figure 25. Cross-sectionally averaged velocity profiles at 2, 4, and 8 hours for a constant sluicing discharge of 300 cfs.

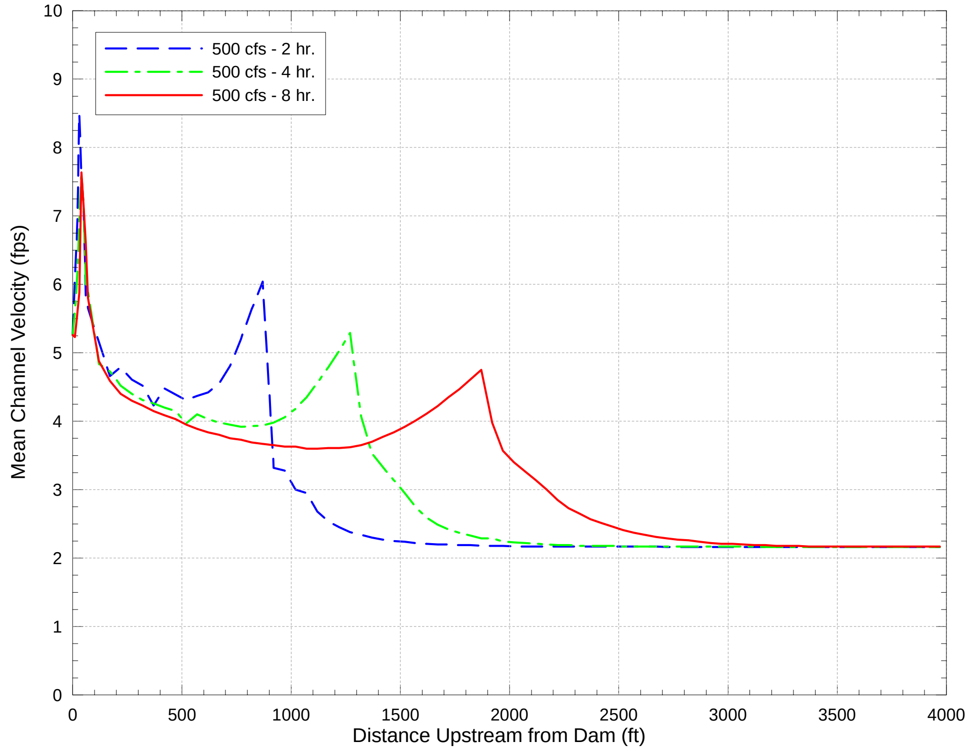


Figure 26. Cross-sectionally averaged velocity profiles at 2, 4, and 8 hours for a constant sluicing discharge of 500 cfs

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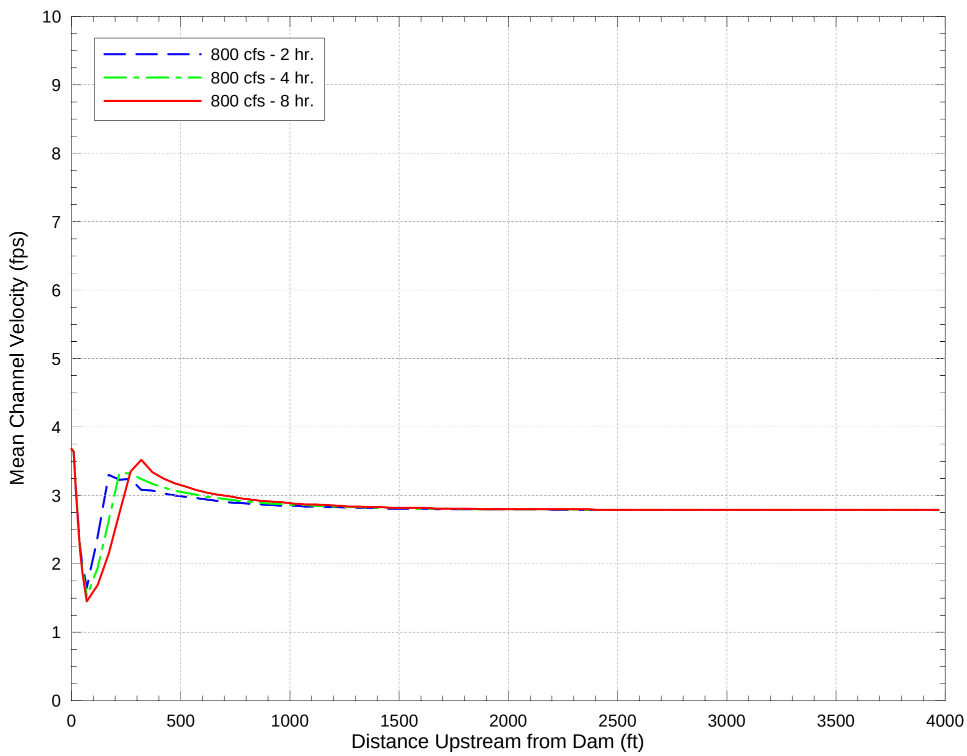

Figure 27. Cross-sectionally averaged velocity profiles at 2, 4, and 8 hours for a constant sluicing discharge of 800 cfs.

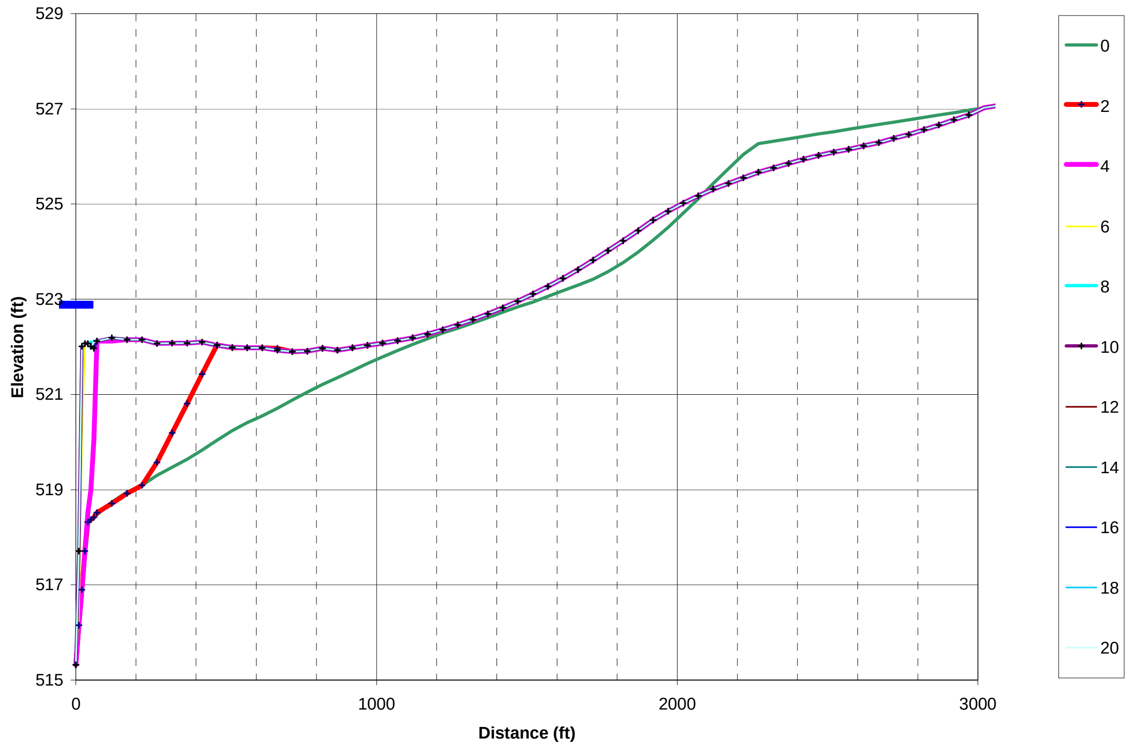

Figure 28. Profile of the incised channel 2 to 20 days after the end of sluicing operations at a constant discharge through the fish ladder of 40 cfs.

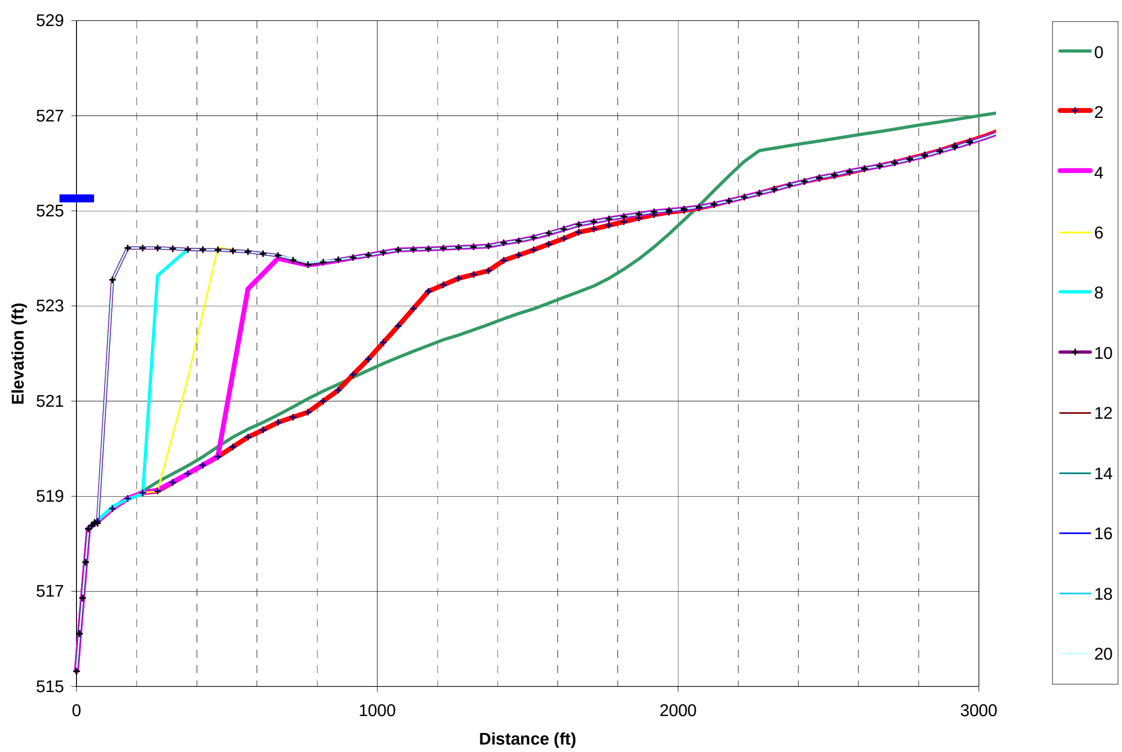

Figure 29. Profile of the incised channel 2 to 20 days after the end of sluicing operations at a constant discharge through the fish ladder of 60 cfs.

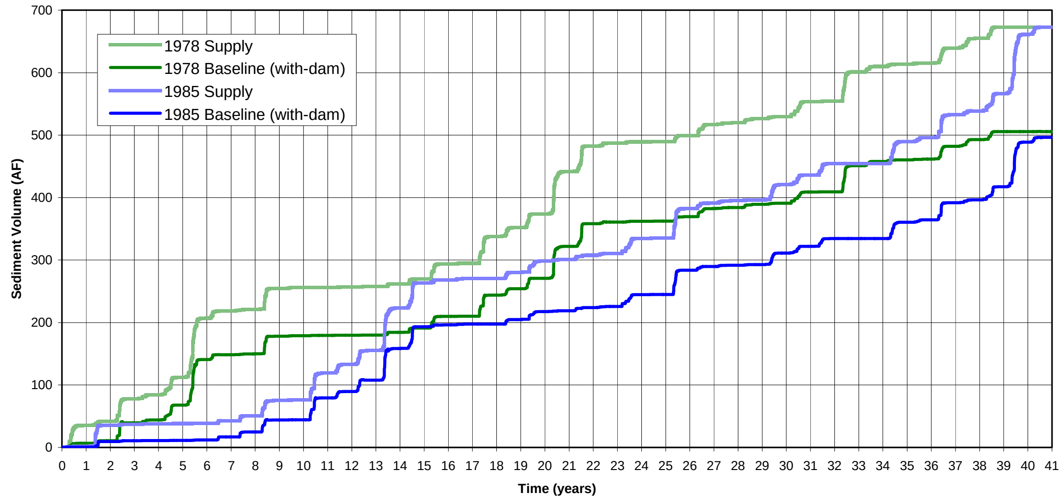

Figure 30. Inflowing Baseload and computed sediment load passing San Clemente Dam for baseline conditions (WY1978 and WY1985 start-dates).

Additional Modeling to Evaluate Sediment Sluicing Options and Compare Downstream Sediment Concentrations for EIR/EIS Alternatives, San Clemente Seismic Safety Project

March 23, 2007
Updated August 9, 2007

1. INTRODUCTION

Mussetter Engineering, Inc. (MEI) was retained by MWH Americas, Inc. (MWH) to perform additional modeling and analysis to assist the project team in evaluating the potential sedimentation impacts and addressing agency concerns about the alternatives that are being considered for the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the San Clemente Dam Seismic Safety Project. This work included the following specific tasks:

1. A detailed analysis of the potential sedimentation impacts of the Proponents Proposed Alternative (dam thickening, reconstruction of the fish-ladder, 10-foot diameter sluice gate to clear sediment from the fish ladder intake) was performed, as follows:

    a. The incised channel geometry from the sluicing model for the 2-hour, 300-cfs sluicing event (see MEI, 2006a) was incorporated into the HEC-6T model of the reservoir.

    b. The reservoir model was run with one year of flows for the two hydrology scenarios that have been used for the previous analyses (1978 and 1985 start-dates[1]) to assess the rate of backfilling of the sluice channel. This analysis generally indicated that the rate of backfilling strongly depends on the sequence of flows that occurs during the post-sluicing period, with generally higher rates of backfilling under low flows and lower rates of backfilling under high flows due to the backwater effects. The analysis also indicated that the backfilled channel will re-incise during the late-summer and fall baseflow periods by flows entering the fish ladder.

    c. Based on the results from the above task, the 2-hour, 300-cfs sluice channel geometry was incorporated into the combined reservoir and downstream river HEC-6T model, and the combined model was run with one year of flows for each of the two hydrology scenarios. These runs included the 2-hour sluicing period, with the sluiced sediment added at the most upstream cross section in the river segment of the model. The sluicing event (and, thus start of each model run) coincided with the

[1] The 1978 hydrology was used to a simulate a period of wet years after the retrofit activities are completed, and the 1985 hydrology was used to simulate a period of dry years after completion of the retrofit activities.

first 300 cfs mean daily flow that occurs after January 1 of each model year (January 4, 1978; February 9, 1985).

d. The results from each model run were post-processed to assess changes in sediment storage, bed elevations, average daily suspended-sediment concentration in the portion of the water column 6 inches or more above the bed, and bed-material gradations.

2. Results from the available model runs were used to asses whether it is reasonable to use the analysis results for the Proponents Proposed Project to evaluate the potential effects of sluicing operations under Alternative 1, which consists of lowering the dam with a 19-foot notch, excavation of existing sediment deposits above the notch, reconstruction of the fish ladder, and installation of a sluice gate.

3. Results from the following HEC-6T runs that were made as part of previous work on these issues were further analyzed to estimate the suspended-sediment concentrations in the Carmel River downstream from San Clemente Dam during the 41-year simulation period:

   a. Existing conditions (San Clemente Dam in-place, and no sediment sluicing)

   b. Alternative 1 (19-foot notch in the dam, excavation of existing sediment deposits above notch)

   c. Alternative 2 (Complete dam removal, excavation of existing sediment deposits, 1-foot of residual sediment remaining in the valley floor at start of simulation).

   d. Alternative 3 (Carmel River re-routed into San Clemente Creek Arm, excavation of existing sediment in San Clemente Creek Arm, 1-foot of residual sediment in valley bottom of San Clemente Creek.

   The existing conditions HEC-6T model run (Item a) was made for the MEI (2005) evaluation of the Carmel River re-route alternative. The model runs for Items b, c, and d were made for the MEI (2006b) residual sediment impact analysis.

2. DETAILED ANALYSIS OF SEDIMENT SLUICING ALTERNATIVE (PROPONENTS PROPOSED PROJECT)

In the original analysis of the sediment sluicing alternative (MEI, 2006a), a special model was developed to simulate sediment transport and evolution of the incised channel into the reservoir deposits during the sluicing operations. This model was developed due, primarily, to limitations in HEC-6T for this specific application that result in unreasonable channel geometries during the sluicing process. The rate at which the incised channel would backfill after completion of the sluicing operations was evaluated using a revised version of the sluicing model with a range of relatively low, steady-state discharges. The potential impacts of sluicing operations on the downstream river were evaluated using a simplified sediment-continuity approach that used the transport capacity of the river in the approximately 1-mile reach downstream from the dam to estimate the time required to remove the sediment delivered through the sluice gate. A more detailed analysis of the behavior of the incised channel in the reservoir, the movement of sediment over the dam and through the fish ladder during non-sluicing periods, and the impacts of both the sluiced sediment and sediment passing the dam during the non-sluicing periods was performed for this study using a combination of the original sluicing model and an appropriately modified version of the HEC-6T model.

The results from MEI (2006a) indicated that discharges in the range from 300 to 600 cfs would be most effective in sluicing sediment away from the fish ladder entrance with a 10-foot diameter sluice gate. At lower discharges, the rate of incision slows considerably because of the generally lower energy and sediment-transport rates, and at higher discharge the rate of incision slows or, in some cases, even stops, because of backwater caused by the limited hydraulic capacity of the sluice gage. Based on further evaluation of the MEI (2006a) results, the technical project team determined that the preferred criterion for the sluicing would be a 2-hour event at a minimum discharge of 300 cfs. This criterion was selected because the target minimum flow occurs with sufficient frequency during the Steelhead migration period to provide ample sluicing opportunities, and the incised channel will develop sufficiently in a 2-hour period at this discharge to eliminate passage problems in the reservoir. Based on the mean daily flow data from the Carmel River at Robles del Rio gage, the target minimum flow occurred at least once in 42 of the 49 years of available record, with an average of 19 sluicing opportunities per year if both the rising and falling limb of the hydrograph are considered. The analysis in MEI (2006a) indicated that the incised channel would extend approximately 1,000 feet upstream from the dam after 2-hours of sluicing at a steady-state discharge of 300 cfs.

Because of the complexity and level of effort that was required to complete the work, the detailed analysis for this study considered only a single 2-hour sluicing event that occurs on the rising limb of the first hydrograph after January 1 that equals or exceeds 300 cfs.

2.1. Model Setup and Refinement

To insure direct comparability between the original sluicing model used for MEI (2006a) and the HEC-6T model, minor adjustments were made to the assumed reservoir profile in the sluicing model. These adjustments generally involved raising the overbank elevations by approximately 1 foot to better match the irregular surface on the existing deposits. Results from the sluicing model using the modified profile are very similar to the original results, but the length of the incised channel and the volume of sediment passing through the sluice gate increase by a small amount. With the revised profile, the incised channel extends about 1,200 feet upstream from the dam after 2 hours (**Figure 1**), compared to about 1,000 feet in the original analysis (see MEI, 2006a, Figure 14), and the total volume of sediment passing the dam increases from about 2.07 ac-ft (see MEI, 2006a, Figure 12) to 2.39 ac-ft.

The baseline conditions model runs that were made for the previous analyses used the existing reservoir bathymetry, in which an approximately 100-ac-ft pool remains between the reservoir deposits and the dam, as the starting condition. Under these conditions, the trap efficiency of the reservoir remains quite high early in the simulation, particularly at low to moderate flows, limiting the amount of sediment that is delivered to the downstream river. During the first year of the baseline conditions simulation with Water Year (WY) 1978 start-date, for example, approximately 35.3 ac-ft of sediment enters San Clemente Reservoir, but only about 6.7 ac-ft passes over the dam, a trap efficiency of about 81 percent. For the WY1985 baseline simulation, about 2.2 ac-ft of sediment enters the reservoir, essentially all of which is trapped. The baseline model runs indicated that the reservoir will completely fill with sediment within 6 to 10 years, depending the runoff conditions. After the reservoir fills, the trap efficiency decreases substantially and more sediment is passed into the downstream river. For the WY1985 start-date, 25.9 ac-ft of sediment passes over the dam during the 34^{th} year of the simulation (actual WY1978 flows), a trap efficiency of about 27 percent. For the WY1978 simulation, about 1.4 ac-ft of sediment passes the dam during the 7^{th} year of the simulation (actual WY1985 flows), a trap efficiency of 36 percent. Sluicing operations would only be necessary after the reservoir is completely full; thus, the starting conditions for the sluicing model runs were developed by assuming that the reservoir is full at the start of the water year, and the model was run up to the date of the sluicing event to provide conditions in the downstream river that would be consistent with the reduced trap efficiency of the full reservoir.

Under the proposed configuration for this alternative, all of the flow can pass into the fish ladder up to a discharge through the reservoir of about 60 cfs, at which point water will begin to flow over the main spillway. The maximum discharge in the fish ladder at higher flows is about 70 cfs. The initial main channel in the zone that could be directly affected by sluicing operations of up to 2-hours duration (downstream approximately 1,600 feet of the reach) is represented in the model by a 2-foot deep, trapezoidal channel with 10-foot bottom width. This relatively small channel then transitions to the geometry of the low-flow channel on the reservoir deposits over a distance of about 1,400 feet. To correctly simulate the movement of water and sediment in the reservoir under these conditions, the reach between the head of the transition and the dam was modeled as a split flow reach, with main channel flow in the incision zone set equal to the assumed flow in the fish ladder and the remainder spilling into a split flow segment that represents the overbanks leading up to, and over, the spillway. Flows in excess of the fish ladder discharge are removed from the main channel into the overbank flow path at a series of 10 distributed points along the 1,400-foot transition zone. Model runs were made for both hydrology scenarios assuming that the fish ladder will flow at capacity, based on the rating curve from FishPro and Entrix (2005) (**Figure 2**). As will be discussed below, the incised channel created by the sluicing operations re-fills with sediment relatively rapidly under low-flow conditions with the fish ladder operating at full capacity. The flow into the fish ladder can, however, be restricted to relatively low levels without impairing its effectiveness (Sharon Sawdry, HDR/FishPro, personal communication, December 2006). As a result, an additional run was made for the 1985 simulation, in which the flows after the sluicing operation remain very low for several months, with the discharge in the fish ladder restricted to 10 cfs or less to evaluate the effects of the resulting backwater on refilling rates in the incised channel.

Sediment resulting from the sluicing operation is introduced into the downstream river as a lateral inflow at the first river cross section downstream from the dam that follows the temporal pattern of the sediment load passing through the sluice gate from the sluicing model (**Figure 3**). During the 2-hour, 300-cfs sluicing event used for the analysis, sediment loads passing through the sluice gate range from about 45,000 tons/day (tpd) at the start of the event, increasing rapidly to 68,000 tpd to 70,000 tpd over the next 12 to 15 minutes, and then decreasing back to about 56,000 tpd over the remainder of the sluicing period, resulting in a total sediment volume delivered to the downstream river of about 2.4 ac-ft. During the remainder of the model period, the baseline sediment inflow is delivered to the upstream end of the reservoir, and the amount of sediment passing into the fish ladder and over the spillway is computed by the model based on the hydraulic conditions in the main channel and overbank split flow paths. For purposes of the modeling, it is assumed that any sediment that passes into the fish ladder will be delivered to the downstream river. This assumption is reasonable because the fish ladder was designed so that turbulence in the ladder will keep most of the sand-sized sediment in suspension, and essentially all of the sediment will eventually be delivered to the downstream river.

2.2. Model Results

2.2.1. 1978 Start Date

For the 1978 simulation, the first opportunity at which the discharge meets the sluicing criteria occurs on January 4, when the mean daily discharge is 322 cfs on the rising limb of a flow event that had a maximum mean daily flow on the following day of 831 cfs (**Figure 4**). This event was followed by a series of four additional events over the next two months that had maximum mean daily flows of 2,347 cfs (January 12), 2,819 cfs (February 9) and 1,982 cfs (March 4). Between these events, the flow dropped to 100 to 200 cfs for brief periods. The mean daily flow remained above 60 cfs, the maximum flow that can pass through the fish ladder without flow over the spillway, until June 10.

For this scenario, the crest of the depositional wedge that forms in the incised channel created by the sluicing event progrades downstream to within about 270 feet of the dam within 8 to 10 days after the sluicing event, and it stalls at that location for several days because of the backwater created by the high discharges during the next high flow (**Figures 5a and 5b**). The relatively high flows and associated backwater over the next 60 days cause the wedge to grow more slowly (Figure 5b and **Figures 5c and 5c-1**). After 30 days, the crest is located about 220 feet upstream from the dam, and after 120 days, when the flow has decreased to about 170 cfs, the crest is about 120 feet upstream from the dam. As the flow continues to decline, the backwater effect diminishes, and the rate at which the wedge progrades downstream increases, reaching the vicinity of the dam at about Day 150, when the discharge is just over 70 cfs. During this period, the elevation of the wedge crest remains at or slightly above 524 feet, the approximate equilibrium elevation when there is flow over the spillway. As the discharge continues to decline toward the summer baselevel, all of the flow passes through the fish ladder, and the water-surface elevation in the reservoir continues to decline, causing the channel leading to the fish ladder to incise. At 180 days after the sluicing event, the thalweg of the incised channel just upstream from the fish ladder has lowered to elevation 520.7, about 2.7 feet above the invert of the fish ladder (**Figures 5d and 5d-1**). Over the remainder of the year, the flow remains relatively low, and the thalweg of the incised channel just upstream from the dam varies from 1 to 2 feet above the fish ladder invert.

During the winter and spring after the sluicing event, very little sediment passes through the fish ladder, but a substantial amount passes over the spillway (23.8 ac-ft in the 120-day period after sluicing) (**Figure 6**). During the remainder of the year, essentially all of the flow passes through the fish ladder, carrying with it about 3.8 ac-ft of sediment. The total sediment volume passing the dam between the start of the sluicing event and the end of the calendar year is about 30.7 ac-ft, of which 2.4 ac-ft is delivered during the sluicing event, 24.4 ac-ft goes over the spillway and 3.8 ac-ft passes through the fish ladder (**Figure 7**). This represents about 86 percent of the 35.5 ac-ft sediment supplied to the reservoir from upstream during the period (**Figure 8**). As also shown in Figure 7, about 6.5 ac-ft of sediment passes over the spillway between the date of the sluicing event (January 4) and the end of the calendar year under baseline (existing) conditions, and about 26.4 ac-ft of sediment would pass over the dam if the reservoir were completely filled with sediment (Modified Baseline Scenario). For comparison purposes, the total amount of sediment passing over the dam during the period from January 4 through December 31 under Alternative 1 (Dam Notching), Alternative 2 (Complete Dam Removal), and Alternative 3 (Carmel River Re-route) is about 34.5, 36.6, and about 27.9 ac-ft, respectively

For all of the scenarios that were modeled, with the exception of Alternative 2 (Complete Dam Removal), nearly all of the sediment passing the dam is in the sand-size range (**Figure 9**). Under the sluicing scenario, a small component of the sediment passing the dam (about 2 percent) is fine gravel (<8 mm), and for Alternative 3 (Carmel River Re-route), about 3 percent of the material is fine to medium gravel. For Alternative 2 (Complete Dam Removal), about 10 percent of the material is fine gravel, and an additional 6 percent is medium to coarse gravel (>8 mm).

Under baseline conditions, most of the upstream sediment is trapped in the residual pool in the reservoir, and sediment is eroded from the downstream river during the high-flow events that occur during January, February and March (Figures 8 and **10**). With the reservoir filled with sediment (modified baseline conditions), a substantial amount of the inflowing sediment load passes over the spillway, accumulating in the downstream river. By about the middle of the February event, the sediment load from the January flows begins to affect the downstream end of the reach, increasing the sediment load to the ocean and causing a net loss of sediment from the overall reach. During the March event, even more sediment is evacuated from the reach, so that by the end of the event, there is slightly less stored sediment than there was at the beginning of January. As the discharge continues to recede to the summer baseflow-level, additional sediment is evacuated from the overall reach. By the end of the year, the net removal from the reach totals about 1.2 ac-ft.

Under the sluicing scenario (Proponents Proposed Project), the depositional behavior in the downstream river is very similar to that under modified baseline conditions. As previously discussed, the sluicing event delivers about 2.4 ac-ft of sediment to the downstream river. During the early part of the first day after sluicing, the predicted sediment loads in the reach just downstream from the dam are consistent with the transport capacity for the sand-sized sediment that is delivered through the sluice gate (**Figure 11**). Within the first several hours, however, the load in the portion of the reach between the dam and Old San Clemente Dam (referred to in the figures as Subreach [SR] 4.3a) diminishes rapidly to levels that are only a fraction of the transport capacity because the available sand from the sluicing event is evacuated from the reach and the amount of sediment passing over the spillway is relatively small. By the middle of the second day after sluicing, the loads in SR4.3a are actually less than under modified baseline conditions because the sediment evacuated during the sluicing increases the trap efficiency of the reservoir and decreases the supply to the downstream river. As a result, the amount of erosion in SR4.3a is actually greater during the high-flow events in January under modified baseline conditions than under the sluicing scenario (**Figures 12 and 13**; SR4.3b and SR4.3c are the middle and downstream portions of SR4.3, respectively). Under modified baseline conditions, there is very little change in sand storage in the downstream river from the start of the summer baseflow period through the end of the year because the high-flow events removed much of the stored sand and very little passes the dam. Under the sluicing scenario, the sediment that passes through the fish ladder during the summer baseflow period accumulates in the downstream river because of the low flows and, thus, low transport capacity of the river.

2.2.2. 1985 Start Date

For the 1985 start-date simulation, the first opportunity at which the discharge meets the sluicing criteria occurs on February 9, when the mean daily discharge is 303 cfs at the peak of a small flow event that recedes back to less than 60 cfs within 7 days (**Figure 14**). This event was followed by a series of smaller events over the next two months with maximum mean daily discharges ranging from 120 to 240 cfs. The mean daily flow remained below 60 cfs after April 16, with very low baseflows in the range of 5 to 7 cfs throughout the summer and early fall. A short duration event occurred in early December, near the end of the calendar year, with a maximum mean daily discharge of 433 cfs (December 3, 1985).

2.2.2.1. Fish Ladder at Capacity

For this scenario, the crest of the depositional wedge in the incised channel progrades downstream to within about 70 feet of the dam within 10 days after the sluicing event and it approaches the face of the dam in 14 to 15 days (**Figures 15a and 15b**). During the first 5 to 7 days, the elevation of the crest remains at above 523.7 feet, and it then lowers to about 522.5 feet after 10 days. After 15 to 45 days, the sediment deposits remain near the face of the dam, and the elevation of the surface fluctuates between about 521.5 and 524 feet as the deposits respond to the minor high-flow events that exceed the capacity of the fish ladder **(Figure 15b-1**). By 60 days after the sluicing event, the top of the deposits has increased to about elevation 524 feet, which is about one foot below the crest of the spillway (**Figures 15c and 15c-1**). During the remainder of the baseflow period, all of the flow passes through the fish ladder and the water-surface elevation in the reservoir continues to decline, causing the channel to incise to a level that is consistent with the invert of the fish ladder (Figure 15c-1 and **Figure 15d**). The flow event that occurs in early December causes the deposits to build up again to an elevation of 520 feet, about 2 feet above the invert of the fish ladder (**Figure 15d-1**).

For this scenario, the total sediment load passing the dam from the end of the sluicing event to the end of the calendar year is about 5.5 ac-ft, 4.2 ac-ft of which passes through the fish ladder and 1.3 ac-ft of which passes over the spillway (**Figure 16**). A substantial amount of sediment passes through the fish ladder during the late-winter and spring when the flow remains somewhat elevated, but is sufficiently low that most passes through the fish ladder. Including the 2.4 ac-ft associated with the sluicing event, the total sediment load passing the dam between the sluicing event and the end of the calendar year is about 7.8 ac-ft, whereas, only about 1.8 ac-ft of sediment is delivered to the reservoir from upstream (Figure 7). As also shown in Figure 7, little if any sediment passes the dam during this period under baseline (existing) conditions, but about 2.6 ac-ft of sediment would pass over the dam if the reservoir were completely filled with sediment (Modified Baseline Scenario). The quantity of sediment passing over the dam during this period under Alternative 1 (Dam Notching), Alternative 2 (Complete Dam Removal), and Alternative 3 (Carmel River Re-route) is about 3.9, 1.7, and about 1.1 ac-ft, respectively. All of the sediment passing the dam for the simulation is in the sand size-range (Figure 9). Under all of the scenarios that do not involve sluicing, the bulk of the sediment load over the dam occurs during the flow events in March and April (**Figure 17**). Sediment passing through the fish ladder when it is allowed to operate at full capacity results in additional sediment load to the downstream river that does not occur under the other alternatives through at least July.

Because of the relatively low flows after early-February, very little sediment is evacuated from the downstream river under any of the scenarios that were considered; thus, most of the sediment passing the dam goes into storage along the reach (**Figure 18**). Under the proposed project, with the fish ladder operating at capacity, about 5.8 ac-ft of additional sediment is stored in the downstream river between the end of the sluicing event and December 31, compared to about 1.4 ac-ft during the same period under modified baseline conditions. Nearly all of the additional sediment is stored in SR7.7 and SR9, and there is net erosion in most of the other reaches under modified baseline conditions (**Figure 19**). Under the proposed project with the fish ladder at capacity, the sediment delivered from the sluicing event is removed from SR4.3a (San Clemente Dam to Old San Clemente Dam) within about 40 days, but the additional sediment that is delivered through the fish ladder during late-spring and early-summer causes a portion of the additional sediment to be stored in this part of the reach until the high-flow event that occurs in December flushes it downstream (**Figure 20**). In general, the additional sediment load passing the dam under this alternative is distributed through the downstream reach throughout the remainder of the year.

2.2.2.2. Fish Ladder Restricted to 10 cfs

The sediment loads through the fish ladder during the late-winter through spring period for the 1985 scenario are relatively high. The high sediment loads occur because the flows are high enough to entrain and transport significant quantities of the sand-sized reservoir deposits, but low enough that most of the flow passes through the fish ladder. It is MEI's understanding that flow through the fish ladder can be restricted by controlling the size of the opening at the downstream side of the first pool (Sharon Sawdry, HDR/FishPro, personal communication, December 2006). This would cause elevated water-surface elevations in the reservoir that would force more flow over the spillway, move the depositional zone in the incised channel farther upstream in the reservoir, and limit the amount of sediment that is carried into the fish ladder. To evaluate the effectiveness of restricting the flow in the fish ladder, the 1985 model run was revised so that a maximum flow of 10 cfs is allowed to pass into the fish ladder, with any flows in excess of 10 cfs passing over the spillway.

For this scenario, the backwater created by the restricted flow into the fish ladder significantly limits the amount of deposition in the incised channel during the late-winter and spring. During the 125-day period after the sluicing event (February 9 through June 14) when the flows exceed 10 cfs, the sediment wedge in the incised channel progrades slowly downstream, with the crest located about 320 feet upstream from the dam at the end of the period (**Figures 21a, 21b, 21c**). When the discharge falls below 10 cfs, the channel rapidly incises into the wedge to a profile that is consistent with the control provided by the invert of the fish ladder due to the steep energy gradient associated with the reduced stage at the fish ladder (**Figure 21d**). The profile of the incised channel remains at the lower elevation until the high-flow event in early December when a new wedge forms at the upstream end (**Figure 21d**).

For this scenario, about 2.8 ac-ft of sediment passes over the spillway, but little or no sediment passes into the fish ladder between the sluicing event and May 31 (**Figure 22**). The incision into the depositional wedge in the reservoir when the flows drop below 10 cfs on June 15 causes a substantial amount of sediment to be carried into the fish ladder. Between that time and December 31, about 2.1 ac-ft of sediment passes through the fish ladder, and only about 0.7 ac-ft passes over the spillway into the downstream river.

The total amount of sediment that passes the dam between the sluicing event and the end of the year under this scenario is similar to that with the fish ladder operating at full capacity; however, both the temporal pattern and mode of delivery are different (Figure 17). More sediment is delivered across the dam between the sluicing event and early April when the last runoff event begins to recede, however, essentially all of this sediment passes over the spillway. During the period from early-April through mid-June, little or no sediment passes the dam under this scenario, while a substantial load passes through the fish ladder under the scenario with the fish ladder operating at capacity. The sediment load then abruptly increases with the reduction in stage as the restriction on the fish ladder is removed. Similar to the full ladder capacity scenario, the sediment resulting from the sluicing operation is eroded from the reach between San Clemente Dam and Old San Clemente Dam (SR4.3a) during the first approximately 45 days of the simulation; however, additional sediment continues to be eroded during the next 2 to 3 weeks due to the reduced sediment supply passing the dam. When the sediment wedge erodes in mid-June, part of the sediment that passes through the fish ladder accumulates in SR4.3a, where it remains until the December high-flow event (**Figure 23**). The deposition patterns through the rest of the reach are similar to those under the full fish ladder capacity scenario.

2.3. Summary and Recommendations Regarding Sluicing Alternative

For the Proponents Proposed Project, a 10-foot diameter sluice gate will be constructed near the fish ladder with the invert of the sluice gate set about 3 feet below the invert of the fish ladder. Under the assumed operating rules, the sluice gate would be opened for a two hour period on the first occurrence of a 300-cfs flow in the river after January 1. Results from a special sediment routing model that was developed for MEI (2006a) to assess the behavior of the reservoir during the sluicing operations indicates that about 2.4 ac-ft of sediment would be eroded from the reservoir and delivered through the sluice gate into the downstream river after 2 hours at a steady-state flow of 300 cfs. The erosion would create an incised channel that would extend approximately 1,200 feet upstream from the dam. This channel was inserted into the HEC-6T model of the reservoir and river that has been modified to incorporate the proposed fish ladder, and the model was run for approximately one year after the sluicing event for each of the two hydrology scenarios to assess the rate at which the incised channel will re-fill with sediment, the amount of sediment that will be carried into the fish ladder or over the spillway during the post-sluicing period, and the impacts of both the sluiced sediment and post-sluicing sediment load on sediment storage and suspended-sediment concentrations in the downstream river. The following specific conclusions can be drawn from the results of these analyses:

1. Under the 1978 hydrology scenario, in which a series of three relatively high-flow events occurs during the 90-day period after sluicing and the flows remain above the capacity of the fish ladder through early June, backwater from the dam prevents the depositional wedge in the incised channel from migrating sufficiently far downstream to cause sediment impacts to the fish ladder. After the flows recede to baselevels that are within the capacity of the fish ladder, the depositional wedge rapidly approaches the dam and a substantial quantity of sediment passes into the fish ladder. As the flows continue to recede, the water-surface elevation at the fish ladder entrance declines and the upstream channel re-incises to a level that is consistent with the control provided by the fish ladder invert. During the backwater period, little or no sediment enters the fish ladder (Figure 6). During the subsequent baseflow period, substantial sediment enters the fish ladder, resulting in total sediment concentrations ranging to about 3,500 ppm (**Figure 24**).

2. Under the 1985 hydrology scenario, the flow event that would trigger sluicing has a maximum mean daily flow of about 300 cfs and the flow declines rapidly to about 40 cfs over the next few weeks. This event is followed by a series of smaller events with maximum flows in the 120- to 240-cfs range. With the fish ladder operating at its full capacity, the depositional wedge in the incised channel approaches the dam within the first two weeks of the simulation, at which point a substantial amount of sediment passes into the fish ladder. Although there would be sufficient flow depth to permit fish passage through the fish ladder into the upper part of the reservoir, the relatively high sediment loads in the fish ladder may be problematic. During late-February and early-March, for example, the predicted sediment

concentration in the fish ladder exceeds 1,000 ppm for several days, and concentrations of about 1,000 ppm also occur from late-April through mid-May (**Figure 25**). As the flow continues to recede to the very low baseflows through the summer and fall, the channel would re-incise to levels consistent with the control provided by the fish ladder, similar to the behavior under the 1978 hydrology scenario. During this period, the sediment concentrations in the fish ladder are also elevated.

3. Restricting the discharge through the fish ladder to 10 cfs or less under the 1985 scenario would effectively eliminate the sedimentation problems that occur under the full-capacity condition by creating backwater that keeps the depositional wedge a significant distance upstream from the dam until mid-June. During this period, the sediment loads and concentrations in the fish ladder are very low (Figures 22 and 24). Similar to the other scenarios, the sluice channel re-incises back to levels consistent with the control provided by the fish ladder during the summer and fall baseflow period.

4. The behavior of the incised channel during the baseflow period suggests that, if sediment passing into and through the fish ladder during the non-migration, baseflow period is acceptable, the necessity to sluice may be limited during subsequent years after the initial event because of the tendency for the channel to re-incise. As a result, dredging to enlarge the channel during the late-fall prior to the migration season each year, as necessary, may be a viable alternative to operation of the sluice gate.

2.4. Potential Impact of Sluicing Under Alternative 1 (Dam Notching)

Under Alternative 1 (Dam Notching), the profile on the sediment deposits after excavation would intersect the pre-dam profile about one mile upstream from the dam in the Carmel River Branch, assuming that the gradient across the remaining deposits after excavation is the same as the existing reservoir gradient (MEI, 2006; **Figure 26**). The sediment deposits beneath the reconstructed channel in the reach between the dam and the intersection with the pre-dam profile will be finer than in the up- and downstream river, which will affect the transport rates and downstream sediment delivery (**Figure 27**). About 36.6 ac-ft of sediment will pass over the dam during the first full water year after construction of the notch for the 1978 hydrology under this alternative, which exceeds the amount for all of the other alternatives except Alternative 2 (Complete Dam Removal), including the Proposed Project (Figure 8), and under the 1985 hydrology about 6.6 ac-ft of sediment will pass over the dam, which exceeds the quantity for all of the alternatives except the Proposed Project during this very dry year (Figure 17).

If a fish ladder and sluice gate were constructed and operated for Alternative 1 similar to the configuration for the proposed project, the sediment-transport behavior in the reservoir and downstream river would be similar to that described above. During the initial sluicing event, the channel upstream from the sluice gate would develop more quickly because of the finer sediment into which it incises. As a result, the initial downstream sediment loads would also be somewhat larger. The duration of the downstream impacts would, however, be reduced because the transport capacity would be higher for the finer sediments, and thus, they would be flushed through the system more quickly. Over a period of several years after the initial event, the downstream sediment load would become somewhat coarser and the incised channel more stable because more of the gravel that is supplied to the reservoir from upstream and that is presently stored in the upstream end of the reservoir, would migrate downstream into the incised channel due to the steepened gradient associated with lowering of the sediment deposits. The incised channel under the Proposed Project would behave in a similar manner, but would incise at a much slower rate due to the flatter gradient and longer distance over which the gravels would need to travel. The long-term behavior of both alternatives, would, however, be very similar because the reservoir and sluice channel would reach a state of equilibrium with the sediment supply to the upstream end of the reservoir.

3. COMPARISON OF DOWNSTREAM SUSPENDED SEDIMENT CONCENTRATIONS FOR EIS/EIR ALTERNATIVES

Suspended sediment can adversely affect the health of fish, with the severity of the effect increasing as a function of the sediment concentration and duration of exposure (Newcombe and Jensen, 1996). To quantify that adverse impact, Newcombe and Jensen (1996) presented data that indexed the severity-of-ill-effect on various fish species at different growth stages to both the level of suspended-sediment concentrations and the duration of exposure to those higher levels.

MEI (2003) included an analysis of the suspended-sediment concentration in the part of the water column from 6 inches above the channel bed to the water surface for three of the scenarios that were modeled under the 1978 hydrology conditions. This analysis was performed to provide information that can be used by the fishery biologists in assessing the potential impacts to fish during periods when significant sand and finer sediment is being transported by the river. The portion of the water column that was considered in the analysis was selected based on the opinion of the biologists that the fish will tend to avoid the high concentration areas near the bed when substantial sediment is being transported by the river. The analysis was performed for the entire 41-year simulation for the baseline conditions scenario that was reported in MEI (2005) and the dam removal/retrofit scenarios that were considered in MEI (2006b) for both the 1985 and 1978 hydrology scenarios. The analysis was also performed for the period from the sluicing event to the end of the calendar year for both model years for the Proponent's Proposed Project. Results from the sluicing analysis were compared to the original baseline conditions results, as well as a modified baseline conditions run for the equivalent period that assumes that the reservoir is filled with sediment at the start of the sluicing event; thus, reducing the trap efficiency of the reservoir compared to existing conditions.

The HEC-6T model does not separate the bed-load and suspended fractions of the bed-material load in the sediment-routing computations. In performing the analysis, it was, therefore, necessary to estimate the suspended-load concentrations by post-processing the model output using a separate computer model that applies theoretical relationships to estimate the vertical suspended-sediment concentration profiles and resulting loads and concentrations. The estimates were made for each day in the simulations using hydraulic data developed by extracting the cross-sectional geometry from the HEC-6T output. To facilitate evaluation of the results, the hydraulic relationships and resulting sediment concentrations were estimated on a reach-averaged basis for each of the 10 subreaches in the main river channel downstream from San Clemente Dam.

The analysis was performed using the procedure developed by Einstein (1950) in which the suspended-sediment concentration profile is estimated for a particular set of hydraulic and sediment-transport conditions by solving the diffusion equation assuming that, in an equilibrium profile, the average rate at which individual particles settle in the water column is the same as the average rate of upward flux associated with eddies and flow turbulence. The resulting concentrations are then multiplied by the estimated point velocities using the well-known logarithmic vertical velocity profile to estimate the suspended-sediment load at each depth in the profile. Finally, the total suspended-sediment load is obtained by integrating the resulting suspended-sediment load profile over the flow depth. By changing the limits of integration for the Einstein (1950) equation, it is possible to compute the average suspended-sediment concentration and load over any portion of the water column that is of interest. The logarithmic velocity profile is given by the following relationship:

$$\frac{\bar{u}_y}{u_*} = 5.75 \log_{10}\left(30.2\frac{yx}{k_s}\right) = 5.75 \log_{10}\left(30.2\frac{y}{\Delta}\right) \qquad (1)$$

where:

$\bar{u}_y$	= average point velocity at a distance y from the bed
u_*	= shear velocity
y	= distance from the bed
k_s	= roughness of bed
x	= corrective parameter
$\Delta = k_s / x$	= apparent roughness of the surface

The suspended-sediment concentration profile is given by the following relationship, initially proposed by Rouse (1937):

$$\frac{c_y}{c_a} = \left(\frac{d-y}{y}\frac{a}{d-a}\right)^z \qquad (2)$$

where:

C_y	= average concentration at a distance y from the bed
C_a	= average concentration at a distance *a* from the bed
d	= hydraulic depth
y	= distance from the bed
a	= distance to the reference point above the bed
z	$= \dfrac{\upsilon_s}{0.40u_*}$
υ_s	= kinematic viscosity

Combining Equations 1 and 2, Einstein (1950) obtained the following relationship for suspended-sediment transport:

$$q_s = 5.75u_* dc_a\left(\frac{A}{1-A}\right)^z\left\{\log_{10}\left(\frac{30.2d}{\Delta}\right)\int_A^1\left(\frac{1-y}{y}\right)^z dy + 0.434\int_A^1\left(\frac{1-y}{y}\right)^z \log_e y\,dy\right\} \qquad (3)$$

where:

$A = a/d$

and all other variables are as defined previously.

To perform the calculations, the concentration at the reference point *a* was estimated by assuming that this point is located at the top of the bed layer; thus the concentration at *a* will be the same as the sediment concentration in the bed layer that is estimated based on transport rates predicted by the Meyer-Peter-Müller (1948) bed-load equation. The sediment load and average concentration over different portions of the water column were then estimated by adjusting the limits of integration in Equation 3.

Based on advise from the fishery biologists, two threshold values (500 and 2,000 mg/l) were chosen as a basis for comparing the various alternatives and hydrology scenarios. The total number of days and the maximum number of consecutive days that these two values were equaled or exceeded during the 41-year simulation period was determined for each of the alternatives, except for the Proponents Proposed Project (**Table 1**). (Complete 41-year simulations were not performed for the Proponents Proposed Project due to the uncertainty regarding when and how subsequent sluicing events would be conducted after the initial event.) Under baseline conditions, the suspended-sediment concentrations above 6 inches above the bed exceeded 500 ppm on a mean daily basis for a total of 21 days (SR4.7) to 33 days (SR7.7 and SR8.7) under the 1978 hydrology scenario, and 23 days (SR 4.7) to 42 days (SR7.3) during the 41-year simulation under the 1985 hydrology scenario. A similar number and duration of occurrences is experienced under Alternative 1 (Dam Notching). Under Alternative 2 (Complete Dam Removal), the number of exceedences of the 500-ppm threshold increases to the 33 days (SR4.7, SR5, and SR9) to 42 days (SR4.3), with durations of up to 5 days under the 1978 hydrology scenario, and 35 days (SR4.7) to 44 days (SR7.7), with durations of up to 5 days under the 1985 hydrology scenario. Both the number and maximum duration of occurrences exceeding the 500-ppm threshold under Alternative 3 (Carmel River Re-route) are about midway between Alternatives 1 and 2. The 2,000-ppm threshold was only exceeded for one day during the entire 41-year simulation period in the downstream portions of the reach (SR5 through SR9). Tables containing the daily concentration values for each scenario and each subreach are provided in electronic format CD that is included as Appendix A.

The impact of the Proposed Project on downstream suspended-sediment concentrations were also evaluated for the period from the start of the sluicing event to the end of the calendar year in which the event occurred for each of the two hydrology scenarios (**Table 2**). Under the 1978 hydrology scenario, the 500-ppm threshold is exceeded for a total of 6 days during the period from January 4 through December 31 in SR4.3a and SR4.3b (upstream two-thirds of SR4.3). This occurs for a 2- to 3-day period immediately after the sluicing event, and for three separate days during the fall baseflow period. Downstream from SR4.3, this threshold was only exceeded for 2 days in SR7.3 and 1 day in SR6.7 during the period. Although the initial concentrations after the sluicing event are relatively high, the sediment added from the sluicing is quickly diluted by the high flows that occur during this period. In contrast, for the modified baseline conditions (reservoir full of sediment) run, the suspended-sediment concentration exceeded the 500-ppm threshold for a maximum of two days in the middle part of the reach (SR6.7 and SR7.3) under the modified baseline conditions scenario, and there were no exceedences for any of the three alternatives.

For the 1985 hydrology scenario, the suspended-sediment concentrations exceeded the 500-ppm threshold for 4 to 11 days in SR4.3 (Table 2) for maximum durations of 2 to 3 days. Downstream from SR 4.3, there were no exceedences of the 500-ppm threshold during the model period. For the modified baseline conditions run, there were no exceedences, and only a few isolated exceedences for the other alternatives under this hydrology scenario. Except perhaps at the most upstream few cross sections in the model directly below the dam, the suspended-sediment concentrations did not exceed the 2,000-ppm threshold during the model period for either the 1978 or 1985 hydrology scenarios.

In general, these results indicate that the sluicing operation will cause elevated suspended-sediment concentrations during and immediately following the sluicing event, but these effects do not propagate significantly downstream. Under hydrology scenarios when high flows occur after sluicing, the sediment concentrations are rapidly diluted in the downstream direction. Under low-flow conditions, the effects are greater and they tend to persist for longer periods, but appear to be limited to the upstream canyon-bound segment of the study reach.

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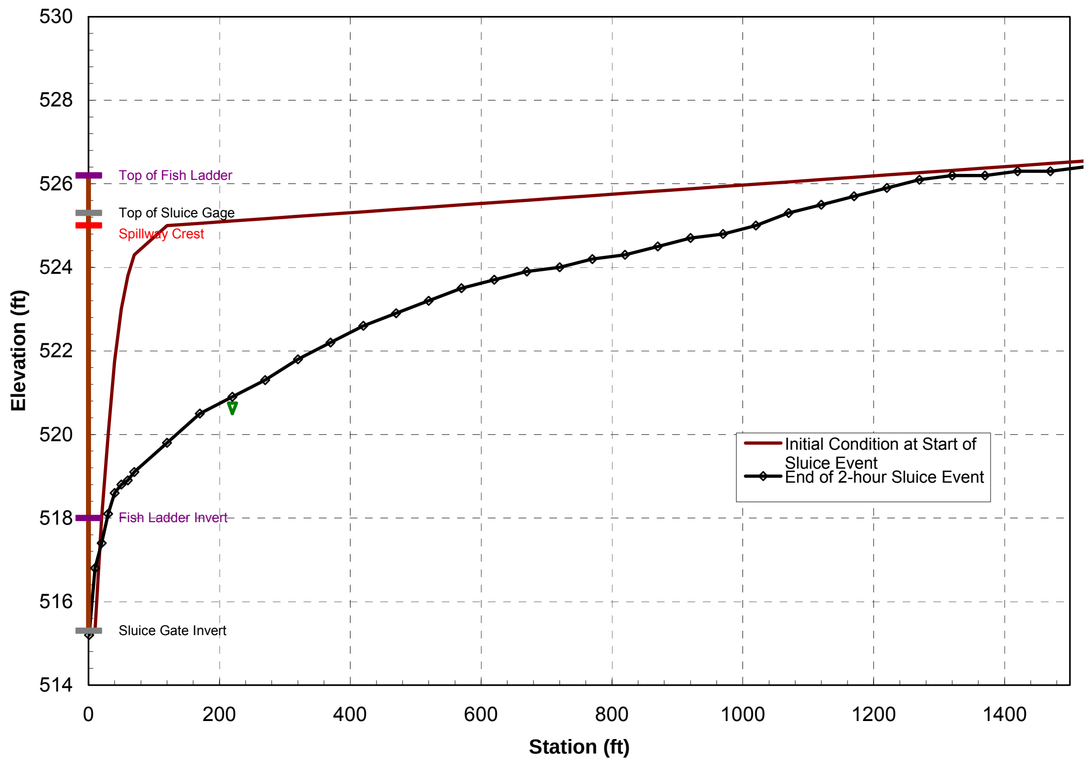


Figure 1. Assumed longitudinal profile of the sediment deposits in San Clemente Reservoir at the start of the sluicing event, and the simulated profiles after 2, 4, 8, and 24 hours of sluicing at a steady-state discharge of 300 cfs.

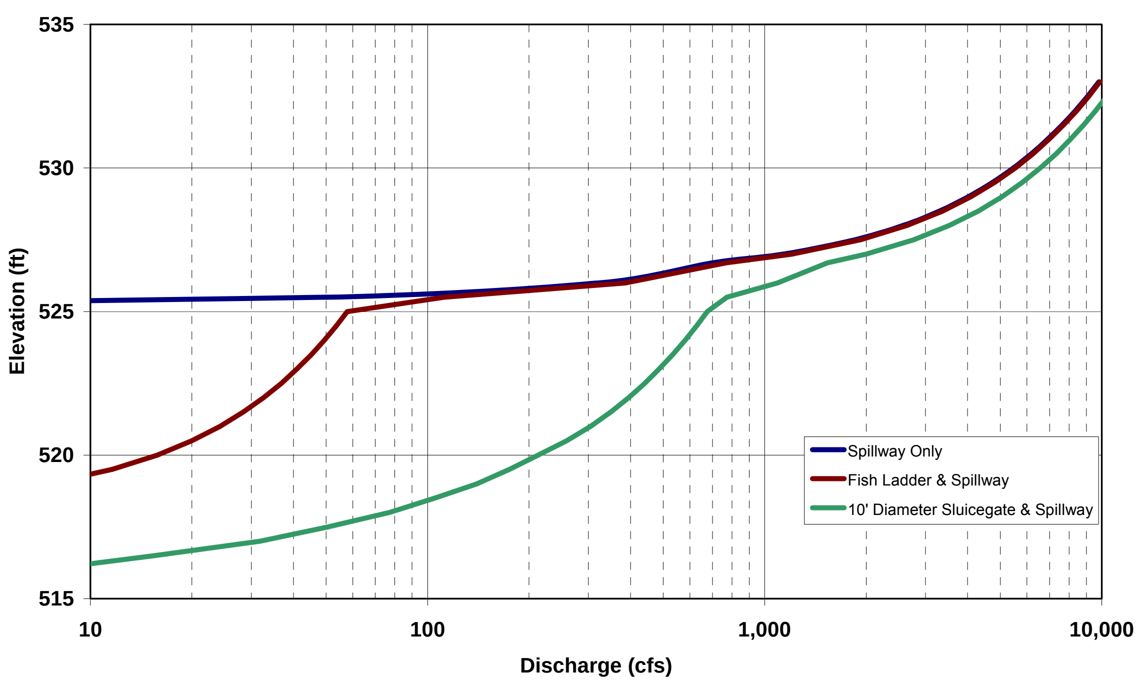


Figure 2. Hydraulic capacity rating curves for the principal spillway at San Clemente Dam, the combined fish ladder and spillway capacity, and the 10-foot diameter sluice gate and spillway.

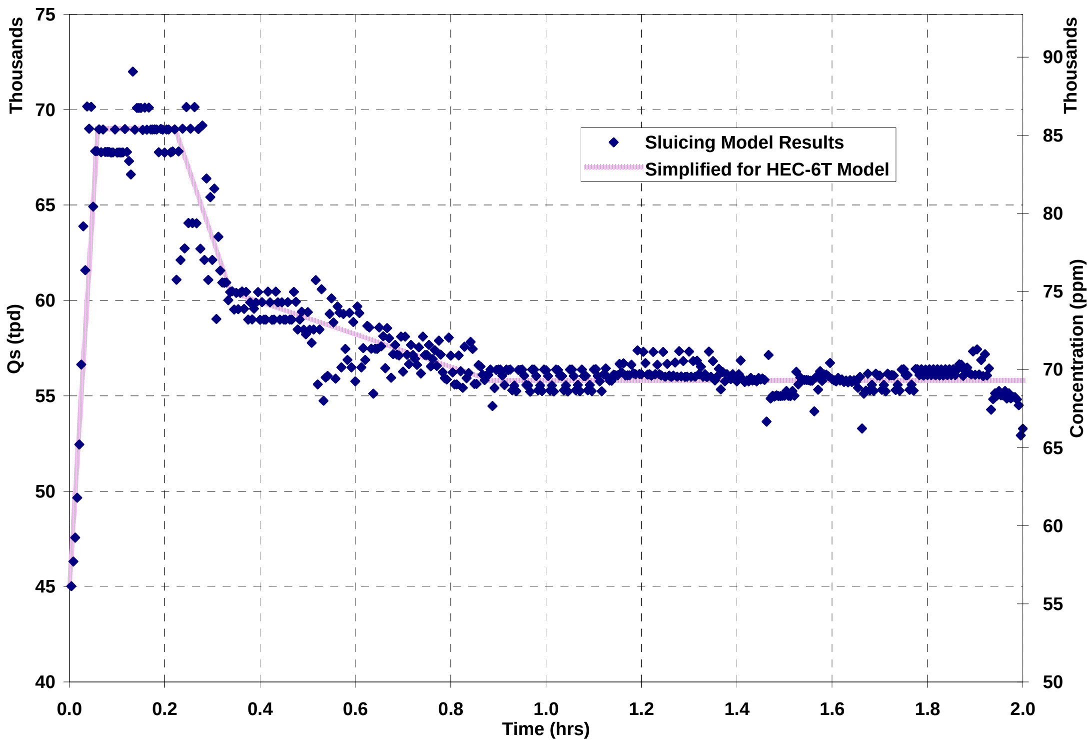


Figure 3. Sediment loads passing through the sluice gate during the 2-hour sluicing event from the sluicing model. Red line represents the sediment load-discharge relationship used in the HEC-6T model during the sluicing period.

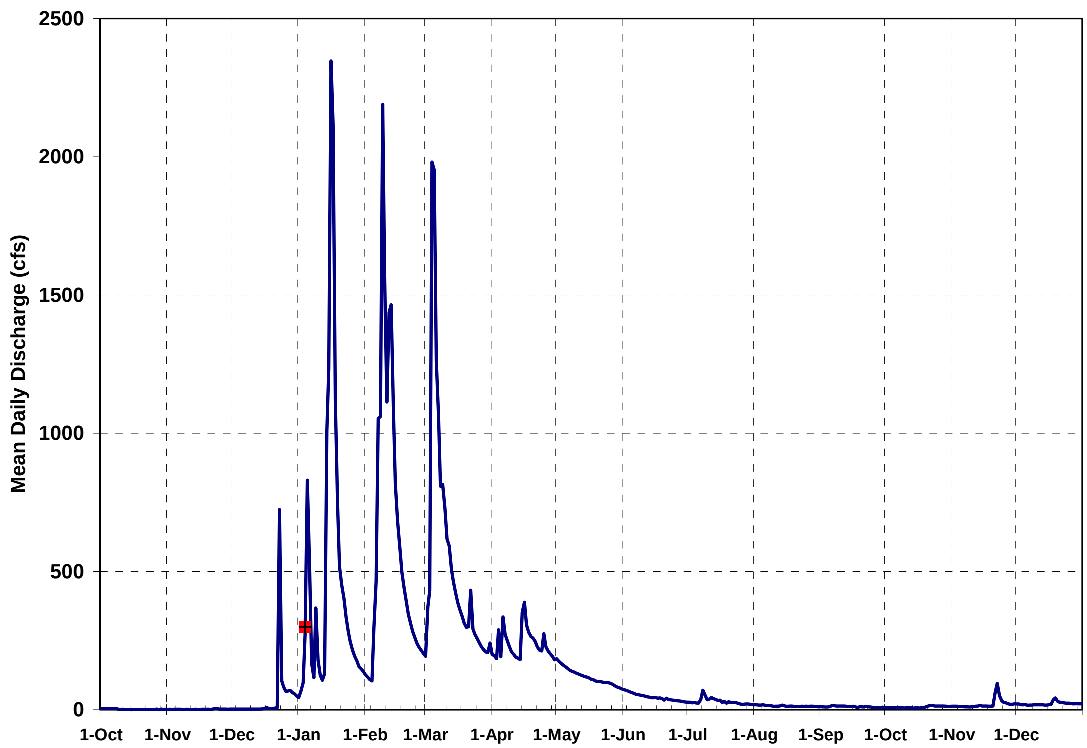


Figure 4. Mean daily flow hydrograph for WY1978. Sluicing event occurs on January 4 (red symbol).

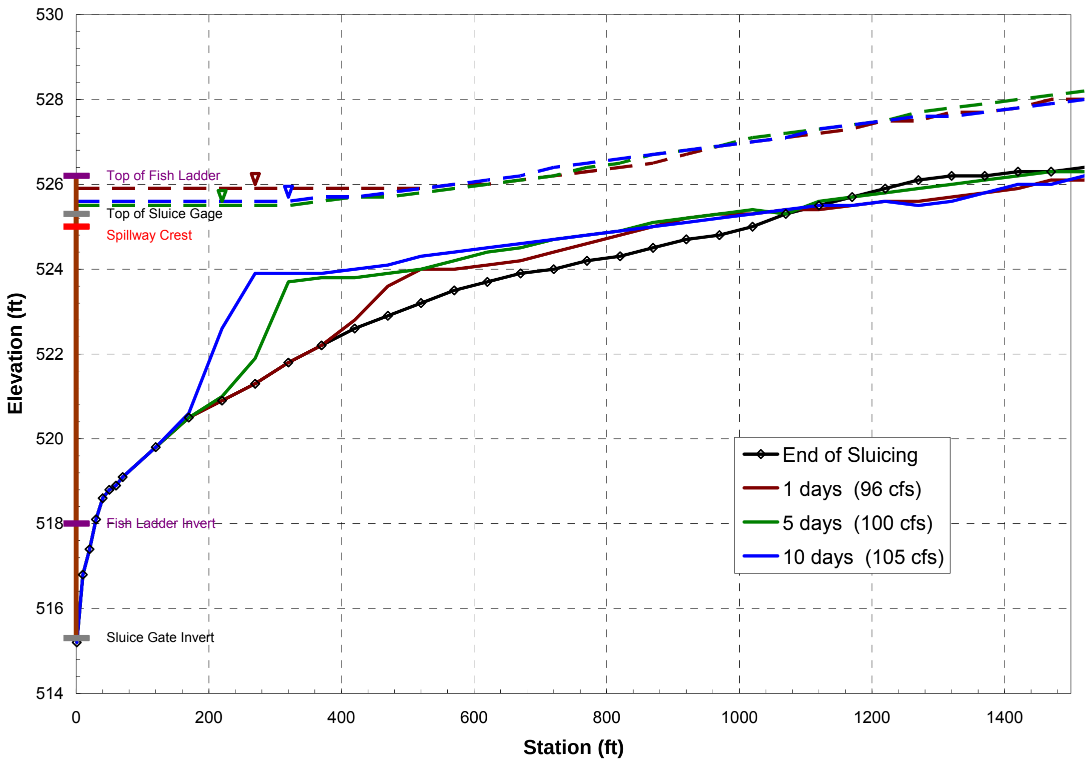


Figure 5a. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 1, 5 and 10 days after the sluicing event, 1978 hydrology.

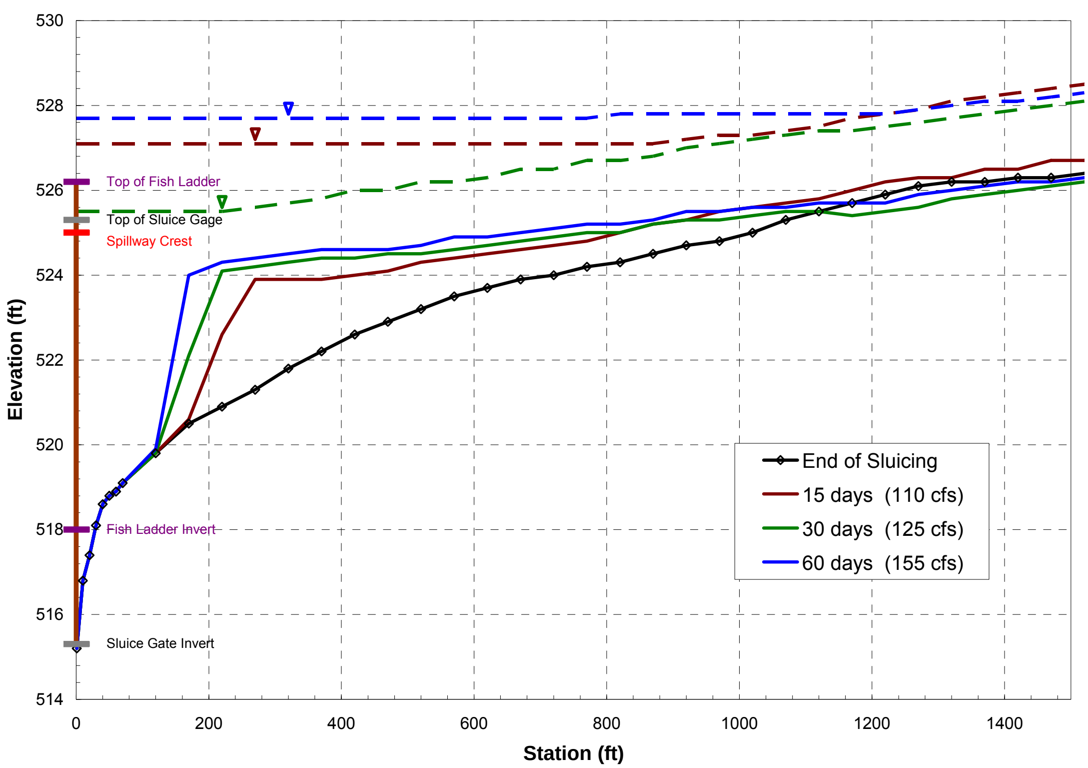


Figure 5b. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 15, 30 and 60 days after the sluicing event, 1978 hydrology.

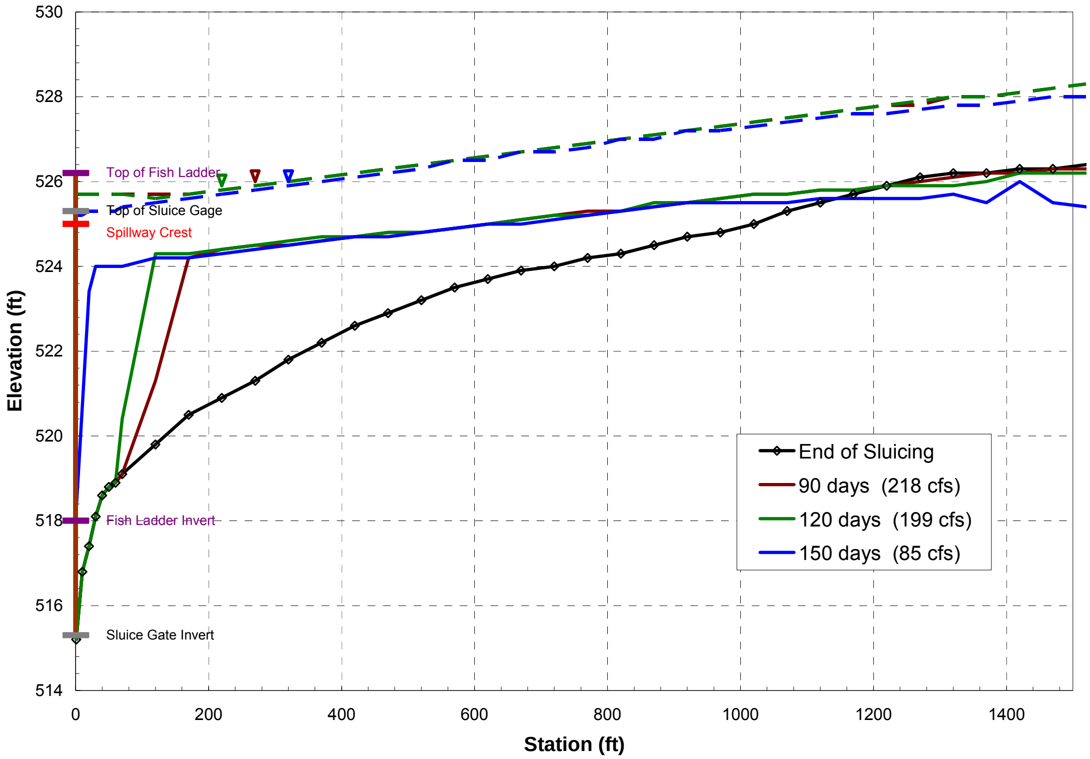


Figure 5c. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 90, 120 and 150 days after the sluicing event, 1978 hydrology.

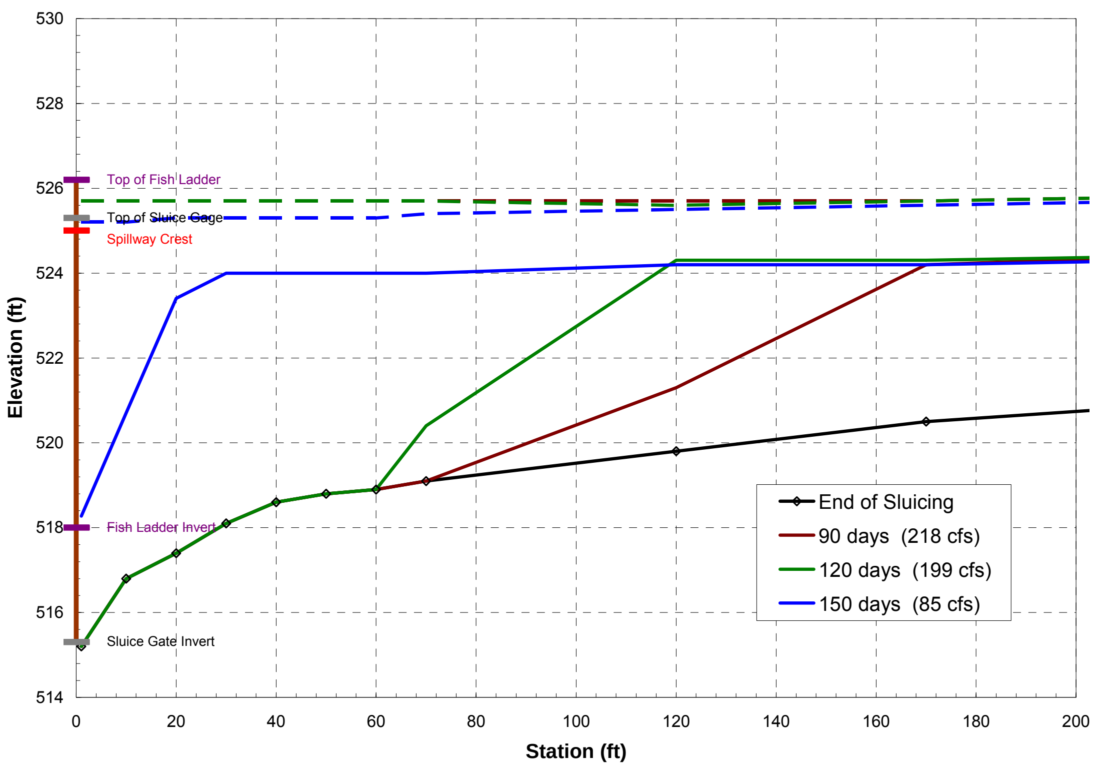


Figure 5c-1. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 90, 120 and 150 days after the sluicing event, 1978 hydrology, zoomed in on the downstream 200 feet of the incised channel.

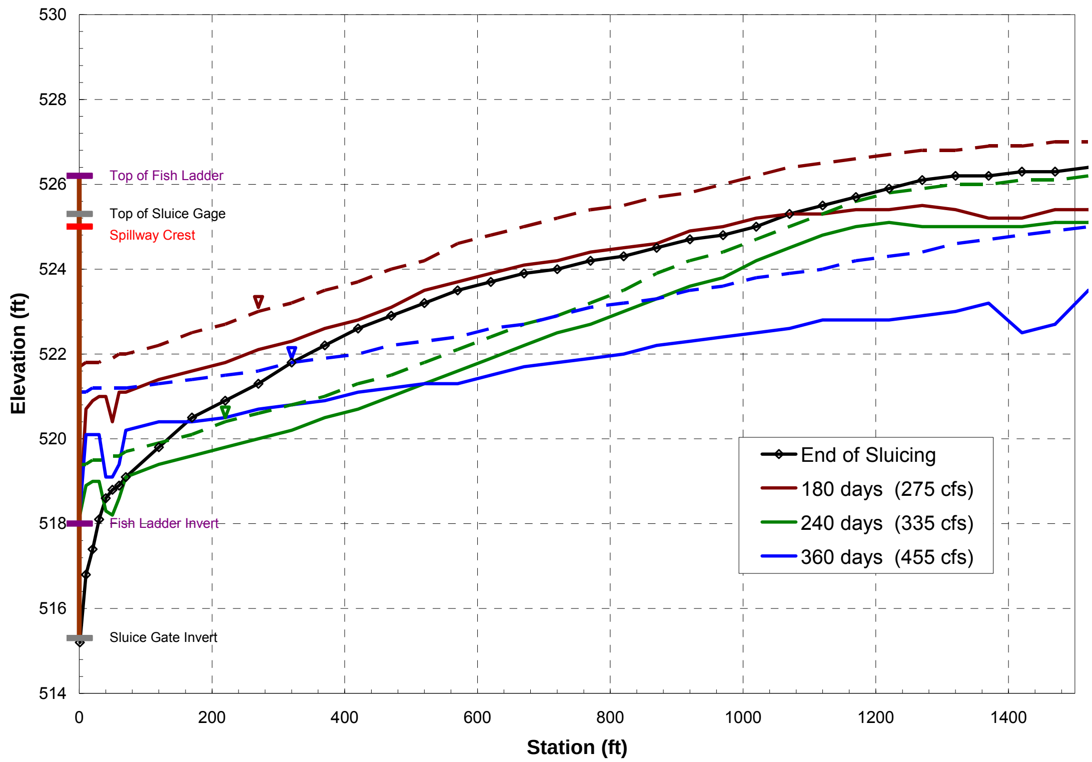


Figure 5d. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 180, 240 and 360 days after the sluicing event, 1978 hydrology.

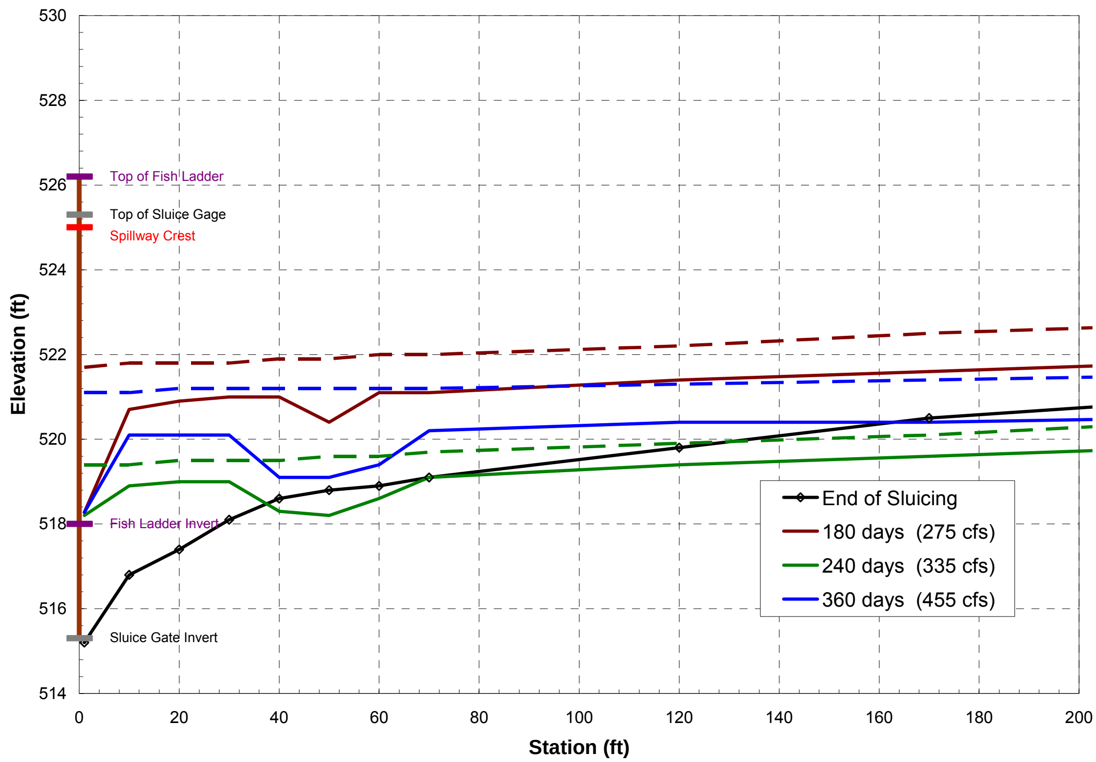


Figure 5d-1. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 180, 240 and 360 days after the sluicing event, 1978 hydrology, zoomed in on the downstream 200 feet of the incised channel.

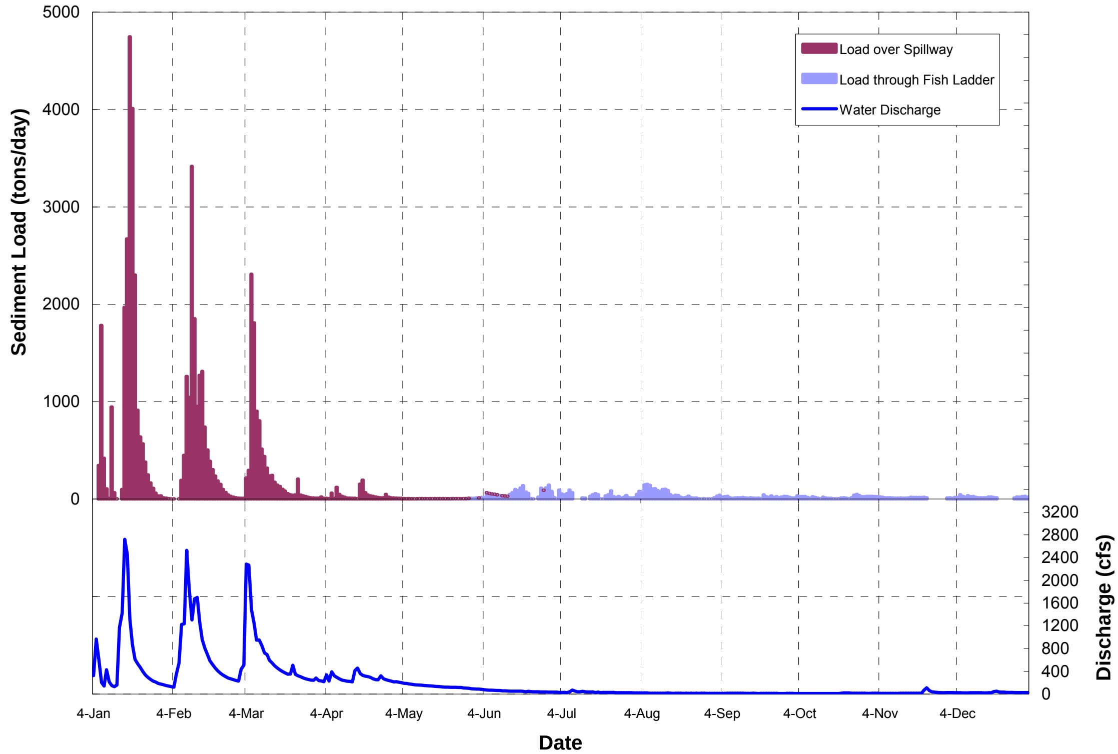


Figure 6. Sediment loads passing over the San Clemente Dam Spillway and through the fish ladder for the 1978 simulation. Also shown is the mean daily flow hydrograph for the simulation period.

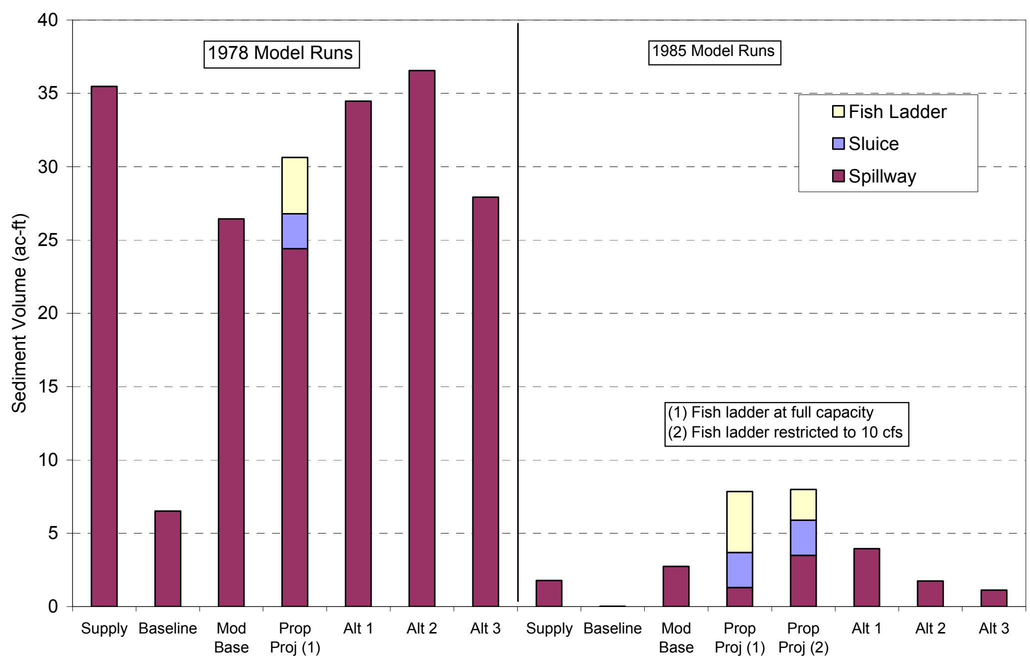


Figure 7. Total sediment volume passing San Clemente Dam between the date of the sluicing event (January 4, 1978; February 9, 1985) and the end of the calendar year for baseline, modified baseline (full reservoir), Proponents Proposed project, and Alternatives 1, 2 and 3 for 1985 and 1978 model runs. Also shown is the total upstream sediment supply to the reservoir.

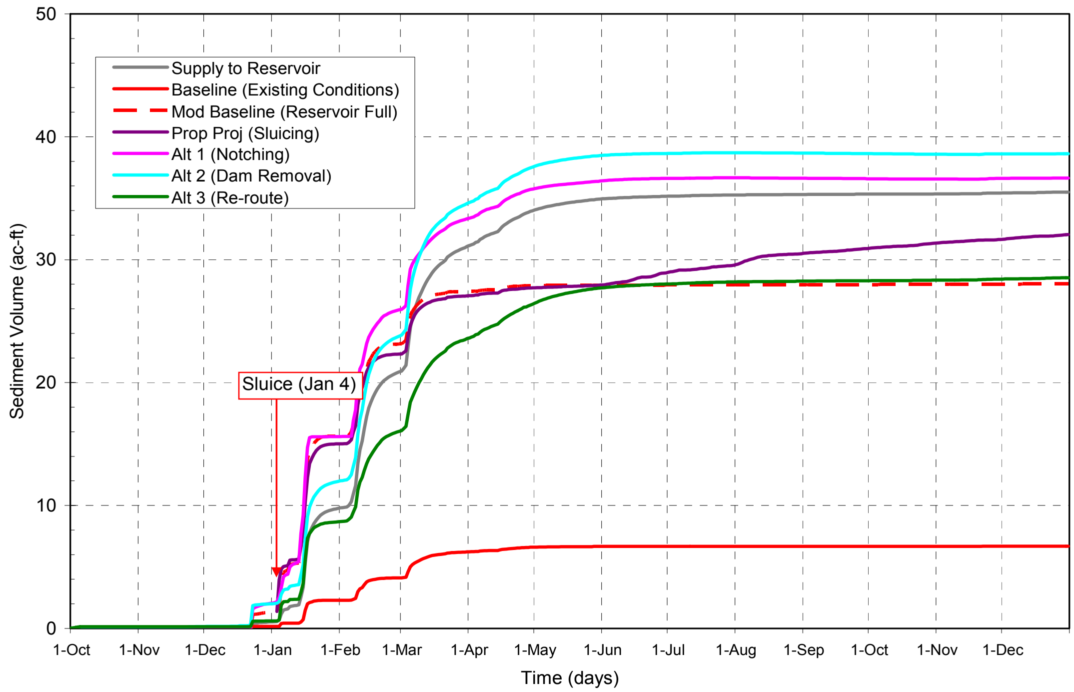


Figure 8. Cumulative sediment load passing San Clemente Dam from October 1, 1977, through December 31, 1978, for baseline and modified baseline (reservoir filled with sediment), Proponents Proposed Project, and Alternatives 1, 2 and 3).

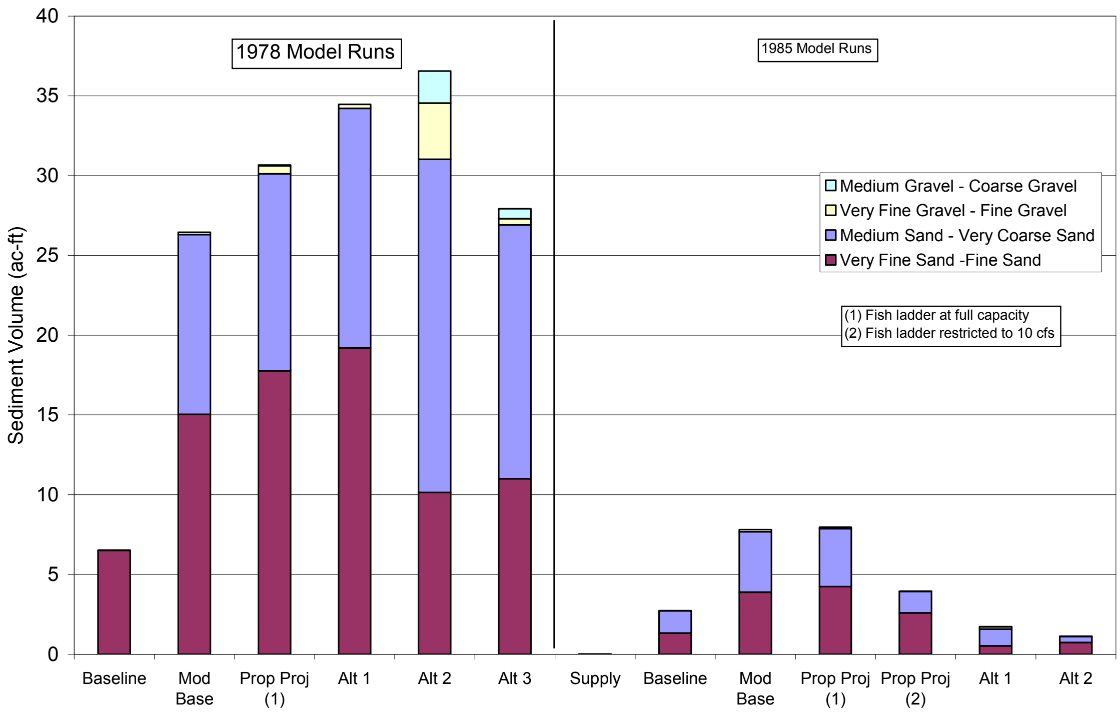


Figure 9. Size breakdown of sediment passing San Clemente Dam between the date of the sluicing event (January 4, 1978; February 9, 1985) and the end of the calendar year for baseline, modified baseline (full reservoir), Proponents Proposed project, and Alternatives 1, 2 and 3 for 1985 and 1978 model runs.

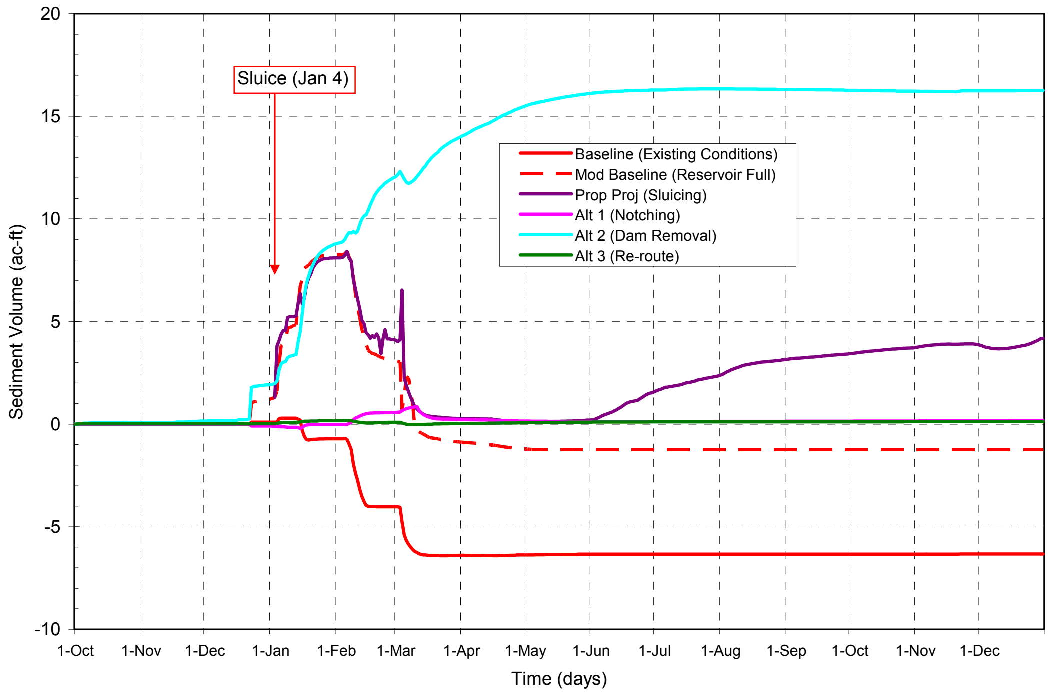


Figure 10. Change in sediment storage in the Carmel River between San Clemente Dam and the mouth between October 1, 1977, through December 31, 1978, for baseline and modified baseline (reservoir filled with sediment), Proponents Proposed Project, and Alternatives 1, 2 and 3).

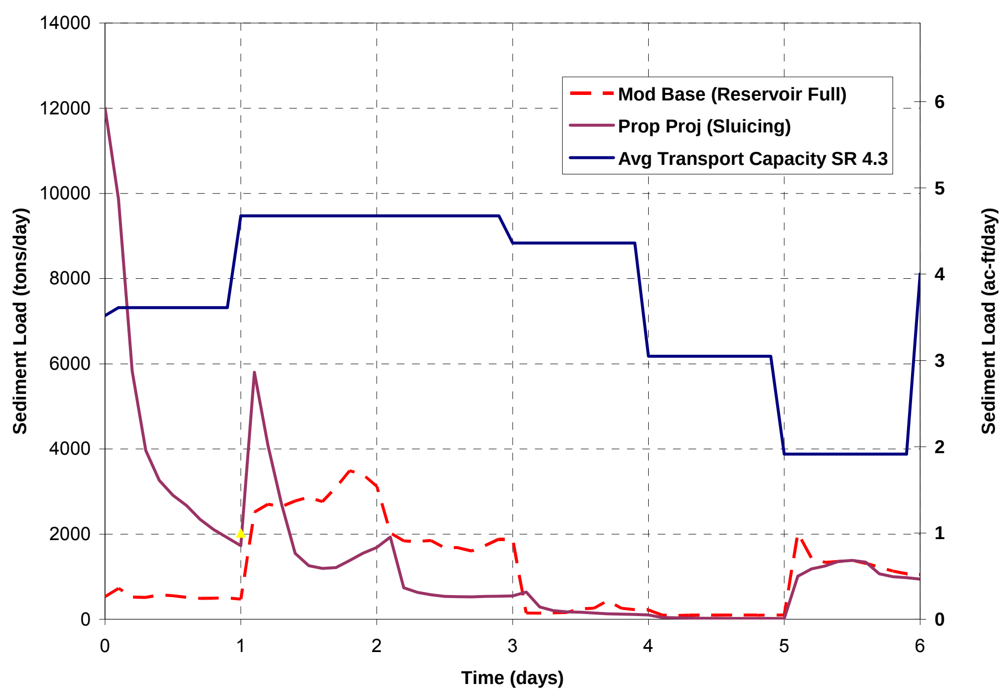


Figure 11. Sediment loads predicted by the model in the reach between San Clemente Dam and Old San Clemente Dam during the first six days after the sluicing event for the 1978 hydrology. Also shown are the predicted loads under the modified baseline (full reservoir) scenario and the transport capacity assuming an unlimited bed sediment reservoir.

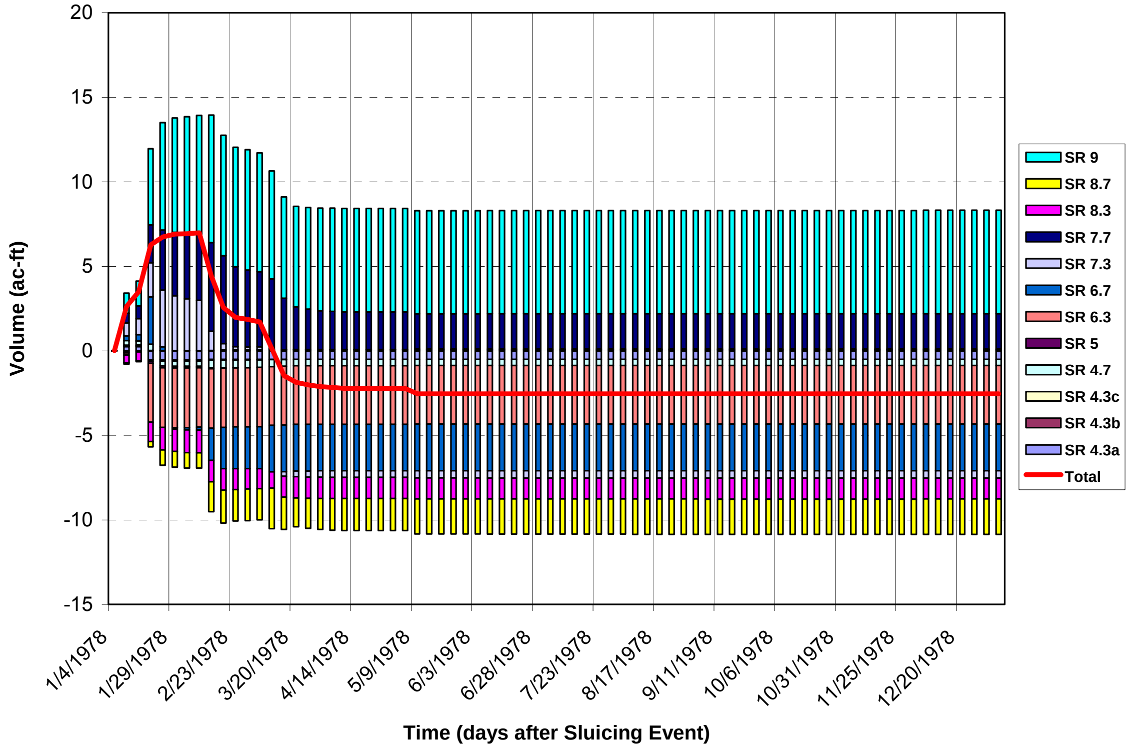


Figure 12. Change in sediment storage in the Carmel River downstream from San Clemente Dam, by subreach, from January 4 through December 31 for the 1978 hydrology for the modified baseline (full reservoir) scenario.

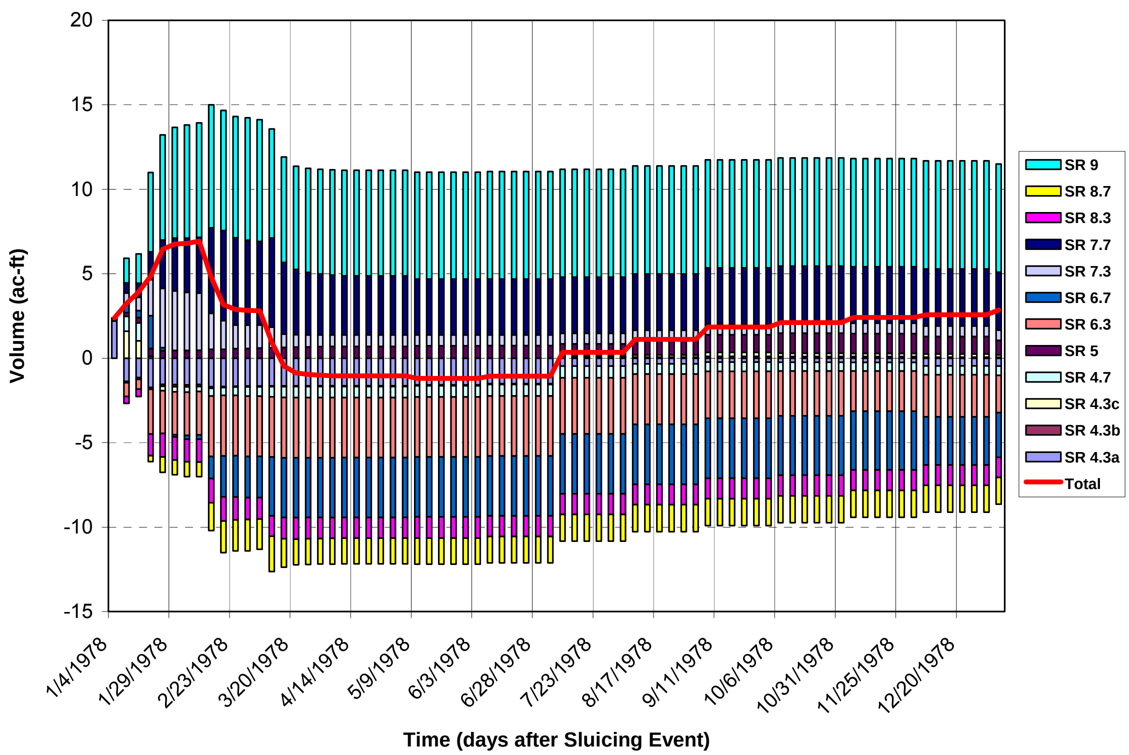


Figure 13. Change in sediment storage in the Carmel River downstream from San Clemente Dam, by subreach, from the end of the sluicing event on January 4 through December 31 for the 1978 hydrology for the Proponents Proposed Project (Sluicing).

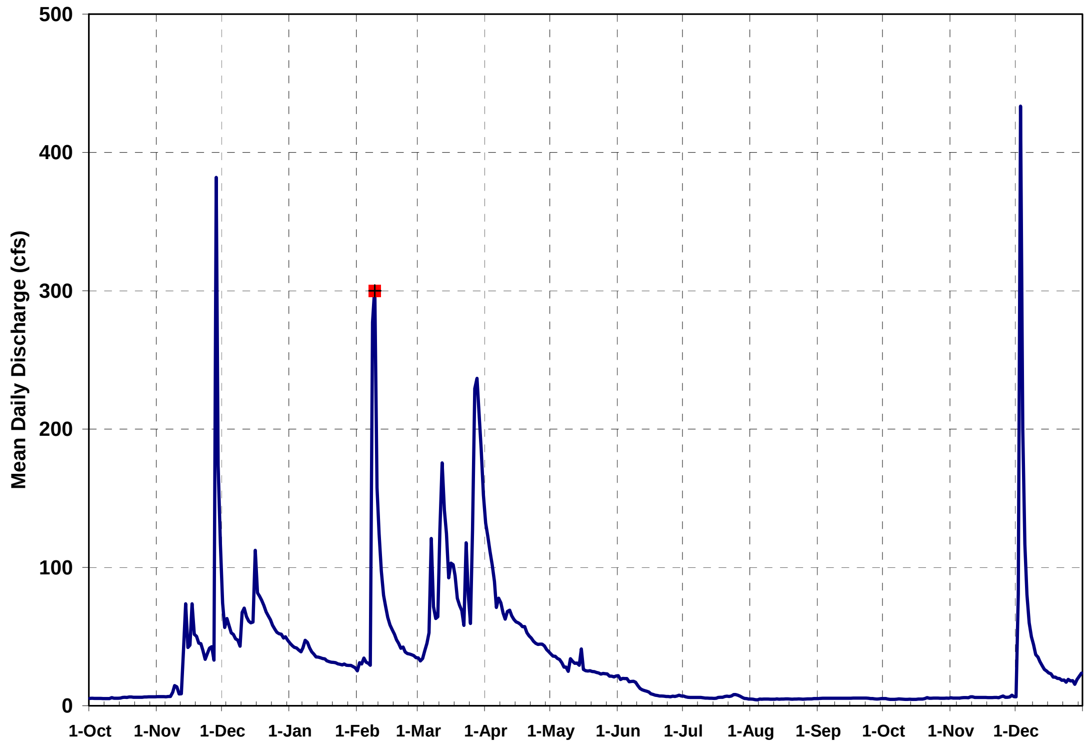


Figure 14. Mean daily flow hydrograph for WY1985. Sluicing event occurs on February 9 (red symbol).

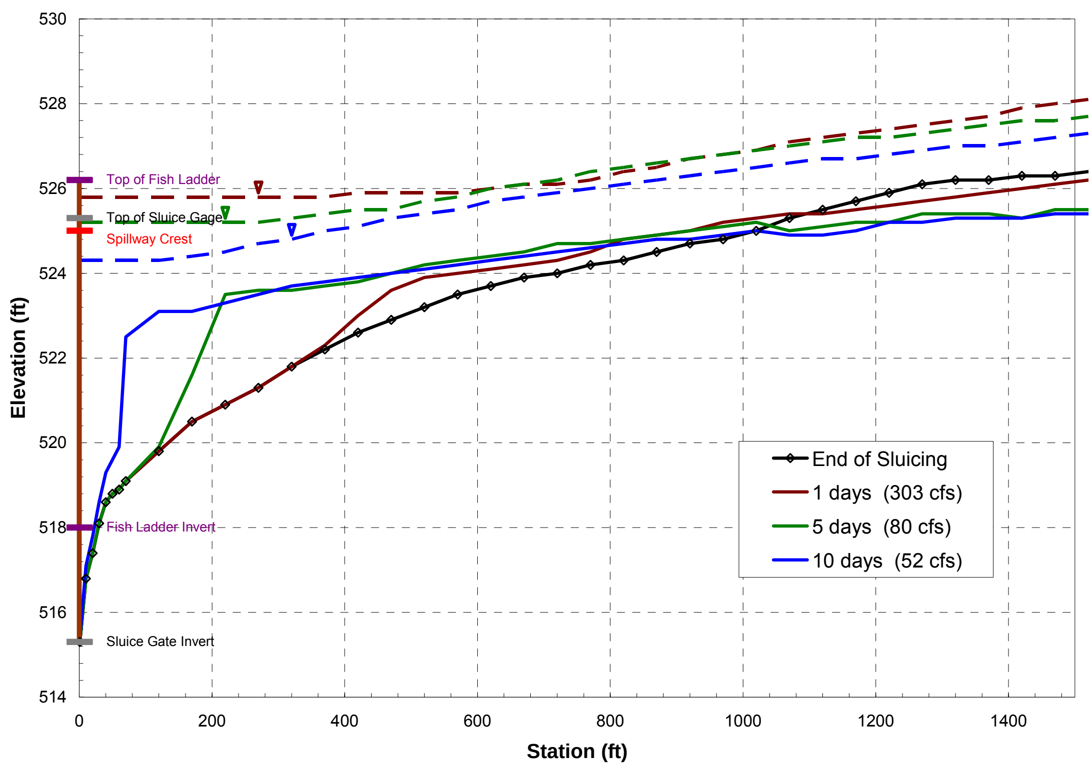


Figure 15a. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 1, 5 and 10 days after the sluicing event, 1985 hydrology with fish ladder at full capacity.

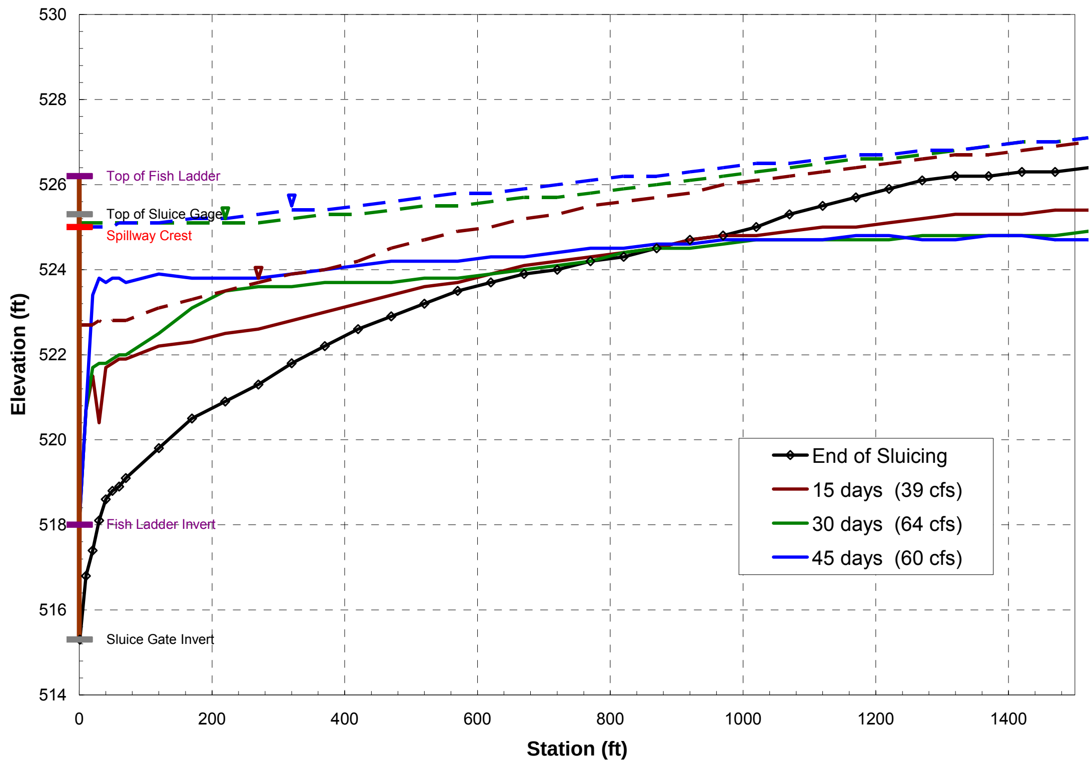


Figure 15b. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 15, 30 and 45 days after the sluicing event, 1985 hydrology with fish ladder at full capacity.

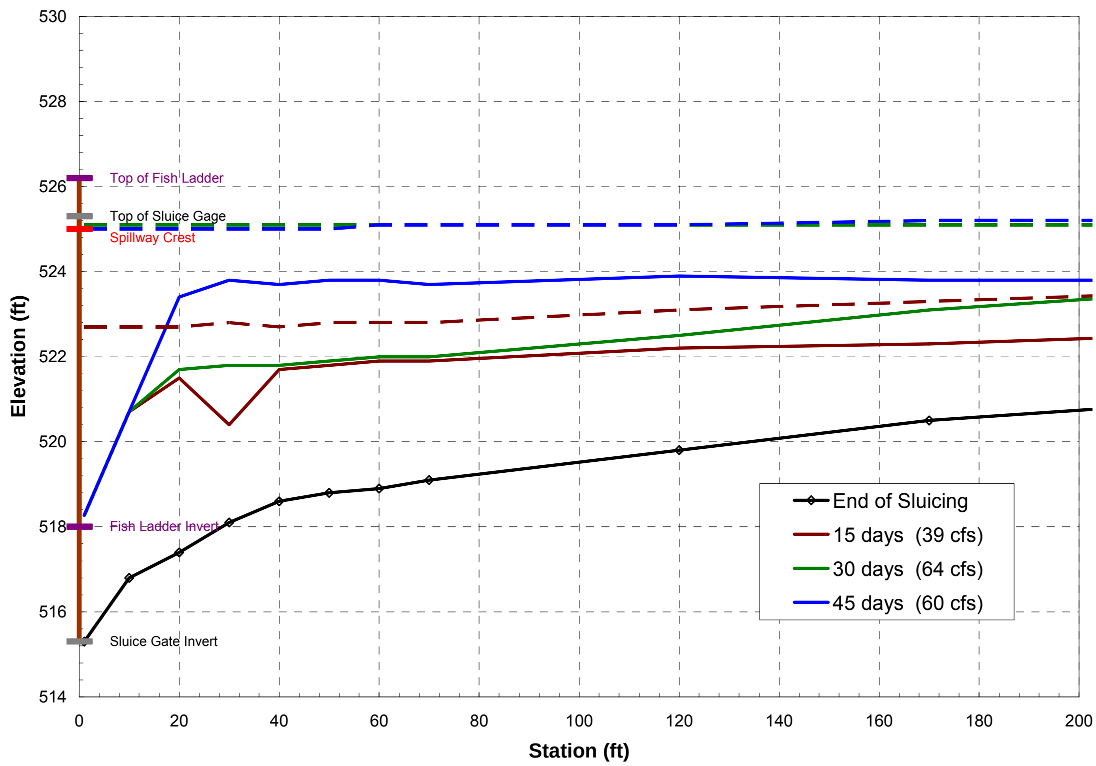


Figure 15b-1. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 15, 30 and 45 days after the sluicing event, 1985 hydrology with fish ladder at full capacity, zoomed in on the downstream 200 feet of the incised channel.

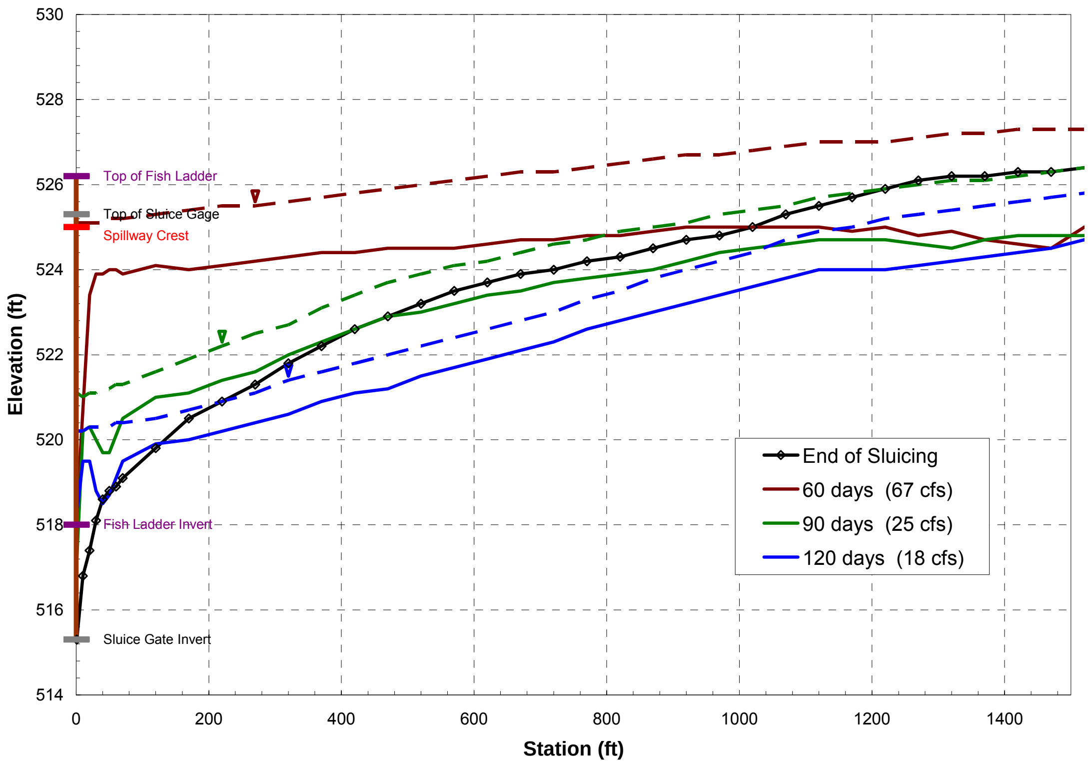


Figure 15c. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 60, 90 and 120 days after the sluicing event, 1985 hydrology with fish ladder at full capacity.

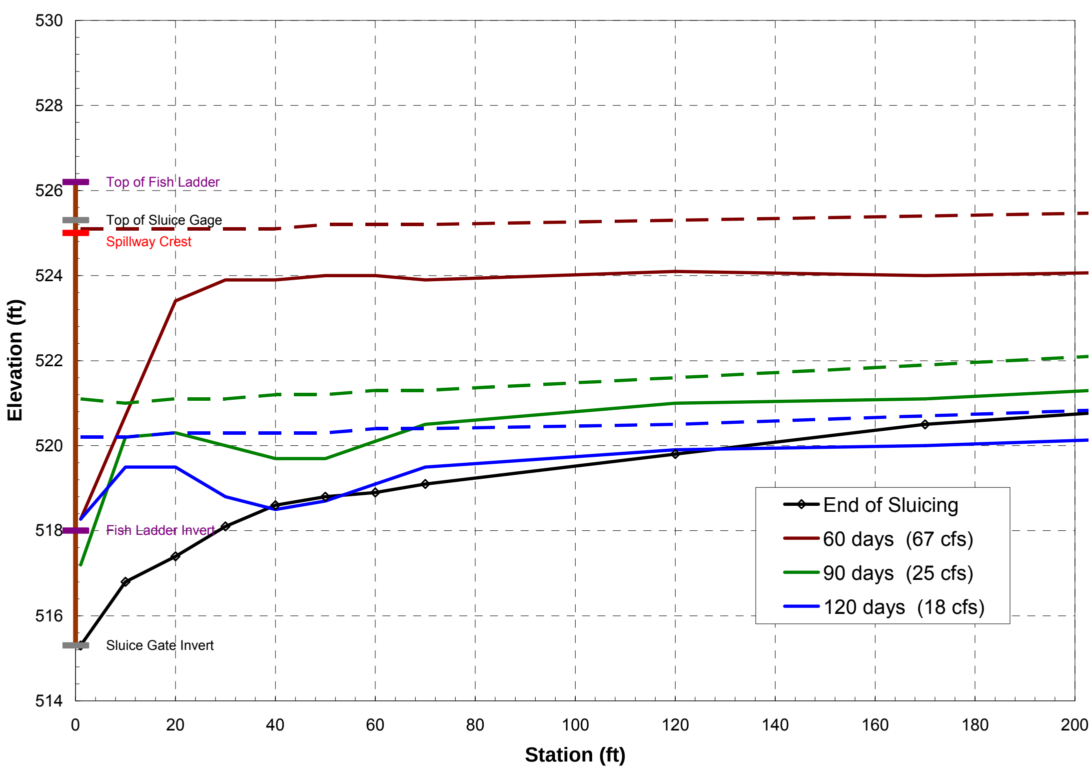


Figure 15c-1. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 60, 90 and 120 days after the sluicing event, 1985 hydrology with fish ladder at full capacity, zoomed in on the downstream 200 feet of the incised channel.

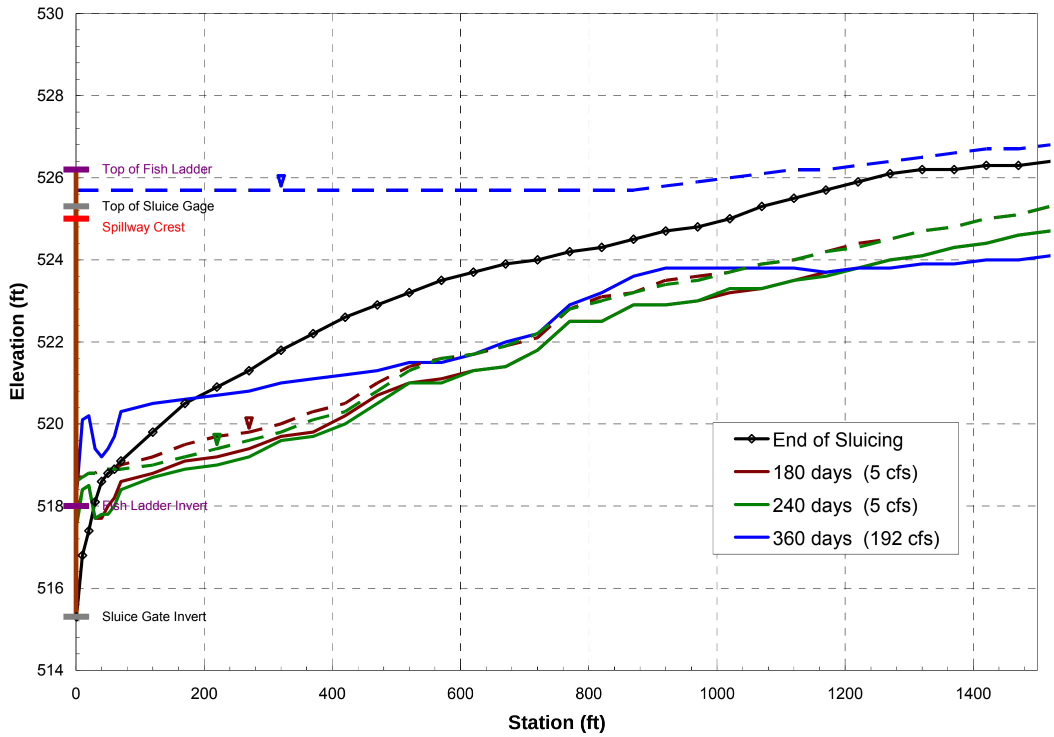


Figure 15d. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 180, 240 and 360 days after the sluicing event, 1985 hydrology with fish ladder at full capacity.

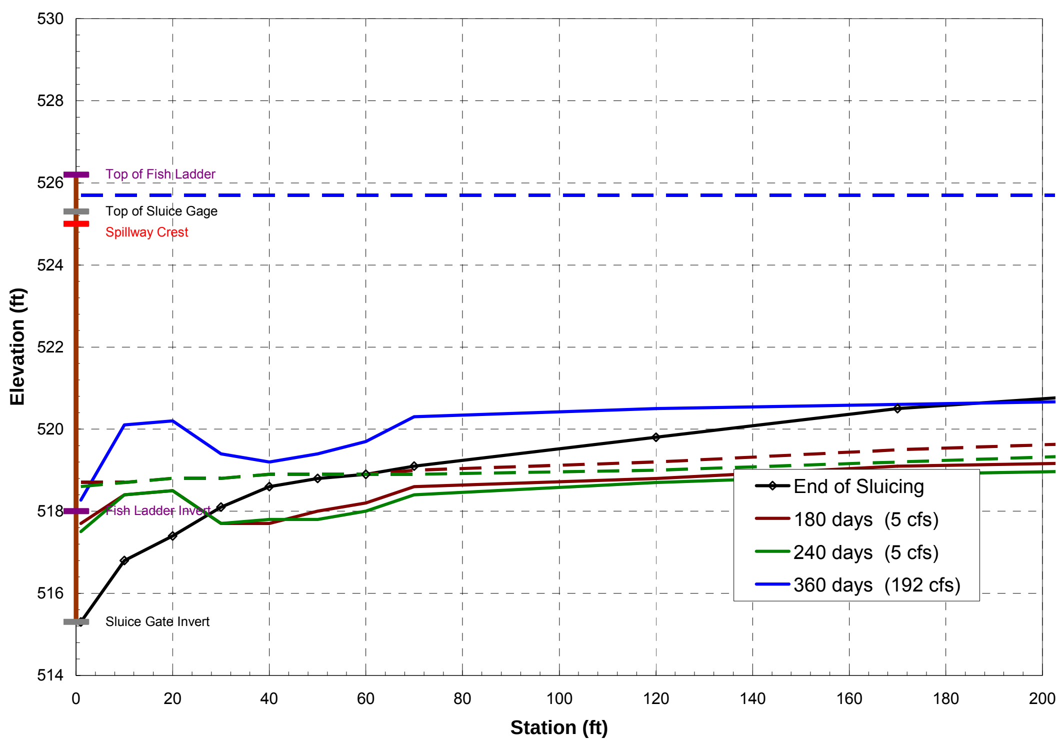


Figure 15d-1. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 180, 240 and 360 days after the sluicing event, 1985 hydrology with fish ladder at full capacity, zoomed in on the downstream 200 feet of the incised channel.

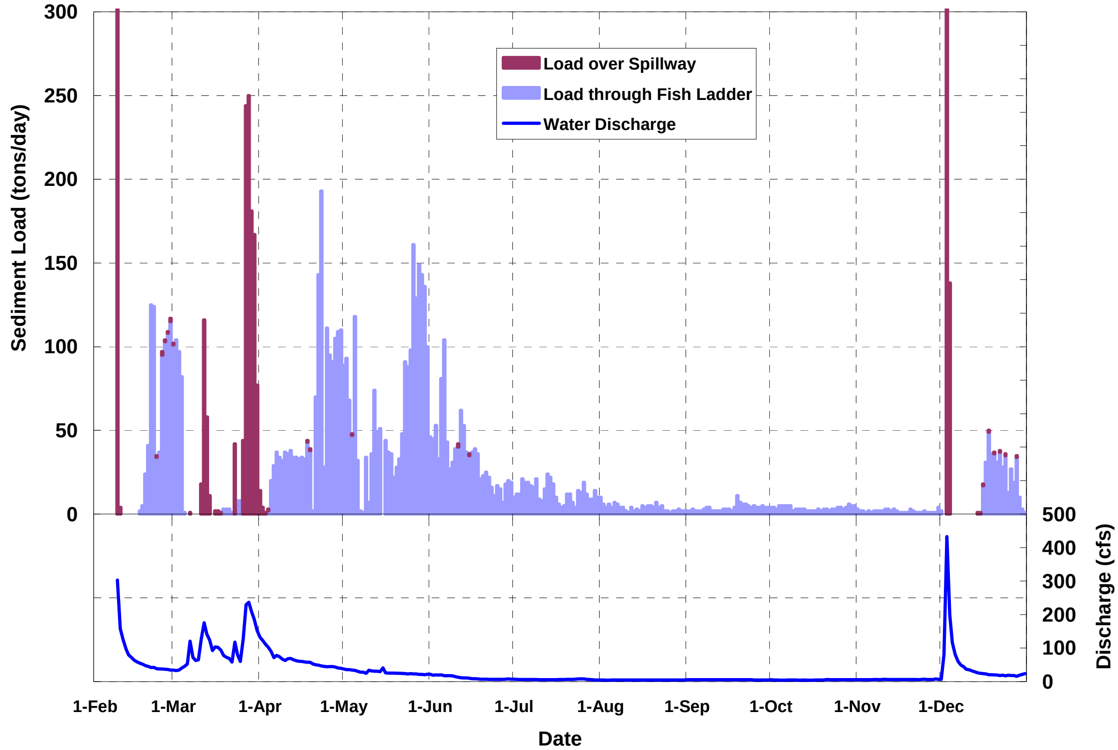


Figure 16. Sediment loads passing over the San Clemente Dam Spillway and through the fish ladder for the 1985 simulation. Also shown is the mean daily flow hydrograph for the simulation period.

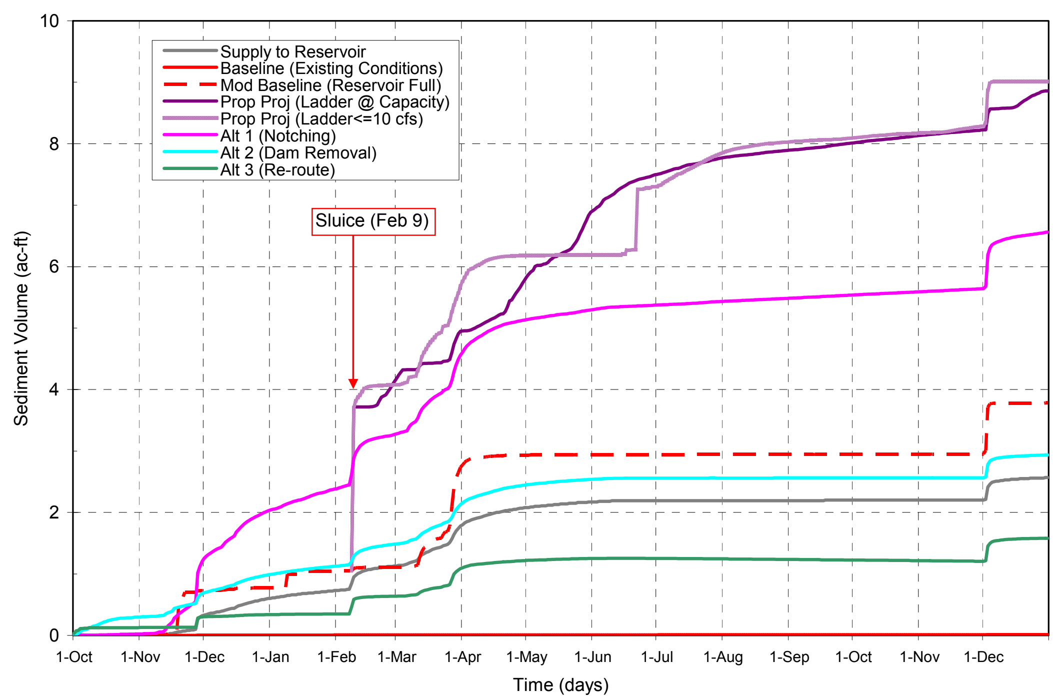


Figure 17. Cumulative sediment load passing San Clemente Dam from October 1, 1985, through December 31, 1985, for baseline and modified baseline (reservoir filled with sediment), Proponents Proposed Project, and Alternatives 1, 2 and 3).

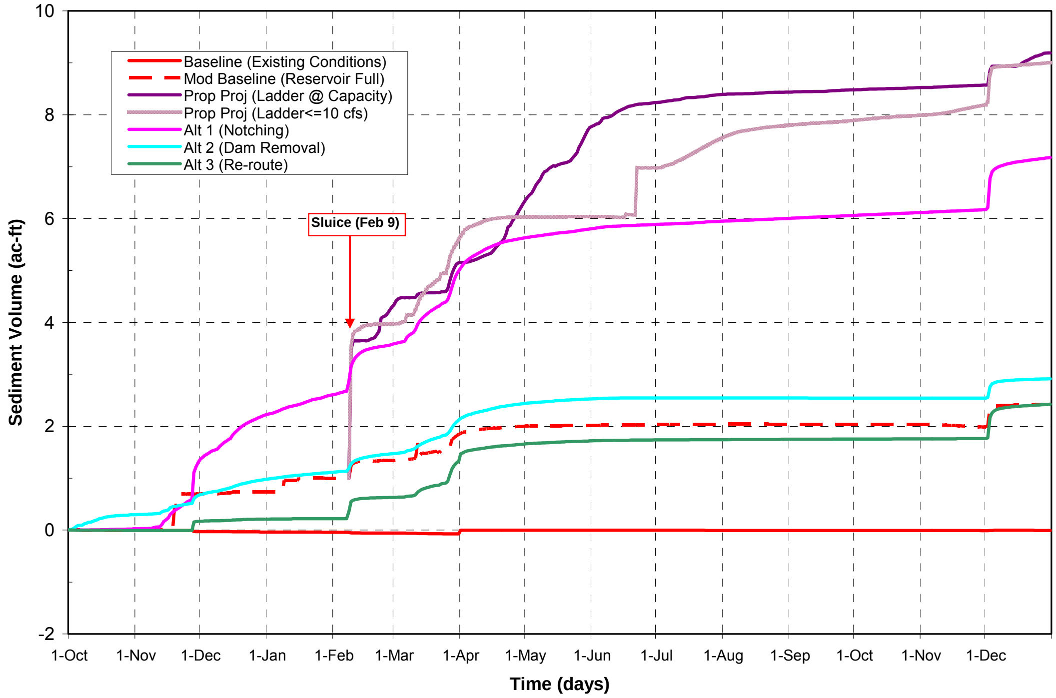


Figure 18. Change in sediment storage in the Carmel River between San Clemente Dam and the mouth between October 1, 1985, through December 31, 1985, for baseline and modified baseline (reservoir filled with sediment), Proponents Proposed Project, and Alternatives 1, 2 and 3).

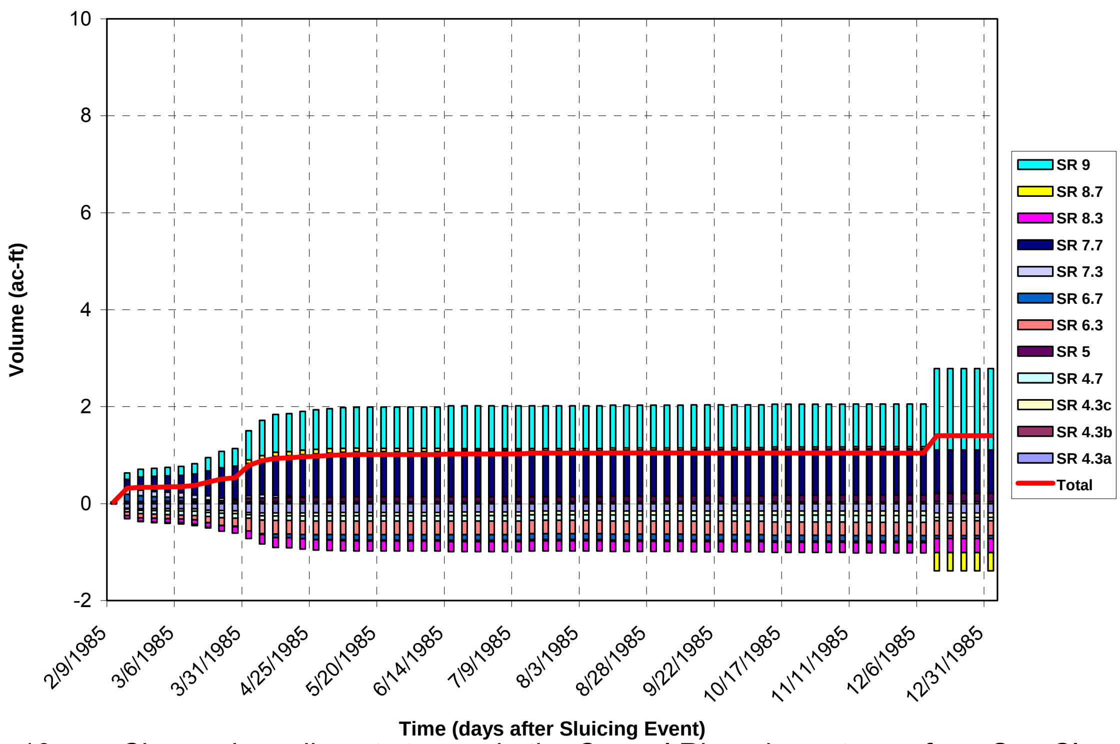


Figure 19. Change in sediment storage in the Carmel River downstream from San Clemente Dam, by subreach, from February 9 through December 31 for the 1985 hydrology for the modified baseline (full reservoir) scenario.

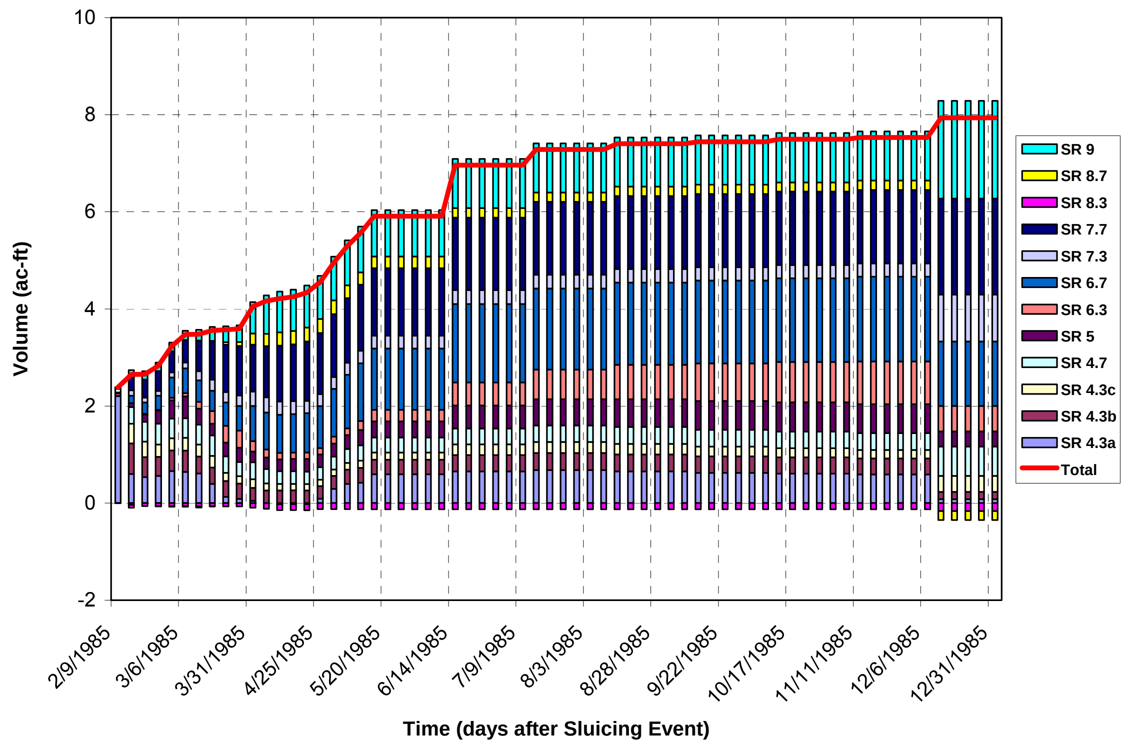


Figure 20. Change in sediment storage in the Carmel River downstream from San Clemente Dam, by subreach, from the end of the sluicing event on February 9 through December 31 for the 1985 hydrology for the Proponents Proposed Project (Sluicing), with the fish ladder operating at full capacity.

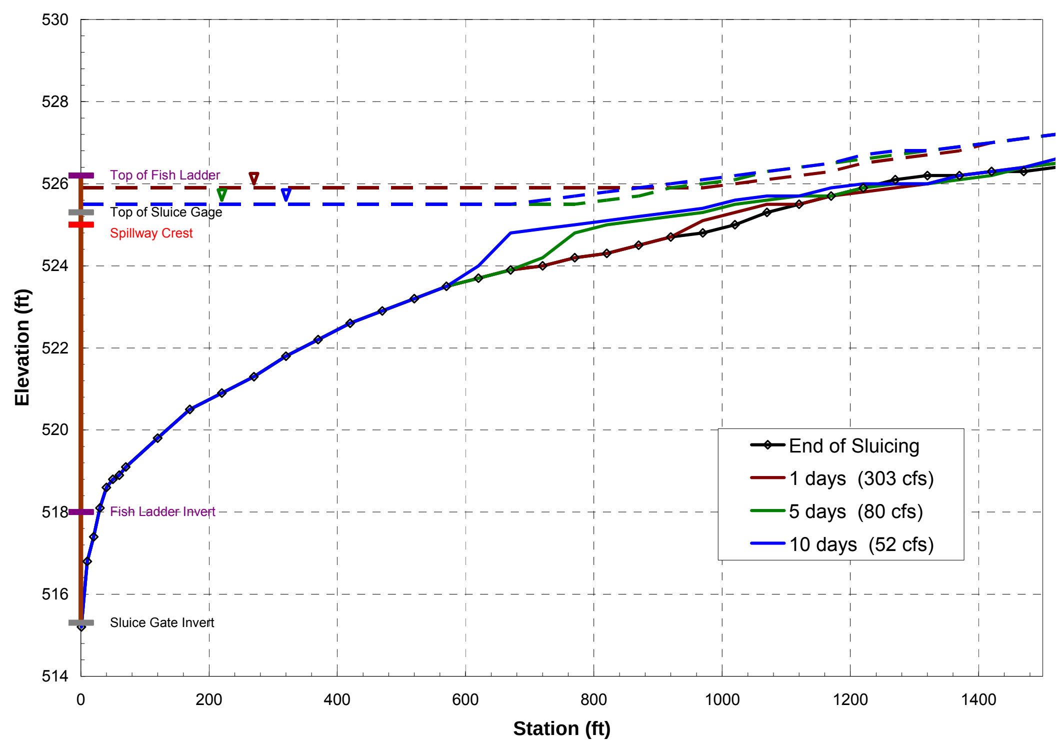


Figure 21a. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 1, 5 and 10 days after the sluicing event, 1985 hydrology with fish ladder restricted to 10 cfs or less.

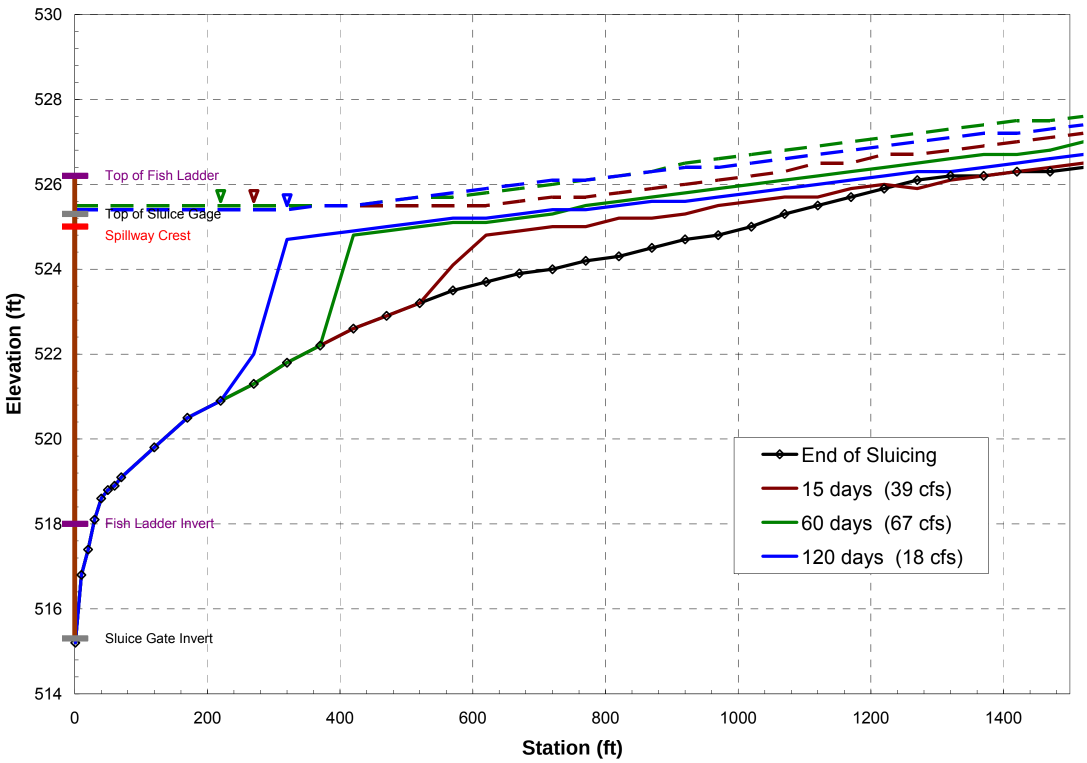


Figure 21b. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 15, 60 and 120 days after the sluicing event, 1985 hydrology with fish ladder restricted to 10 cfs or less.

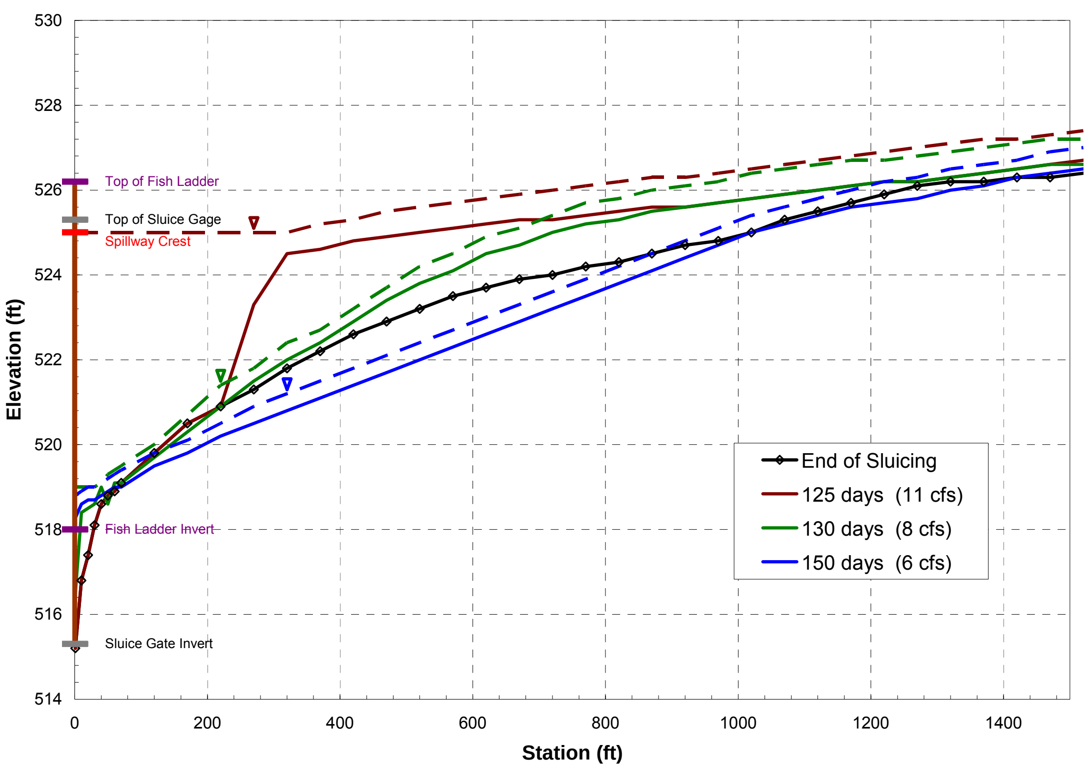


Figure 21c. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 125, 130 and 150 days after the sluicing event, 1985 hydrology with fish ladder restricted to 10 cfs or less.

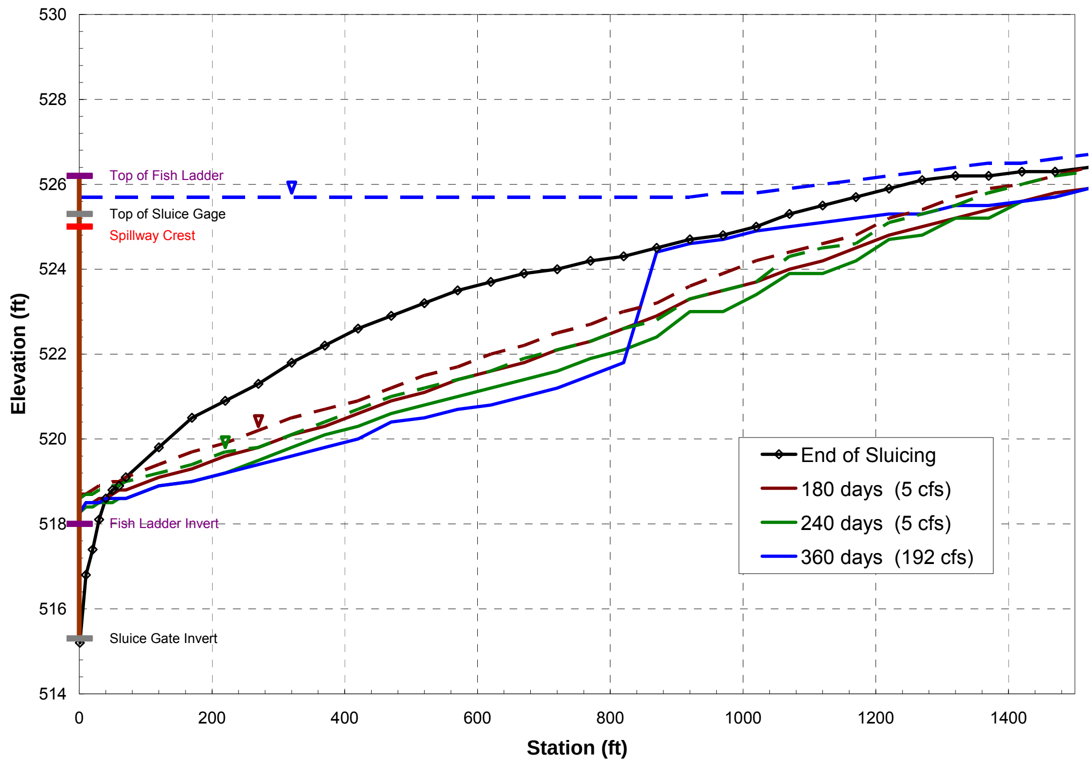


Figure 21d. Longitudinal profile of the incised channel upstream from the sluice gage at the end of the sluicing event, and 180, 240 and 360 days after the sluicing event, 1985 hydrology with fish ladder restricted to 10 cfs or less.

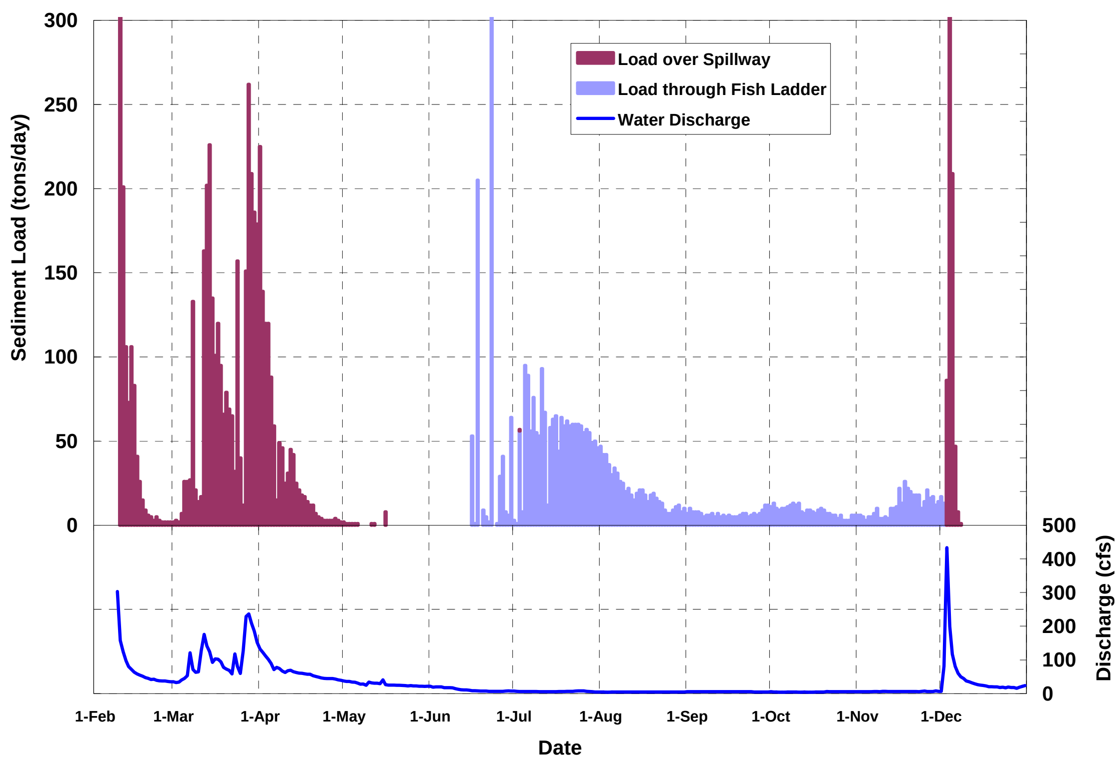


Figure 22. Sediment loads passing over the San Clemente Dam Spillway and through the fish ladder for the 1985 simulation. Also shown is the mean daily flow hydrograph for the simulation period (fish ladder discharge ≤0 cfs).

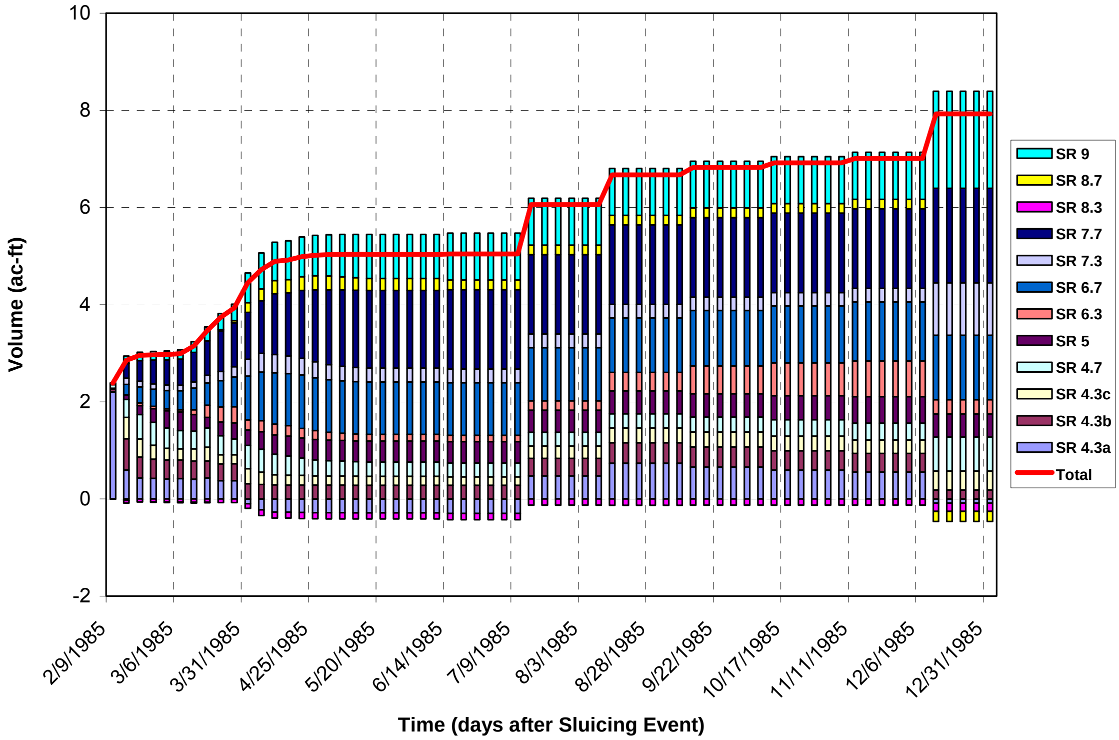


Figure 23. Change in sediment storage in the Carmel River downstream from San Clemente Dam, by subreach, from the end of the sluicing event on February 9 through December 31 for the 1985 hydrology for the Proponents Proposed Project (Sluicing), with the fish ladder restricted to 10 cfs or less.

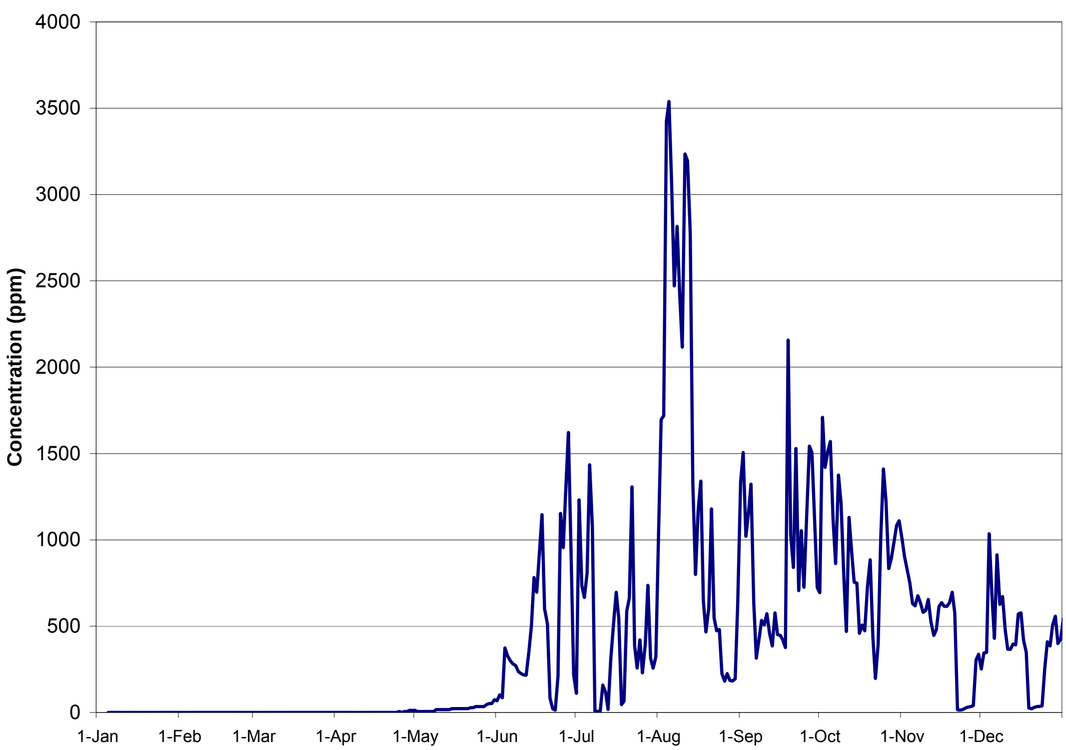


Figure 24. Total sediment concentrations in the fish ladder under the Proposed Project for the 1978 hydrology scenario.

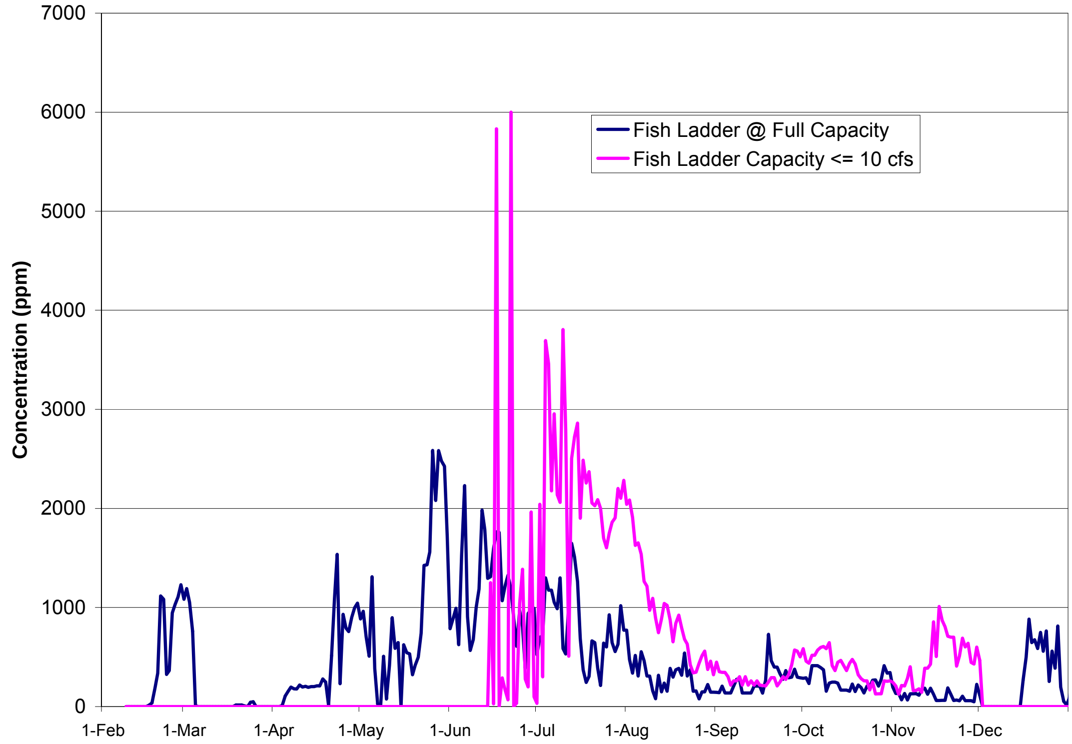


Figure 25. Total sediment concentrations in the fish ladder under the Proposed Project for the 1985 hydrology scenario with the fish ladder operating at full capacity, and with the fish ladder capacity restricted to 10 cfs or less.

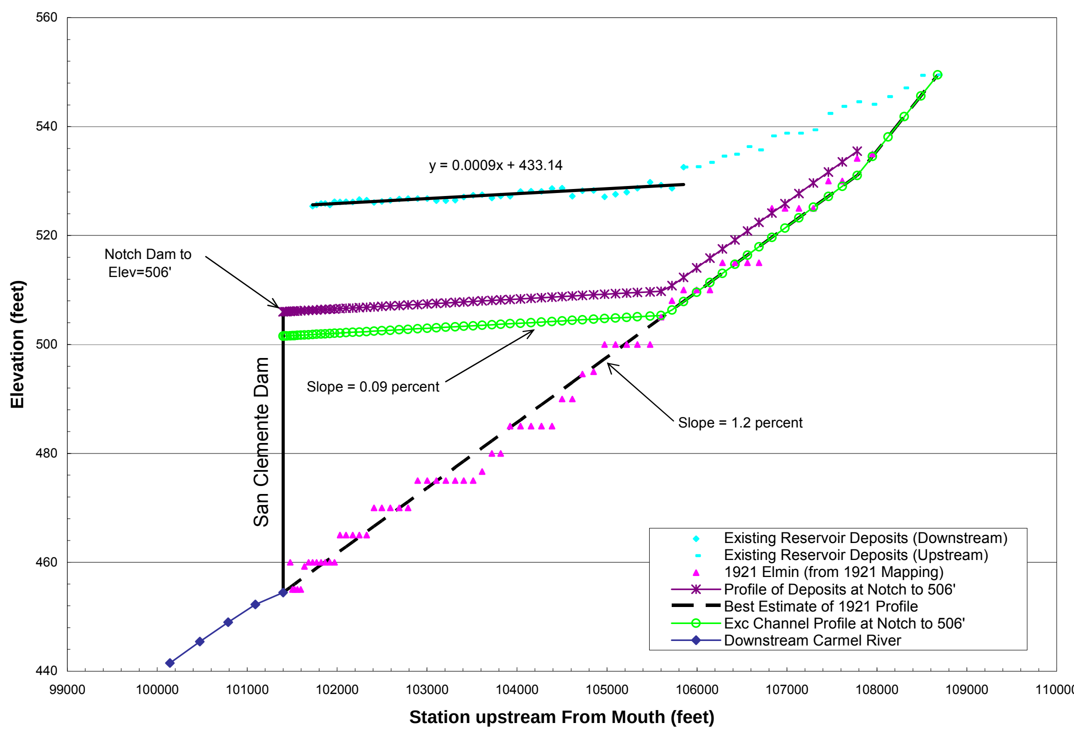


Figure 26. Longitudinal profile of the existing reservoir deposits, the pre-dam surface, and the constructed profile under the Notching Alternative in the Carmel Branch of San Clemente Reservoir.

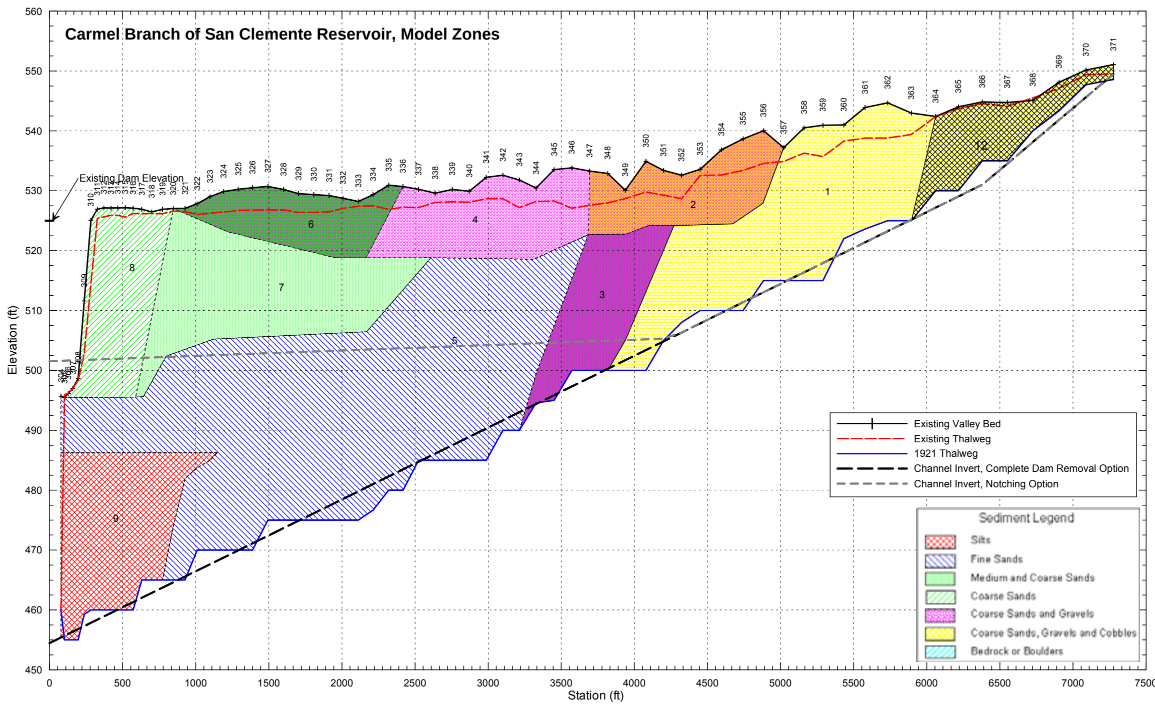


Figure 27. Profile of reservoir sediment zones and the channel invert for the Complete Dam Removal Alternative and for the Notching Alternative, Carmel Branch of San Clemente Reservoir.

Table 1. Total and maximum consecutive number of days during the 41-year simulation period that suspended sediment concentration above 6 inches above the bed exceeds 500 and 2,000 ppm.								
Subreach	Baseline		Alternative 1 (Dam Notching)		Alternative 2 (Complete Dam Removal)		Alternative 3 (Carmel River Re-route)	
	1978	1985	1978	1985	1978	1985	1978	1985
Total number days concentration exceeds 500 ppm								
R4.3	22	27	23	23	42	41	33	27
R4.7	21	23	23	23	33	35	29	27
R5	24	28	25	30	33	40	30	29
R6.3	28	30	29	31	34	38	34	33
R6.7	30	38	36	36	40	41	38	38
R7.3	32	42	38	38	40	43	42	38
R7.7	33	40	37	40	39	44	38	38
R8.3	30	35	30	33	35	38	33	33
R8.7	33	36	33	35	34	41	36	38
R9	31	33	37	36	33	39	35	37
	Maximum consecutive days concentration exceeds 500 ppm							
R4.3	3	3	3	3	5	5	4	4
R4.7	3	3	3	3	4	4	4	4
R5	4	4	4	4	4	5	4	4
R6.3	4	4	4	4	4	4	4	4
R6.7	4	4	4	5	4	5	4	4
R7.3	4	5	4	4	4	5	5	4
R7.7	4	4	4	4	5	5	5	4
R8.3	4	4	4	4	4	5	4	4
R8.7	4	5	4	5	4	5	4	5
R9	4	4	4	5	4	5	4	5
	Total number days concentration exceeds 2000 ppm							
R4.3	0	0	0	0	0	1	0	0
R4.7	0	0	0	0	0	0	0	0
R5	1	1	1	1	1	1	1	1
R6.3	1	1	1	1	1	1	1	1
R6.7	1	1	1	1	1	1	1	1
R7.3	1	1	1	1	1	1	1	1
R7.7	1	1	1	1	1	1	1	1
R8.3	1	1	1	1	1	1	1	1
R8.7	1	1	1	1	1	1	1	1
R9	1	1	1	1	1	1	1	1
	Maximum consecutive days concentration exceeds 2000 ppm							
R4.3	0	0	0	0	0	1	0	0
R4.7	0	0	0	0	0	0	0	0
R5	1	1	1	1	1	1	1	1
R6.3	1	1	1	1	1	1	1	1
R6.7	1	1	1	1	1	1	1	1
R7.3	1	1	1	1	1	1	1	1
R7.7	1	1	1	1	1	1	1	1
R8.3	1	1	1	1	1	1	1	1
R8.7	1	1	1	1	1	1	1	1
R9	1	1	1	1	1	1	1	1

Table 2. Total and maximum consecutive number of days suspended sediment concentration above 6 inches above the bed exceeds 500 and 2,000 ppm for remainder of equivalent calender year after sluicing.

Subreach	Baseline		Modified Baseline (Full Reservoir)		Sluicing		Alternative 1 (Dam Notching)		Alternative 2 (Complete Dam Removal)		Alternative 3 (Carmel River Re-route)	
	1978	1985	1978	1985	1978	1985	1978	1985	1978	1985	1978	1985
	Total number days concentration exceeds 500 ppm											
R4.3a	0	0	0	0	7	5	0	0	1	0	0	0
R4.3b					6	11						
R4.3c					3	4						
R4.7	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0
R6.3	0	0	1	0	1	0	0	0	0	0	1	0
R6.7	0	0	2	0	2	0	1	0	1	0	1	0
R7.3	0	0	2	0	0	0	3	0	0	0	2	0
R7.7	0	0	1	0	0	0	0	0	0	0	0	0
R8.3	0	0	1	0	0	0	0	0	0	0	0	0
R8.7	0	0	1	0	0	0	1	0	0	0	0	0
R9	0	0	1	0	0	0	3	0	0	0	0	0
	Maximum consecutive days concentration exceeds 500 ppm											
R4.3a	0	0	0	0	3	2	0	0	1	0	0	0
R4.3b					2	3						
R4.3c					2	2						
R4.7	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0
R6.3	0	0	1	0	1	0	0	0	0	0	1	0
R6.7	0	0	2	0	2	0	1	0	1	0	1	0
R7.3	0	0	2	0	0	0	2	0	0	0	2	0
R7.7	0	0	1	0	0	0	0	0	0	0	0	0
R8.3	0	0	1	0	0	0	0	0	0	0	0	0
R8.7	0	0	1	0	0	0	1	0	0	0	0	0
R9	0	0	1	0	0	0	2	0	0	0	0	0
	Total number days concentration exceeds 2000 ppm											
R4.3a	0	0	0	0	0	0	0	0	0	0	0	0
R4.3b					0	0						
R4.3c					0	0						
R4.7	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0
R6.3	0	0	0	0	0	0	0	0	0	0	0	0
R6.7	0	0	0	0	0	0	0	0	0	0	0	0
R7.3	0	0	0	0	0	0	0	0	0	0	0	0
R7.7	0	0	0	0	0	0	0	0	0	0	0	0
R8.3	0	0	0	0	0	0	0	0	0	0	0	0
R8.7	0	0	0	0	0	0	0	0	0	0	0	0
R9	0	0	0	0	0	0	0	0	0	0	0	0
	Maximum consecutive days concentration exceeds 2000 ppm											
R4.3a	0	0	0	0	0	0	0	0	0	0	0	0
R4.3b					0	0						
R4.3c					0	0						
R4.7	0	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0	0	0	0	0
R6.3	0	0	0	0	0	0	0	0	0	0	0	0
R6.7	0	0	0	0	0	0	0	0	0	0	0	0
R7.3	0	0	0	0	0	0	0	0	0	0	0	0
R7.7	0	0	0	0	0	0	0	0	0	0	0	0
R8.3	0	0	0	0	0	0	0	0	0	0	0	0
R8.7	0	0	0	0	0	0	0	0	0	0	0	0
R9	0	0	0	0	0	0	0	0	0	0	0	0

Appendix T

A BOTANICAL REPORT FOR SIX AREAS DESIGNATED FOR POSSIBLE ALTERATION OR DISTURBANCE IN SELECTING A RECEIVER SITE FOR SEDIMENT FROM BEHIND THE SAN CLEMENTE DAM

VERN YADON
1119 Buena Vista Avenue
Pacific Grove, California 93950

A Botanical Report for Six Areas Designated for Possible Alteration or Disturbance in Selecting a Receiver Site for Sediment from Behind the San Clemente Dam

By

Vern Yadon

July 21, 2005

(Field work: May 25, 30 & June 10, July 21, 2005)

As part of the California American Water Company's Seismic Safety Project for San Clemente Dam, botanical data has been gathered by the writer and others while methods and routes are being studied for determining a receiver site and a route of transport for sediment from behind San Clemente Dam. This report is designed to provide botanical data for six areas some of which may have been previously studied. The areas may be variously impacted depending on the proposed use, i.e. transport or receipt of the sediment. Personnel of ENTRIX, Inc. will determine methods to be used, areas to be transversed, and the location(s) of the receiver site(s).

Prepared for:

Mr. Jeremy Pratt
ENTRIX, Inc.
2701 First Avenue Suite 500
Seattle, WA 98121

I. Introduction

I was contacted by Mr. Jeremy Pratt of ENTRIX, Inc., Seattle, Washington, to perform certain botanical surveys based on marked aerial photographs and Geodetic Survey Maps. Ms. Gretchen Lebednik was the principal person to oversee the work to be done. She provided a target list of species to be watched for and indicated the style of report she wished to receive. While the work was scheduled for earlier in May, certain delays prevented the marked overlays from arriving. Rainfall for the entire winter made the unimproved access roads inadvisable at best and impassible for part of the period. Mr. Don Lingenfelter, Dam Keeper for Cal Am, provide access keys and advice on road conditions.

II. Regional Setting

The area studied is within the Carmel Valley quadrangle and essentially lies south and east of San Clemente Dam. The terrain generally slopes westerly and northwesterly from Tularcitos Ridge and Cachagua Rd. to the Carmel River. Carmel Valley Village is to the northwest. The elevations encountered are from approximately 1400 feet at the Cachagua Rd. entry to approximately 540 feet at the San Clemente Dam.

Following Robert Holland's <u>Natural Communities of California</u>, the area vegetation generally is composed of five types. These are: Interior Grasslands, Coast Live Oak Woodland, Coast Live Oak Savanna, Adenostoma Chaparral and River Riparian Forest similar to Holland's Central Coast Cottonwood-Sycamore Riparian Forest.

In attempting to follow Sawyer and Keeler-Wolf *A Manual of California Vegettion* California Native Plant Soc. 1995 and California Natural Diversity Database *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* May 2002 Edition, some comprimises must be made. The grasslands are most like the Nodding Needlegrass Series. But the present grasslands are mostly dominated by introduced annuals with occasional lenses of more concentrated perennials. The Coast Live Oak forested areas follow the Coast Live Oak Series. The Adenostoma chaparral is within the Chamise Series. No logical vegetation type appears to cover the mixture of plants occuring in the alluvial fans above the San Clemente Dam. However sycamore trees are present as a species, but no forest of that taxon is present. The mixed chaparral of the diversion canal site falls within the Chamise Series.

III. Local Vegetation

The method used in determining the local vegetation was to walk the areas designated while recording the various plant species present. This included the possible transport route along an existing access road from Cachagua Rd. to and including the 4R sediment disposal site. Also transversed was the route of a proposed road leading from the disposal site downward to the Carmel River. The areas above San Clemente Dam were also walked. These included a proposed sediment transport route between San Clemente Creek and the Carmel River, the area of a diversion dyke on the Carmel River, and the proposed diversion canal between San Clemente Creek and the Carmel River. As one might expect, the existing road route from Cachagua Rd. produced the greatest variety of vegetation because it transversed many of the habitats. The ungrazed grassland areas were greatly overgrown by a dense thatch of introduced grasses influenced by this year's continual series of rainstorms that provided moisture the entire winter. This made growing conditions difficult for the smaller forbs, causing them to be shaded out and nearly impossible to find. The Adenostoma Chaparral was also greatly overgrown so that smaller forbs were shaded out. A seed bank of numerous species will be present within the soils of that habitat element. These species will appear following any future wildland fire. The proposed road extension produced a repeat of plants already found. Additions to the species list began to appear when the area of the dam reservoir was reached. The river area added considerably to the species list as did the east-facing slope of the area proposed for a diversion canal.

Coast Live Oak Forest (Coast Live Oak Series) is the principal upland habitat present. Site 4R is a steep canyon with a closed canopy of Coast Live Oak Forest plus a few additional tree species and tree sized shrubs such as toyon. The disposal site understory is mostly a dense tangle of poison oak, snowberry and shade tolerant ferns and shrubs reaching for light. The canyon is dry except for a bit of moisture flowing along its lower level near the dam reservoir. One might have expected surface water here and there in the canyon because of the abundant winter rains, but drainage flow had mostly followed previously cut channels without retaining surface water or feeding springs.

The plant lists show a preponderance of native species some of which were recorded as single plants. The entire area in actuality has a general intrusion of weedy grasses and introduced forbs numbering fewer in numbers of species but very large in numbers of individuals.

IV. & V. Rare and Endangered Plants or Communities

No rare or endangered plant species were found.

VI. Special Plants

Lewis's Clarkia *Clarkia lewisii* was found along the entry road from the Cachagua Grade. It is a California Native Plant Society List 4 species. A plant appearing on List 4 is not an indication of rarity but rather a request for information concerning its abundance and distribution. Lewis's Clarkia is common on road banks in Monterey County especially in the Santa Lucia Mountains. Eventually the Native Plant Society will determine the scarcity-abundance of this species, but is currently only requesting information on its distribution. The California Department of Fish and Game's publication called Special Plants lists the species in its publication by that name. The publication is dated 2002.

VII. Impact Assessment

To be determined in the EIR process.

VIII Mitigations

To be determined in the EIR process.

IX. Plants of the Various Sites

Plants along Route: Cachagua Road Gate to Site R4 and Vicinity

Habitats: Quercus agrifolia forest; Coast Live Oak Series); Quercus agrifolia-mixed grassland, (Nodding Needlegrass Series); Adenostoma fasciculatum chaparral, (Chamese Series); Closed canopy Quercus agrifolia-mixed hardwood with Toxicodendron diversifolium understory

Acer macrophyllum Big Leaf Maple	Aceraceae	n
Achillea millefolium White Yarrow	Asteraceae	n
Adenostoma fasciculatum Chamise	Rosaceae	n
Adiantum jordanii California Maiden-hair Fern	Pteridaceae	n
Aesculus californica Buckeye	Hippocastanaceae	n
Agoseris grandiflora Large-flowered Agoseris	Asteraceae	n
Agoseris retrorsa Spear-leaved Agoseris	Asteraceae	n
Agrostis pallens (Agrostis diegoensis)	Poaceae	n
Aira caryophyllea Hair Grass	Poaceae	x
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Arabis glabra var. furcatipilis Tower Mustard	Brassicaceae	n
Arbutus menziesii Madroño	Ericaceae	n
Artemisia californica California Sagebrush	Asteraceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Aster radulinus Broad-leaf Aster	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Avena fatua Wild Oat	Poaceae	x
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n
Baccharis salicifolia Mule Fat	Asteraceae	n
Bloomeria crocea Common Goldenstar	Liliaceae	n
Bowlesia incana Bowlesia	Apiaceae	n
Briza maxima Rattlesnake Grass	Poaceae	x
Briza minor Little Quaking Grass	Poaceae	x
Bromus carinatus var. carinatus California Brome	Poaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus Soft Chess	Poaceae	x
Bromus pseudolaevipes	Poaceae	n
Bromus rubens Red Brome	Poaceae	x
Bromus vulgaris	Poaceae	n
Calandrinia ciliata Red Maids	Portulaceae	n
Calochortus albus White Globe Lily.	Liliaceae	n
Calystegia malacophylla ssp. pedicellata Wooly Morning-glory	Convolvulaceae	n
Calystegia purpurata var. purpurata Western Morning-glory	Convolvulaceae	n
Calystegia subacaulis Hill Morning-glory	Convolvulaceae	n
Carduus pycnocephalus Italian Thistle	Asteraceae	x
Carex globosa Round-fruited Sedge	Cyperaceae	n
Castilleja attenuata Narrow-leaved Orthocarpus	Scrophulariaceae	n

Ceanothus oliganthus var. sorediatus Jim Brush	Rhamnaceae	n
Centaurea melitensis Tocalote, Yellow Star Thistle	Asteraceae	x
Centaurium davyi Canchalagua	Gentianaceae	n
Cerastium glomeratum Mouse-eared Chickweed	Caryophyllaceae	x
Chamomilla suaveolens Pineapple Weed	Asteraceae	x
Chlorogalum pomeridianum var. pomeridianum Soaproot, Amole	Liliaceae	n
Chorizanthe douglasii Douglas' Spine Flower	Polygonaceae	n
Cirsium occidentalis var. venustum Venus Thistle	Asteraceae	n
Clarkia lewisii Lewis's Clarkia	Onagraceae	n
Clarkia purpurea ssp. quadrivulnera Four Spot	Onagraceae	n
Clarkia unguiculata Canyon Clarkia	Onagraceae	n
Claytonia perfoliata ssp. perfoliata Miner's Lettuce	Portulacaceae	n
Collinsia heterophylla Chinese Houses	Scrophulariaceae	n
Corethrogyne filaginifolia var. filaginifolia	Asteraceae	n
Choriznthe douglasii Douglas' Spine Flower	Polygonaceae	n
Crassula tillaea Sand Pygmy	Crassulaceae	x
Cynosurus echinatus Dogtail Grass	Poaceae	x
Daucus pusillus Rattlesnake Weed	Apiaceae	n
Dichelostemma capitatum Blue Dicks	Liliaceae	n
Dodecatheon clevelandii ssp. insulare Padre's Shooting Star	Primulaceae	n
Dryopteris arguta California Wood Fern	Dryopteridaceae	n
Elymus glaucus var. glaucus Western Ryegrass	Poaceae	n
Epilobium brachycarpum Summer Cottonweed	Onagraceae	n
Epilobium canum ssp. canum Zauschneria	Onagraceae	n
Epipactis helleborine Hellebore	Orchidaceae	x
Erechtites glomerata Cut-leaved Fireweed	Asteraceae	x
Eremocarpus setigerus Turkey Mullein	Eulphoribaceae	n
Eriogonum nudum var. auriculatum	Polygonaceae	n
Erodium botrys Long-beaked Filaree	Geraniaceae	x
Erodium circutarium Red-stemmed Filaree	Geraniaceae	x
Festuca elmeri Elmer's Fescue	Poaceae	n
Filago gallica Narrow-leaved Filago	Asteraceae	x
Foeniculum vulgare Sweet Fennel	Apiaceae	x
Fragaria vesca California Strawberry	Rosaceae	n
Galium aparine Goose Grass	Rubiaceae	n
Galium californicum ssp. californicum California Bedstraw	Rubiaceae	n
Galium parisiense Wall Bedstraw	Rubiaceae	x
Galium porrigens var. tenue	Rubiaceae	n
Gastridium ventricosum Nitgrass	Poaceae	x
Geranium dissectum Cut-leaved Geranium	Geraniaceae	x
Geranium molle	Geraniaceae	x
Gnaphalium californicum California Everlasting	Asteraceae	n
Gnaphalium luteo-album Weedy Cudweed	Asteraceae	x
Gnaphalium purpureum Purple Cudweed	Asteraceae	n
Gnaphalium ramosissimum Pearly Everlasting	Asteraceae	n
Helianthemum scoparium Rush-rose	Cistaceae	n

Hemizonia corymbosa Tar Weed	Asteraceae	n
Hesperocnide tenella	Urticaceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Holodiscus discolor Cream Bush	Rosaceae	n
Hordeum marinum ssp. gussoneanum Mediterranean Barley	Poaceae	x
Hordeum murinum ssp. leporinum Barnyard Foxtail	Poaceae	x
Hypochaeris glabra Smooth Cat's Ear	Asteraceae	x
Juncus bufonius var. bufonius Toad Rush	Juncaceae	n
Juncus patens	Juncaceae	n
Lactuca serriola Prickly Lettuce	Asteraceae	x
Lagophylla ramosissima ssp. ramosissima Common Hareleaf	Asteraceae	n
Lathyrus vestitus var. ochropetalus Bolander Pea	Fabaceae	n
Lathyrus vestitus var. vestitus Pacific Pea	Fabaceae	n
Lepidium nitidum var. nitidum Shining Peppergrass	Brassicaceae	n
Leymus condensatus Giant Wild Rye	Poaceae	n
Leymus triticoides	Poaceae	n
Lithophragma heterophyllum Hill Star	Saxifragaceae	n
Lolium multiflorum Italian Ryegrass	Poaceae	x
Lonicera hispidula var. vacillans Hairy Honeysuckle	Caprifoliaceae	n
Lotus micranthus Small-flowered Lotus	Fabaceae	n
Lotus purshianus Spanish Clover	Fabaceae	n
Lotus scoparius var. scoparius Deer Weed	Fabaceae	n
Lupinus albifrons var. albifrons Silver Lupine	Fabaceae	n
Lupinus bicolor Lindley’s Annual Lupine	Fabaceae	n
Lupinus latifolius var. latifolius Broad-leaved Lupine	Fabaceae	n
Madia sativa Coast Tarweed	Asteraceae	n
Marah fabaceus Common Manroot	Cucurbitaceae	n
Medicago polymorpha Calif. Bur-clover	Fabaceae	x
Melica imperfecta Melic	Poaceae	n
Melica torreyana Torrey’s Melic	Poaceae	n
Melilotus indica Indian Melilot	Fabaceae	x
Mimulus aurantiacus Sticky Monkey-flower	Scrophulariaceae	n
Mimulus guttatus Monkey Flower	Scrophulariaceae	n
Nassella cernua Nodding Needlegrass	Poaceae	n
Nassella lepida Foothill Needlegrass	Poaceae	n
Nassella pulchra Purple Needlegrass	Poaceae	n
Navarretia atractyloides Holly-leaved Navarretia	Polemoniaceae	n
Nemophila heterophylla Variable-leaved Nemophila	Hydrophyllaceae	n
Nemophila menziesii var. menziesii Baby Blue-eyes	Hydrophyllaceae	n
Oemleria cerasiformis Oso Berry	Rosaceae	n
Osmorhiza chilensis Wood Cicely	Apiaceae	n
Oxalis albicans ssp. pilosa Hairy Wood-sorrel	Oxalidaceae	n
Oxalis pes-caprae Bermuda Buttercup	Oxalidaceae	x
Pellaea andromedifolia Coffee Fern	Pteridaceae	x
Pentagramma triangularis Goldback Fern	Pteridaceae	n

Phacelia imbricata ssp. imbricata Imbricate Phacelia	Hydrophyllaceae	n
Phalaris aquatica Harding Grass	Poaceae	x
Pholistoma auritum Fiesta-flower	Hydrophyllaceae	n
Piperia transversa Transverse Rein-orchid	Orchidaceae	n
Plagiobothrys canescens Valley Popcorn Flower	Boraginaceae	n
Plagiobothrys nothofulvus Popcorn Flower	Boraginaceae	n
Plantago lanceolata Ribwort	Plantaginaceae	x
Plectritis ciliosa ssp. cilosa Long-spurred Plectritis	Valeriaaceae	n
Poa annua Annual Bluegrass	Poaceae	x
Poa secunda ssp. secunda Pine Bluegrass	Poaceae	n
Polygonum arenastrum Knotweed	Polygonaceae	x
Polypodium calirhiza	Polypodiaceae	n
Polypogon monspeliensis Rabbitfoot Grass	Poaceae	x
Populus balsamifera ssp.trichocarpa Black Cottonwood	Salicaceae	n
Potentilla glandulsoa ssp. glandulosa Sticky Cinqufoil	Rosaceae	n
Psilocarphus tenellus var. tenellus Slender Woolly-heads	Asteraceae	n
Pterostegia drymarioides Pterostegia	Polygonaceae	n
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Quercus douglasii Blue Oak	Fagaceae	n
Rafinesquia californica California Chicory	Asteraceae	n
Ranunculus californicus California Buttercup	Ranunculaceae	n
Ranunculus hebecarpus Downy Buttercup	Ranunculaceae	n
Rhamnus californica ssp. californica Coffeeberry	Rhamnaceae	n
Rhamnus crocea Redberry	Rhamnaceae	n
Ribes californicum var. californicum Hillside Gooseberry	Grossulariaceae	n
Ribes divaricatum var. pubiflorum Straggly Gooseberry	Grossulariaceae	n
Ribes speciosum Fuchsia-flowered Gooseberry	Grossulariaceae	n
Rosa californica California Wild Rose	Rosaceae	n
Rubus parviflorus Thimble Berry	Rosaceae	n
Rubus ursinus California Blackberry	Rosaceae	n
Rumex acetosella Sheep Sorrel	Polygonaceae	x
Rumex crispus Curly Dock	Polygonaceae	x
Rumex pulcher Fiddle Dock	Polygonaceae	x
Rupertia.physodes California Tea	Fabaceae	n
Salix lasiolepis Arroyo Willow	Salicaceae	n
Sambucus mexicana Blue Elderberry	Caprifoliaceae	n
Sanicula bipinnatifida Purple Sanicle	Apiaceae	n
Sanicula crassicaulis Gambleweed	Apiaceae	n
Satureja douglasii Yerba Buena	Lamiaceae	n
Scrophularia californica ssp. floribunda Many-flowered Scroph.	Scrophulariaceae	n
Scrophularia californica ssp. californica California Figwort	Scrophulariaceae	n
Silene antirrhina Sticky Catchfly	Caryophyllaceae	n
Silene gallica Common Catchfly	Caryophyllaceae	x
Silene lemmonii Lemmon's Campion	Caryophyllaceae	n
Silybum marianum Milk Thistle	Asteraceae	x
Sisymbrium officinale Hedge Mustard	Brassicaceae	x

Sisyrinchium bellum Blue-eyed Grass	Iridaceae	n
Smilacina stellata Slim Solomon	Liliaceae	n
Soliva sessilis Common Soliva	Asteraceae	x
Sonchus asper Prickly Sow-thistle	Asteraceae	x
Sonchus oleraceus Common Sow-thistle	Asteraceae	x
Spergula arvensis ssp. arvensis Corn Spurrey	Caryophyllaceae	x
Spergularia rubra Purple Sand Spurrey	Caryophyllaceae	x
Stachys bullata Hedge Nettle	Lamiaceae	n
Stellaria media Common Chickweed	Caryophyllaceae	x
Stephanomeria virgata ssp. pleurocarpa	Asteraceae	n
Symphoricarpos albus var. laevigatus Common Snowberry	Caprifoliaceae	n
Symphoricarpos mollis Creeping Snowberry	Caprifoliaceae	n
Thalictrum fendleri var. polycarpumMeadow Rue	Ranunculaceae	n
Torilis nodosa Knotted Hedge-parsley	Apiaceae	x
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Trichostema lanceolatum Vinegar Weed	Lamiaceae	n
Trifolium barbigerum var. barbigerum Colony Clover	Fabaceae	n
Trifolium bifidum var. bifidum Pinole Clover	Fabaceae	n
Trifolium ciliolatum Tree Clover	Fabaceae	n
Trifolium gracilentum var. gracilentum Pin-point Clover	Fabaceae	n
Trifolium hirtum Rose Clover	Fabaceae	x
Trifolium microcephalum Maiden Clover	Fabaceae	n
Trifolium microdon Valparaiso clover	Fabaceae	n
Trifolium willdenovii Tomcat Clover	Fabaceae	n
Triphysaria pusilla Dwarf Orthocarpus	Scrophulariaceae	n
Triteleia ixioides ssp. ixioides Golden Stars, Golden Brodiaea	Liliaceae	n
Umbellularia californica California Bay	Lauraceae	n
Uropappus lindleyi Silver Puffs	Asteraceae	n
Verbena lasiostachys var. lasiostachys Western Vervain	Verbenaceae	n
Veronica persica Persian Speedwell	Scrophulasriaceae	x
Vicia sativa ssp. sativa Spring Vetch	Fabaceae	x
Viola pedunculata Johnny Jump-up	Violaceae	n
Vulpia bromoides Six-week Fescue	Poaceae	x
Vulpia myuros var. hirsuta Rat-tail Fescue	Poaceae	x
Vulpia myuros var. myuros Rat-tail Fescue	Poaceae	x
Wyethia helenioides Woolly Mule-ears	Asteraceae	n
Yabea microcarpa Western Hedge-parsley	Apiaceae	n
Zigadenus fremontii Star-lily	Liliaceae	n

Plants Deliniated Area Site R4

Habitats: Quercus agrifolia forest (Coast Live Oak Series); Quercus agrifolia-mixed grassland, (Nodding Needlegrass Series); Adenostoma fasciculatum chaparral, (Chamise Series); Closed canopy Quercus agrifolia-mixed hardwood with Toxicodendron diverfsilobum understory

Acer macrophyllum Big Leaf Maple	Aceraceae	n

Achillea millefolium White Yarrow	Asteraceae	n
Adenostoma fasciculatum Chamise	Rosaceae	n
Adiantum jordanii California Maiden-hair Fern	Pteridaceae	n
Aesculus californica Buckeye	Hippocastanaceae	n
Agoseris grandiflora Large-flowered Agoseris	Asteraceae	n
Agoseris retrorsa Spear-leaved Agoseris	Asteraceae	n
Agrostis pallens (Agrostis diegoensis)	Poaceae	n
Aira caryophyllea Hair Grass	Poaceae	x
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Arabis glabra var. furcatipilis Tower Mustard	Brassicaceae	n
Arbutus menziesii Madroño	Ericaceae	n
Arctostaphylos glandulosa ssp. glandulosa	Ericaceae	n
Artemisia californica California Sagebrush	Asteraceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Aster radulinus Broad-leaf Aster	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Aven fatua Wild Oat	Poaceae	x
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n
Bowlesia incana Bowlesia	Apiaceae	n
Briza minor Little Quaking Grass	Poaceae	x
Bromus carinatus var. carinatus California Brome	Poaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus Soft Chess	Poaceae	x
Bromus pseudolaevipes	Poaceae	n
Bromus rubens Red Brome	Poaceae	x
Bromus vulgaris	P:oaceae	n
Calochortus albus White Globe Lily.	Liliaceae	n
Carduus pycnocephalus Italian Thistle	Asteraceae	x
Carex globosa Round-fruited Sedge	Cyperaceae	n
Cerastium glomeratum Mouse-eared Chickweed	Caryophyllaceae	x
Chenopodium californicum Soap Plant	Chenopodiaceae	n
Cirsium occidentalis var. venustum Venus Thistle	Asteraceae	n
Clematis ligusticifolia Yerba de Chivato	Ranunculaceae	n
Clarkia lewisii (Clarkia bottae)	Onagraceae	n
Clarkia purpurea ssp. quadrivulnera Four Spot	Onagraceae	n
Claytonia perfoliata ssp. perfoliata Miner's Lettuce	Portulacaceae	n
Cryptantha microstachys	Boraginaceae	n
Cynosurus echinatus Dogtail Grass	Poaceae	x
Dichelostemma capitatum Blue Dicks	Liliaceae	n
Dryopteris arguta California Wood Fern	Dryopteridaceae	n
Elymus glaucus var. glaucus Western Ryegrass	Poaceae	n
Epipactis helleborine Hellebore	Orchidaceae	x
Erechtites minima Toothed Coast Fireweed	Asteraceae	x
Erodium botrys Long-beaked Filaree	Geraniaceae	x
Festuca elmeri Elmer's Fescue	Poaceae	n
Galium aparine Goose Grass	Rubiaceae	n

Galium californicum ssp. californicum California Bedstraw	Rubiaceae	n
Galium parisiense Wall Bedstraw	Rubiaceae	x
Galium porrigens var. tenue	Rubiaceae	n
Gastridium ventricosum Nitgrass	Poaceae	x
Geranium dissectum Cut-leaved Geranium	Geraniaceae	x
Geranium molle	Geraniaceae	x
Gnaphalium californicum California Everlasting	Asteraceae	n
Gnaphalium luteo-album Weedy Cudweed	Asteraceae	x
Gnaphalium purpureum Purple Cudweed	Asteraceae	n
Gnaphalium ramosissimum Pearly Everlasting	Asteraceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Holodiscus discolor Cream Bush	Rosaceae	n
Hordeum murinum ssp. leporinum Barnyard Foxtail	Poaceae	x
Hypochaeris glabra Smooth Cat's Ear	Asteraceae	x
Juncus patens	Juncaceae	n
Lactuca serriola Prickly Lettuce	Asteraceae	x
Lathyrus vestitus var. ochropetalus Bolander Pea	Fabaceae	n
Lathyrus vestitus var. vestitus	Fabaceae	n
Leymus condensatus Giant Wild Rye	Poaceae	n
Lithophragma heterophyllum Hill Star	Saxifragaceae	n
Lolium multiflorum Italian Ryegrass	Poaceae	x
Lonicera hispidula var. vacillans Hairy Honeysuckle	Caprifoliaceae	n
Lotus scoparius var. scoparius Deer Weed	Fabaceae	n
Madia sativa Coast Tarweed	Asteraceae	n
Marah fabaceus Common Manroot	Cucurbitaceae	n
Medicago polymorpha Calif. Bur-clover	Fabaceae	x
Melica californica California Melic	Poaceae	n
Melica imperfecta Melic	Poaceae	n
Melilotus indica Indian Melilot	Fabaceae	x
Mimulus aurantiacus Sticky Monkey-flower	Scrophulariaceae	n
Monardella villosa ssp. villosa Coyote Mint	Lamiaceae	n
Nassella lepida Hill Needlegrass	Poaceae	n
Oemleria cerasiformis Oso Berry	Rosaceae	n
Osmorhiza chilensis Wood Cicely	Apiaceae	n
Pentagramma triangularis Goldback Fern	Pteridaceae	n
Pholistoma auritum Fiesta-flower	Hydrophyllaceae	n
Poa annua Annual Bluegrass	Poaceae	x
Poa secunda ssp. secunda Pine Bluegrass	Poaceae	n
Polypodium calirhiza	Polypodiaceae	n
Potentilla glandulsoa ssp. glandulosa Sticky Cinqufoil	Rosaceae	n
Pterostegia drymarioides Pterostegia	Polygonaceae	n
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Rafinesquia californica California Chicory	Asteraceae	n
Ranunculus hebecarpus Downy Buttercup	Ranunculaceae	n
Rhamnus californica ssp. californica Coffeeberry	Rhamnaceae	n
Ribes californicum var. californicum Hillside Gooseberry	Grossulariaceae	n

Ribes divaricatum var. pubiflorum Straggly Gooseberry	Grossulariaceae	n
Ribes speciosum Fuchsia-flowered Gooseberry	Grossulariaceae	n
Rosa californica California Wild Rose	Rosaceae	n
Rubus ursinus California Blackberry	Rosaceae	n
Salix lasiolepis Arroyo Willow	Salicaceae	n
Salvia mellifera Black Sage	Lamiaceae	n
Sambucus mexicana Blue Elderberry	Caprifoliaceae	n
Sanicula crassicaulis Gambleweed	Apiaceae	n
Satureja douglasii Yerba Buena	Lamiaceae	n
Scrophularia californica ssp. californica California Figwort	Scrophulariaceae	n
Scrophularia californica ssp. floribunda Many-flowered Scroph.	Scrophulariaceae	n
Silene gallica Common Catchfly	Caryophyllaceae	x
Silybum marianum Milk Thistle	Asteraceae	x
Sisymbrium officinale Hedge Mustard	Brassicaceae	x
Sisyrinchium bellum Blue-eyed Grass	Iridaceae	n
Smilacina stellata Slim Solomon	Liliaceae	n
Solidago californica California Goldenrod	Asteraceae	n
Sonchus asper Prickly Sow-thistle	Asteraceae	x
Sonchus oleraceus Common Sow-thistle	Asteraceae	x
Stachys bullata Hedge Nettle	Lamiaceae	n
Stellaria media Common Chickweed	Caryophyllaceae	x
Symphoricarpos albus var. laevigatus Common Snowberry	Caprifoliaceae	n
Symphoricarpos mollis Creeping Snowberry	Caprifoliaceae	n
Torilis nodosa Knotted Hedge-parsley	Apiaceae	x
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Trifolium ciliolatum Tree Clover	Fabaceae	n
Trifolium microcephalum Maiden Clover	Fabaceae	n
Trifolium willdenovii Tomcat Clover	Fabaceae	n
Triteleia ixioides ssp. ixioides Golden Stars, Golden Brodiaea	Liliaceae	n
Umbellularia californica California Bay	Lauraceae	n
Verbena lasiostachys var. lasiostachys Western Vervain	Verbenaceae	n
Veronica persica Persian Speedwell	Scrophulariaceae	x
Vulpia myuros var. hirsuta Rat-tail Fescue	Poaceae	x
Vulpia myuros var. myuros Rat-tail Fescue	Poaceae	x
Yabea microcarpa Western Hedge-parsley	Apiaceae	n
Zigadenus fremontii Star-lily	Liliaceae	n

Plants Along Proposed New Road to Reservoir

Habitats: Quercus agrifolia forest, (Coast Live Oak Series); Adenostoma fasciculatum chaparral, (Chamise Series); Closed canopy Quercus agrifolia-mixed hardwood with Toxicodendron diverfsilobum understory

Achillea millefolium White Yarrow	Asteraceae	n

Adenostoma fasciculatum Chamise	Rosaceae	n
Adiantum jordanii California Maiden-hair Fern	Pteridaceae	n
Aesculus californica Buckeye	Hippocastanaceae	n
Agoseris retrorsa Spear-leaved Agoseris	Asteraceae	n
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Arabis glabra var. furcatipilis Tower Mustard	Brassicaceae	n
Arbutus menziesii Madroño	Ericaceae	n
Artemisia californica California Sagebrush	Asteraceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Aster radulinus Broad-leaf Aster	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Avena fatua Wild Oat	Poaceae	x
Baccharis douglasii Douglas' Baccharis	Asteraceae	n
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n
Bowlesia incana Bowlesia	Apiaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus Soft Chess	Poaceae	x
Bromus rubens Red Brome	Poaceae	x
Calochortus albus White Globe Lily.	Liliaceae	n
Calystegia purpurata var. purpurata Western Morning-glory	Convolvulaceae	n
Carduus pycnocephalus Italian Thistle	Asteraceae	x
Carex globosa Round-fruited Sedge	Cyperaceae	n
Ceanothus cuneatus var. cuneatus Buck Brush	Rhamnaceae	n
Ceanothus oliganthus var. sorediatus Jim Brush	Rhamnaceae	n
Centaurea melitensis Tocalote, Yellow Star Thistle	Asteraceae	x
Cerastium glomeratum Mouse-eared Chickweed	Caryophyllaceae	x
Chlorogalum pomeridianum var. pomeridianum Soaproot, Amole	Liliaceae	n
Cirsium occidentalis var. venustum Venus Thistle	Asteraceae	n
Clarkia purpurea ssp. quadrivulnera Four Spot	Onagraceae	n
Clarkia unguiculata Canyon Clarkia	Onagraceae	n
Claytonia perfoliata ssp. perfoliata Miner's Lettuce	Portulacaceae	n
Cynoglossum grande Hound's Tngue	Boraginaceae	n
Cynosurus echinatus Dogtail Grass	Poaceae	x
Daucus pusillus Rattlesnake Weed	Apiaceae	n
Dichelostemma capitatum Blue Dicks	Liliaceae	n
Dryopteris arguta California Wood Fern	Dryopteridaceae	n
Dudleya lanceolata	Crassulaceae	n
Elymus glaucus var. glaucus Western Ryegrass	Poaceae	n
Epilobium canum ssp. canum Zauschneria	Onagraceae	n
Epipactis helleborine Hellebore	Orchidaceae	x
Equisestum hyemale ssp. affine scouring-rush	Equissetaceae	n
Eremocarpus setigerus Turkey Mullein	Eulphoribaceae	n
Erodium botrys Long-beaked Filaree	Geraniaceae	x
Euphorbia crenulata Chinese Caps	Euphorbiaceae	n
Foeniculum vulgare Sweet Fennel	Apiaceae	x
Galium aparine Goose Grass	Rubiaceae	n

Galium porrigens var. tenue	Rubiaceae	n
Genista monspessulina French Broom	Fabaceae	x
Geranium dissectum Cut-leaved Geranium	Geraniaceae	x
Geranium molle	Geraniaceae	x
Helenium puberulum Sneeze-weed	Asteraceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Holodiscus discolor Cream Bush	Rosaceae	n
Hordeum murinum ssp. leporinum Barnyard Foxtail	Poaceae	x
Hypochaeris glabra Smooth Cat's Ear	Asteraceae	x
Juncus patens	Juncaceae	n
Juncus xiphioides	Juncaceae	n
Lathyrus vestitus var. vestitus	Fabaceae	n
Lemna minor Duckweed	Lemnaceae	n
Leymus condensatus Giant Wild Rye	Poaceae	n
Lolium multiflorum Italian Ryegrass	Poaceae	x
Lonicera hispidula var. vacillans Hairy Honeysuckle	Caprifoliaceae	n
Madia sativa Coast Tarweed	Asteraceae	n
Marah fabaceus Common Manroot	Cucurbitaceae	n
Medicago polymorpha Calif. Bur-clover	Fabaceae	x
Melica imperfecta Melic	Poaceae	n
Mimulus aurantiacus Sticky Monkey-flower	Scrophulariaceae	n
Mimulus guttatus Monkey Flower	Scrophulariaceae	n
Osmorhiza chilensis Wood Cicely	Apiaceae	n
Pellaea andromedifolia Coffee Fern	Pteridaceae	x
Pentagramma triangularis Goldback Fern	Pteridaceae	n
Phacelia imbricata ssp. imbricata Imbricate Phacelia	Hydrophyllaceae	n
Pholistoma auritum Fiesta-flower	Hydrophyllaceae	n
Plantago lanceolata Ribwort	Plantaginaceae	x
Poa annua Annual Bluegrass	Poaceae	x
Polygonum arenastrum Knotweed	Polygonaceae	x
Polypodium calirhiza	Polypodiaceae	n
Populus balsamifera ssp.trichocarpa Black Cottonwood	Salicaceae	n
Potentilla glandulsoa ssp. glandulosa Sticky Cinqufoil	Rosaceae	n
Pterostegia drymarioides Pterostegia	Polygonaceae	n
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Rhamnus californica ssp. californica Coffeeberry	Rhamnaceae	n
Rhamnus ilicifolia Redberry	Rhamnaceae	n
Ribes speciosum Fuchsia-flowered Gooseberry	Grossulariaceae	n
Rosa californica California Wild Rose	Rosaceae	n
Rubus ursinus California Blackberry	Rosaceae	n
Rumex acetosella Sheep Sorrel	Polygonaceae	x
Rumex crispus Curly Dock	Polygonaceae	x
Rumex salicifolius var. salicifolium Willow Dock	Polygonaceae	n
Salix lasiolepis Arroyo Willow	Salicaceae	n
Sambucus mexicana Blue Elderberry	Caprifoliaceae	n
Sanicula crassicaulis Gambleweed	Apiaceae	n

Satureja douglasii Yerba Buena	Lamiaceae	n
Scirpus californica California Tule	Cyperaceae	n
Scirpus microcarpus Panicled Bullrush	Cyperaceae	n
Scrophularia californica ssp. californica California Figwort	Scrophulariaceae	n
Silybum marianum Milk Thistle	Asteraceae	x
Sisymbrium officinale Hedge Mustard	Brassicaceae	x
Sisyrinchium bellum Blue-eyed Grass	Iridaceae	n
Smilacina stellata Slim Solomon	Liliaceae	n
Solidago californica Common Golderod	Asteraceae	n
Sonchus asper Prickly Sow-thistle	Asteraceae	x
Stachys bullata Hedge Nettle	Lamiaceae	n
Symphoricarpos albus var. laevigatus Common Snowberry	Caprifoliaceae	n
Thalictrum fendleri var. polycarpumMeadow Rue	Ranunculaceae	n
Torilis nodosa Knotted Hedge-parsley	Apiaceae	x
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Trifolium bifidum var. bifidum Pinole Clover	Fabaceae	n
Trifolium ciliolatum Tree Clover	Fabaceae	n
Trifolium microcephalum Maiden Clover	Fabaceae	n
Trifolium microdon Valparaiso clover	Fabaceae	n
Triteleia ixioides ssp. ixioides Golden Stars, Golden Brodiaea	Liliaceae	n
Umbellularia californica California Bay	Lauraceae	n
Verbena lasiostachys var. lasiostachys Western Vervain	Verbenaceae	n
Vulpia myuros var. hirsuta Rat-tail Fescue	Poaceae	x
Vulpia myuros var. myuros Rat-tail Fescue	Poaceae	x
Yabea microcarpa Western Hedge-parsley	Apiaceae	n

Potential Sediment Transport Route above San Clemente Dam

Area previously partially cleared, Quercus agrifolia overstory in part, alluvial grassland with some native grasses and sedges. Distal portion solid Conium maculatum and Urtica dioica plus willows

Adenostoma fasciculatum Chamise	Rosaceae	n
Aesculus californica Buckeye	Hippocastanaceae	n
Alnus rubra Red Alder	Betulaceae	n
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Arbutus menziesii Madroño	Ericaceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Baccharis douglasii Douglas' Baccharis	Asteraceae	n
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n
Barbarea orthoceras American Winter-cress	Brassicaceae	n
Bromus carinatus var. carinatus California Brome	Poaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus* Soft Chess	Poaceae	x
Bromus rubens Red Brome	Poaceae	x

Carex barbarae Santa Barbara Sedge	Cyperaceae	n
Carex harfordii Monterey Sedge	Cyperaceae	n
Centaurea melitensis Tocalote, Yellow Star Thistle	Asteraceae	x
Cirsium occidentale var. venustum Venus Thistle	Asteraceae	n
Cirsium vulgare Bull Thistle	Asteraceae	x
Clarkia purpurea ssp. quadrivulnera Four Spot	Onagraceae	n
Clarkia unguiculata Canyon Clarkia	Onagraceae	n
Claytonia perfoliata ssp. perfoliata Miner's Lettuce	Portulacaceae	n
Conium maculatum Poison-hemlock	Apiaceae	x
Conyza bonariensis South American Conyza	Asteraceae	x
Cynosurus echinatus Dogtail Grass	Poaceae	x
Deschampsia danthonioides Annual Hair-grass	Poaceae	n
Digitalis purpurea Foxglove	Scrophulariaceae	x
Dryopteris arguta California Wood Fern	Dryopteridaceae	n
Elymus glaucus var. glaucus Western Ryegrass	Poaceae	n
Galium aparine Goose Grass	Rubiaceae	n
Galium parisiense Wall Bedstraw	Rubiaceae	x
Geranium dissectum Cut-leaved Geranium	Geraniaceae	x
Geranium molle Velvet Geranium	Geranicaceae	x
Helenium puberulum Sneeze-weed	Asteraceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Hirschfeldia incana Summer Mustard	Brassicaceae	x
Holcus lanatus Velvet Grass	Poaceae	x
Hordeum distichon Cultivated Barley	Poaceae	x
Hypochaeris glabra Smooth Cat's Ear	Asteraceae	x
Juncus effusus var. brunneus Common Rush	Juncaceae	n
Juncus patens Spreading Rush	Juncaceae	n
Lactuca serriola Prickly Lettuce	Asteraceae	x
Lathyrus vestitus var. vestitus Paciofic Pea	Fabaceae	n
Lolium multiflorum Italian Ryegrass	Poaceae	x
Lonicera hispidula var. vacillans Hairy Honeysuckle	Caprifoliaceae	n
Lotus purshianus Spanish Clover	Fabaceae	n
Lotus scoparius var. scoparius Deer Weed	Fabaceae	n
Lupinus albifrons var. albifrons Silver Lupine	Fabaceae	n
Lupinus bicolor Lindley's Annual Lupine	Fabaceae	n
Lupinus nanus Sky Lupine	Fabaceae	n
Madia sativa Coast Tarweed	Asteraceae	n
Medicago polymorpha Calif. Bur-clover	Fabaceae	x
Melilotus indica Indian Melilot	Fabaceae	x
Mimulus aurantiacus Northern Sticky Monkey-flower	Scrophulariaceae	n
Osmorhiza chilensis Wood Cicely	Apiaceae	n
Polygonum persicaria Spotted Persicaria	Polygonaceae	x
Polypogon monspeliensis Rabbitfoot Grass	Poaceae	x
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Rhamnus californica ssp. californica Coffeeberry	Rhamnaceae	n
Ribes divaricatum var. pubiflorum Straggly gooseberry	Grossulariaceae	n

Ribes speciosum Fuchsia-flowered Gooseberry	Grossulariaceae	n
Rorippa nasturtium-aquaticum Water-cress	Brassicaceae	n
Rubus ursinus California Blackberry	Rosaceae	n
Rumex acetosella Sheep Sorrel	Polygonaceae	x
Rumex crispus Curly Dock	Polygonaceae	x
Salix lasiolepis Arroyo Willow	Salicaceae	n
Sambucus mexicana Blue Elderberry	Caprifoliaceae	n
Satureja douglasii Yerba Buena	Onagraceae	n
Scirpus microcarpus Panicled Bulrush	Cyperaceae	n
Silybum marianum Milk Thistle	Asteraceae	x
Sonchus asper Prickly Sow-thistle	Asteraceae	n
Stachys bullata Hedge Nettle	Lamiaceae	n
Symphoricarpos mollis Creeping Snowberry	Caprifoliaceae	n
Torilis nodosa Knotted Hedge-parsley	Apiaceae	x
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Trifolium microcephalum Maiden Clover	Fabaceae	n
Umbellularia californica California Bay	Lauraceae	n
Urtica dioica ssp. holosericea Hoary Nettle	Urticaceae	n
Verbena lasiostachys var. lasiostachys	Verbeniaceae	n
Vulpia myuros var. myuros	Poaceae	x
Zigadenus fremontii Fremont's Star Lily	Liliaceae	n

Plants of San Clemente Diversion Dike

A combination of alluvium filled river bottom plus closed canopy Quercus Agrifolia and some open grassland

Achillea millefolium White Yarrow	Asteraceae	n
Adenostoma fasciculatum Chamise	Rosaceae	n
Adiantum jordanii California Maiden-hair Fern	Pteridaceae	n
Aesculus californica Buckeye	Hippocastranacee	n
Agoseris retrorsa Spear-leaved Agoseris	Asteraceae	n
Agrostis viridis Water Bent-grass	Poaceae	x
Aira caryophyllea Hair Grass	Poaceae	x
Alnus rubra Red Alder	Betulaceae	n
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Arbutus menziesii Madroño	Ericaceae	n
Arctostaphylos glandulosa ssp. glandulosa	Ericaceae	n
Arctostaphylos t. ssp. tomentosa Shaggy-barked Manzanita	Ericaceae	n
Artemisia californica California Sagebrush	Asteraceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Artemisia dracunculus Dragon Sagewort	Asteraceae	n
Aster chilensis Common California Aster	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n

Baccharis salicifolia Mule Fat	Asteraceae	n
Brickellia californica California Brickelbush	Asteraceae	n
Bromus carinatus var. carinatus California Brome	Poaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus Soft Chess	Poaceae	x
Bromus madritensis ssp. madritensis Madrid Brome	Poaceae	x
Bromus rubens Red Brome	Poaceae	x
Bromus vulgaris Narrow-flowered Brome	Poaceae	n
Calochortus albus White Globe Lily	Liliaceae	n
Calystegia purpurata ssp. purpurata Western Morning Glory	Convolvulaceae	n
Camissonia micrantha Small Primrose	Onagraceae	n
Carduus pycnocephalus Italian Thistle	Asteraceae	x
Carex globosa Round-fruited Sedge	Cyperaceae	n
Ceanothus oliganthus var. sorediatus Jim Brush	Rhamnaceae	n
Centaurea melitensis Tocalote, Yellow Star Thistle	Asteraceae	x
Chlorogalum pomeridianum var. pomeridianum Soaproot, Amole	Liliaceae	n
Cirsium occidentale var. venustum Venus Thistle	Asteraceae	n
Clarkia lewisii Lewis' Clarkia	Onagraceae	n
Clarkia purpurea ssp. quadrivulnera Four Spot	Onagraceae	n
Clarkia unguiculata Canyon Clarkia	Onagraceae	n
Claytonia perfoliata ssp. perfoliata Miner's Lettuce	Potulacaceae	n
Corethrogyne filaginifolia var. filaginifolia Beach Aster	Asteraceae	n
Cuscuta spp. Dodder	Cuscutaceae	n
Cynosurus echinatus Dogtail Grass	Poaceae	x
Cyperus eragrostis Umbrella Sedge	Cyperaceae	n
Datisca glomerata Durango Root	Datiscaceae	n
Dichelostemma capitatum Blue Dicks	Liliaceae	n
Dudleya lanceolata Lance-leaved Dudleya	Crassulaceae	n
Eleocharis acicularis var. acicularis Needle Spikerush	Cyperaceae	n
Elymus glaucus var. glaucus Western Ryegrass	Poaceae	n
Epilobium brachycarpum Summer Cottonweed	Onagraceae	n
Epilobium ciliatum ssp. watsonii Coast Cottonweed	Onagraceae	n
Equisetum hyemale ssp. affine Scouring-rush	Equisetaceae	n
Eriogonum elegans ssp. elegans Elegant Buckwheat	Polygonaceae	n
Eriogonum nudum var. auriculatum Naked Buckwheat	Polygonaceae	n
Eschscholzia californica California Poppy	Papaveraceae	n
Filago gallica Narrow-leaved Filago	Asteraceae	x
Galium aparine Goose Grass	Rubiaceae	n
Galium californicum ssp. californicum California Bedstraw	Rubiaceae	n
Galium parisiense Wall Bedstraw	Rubiaceae	x
Galium porrigens .var. tenue Climbing Bedstraw	Rubiaceae	n
Gnaphalium canescens ssp. beneolens Fragrant Everlasting	Asteraceae	n
Gnaphalium palustre Lowland Cudweed	Asteraceae	n
Helenium puberulum Sneeze-weed	Asteraceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Heterotheca grandiflora Telegraph Weed	Asteraceae	n

Hirschfeldia incana Summer Mustard	Brassicaceae	x
Hoita macrostachya Leather Root	Fabaceae	n
Holodiscus discolor Cream Bush	Rosaceae	n
Juncus effusus var. brunneus Common Rush	Juncaceae	n
Juncus patens Spreading Rush	Juncaceae	n
Lathyrus vestitus var. vestitus Pacific Pea	Fabaceae	n
Lonicera hispidula var. vacillans Hairy Honeysuckle	Caprifoliaceae	n
Lotus purshianus Spanish Clover	Fabaceae	n
Lotus scoparius var. scoparius Deer Weed	Fabaceae	n
Lupinus albifrons var. albifrons Silver Bush Lupine	Fabaceae	n
Lupinus bicolor Lindley’s Annual Lupine	Fabaceae	n
Lupinus nanus Sky Lupine	Fabaceae	n
Madia sativa Coast Tarweed	Asteraceae	n
Medicago sativa Alfalfa	Fabaceae	x
Melilotus albus White Sweet-clover	Fabaceae	x
Melilotus indica Indian Melilot	Fabaceae	x
Mentha pulegium Pennyroyal	Lamiaceae	x
Mimulus aurantiacus Sticky Monkey-flower	Scrophulariaceae	n
Nassella lepida Foothill Needlegrass	Poaceae	n
Navarretia atractyloides Holly-leaved Navarretia	Polemoniaceae	n
Osmorhiza chilensis Wood Cicely	Apiaceae	n
Paspalum distichum Knotgrass	Poaceae	x
Pellaea andromediaefolia Coffee Fern	Pteridaceae	n
Pentagramma triangularis Goldback Fern	Pteridaceae	n
Plantago lanceolata Ribwort	Plantaginaceae	x
Platanus racemosa Western Sycamore	Platanaceae	n
Polygala californica California Milkwort	Polygalaceae	n
Polypodium calirhiza California Polypody	Polypodiaceae	n
Polypogon monspeliensis Rabbitfoot Grass	Poaceae	x
Polystichum munitum Sword Fern	Pteridaceae	n
Populus fremontii Fremont's Cottonwood	Salicaceae	n
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Quercus lobata Valley Oak	Fagaceae	n
Rafinesquia californica California Chicory	Asteraceae	n
Rhamnus crocea Redberry	Rhamnaceae	n
Ribes speciosum Fuchsia-flowered Gooseberry	Grossulariaceae	n
Rumex acetosella Sheep Sorrel	Polygonaceae	x
Rumex crispus Curly Dock	Polygonaceae	x
Rumex salicifolius var. salicifolius Willow Dock	Polygonaceae	n
Rupertia.physodes California Tea	Fabaceae	n
Salix exigua Narrow-leaved Willow	Salicaceae	n
Salix lasiolepis Arroyo Willow	Salicaceae	n
Salix lucida.ssp.lasiandra Shining Willow	Salicaceae	n
Salvia mellifera Black Sage	Lamiaceae	n
Scirpus microcarpus Panicled Bulrush	Cyperaceae	n
Sonchus asper Prickly Sow-thistle	Asteraceae	x

Stachys bullata Hedge Nettle	Lamiaceae	n
Symphoricarpos albus var. laevigatus Common Snowberry	Caprifoliaceae	n
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Trifolium hirtum Rose Clover	Fabaceae	x
Trifolium willdenovii Tomcat Clover	Fabaceae	n
Typha domingensis Narrow-leaved Cat-tail	Typhaceae	n
Umbellularia californica California Bay	Lauraceae	n
Verbascum thapsus Woolly Mullein	Scrophulariaceae	x
Veronica anagallis-aquatica Water Speedwell	Scrophulariaceae	x
Vulpia myuros var. hirsuta	Poaceae	x
Yabea microcarpa Western Hedge-parsley	Apiaceae	n

Entrix Plants of San Clemente Diversion Canal

Habitat is entirely (Chamise Series), Adenostoma Chaparral with a mixture of other shrubs because the east facing portion is quite steep and has had some slides. The west portion is vertical

Achillea millefolium White Yarrow	Asteraceae	n
Adenostoma fasciculatum Chamise	Rosaceae	n
Adiantum jordanii California Maiden-hair Fern	Pteridaceae	n
Agrostis pallens Leafy Bent-grass	Poaceae	n
Aira caryophyllea Hair Grass	Poaceae	x
Alnus rubra Red Alder	Betulaceae	n
Anagallis arvensis Pimpernel, Poor Man's Weather-glass	Primulaceae	x
Anthemus cotula Mayweed	Asteraceae	x
Arctostaphylos glandulosa ssp. glandulosa	Ericaceae	n
Artemisia californica California Sagebrush	Asteraceae	n
Artemisia douglasiana California Mugwort	Asteraceae	n
Aster chilensis Common California Aster	Asteraceae	n
Avena barbata Slinder Oat	Poaceae	x
Baccharis pilularis Dwarf Chaparral Broom	Asteraceae	n
Bromus carinatus var. carinatus California Brome	Poaceae	n
Bromus diandrus Great Brome	Poaceae	x
Bromus hordeaceus ssp. hordeaceus Soft Chess	Poaceae	x
Bromus rubens Red Brome	Poaceae	x
Bromus vulgaris Narrow-flowered Brome	Poaceae	n
Carex globosa Round-fruited Sedge	Cyperaceae	n
Ceanothus oliganthus var. sorediatus Jim Brush	Rhamnaceae	n
Cercocarplus betuloides Mopuntain mahogany	Rosaceae	n
Chenpopodium album White Goosefoot	Chenopodiaceae	x
Cirsium occidentale var. venustum Venus Thistle	Asteraceae	n
Clematis ligusticifolia Yerba de Chivato	Ranunculaceae	n
Conyza bonariensis South American Conyza	Asteraceae	x
Cryptantha micromeres Minute-flowered Cryptantha	Boraginaceae	n
Cynosurus echinatus Dogtail Grass	Poaceae	x
Datisca glomerata Durango Root	Datiscaceae	n

Delphinium parryi Parry's Larkspur	Ranunculaceae	n
Dudleya lanceolata Lance-leaved Dudleya	Crassulaceae	n
Elymus glaucus var. Western Reygrass	Poaceae	n
Epilobium brachycarpum Summer Cottonweed	Onagraceae	n
Eriiophyllum confertiflorum var. confertiflorum Golden Yarrow	Asteraceae	n
Eriogonum fasciculatum var. foliolosum California Buckwheat	Polygonaceae	n
Eriogonum nudum var. auriculatum Naked Buckwheat	Polygonaceae	n
Festuca californica California Fescue	Poaceae	n
Galium parisiense Wall Bedstraw	Rubiaceae	x
Galilum porrigens var. tenue Climbing Bedstraw	Rubiaceae	n
Gnaphalium bicolor Bioletti's Cudweed	Asteraceae	n
Heteromeles arbutifolia Toyon	Rosaceae	n
Hirschfeldia incana Summer Mustard	Brassicaceae	n
Hordeum murinum ssp. leporinum Barnyard Foxtail	Poaceae	n
Hordeum murinum ssp. leporinum Barnyard Foxtail	Poaceae	x
Leymus condensatus Giant Ryegrass	Poaceae	n
Linanthus liniflorus Flax-flowered Linanthus	Polemoniaceae	n
Lolium multiflorum Italian Ryegrass	Poaceae	x
Marah fabaceus Manroot, Wild Cucumber	Cucurbitaceae	n
Melica californica California Melic	Poaceae	n
Melica imperfecta California Melica	Poaceae	n
Melilotus indica Indian Melilot	Fabaceae	n
Mimulus aurantiacus Sticky Monkey-flower	Scrophulariaceae	n
Nassella lepida Foothill Needlegrass	Poaceae	n
Pellaea andromediaefolia Coffee Fern	Pteridaceae	n
Pellaea mucronata Birds-foot Fern	Pteridaceae	x
Pentagramma triangularis Goldback Fern	Pteridaceae	n
Phacelia imbricata Imbricate Phacelia	Hydrophyllaceae	n
Platanus racemosa Western Sycamore	Platanaceae	n
Polypodium calirhiza California Polypody	Polypodiaceae	n
Polypogon monspeliensis Rabbitfoot Grass	Poaceae	x
Populus balsamifera ssp. tricocarpa Black Cottonwood	Salicaceae	n
Prunus ilicifolia Holly-leaf Cherry	Rosaceae	n
Pterostegia drymarioides Pterostegia	Polygonaceae	n
Quercus agrifolia var. agrifolia Coast Live Oak	Fagaceae	n
Rafinesquia californica California Chicory	Asteraceae	n
Rhamnus crocea Redberry	Rhamnaceae	n
Rumex salicifolius var. salicifolius Willow Dock	Polygonaceae	n
Salix lasiolepis Arroyo Willow	Salicaceae	n
Salvia mellifera Black Sage	Lamiaceae	n
Sambucus mexicana Blue Elderberry	Calprifoliaceae	n
Satureja douglasii Yerba Buena	Lamiaceae	n
Scirpus californica California Tule	Cypraceae	n
Selaginella bigelovii Bushy Selaginella	Selaginellaceae	n
Sonchus asper Prickly Sow-thistle	Asteraceae	x
Stachys bullata Hedge Nettle	Lamiaceae	n

Stephanomeria virgata ssp. pleurocarpa Stephanomeria	Asteraceae	n
Toxicodendron diversilobum Poison-Oak	Anacardiaceae	n
Triteleia ixioides ssp. ixioides Golden Brodiaea	Liliaceae	n
Urtica dioica ssp. holosericea Hoary Nettle	Urticaceae	n
Veronica anagallis-aquatica Water Speedwell	Scrophulariaceae	x
Vulpia myuros var. hirsuta	Poaceae	x
Zigadenus fremontii Fremont's Star Lily	Liliaceae	n

Appendix U

BOTANICAL RESOURCES MANAGEMENT PLAN

TABLE OF CONTENTS

APPENDIX U

BOTANICAL RESOURCES MANAGEMENT PLAN

EROSION CONTROL, REVEGETATION, OAK WOODLAND, ANDWETLAND RESTORATION PLAN

1.1 INTRODUCTION

Implementation of activities related to the San Clemente Dam Seismic Retrofit Project (Project) has the potential to affect botanical resources, wetlands, and Other Waters of the U.S (OWUS) within and near the Project Area. A Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS) identified potential issues related to vegetation communities and wetlands, and described mitigation measures to minimize and mitigate potential impacts (CITATION). This Botanical Resources Management Plan (Plan) has been prepared to address these issues. It identifies measures to be taken by the California-American Water Company (CAW) and its contractors (Contractor) for erosion control and to minimize and mitigate for Project-related effects to native oaks and riparian vegetation and wetlands/Other WOUS.

This plan contains the following components.

- Avoidance and minimization measures
- Erosion control measures and best management practices (BMPs)
- Revegetation plan for upland, riparian and wetland communities
- Post-construction monitoring for revegetation
- Wetland/OWUS restoration, mitigation, and monitoring

The Plan identifies best management practices (BMPs) to minimize project-related effects, such as loss of native vegetation and erosion/sedimentation during construction activities. It outlines a revegetation plan to mitigate for loss of native vegetation. It outlines a post-construction monitoring plan for revegetation. It outlines wetland restoration, mitigation, and monitoring. The Plan identifies measures to be taken by CAW and its contractors (Contractor) to ensure that measures contained in this Plan are carried out in accordance with federal, state, and local regulations.

This document shall be finalized with review and comments from agencies and organizations vested in management of oak woodland and riparian resources, the detection and control of invasive species, and wetland management. These agencies include the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), State Water Resources Control Board (State Water Board), and Monterey County.

ISSUES ADDRESSED IN THIS PLAN

Issues identified in the San Clemente Dam Seismic Retrofit Project Draft Environmental Impact Report/Environmental Impact Statement that are addressed in this Plan are summarized as follows.

Impacts to Vegetation Resources

This Plan addresses the following Vegetation issues identified in the DEIR/EIS.

Issue VE-2: Loss of Protected Oak Woodland

Construction activities could result in loss of oak woodlands protected by the Monterey County Oak Protection Ordinance (Monterey County Code 2005). Improvements to access routes may also result in oak losses. For the Proponent's Proposed Project, Alternative 1, and Alternative 2, most of the loss of oak woodland would occur at the sediment disposal site and the conveyor route to the site. For Alternative 3, most of the loss would occur at the access route to the construction site. No impact would occur under Alternative 4 (No Project). The estimated acreage of loss of oak woodlands for each of the project alternatives is summarized as follows.

- Proponent's Proposed Project: 1 acre. Construction of Tularcitos access route also would require removal of coast oak trees.
- Alternative 1 (Dam Notching): 19.4 acres
- Alternative 2 (Dam Removal): 26.3 acres in the area mapped in 2005.
- Alternative 3 (Carmel River Reroute and Dam Removal): 9.6 acres

Issue VE-3: Loss of Other Native Vegetation

Project activities are expected to result in loss of native vegetation, including several types of sensitive riparian habitat and oak woodland habitat. No impact would occur under Alternative 4 (No Project). The estimated total acreage of loss native vegetation, including several types of sensitive riparian habitat and oak woodland habitat is as follows:

- Proponent's Proposed Project: 3.4 acres. An unquantified amount of riparian vegetation could also be lost due to de-watering and diversion.
- Alternative 1 (Dam Notching): 48.2 acres.
- Alternative 2 (Dam Removal): 70.3 acres in the area mapped in 2005.
- Alternative 3 (Carmel River Reroute and Dam Removal): 53.3 acres.

Issue VE-4: Indirect Effects on Native Vegetation (effects caused by increased erosion and sedimentation)

Under the Proponent's Proposed Project and Alternatives 1 through 3, Project activities may result in indirect adverse impacts to vegetation, including increased erosion and sedimentation, damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated, dust impacts to roadside vegetation, and colonization of exposed substrate by exotic plant species. Under Alternative 4 (No Project), indirect impacts to downstream vegetation may occur. Possible changes to this vegetation would vary by reach and may include increases in bank failure, sediment deposit, and habitat complexity.

Mitigation Requirements

Mitigation for vegetation issues includes measures to avoid or minimize loss of oak woodland and native vegetation, develop and implement best management practices (BMPs) prior to and during construction activities, implement revegetation, and construction and post-construction monitoring.

One component of mitigation for Issue VE-2: loss of protected oak woodland includes a revegetation plan to be completed and implemented immediately following construction with the following elements from the Monterey County Oak Protection Ordinance (Monterey County Code 2005):

- Replace up to half the oak trees removed by access road and right abutment wall construction at a 3:1 ratio by planting seedlings or potted trees in appropriate habitat under the supervision of a qualified botanist;
- Derive all plant material from Carmel Valley area populations;
- Monitor plantings for at least five years after planting;
- Replant seedlings as necessary to replace seedlings that do not survive;
- Take other remedial action as necessary, including irrigation or protection from browsing animals such as deer, to ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code;
- Provide or acquire a conservation easement sufficient to mitigate at least half the loss of oak trees, per Monterey County Code. The conservation easement shall consist of lands elsewhere in the Carmel River watershed that support undeveloped blue oak stands.

One component of mitigation for Issue VE-3: loss of other native vegetation is to include the following element in the revegetation plan.

- Revegetate riparian forest at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall.

Mitigation for Issue VE-4: indirect effects on native vegetation are addressed by the implementation of various minimization/avoidance measures and (BMPs).

Impacts to Wetlands and Other Waters of the U.S.

This Plan addresses the following Wetland issues identified in the DEIR/EIS. Wetlands Issues WET-1 and WET-3 do not apply to Alternative 4 (No Project).

WET-1: Permanent Loss of Wetlands and Other Waters of the U.S. (permanent loss of jurisdictional waters of the U.S.)

- Proponent's Proposed Project: 0.02 acres of jurisdictional OWUS at the plunge pool.
- Alternative 1 (Dam Notching): 0.12 acre of OWUS at the sediment disposal site.
- Alternative 2 (Dam Removal): 0.12 acre of OWUS at the sediment disposal site.
- Alternative 3 (Carmel River Reroute and Dam Removal): Similar to Proponent's Proposed Project, plus the permanent loss of about 10.0 acres of OWUS at the diversion dam site.

WET-2: Temporary Disturbance of Wetlands and Other Waters of the U.S. (temporary filling of fringe wetlands)

The estimated acreage affected by temporary filling of wetlands for each alternative is as follows.

- Proponent's Proposed Project: 0.13 acre of fringe palustrine emergent wetlands and 7.1 acres of OWUS.
- Alternative 1 (Dam Notching): 0.74 acre of fringe wetlands and up to 8.3 acres of OWUS.
- Alternative 2 (Dam Removal): Similar to Alternative 1, but includes impacts to OWUS in the unnamed tributary at the sediment disposal site and impacts to wetlands and OWUS upstream of the disturbance limits of Alternative 1.
- Alternative 3 (Carmel River Reroute and Dam Removal): 0.3 acre of fringe wetlands and 0.5 acre of OWUS.
- Alternative 4 (No Project): loss of a small area of fringe wetlands and OWUS similar to or less than the area described for the Proponent' Proposed Project.

WET-3: Indirect Impacts to Wetlands and Other Waters of the U.S. (indirect adverse impacts to vegetation, including increased erosion and sedimentation)

- Proponent's Proposed Project: Indirect impacts on wetlands and OWUS.
- Alternative 1 (Dam Notching): Indirect impacts on wetlands and OWUS.
- Alternative 2 (Dam Removal): Similar to Proposed Project but includes impacts to OWUS in the unnamed tributary at the sediment disposal site.
- Alternative 3 (Carmel River Reroute and Dam Removal): Similar to Proponent's Proposed Project

Mitigation Requirements

Mitigation for wetland issues WET-1 and WET-2 includes development and implementation of a restoration, mitigation, and monitoring plan for wetlands and OWUS affected by the project. Implementation of mitigation measures for Impact Issue VE-4 would address Issue WET-3.

Wetland restoration, mitigation and monitoring would be implemented for the Proponent's Proposed Project, Alternatives 1, 2, 3 and 4, and restoration or conservation acreages would be adjusted to suit the affected acreage. Additional measures, such as measures related to installation of cofferdams, would be implemented for some alternatives. Erosion control and sediment management measures would be implemented for construction activities under the Proponent's Proposed Project and all four alternatives.

1.2 PURPOSE

The purpose of this Plan is to

- Avoid or minimize construction impacts, disturbance to protected oak woodlands and native vegetation, such as erosion and sedimentation, and impacts to wetlands and OWUS.
- Mitigate for Project-related loss of oak woodlands and other native vegetation by revegetation with native plant material on Project construction sites and on mitigation sites.
- Mitigate for impacts to wetlands and OWUS.

Specific goals to minimize or avoid direct and indirect construction impacts include the following.

- Minimize disturbance to and loss of native vegetation;
- Minimize damage to roots of oaks and other tree species adjacent to areas where heavy equipment would be operated

- Minimize erosion and sedimentation from construction activities;
- Minimize bank erosion from altered flows;
- Minimize dust impacts to roadside vegetation;
- Minimize alterations of the hydrologic regime that support the riparian forest habitat on the adjacent floodplain;
- Provide irrigation to alders around the reservoir fringe when the reservoir is dewatered and to riparian vegetation above the bypass outflow.

Specific goals to meet the revegetation component of this Plan include the following.

- Replace up to half the oak trees removed by access road and right abutment wall construction at a 3:1 ratio with plant material derived from Carmel Valley area populations;
- Revegetate riparian forest at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall;
- Ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code; and
- Provide or acquire a conservation easement sufficient to mitigate at least half the loss of oak trees, per Monterey County Code.
- Identify and implement baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies.

1.3 RESPONSIBILITIES AND COORDINATION

This Plan shall be implemented by CAW and the Contractor on the project. CAW and the Contractor have the responsibility for providing all necessary guidance on the project site to their respective employees, and for operating under the requirements of this Plan. Prior to construction, CAW shall contact the appropriate authorities to establish communications, obtain permits (as applicable), and/or fulfill other obligations as directed by regulatory agencies.

This Plan shall be consistent with any local or regional plans, policies, regulations protecting any riparian habitat or other sensitive natural community identified by the U.S. Fish and Wildlife Service (USFWS), Corps, State Water Board, or CDFG. It shall be consistent with any local policies or ordinances protecting biological resources, such as Monterey County's tree preservation policy (Monterey County Code 2005). It shall be modified, if needed, to be consistent with a future, adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Once the Project is permitted, further changes to this Plan may be implemented if an alternative measure:

- Provides equal or better environmental protection;
- is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
- is specifically required in writing by a Federal, state, or Monterey County land management agency for the portion of the project on its land or under its jurisdiction.

Components of this Plan related to riparian vegetation are subject to terms and conditions of Project permits issued by the Corps (Clean Water Act [CWA] section 404), CDFG (Lake or Streambed Alteration Agreement), and State Water Board (CWA section 401), and therefore require approval by these agencies. Protected oak revegetation components of this plan are subject to a Use Permit by the Monterey County Planning Commission, and therefore are subject to approval by the Monterey County Planning Commission. The CDFG is the regulatory authority responsible for oversight for the riparian revegetation component of this Plan.

IMPLEMENTATION OF PLAN COMPONENTS

Measures identified in this Plan apply to work within the project area defined as the construction area, access roads, all work and storage areas, and other areas used during construction of the project. Revegetation (upland, riparian and wetland) measures also apply to any mitigation sites that may be identified for revegetation.

Pre-construction and construction BMPs shall be implemented, as applicable, for all alternatives. Monitoring shall be conducted annually during the construction period by a qualified biologist of all revegetated areas and all areas identified as potential problem areas for erosion and sedimentation from access road construction.

The revegetation component of this Plan shall be implemented for the Proponent’s Proposed Project and Alternatives 1 through 3. They shall not be implemented for Alternative 4 (No Action).

The revegetation component of the plan shall be implemented immediately following completion of Phase 1 Construction. A monitoring program shall be implemented immediately following planting. Monitoring shall be conducted during years 1, 2, 3, and 5 following planting. For areas in which trees, saplings, poles, wands, or acorns are planted, monitoring shall also be conducted in the year 10 following planting.

SUPERVISION AND INSPECTION

Environmental inspectors (EIS) shall be designated to implement supervision and inspection activities during construction and post-construction activities.

The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the size of the construction area and the number/significance of resources affected. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required.

The Environmental Inspector(s) shall be responsible for ensuring compliance with the requirements of this Plan, the environmental conditions of the applicable permits, the mitigation measures required by environmental permits, other environmental permits and approvals, and environmental requirements in landowner easement agreements.

This plan and a copy of the Notice of Intent shall be kept at all of the construction sites (if practical) or at the nearest contractor office or trailer. This plan shall be available to a responsible agency representative upon request.

All personnel involved in the project shall attend an environmental training program that shall include a discussion on general erosion and sediment control requirements, proper clearing and grading methods, and the importance of protecting sensitive vegetation resources on the project. Crews specializing in vegetation management tasks shall be given additional training on proper installation and maintenance of erosion and sediment control measures, and revegetation measures.

Additional Environmental Inspector's responsibilities are outlined in the Stormwater Pollution Prevention Plan (SWPPP).

Environmental Inspection and Modifications

The Environmental Inspector shall verify that the limits of authorized construction work areas and locations of access roads are properly marked before clearing; and verify the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area.

Throughout construction, the Contractor and the Environmental Inspector shall inspect temporary erosion control structures and temporary/permanent revegetated areas as follows:

- daily in areas of active construction or equipment operation;
- on a weekly basis in areas with no construction or equipment operation; and
- in all areas of the Project site within 24 hours of each 0.5-inch or greater rainfall event, soil and weather conditions permitting.

The Environmental Inspector shall document all inspections in an Environmental Daily Inspection Report. In the event of forecasted impending heavy precipitation, all temporary erosion control devices found needing repair or new installation shall be repaired immediately. During this period, the Contractor shall provide additional personnel, vehicles, and materials to repair erosion control structure damage where noted during the inspection.

Should structures clog, deteriorate, fail, be damaged, or require maintenance, the Contractor shall conduct repairs or replacements within 24 hours after problems have been identified, weather and soil conditions permitting. Additionally, changes to the Plan shall be made reflecting any corrective measures determined necessary during the inspection.

At sites that have been finally stabilized or where runoff is unlikely, inspections shall be conducted at least once every month until the project site is successfully revegetated. Inspections shall take place until construction is completed.

Based upon the results of the inspection, this Plan shall be revised as needed within seven calendar days to address issues identified and measures recommended. Any changes to this Plan shall be implemented before the next anticipated storm event or as soon as practicable following the inspection. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this Plan and actions taken resulting from observation made during the inspection shall be made and retained as part of the plan for at least 3 years following the date of the inspection.

1.4 PRECONSTRUCTION AND CONSTRUCTION MEASURES AND BMPS

To meet the Plan goals related to avoidance and minimization of construction impacts to native vegetation, wetland and OWUS, the following measures shall be implemented.

PRECONSTRUCTION PLANNING

CAW and Contractor(s) shall do the following before construction,

Construction Work Areas

- Identify all construction work areas (e.g., construction right-of-way, extra work space areas, storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction.

- CAW shall ensure that appropriate biological surveys have been conducted for botanical resources. Any required biological surveys shall be expanded, as needed in anticipation of the need for activities outside of certificated work areas.

Measures specific to wetlands and OWUS include the following.

- CAW shall file its wetland delineation report with the Corps before construction. This report shall identify:
  - the wetland type of each wetland (to correlate with the National Wetlands inventory [NWI] classification); and
  - the acreages of each wetland type.
- The area of permanent and temporary disturbance that shall occur in each wetland type shall be provided in the permit application.
- Construction areas shall be situated to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided, construction areas shall be situated in a manner that minimizes disturbance to wetlands.

Agency Coordination

CAW shall coordinate with the appropriate local, state, and federal agencies as outlined in this Plan.

- Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
- Consult with County-level Natural Resources Conservation Service authorities regarding seed and seedling stock source recommendations and erosion control methods.
- Consult with state and federal land offices for revegetation and erosion control recommendations for land that is owned or managed by those agencies, if any such lands are included in the project or mitigation areas.
- Coordinate with the Corps and CDFG to minimize and mitigate for permanent and temporary impacts to wetlands and OWUS.
- The erosion control measures in this plan are subject to approval by Monterey County Planning and Building Inspection Department.

CONSTRUCTION MEASURES

Avoidance and Minimization Measures

The following measures shall be implemented under the Proponent's Proposed Project and Alternatives 1 through 3.

- Impacts to a stand of blue oak series shall be avoided by confining the "high road" access improvement activity in the vicinity of this stand to the north side of the existing road. Fencing shall be used to prevent construction activity from encroaching into the blue oak stand on the south side of the road.

- The proposed access road improvements, the batch plant and laydown areas, plunge pool access, and the abutment staging areas shall be designed to minimize loss of native vegetation. Unnecessary clearing of, or disturbance to, native vegetation outside the road right-of-way shall be avoided.

- Populations of CNPS List 4 species, such as virgate eriastrum, shall be avoided to the extent possible.

- Disturbed areas or areas of annual grassland habitat between the left abutment and the existing residence shall be used to the maximum extent available for the left abutment staging area.

- Fencing shall be used to prevent any encroachment of vehicles or project activity into undisturbed native habitat or within the dripline of native trees outside the designated batch plant and laydown site, the plunge pool area and the left and right abutment areas.

- Project outflows shall be designed to diffuse water rather than allow it to flow out in a concentrated stream. Outflows shall be placed so as to minimize bank erosion from altered flows. The temporary outflow below the plunge pool shall be designed to minimize alterations of the hydrologic regime that support the riparian forest habitat on the adjacent floodplain.

- Supplemental irrigation shall be provided to alders around the reservoir fringe when the reservoir is dewatered and to riparian vegetation above the bypass outflow.

The following measures shall be implemented for construction in wetlands and OWUS.

- Wetland boundaries and buffers shall be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

- Aboveground facilities shall not be located in any wetland, except where the location of such facilities in wetlands is necessary for completion of the project.

Construction Measures and Best Management Practices

The following measures shall be implemented during construction under the Proponent's Proposed Project and Alternatives 1 through 3.

- Standard erosion and sedimentation control measures (BMPs) shall be implemented for all grading, filling, clearing of vegetation, or excavating that occurs in site preparation. Road widening shall be designed to avoid placing fill above canyon walls.

- With the assistance of a qualified hydrologist, all road widening and improvements shall be designed to avoid or minimize alterations of existing drainage patterns that could lead to increased erosion and sedimentation. Appropriate erosion control technology (BMPs) shall be employed during all phases of access road construction. To the extent consistent with other regulatory conditions, construction work shall be scheduled to occur during the dry season.

- To minimize dust, unpaved access roads shall frequently be watered with raw water using a sprayer truck during periods when trucks and other construction vehicles are using the roads, except during periods when precipitation has dampened the soil enough to inhibit dust.

- Where blasting is conducted near the Carmel River or other sensitive habitats, a blasting mat shall be placed over the rock walls in order to capture and direct flying rock debris to fall onto the existing roadway. In addition, temporary wall structures made of wood and/or steel shall be erected adjacent to the existing access road to contain blasted rock on the road.

- Excavation and operation of construction vehicles off of the road right-of-way shall be prohibited within the dripline of oak and other tree species identified for avoidance.

- Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover shall be removed outside the roadway shall be revegetated with an appropriate seed mix or seedlings. The seed mix shall be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation.

- Monitoring shall be conducted by a qualified hydrologist and revegetation specialist of all revegetated areas and all areas identified as potential problem areas for erosion and sedimentation from access road construction. Remedial action shall be implemented if revegetation is not successful or if significant erosion and sedimentation problems are observed during monitoring.

When the construction activities encounter wetlands, CAW shall protect and minimize potential adverse impacts to wetlands by:

- Expediting construction in and around wetlands, and limiting the amount of equipment and mainline construction activities within wetlands to reduce disturbances of wetland soils;

- Restoring wetlands to their original configurations and contours, except where modification of the area is part of the project objectives;

- Permanently stabilizing upland areas near wetlands as soon as possible after completion of ground disturbing work; and

- Inspecting the project area periodically during and after construction and repairing any erosion control or restoration features until vegetation is successfully established on the upland portions of the project area.

Additional methods and procedures to control erosion and minimize impacts to vegetation are presented in the Storm Water Pollution Prevention Plan (CAW 2007).

Erosion and Sediment Control

GENERAL MEASURES

Temporary erosion and sediment control measures are designed to effectively reduce erosion and the transport of sediment, and to protect sensitive resources during construction. Temporary erosion control measures shall be installed where needed immediately following significant soil disturbance and shall be maintained throughout the course of construction. In general, temporary erosion control measures shall be removed during cleanup activities after permanent erosion control measures have been installed. Permanent erosion control measures are designed to minimize erosion and sedimentation after construction until revegetation efforts have effectively stabilized the construction area.

Standard erosion control methods and BMPs shall be implemented on both the upslope and downslope sides of all construction zones to minimize potential soil erosion. No fill shall be placed on steep canyon slopes directly above the river. Retaining walls shall be used where road widening occurs immediately upslope of the river on steep banks.

Erosion controls shall be adequately sized and appropriately located. BMPs shall be customized to address site-specific conditions encountered on the steep slopes that adjoin the river. Drainage facilities and slope protection methods shall function throughout the construction and revegetation period. Erosion controls that prevent soil or sediment from entering the river shall be monitored for effectiveness, and maintained throughout the construction operations.

Erosion control methods and procedures shall include, as a minimum, the following:

- Use of filter fabrics, berms, hay bales, and other means to control surface runoff and prevent erosion;

- Monitoring erosion control methods for effectiveness and maintenance of these methods throughout the duration of construction operations;

- Constructing fills and spoil areas by selective placement to eliminate surface silts or clays which may erode;

- Controlling surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation by holding the areas of bare soil exposed at one time to a minimum, and providing temporary control measures such as berms, dikes, and drains; and

- Inspecting cut slopes periodically to detect evidence of possible future slope failures, possible rock raveling which could be hazardous to personnel working in the excavation area below.

Temporary sediment control methods specific to wetlands and OWUS include:

- Installing sediment barriers immediately after initial disturbance of the wetland or adjacent upland,

- Properly maintaining sediment barriers throughout construction and reinstalling them as necessary, and

- Maintaining sediment barriers until they are replaced by permanent erosion controls or until the restoration of adjacent upland areas is complete.

- Installing sediment barriers across the entire construction area immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.

- Where wetlands are adjacent to the construction area and the construction area slopes toward the wetland, installing sediment barriers along the edge of the construction area as necessary to prevent sediment flow into the wetland.

- Installing sediment barriers along the edge of the construction area as necessary to contain spoil and sediment within the construction area through wetlands. These sediment barriers shall be removed during post-construction cleanup.

The following general environmental protection measures shall be implemented to minimize environmental impacts during construction and operation of the project:

- All personnel, vehicles, and equipment shall stay in the designated construction areas. Access roads outside of the construction area shall be designated by CAW. All staking, flagging, and exclusion fencing shall be respected.

- Construction, cleanup, and reclamation shall be managed to minimize the time between grading, excavation, backfilling, and final restoration/reclamation.

- Temporary erosion/sediment control devices shall be installed immediately after initial soil disturbance and shall be maintained throughout construction and restoration, as necessary, until replaced by permanent erosion control measures.

- Fabric barrier shall be placed on the ground surface of the active construction area to catch fine sediments, cement dust or other materials that are used or spilled during construction activities. All sand-size and finer construction fill and any angular crushed rock would be removed from the construction area and disposed of at an appropriate off-site location. [

- Permanent erosion control measures and final cleanup shall be completed within 10 days of completion of the dam seismic retrofit. If this schedule cannot be met, these activities shall be completed as soon as possible. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season.

- A stockpile of erosion control materials, including straw bales, silt fence, and geotextile fabric, shall be stored at the contractor yard during the entire period that construction disturbance occurs. Materials shall be stored for planned use during construction, and sufficient additional quantities shall be stored for maintenance and emergency use.

- Environmental Inspector(s) shall verify compliance with the environmental requirements throughout construction.

The following temporary erosion and sediment control measures shall be installed, where necessary during construction of the project.

SEDIMENT BARRIERS

Temporary sediment barriers (e.g., straw bales, silt fence) are designed to reduce the velocity of water flow and intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to limit sediment transport out of the construction area. Temporary sediment barriers shall be installed at the following locations immediately after initial ground disturbance:

- adjacent to paved roadways, drainages, wetlands (dry or wet), springs (dry or wet), impoundments (dry or wet), and other sensitive resources where the topography shall direct sediment into these resource areas;

- around soil or spoil piles, where necessary (e.g., adjacent to flowing drainages); and

- where requested by the Environmental Inspector to prevent significant sediment transport into adjacent resource areas.

General Requirements

Straw bale or silt fence sediment barriers shall be placed at the bottom of slopes and shall be located at least 6 feet from the toe of the slope, where possible, in order to increase ponding volume. The ends of the sediment barrier shall be turned upslope to capture sediment.

Sediment barriers shall be placed so as not to hinder construction activities and above the ordinary high water mark of active stream channels. If silt fences or straw bale sediment barriers are placed across the construction area, provisions shall be made for traffic flow. A gap approximately 15-feet-wide, shall be provided along the silt fence or straw bale row, with the ends of the sediment barrier turned slightly upslope. Across the gap, a drivable earth berm shall be installed and maintained immediately upslope of the sediment barrier (upturned ends of the sediment barrier shall tie into the drivable earth berm).

If sediment builds up to greater than 40 percent of barrier capacity, the sediment shall be removed or spread on the sediment disposal site. Damaged or undermined sediment control barriers shall be repaired or replaced as described in this plan.

Straw Bales

Straw bale sediment barriers consist of a row of tightly abutted straw bales placed perpendicular to the runoff direction with the ends turned upslope. The barriers are typically one bale high, placed on the fiber-cut edge (ties not in contact with the ground) in a 4-inch-deep trench, and anchored securely with two wooden stakes driven through each bale. Soil shall be placed and compacted along the toe of the uphill side of the straw bale barrier. If a dugout area cannot be excavated due to the presence of rocky material, the Contractor shall install the straw bale so that the bale shall not be undermined.

The Contractor shall acquire weed-free straw and provide CAW with the appropriate documentation.

Silt Fences

Silt fence composed of commercial filter fabrics with sufficient strength to prevent failure shall be provided and installed by the Contractor. The height of the silt fence shall not exceed 36 inches above the ground. The fabric shall be cut from a continuous roll of fabric with splices only at the support posts. When splicing sections, at least a 6-inch overlap of fabric shall be secured and wrapped to the post(s). Support posts shall be a maximum of 10 feet apart.

The bottom edge of the silt fence shall be installed in a trench excavated approximately 4 inches wide by 6 inches deep and refilled with compacted soil, unless on-site constraints dictate otherwise (e.g., rock). If a trench cannot be excavated, the Contractor shall secure the bottom edge of the silt fence so that it shall not be undermined. Silt fences shall be attached to supporting posts by staples or wire. A typical construction drawing has been included in Attachment B. As determined by the Environmental Inspector, a wire fence may be used instead of wooden support posts to provide additional strength on hillsides.

Sandbags

Sandbags may be used as dikes or sediment barriers to control sediment in drainage swales. Sandbags can be strategically placed to control runoff, dissipate runoff energy, and catch sediment (i.e. as a “J” hook at the end of a waterbar).

Waterbars

Waterbars are utilized in various forms (e.g., rolling dips on access roads, drivable berms across travel ways, waterbars on slopes, etc.) during project construction and after final grade restoration. Waterbars are intended to intercept water traveling down a disturbed slope and divert water off disturbed soil into stable, well-vegetated, or adjacent rocky areas.

Waterbars shall be installed near the base of slopes adjacent to wetlands and drainages, except at those specific sites (e.g., terrain slopes away from a canal) where, in the judgment of the Environmental Inspector, waterbars are not necessary to prevent discharge of sediment into sensitive resources. The general spacing for temporary and permanent waterbars is as follows:

- 300 feet for slopes of 5 to 15 percent
- 200 feet for slopes of 15 to 30 percent
- 100 feet for slopes greater than 30 percent

The Environmental Inspector can modify the final spacing of waterbars in the field. Waterbar spacing is based on a site-specific evaluation of the project site and standard construction protective measures. This spacing takes into account the soils, timing of construction, and area of disturbance anticipated for construction of the project. Except for site-specific situations as determined by the Environmental Inspector (e.g., extremely long slopes with highly erodable soils), waterbars shall not be constructed on slopes with less than a 5 percent gradient.

Earthen waterbars shall be constructed of existing suitable material and compacted to increase durability. Alternatives to waterbars may include a series of tightly abutted straw bales (constructed as per Section *Straw Bales*), excelsior logs, or abutted burlap bags filled with native sand/soil. The installation angle shall be 2 to 8 percent down slope (as measured by a hand-held clinometer or level) and shall extend to, or slightly beyond, the edge of the disturbed construction area, but within the boundaries of the project area.

Where possible, waterbars shall discharge into stable, non-erosive (vegetated or rocky) receiving areas. In isolated instances where waterbars discharge into unstable or highly erosive areas without rock or vegetation, flow energy dissipaters or “J-hook” shaped sediment barriers may be positioned at the waterbar outlet. Additionally, in highly erodable soils, the spacing between waterbars may be decreased to further slow the velocity of water. Whenever feasible, waterbars shall be sited so that they do not outlet directly into sensitive resource areas (e.g., cultural sites, rare plant sites, drainages, waterbodies, wetlands, etc.).

The Contractor shall regularly inspect and repair waterbars during construction to maintain their effectiveness. Waterbars worn down by heavy construction traffic or filled with sediments shall be repaired, as needed, and the sediment shall be spread on the disturbed area uphill of the waterbar.

Check Dams

Where determined necessary by the Environmental Inspector, the Contractor shall install check dams in bar ditches or other intermittent drainages to minimize the transport of sediment from the construction zone. Check dams shall be constructed of staked straw bales or stacked sand bags just inside the drainage area edge. The center of the structure shall be lower than the ends to channel water and create a sediment dump immediately upstream of the structure. The structure, and any deposited sediment, shall be removed following final restoration of the site.

Surface Roughening

Surface roughening involves tracking of the ground surface with heavy machinery creating a series of willow depressions running parallel to the ground surface contours. Surface roughening assists in controlling erosion by reducing the speed of storm water runoff, increasing infiltration, and trapping sediment.

Topsoil Segregation

- In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil shall be segregated. In soils with less than 12 inches of topsoil every effort shall be made to segregate the entire topsoil layer.

- Where topsoil segregation is required, separation of salvaged topsoil and subsoil shall be maintained throughout all construction activities.

Mulch

Mulch, consisting of weed-free straw, wood fiber, or an approved equivalent, may be applied to disturbed soils to minimize the effects of wind or rain on exposed soils. During rainy conditions, mulch reduces the impact of rainfall in initiating erosion and slows the down slope velocity of surface flow.

An acceptable application of straw mulch shall include the following:

- Straw mulch shall be required in the following areas:
  - within 100 feet of flowing streams;
  - slopes of 30 to 40 percent with less than 70 percent surface cover; and
  - slopes of 0 to 30 percent with highly wind erodable soils and less than 70 percent surface cover, as directed by the Environmental Inspector or other qualified personnel.

- Straw mulch shall be applied at a rate of 2,000 to 4,000 pounds (3,000 average) per acre, as directed by the Environmental Inspector. Mulch rates may be reduced or eliminated by the Environmental Inspector, where necessary.

- Straw fiber length shall be at least 8 inches long to facilitate crimping in place after application.

- Equipment specifically designed to crimp straw shall be used to crimp straw fibers to a depth of 2 to 3 inches. Steep slopes inaccessible with a crimper shall be crimped by tracking with tracked equipment running perpendicular to the slope. Farm discs shall not be allowed for crimping. Acceptable straw mulch crimpers include:

  – mechanical crimper;

  – backhoe with crimper forks;

  – tracked equipment tracking up and down slopes (restricted to areas where other methods shall not work); or

  – equivalent, as approved by the Environmental Inspector.

- If a straw mulch blower is used, strands of the mulching material shall be at least 8 inches long to allow anchoring. Alternatively, organic liquid mulch binders may be used in accordance with the manufacturer’s recommendations and with CAW’s approval.

If reclamation and seeding is deferred more than 10 days after final grade restoration, all disturbed slopes above waterbodies and wetlands shall be temporarily stabilized by applying 3 tons of dry straw mulch per acre for a minimum distance of 100 feet above the edge of the waterbody or wetland.

After final restoration and seeding, mulch shall be applied to all dry sandy sites, slopes greater than 8 percent, and all slopes within 100 feet of waterbodies to control erosion. Mulch shall be spread over the area to a visible coverage of at least 75 percent of the ground surface and at a rate of 2 tons of dry straw (or functional equivalent) per acre.

Matting / Netting

Where determined necessary by the Environmental Inspector and/or Construction Inspector, erosion control matting shall be installed along the stream banks of flowing streams and steep slopes (greater than 33 percent) after final grade restoration to reduce rain impacts on soils, to control erosion, and to stabilize steep slopes and waterbody banks.

The Contractor shall use matting supplied in continuous rolls of 30 feet or greater with a minimum width of 4 feet. Staples shall be made of wire, 0.09 inch in diameter or greater, and have a “U” shape with legs 8 inches in length and a 2-inch crown. Wire staples shall be driven into the ground for the full length of the staple legs. Alternatively, wood pegs (0.5-inch-diameter) may be used to secure the erosion control fabric. In areas of active livestock grazing, protection measures other than fabric must be used.

Matting shall be anchored, as it is unrolled to prevent stretching of the material and incomplete ground contact. For stream bank installations, mats shall be laid parallel (upper mat overlapping lower mat in a shingle pattern) to the waterbody to a point above the top of the bank. Native materials (e.g., rocks, logs, etc.) may be used in conjunction with the matting to aid in bank stabilization.

During regular erosion control monitoring, erosion control matting shall be inspected for washouts, adequate staking, and loss of matting. Damaged or undermined matting shall be repaired or replaced, as necessary.

Dewatering Wetlands and Other Waters of the U.S.

Dewatering shall be conducted in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any wetland. Dewatering structures shall be removed as soon as possible after the completion of dewatering activities.

Cofferdams shall be constructed of clean river-run gravel. Cofferdams shall be installed no earlier than May and removed in October. If existing flows are less than the 50 cfs bypass capacity, the cofferdams could be installed as early as April 15th or removed as late as November 30th.

Under the Proponent's Proposed Project and Alternatives 1, 2, and 3, temporary fill shall be placed in the plunge pool and at the upper end of the plunge pool access road. The following measures shall be implemented for this activity.

- The plunge pool staging area shall be filled with spawning-sized gravel and topped with a visqueen liner and a layer of crushed rock and/or sand to create a working surface.
- When construction is complete, the surface layer and liner shall be removed off-site and the gravels used to augment spawning habitat in the plunge pool tailwater and downstream.
- The plunge pool access road shall be upgraded to a one lane, two-way road with pullouts to minimize road widening and loss of wetlands and riparian vegetation.

Wetlands

When the construction activities encounter wetlands, CAW shall protect and minimize potential adverse impacts to wetlands by:

- Expediting construction in and around wetlands, and limiting the amount of equipment and mainline construction activities within wetlands to reduce disturbances of wetland soils;
- Restoring wetlands to their original configurations and contours;
- Permanently stabilizing upland areas near wetlands as soon as possible after completion of ground disturbing work; and
- Inspecting the project area periodically during and after construction and repairing any erosion control or restoration features until vegetation is successfully established on the upland portions of the project area.

Waterbodies

CAW shall protect and minimize potential adverse impacts to perennial waterbodies by the following protective measures:

- Expediting construction and limiting the amount of equipment and activities in waterbodies;
- Reducing clearing, leaving in place as many trees as possible on stream banks;
- Removing all temporary construction material and temporary structures from the waterbody after construction;
- Restoring stream channels and bottoms to their original configurations and contour except where modification is part of the project;
- Permanently stabilizing stream banks and adjacent upland areas after construction; and
- Inspecting the project area periodically during and after construction and repairing any erosion controls and/or performing restoration, as needed, in a timely manner.

Restoration

Cleanup

After final construction on the dam, all disturbed portions of the construction area, including the access roads, and staging areas, shall be returned to preconstruction grades and contours. Construction debris shall be removed from the project sites and these sites shall be graded where appropriate and decompacted so that the soil is left in the proper condition for planting. Any necessary permanent water bars (constructed in the same manner as temporary waterbars) shall be constructed after final grading and prior to seeding.

Temporary sediment barriers shall be removed when replaced by permanent erosion control measures or when revegetation is successful. Every effort shall be made to complete final cleanup and installation of permanent erosion control measures within 10 days after final activities at each site are complete. If this schedule cannot be met, final cleanup shall be completed as soon as possible. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season. Sediment barriers left in place after construction shall be limited to earthen berms, waterbars, and diversion swales, although silt fence may be left in place in specific locations at the direction of the Environmental Inspector.

CAW shall file with appropriate permitting agencies for the review and written approval, a winterization plan if construction shall continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

Reclamation, including alleviating soil compaction, final seedbed preparation, and revegetation, shall occur immediately after final cleanup. Seeding may be postponed until conditions allow (e.g., time of year, soil moisture, or weather conditions). In no case shall seeding be postponed past the next seeding season.

Reclamation and revegetation of the project site incorporates permanent erosion and sediment control measures. However, if final restoration cannot occur in a timely manner due to weather or soil conditions, temporary erosion and sediment control measures shall be employed until the weather is suitable for final cleanup and revegetation. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season. If final reclamation or reseeding is delayed more than 30 days before the perennial vegetation seeding season, areas adjacent to waterbodies shall be mulched with 3 tons/acre of straw, or its equivalent, for a minimum of 100 feet on either side of the waterbody.

Revegetation of Disturbed Areas

Disturbed areas shall be immediately revegetated upon completion of road improvements using permanent revegetation to replace trees, shrubs, and grasses. Cut slopes, fill areas, denuded areas, and any other areas where existing vegetation cover shall be removed outside the roadway shall be revegetated with an appropriate seed mix or seedlings. Additional detail regarding permanent revegetation is provided in *Section 5 Revegetation* of this Plan.

If there is insufficient time prior to the runoff season to permanently revegetate impacted areas, temporary erosion control and revegetation actions shall be implemented for any winter season prior to completion of the project. Temporary over-winter erosion control and revegetation actions may include such methods as the use of geofabrics and hydroseeding to provide an annual ground cover until the spring growing season when more permanent revegetation methods shall be implemented. Installation of any geotextile or mechanical over-wintering protection shall be properly installed to prevent undermining or washout during winter rains.

The project site shall be seeded within 6 working days of final grading in accordance with recommended seeding dates, weather and soil conditions permitting. Slopes steeper than 3:1 shall be seeded immediately after final grading in accordance with recommended seeding dates, weather permitting.

For temporary or permanent seeding following construction, the following measures shall be implemented.

Seeding Requirements

Seed mixes shall be selected with the assistance of a qualified revegetation specialist with demonstrated experience and expertise in revegetation, and shall contain native species that are indigenous to the project area. If more than one type of seed mix is needed, the seed mixes shall be assigned to project construction and mitigation areas with the assistance of the qualified revegetation specialist. If enough native seed is not available and non-natives must be included in the seed mix, these would be species known not to be invasive or persistent. The seed mix shall contain native species known to compete well against invasive non-native species.

The project site shall be seeded within 6 working days of final grading in accordance with recommended seeding dates, weather and soil conditions permitting. Slopes steeper than 3:1 shall be seeded immediately after final grading in accordance with recommended seeding dates, weather permitting.

Seeding of permanent vegetation shall be performed within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed above and perform seeding of permanent vegetation at the beginning of the next recommended seeding season.

Prior to application of the seed, the seedbed shall be prepared to depth of 3 to 4 inches using appropriate equipment to provide a firm, smooth seedbed that is free of debris. For broadcast and hydro-seeding, the seedbed shall be scarified to ensure sites for seeds to lodge and germinate. The seed shall be applied and covered uniformly per local soil conservation authorities' recommendations for the seed mixture being applied. A range drill shall be used on many of the disturbed sites; however, broadcast or hydro-seeding may also be used at double the recommended seeding rates. Where broadcast seeding is used, the area shall be lightly raked or dragged with appropriate equipment after seeding to lightly cover the seeds.

Seed shall be purchased in accordance with the Pure Live Seed specifications for seed mixes and used within 12 months of testing. Legume seed shall be treated with a species-specific inoculate per manufacturer's specifications.

Reporting

CAW shall maintain records that identify:

- method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
- acreage treated;
- dates of backfilling and seeding; and
- any problem areas and how they were addressed.

CAW shall file with the Corps, USFWS, State Water Board, and CDFG quarterly activity reports documenting problems and corrective actions taken for at least 2 years following Phase 1 Construction. Activity reports documenting post-construction problems shall be filed only during quarters where problems have been identified. This shall alleviate the time, expense, effort, and paperwork associated with reporting non-events.

1.5 RESTORATION AND MITIGATION FOR WETLANDS AND OTHER WATERS OF THE U.S.

Mitigation for permanent loss of wetlands and OWUS includes restoration, mitigation and monitoring for wetlands and Other Waters affected by the project. Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage would be created or restored at a 3:1 ratio. Revegetation and monitoring programs are outlined in Section 6 Revegetation Plan.

For impacts to Other Waters, mitigation may consist of stream channel improvements either along the Carmel River upstream from the Project Area or along other streams in the watershed. The Project Proponent may either conduct the work or provide funding to other property managers for projects that restore natural channel conditions. Restoration sites may be located in lands along the Carmel River owned by the Project Proponent or on streams elsewhere in the watershed. Restoration sites shall be conserved in perpetuity.

The following measures shall be implemented for Project-affected wetlands or OWUS under the Proponent's Proposed Project and Alternatives 1 through 4.

RESTORATION IN WETLANDS OR OTHER WATERS OF THE U.S.

- Construction areas shall be reconstructed as necessary to maintain the original wetland hydrology.
- A conceptual restoration plan that includes should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species, and monitoring the success of the revegetation and

weed control efforts is provided in Section 6. Permitting agencies shall be consulted prior to finalizing the details of this plan.

- Restoration of all disturbed areas in wetland habitat shall meet performance criteria for revegetation with wetland herbaceous and/or woody plant species, as specified in the final plan.

- Temporary sediment barriers located at the boundary between wetland and adjacent upland areas shall be removed after upland revegetation and stabilization of adjacent upland areas are judged to be successful.

POST-CONSTRUCTION MAINTENANCE

- Vegetation maintenance shall not be conducted over access roads in wetlands. However, to facilitate dam inspection and maintenance surveys, a corridor up to 10 feet wide may be maintained in a herbaceous state.

- Herbicides or pesticides shall not be used in or within 100 feet of a wetland, except as allowed by the appropriate land management agency or state agency.

- The success of wetland revegetation shall be monitored and recorded annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, a report shall be filed with the Corps identifying the status of the wetland revegetation efforts. The report shall include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). If the performance criteria are not met at the end of the first 3 years after construction, a report shall be filed annually until wetland performance criteria are met.

- Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 50 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, a remedial revegetation plan to actively revegetate the wetland shall be developed and implemented (in consultation with a professional wetland ecologist). Revegetation efforts shall be continued until wetland revegetation performance criteria are met.

1.6 REVEGETATION PLAN

To meet the goals of the revegetation component of this Plan the following measures shall be implemented immediately following completion of construction. All work shall be conducted under the supervision of a qualified botanist.

OAK TREES

A conservation easement shall be provided or acquired that is sufficient to mitigate at least half the loss of oak trees, per Monterey County Code (2005). The conservation easement shall consist of lands elsewhere in the Carmel River watershed that support undeveloped blue oak stands.

If insufficient space is available in areas where protected oaks are lost, additional mitigation sites for shall be identified within the Carmel River watershed, as feasible.

Up to half of the oak trees removed by access road and right abutment wall construction shall be replaced at a 3:1 ratio by planting seedlings or potted trees in appropriate habitat. All plant material shall be derived from Carmel Valley area populations.

Fertilizers may promote the growth of exotic weeds, to the detriment of native species. Fertilizers and soil pH modifiers shall be used only in accordance with written recommendations obtained from a qualified revegetation specialist. Any recommended soil pH modifier and fertilizer shall be incorporated into the top 2 inches of soil as soon as possible after application.

RIPARIAN VEGETATION

Lost riparian vegetation shall be revegetated at a 3:1 ratio for trees removed, including the cottonwood-sycamore riparian forest below San Clemente Dam at the plunge pool staging area and access road, and any riparian species disturbed at the site of the right abutment wall.

Riparian and fringe palustrine emergent wetlands similar in function (streamside habitat) to the lost acreage shall be created or restored at a 3:1 ratio, grading as necessary and placing cuttings or seedlings in appropriate habitat under the supervision of a qualified botanist. Seedlings shall be from Carmel Valley area populations.

If insufficient space is available in areas where riparian vegetation is lost, additional mitigation sites for riparian revegetation shall be identified, as outlined in Section 5 of this Plan.

MONITORING AND MAINTENANCE

A monitoring and maintenance program shall be implemented following revegetation in riparian and upland areas.

Upland Vegetation

Plantings shall be monitored during years one, two, three, five and ten after planting. Annual follow-up inspections of all revegetated areas shall be conducted after the growing season to determine the success of revegetation. Monitoring during year ten shall be conducted to assess long-term survival of plantings, particularly trees.

The functions and values of the revegetated areas are expected to match or exceed the functions and values of surrounding areas during and beyond the monitoring period. A variety of environmental parameters shall be monitored in the revegetated areas. These parameters shall be used to assess the success of the revegetation relative to established performance criteria. Performance criteria are based on existing conditions currently present in oak woodland and riparian habitats in or near the Project Area.

Monitoring data shall include 1) a list of plant species; 2) the frequency of occurrence by plant species; 3) relative percent cover by species; and 4) survival of replanted trees. Revegetation efforts shall continue for at least five years and/or until revegetation is successful.

Revegetation shall be considered successful if 1) within ten years of planting, the survival rate of the planted oaks and riparian tree species is 75 percent and 2) planted seedlings survive for a period of at least 10 years.

If the revegetation does not meet the performance criteria, remediation shall be implemented. Remedial actions shall be taken, as necessary, including but not limited to irrigation or protection from browsing animals such as deer, to ensure long-term survival of the plantings per the requirements of Title 16, Chapter 16.60, Monterey County Code. Drainage and irrigation systems shall be monitored and problems corrected until restoration is successful.

Additional seedlings shall be planted to replace seedlings that do not survive. If at any time during the monitoring program the survival rate of the planted trees falls below the target 75 percent survival rate, additional trees shall be planted.

Other remedial mitigation measures may be implemented within the 10-year monitoring period to ensure success criteria are met. For example, additional tree planting may be implemented to compensate for excess mortality of the initial tree planting. If exotic vegetation is causing failure of the native vegetation cover to meet targets, control methods shall be increased to counter this effect.

Riparian Vegetation

Replacement plantings shall be monitored annually for at least five years. Seedlings shall be replanted as necessary to ensure long-term survival.

Restoration sites shall be monitored for five years. Performance criteria shall be agreed upon with the Corps and CDFG, but shall include cover criteria for native vegetation (ranging from 50 to 75 percent) and survival criteria for woody vegetation that is planted. All disturbed areas shall meet performance criteria for revegetation with wetland herbaceous and/or woody plant species.

Wetland Vegetation

The success of wetland revegetation shall be monitored and recorded annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, a report shall be filed with the Corps identifying the status of the wetland revegetation efforts. Included in the report shall the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). A report shall continue to be filed annually until wetland performance criteria are met.

Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 50 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, a remedial vegetation plan shall be developed and implemented (in consultation with a professional wetland ecologist) to actively revegetate the wetland. Revegetation efforts shall continue until wetland revegetation is successful.

Reporting

CAW shall file annual reports with appropriate county, state and federal permitting agencies, including the Corps, USFWS, CDFG, and Monterey County following within six months of the conclusion of each annual monitoring period. A summary report shall be issued after year ten, the final year of monitoring.

1.7 REFERENCES

Monterey County Code. 2005. Title 16 Environment, Chapter 16.60 Preservation of oak and other protected trees.

California American Water Company (CAW). 2007. Storm Water Pollution Prevention Plan.

Appendix V

PROTECTION MEASURES FOR SPECIAL STATUS SPECIES

San Clemente Dam Seismic Retrofit Project

Protection Measures for Special Status Species

TABLE OF CONTENTS

PROTECTION MEASURES FOR SPECIAL STATUS SPECIES DURING CONSTRUCTION

1. INTRODUCTION

Implementation of activities related to the San Clemente Dam Seismic Retrofit Project (Project) has the potential to affect special-status species within and near the Project area. The Protection Measures for Special Status Species Plan (Plan) identifies measures to be taken by the California-American Water Company (CAW), (otherwise referred to as "applicant" on future actions relating to this project) and its contractors (Contractor) to ensure that avoidance and minimization measures are implemented during Project construction activities to protect special-status species in accordance with federal, state, and local regulations. Measures identified in this Plan apply to work within the Project Area defined as the construction area, access roads, all work and storage areas, and other areas used during construction of the project. This Plan also identifies mitigation measures.

This document identifies which measures will be implemented for the Proponent's Proposed Project or an alternative action. The project alternatives include the following.

- Proponent's Proposed Project – Dam Thickening
- Alternative 1 – Dam Notching
- Alternative 2 – Dam Removal
- Alternative 3 – Carmel River Reroute and Dam removal
- Alternative 4 – No Project (No Action)

This Preliminary Draft Plan shall be finalized with review and comments from agencies and organizations with regulatory authority in the management of special-status wildlife and aquatic species. These agencies include the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and California Department of Fish and Game (CDFG). Review and comments also will be sought from the U.S. Army Corps of Engineers (Corps), lead agency for consultation on the Project.

This Plan will be consistent with any local or regional plans, policies, and regulations protecting any special status species and their habitat identified by the USFWS, NMFS, or CDFG. These measures will be implemented by CAW as "applicant" and its contractors unless superseded by specific written requirements or recommendations from the USFWS or NMFS as a result of Section 7 consultation under the Endangered Species Act. It will be modified, if needed, to be consistent with a future, adopted Habitat Conservation Plan, or other approved local, regional, or state habitat conservation plan.

1.1. SPECIAL-STATUS SPECIES WITHIN THE PROJECT VICINITY

Special-status species include plant and wildlife species listed by the U.S. Fish and Wildlife Service (USFWS) and by the National Marine Fisheries Service (NMFS) as Threatened or

Endangered under provisions of the Federal Endangered Species Act (ESA) of 1973 (16 USC 1531 et. seq., as amended), as well as Proposed and Candidate species for listing. Special-status species also include species listed as threatened or endangered by the California Department of Fish and Game (CDFG) under provisions of the 1984 California Endangered Species Act (CESA) (CDFG 1994, 1997), and plant species listed as Rare, Threatened, or endangered by CDFG under provisions of CESA and the 1977 Native Plant Protection Act (NPPA) (CDFG 1996). Wildlife species listed by CDFG as Species of Special Concern (CDFG 1994) also are special-status species.

Special-status species include plant species included on List 1A (Plants Presumed Extinct in California), List 1B (plants rare, threatened, or endangered in California and elsewhere), or List 2 (plants rare, threatened, or endangered in California, but more common elsewhere) of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). These species are subject to State regulatory authority under the California Environmental Quality Act (CEQA). Plant species included on Lists 3 and 4 of the CNPS Inventory could be also considered special-status species. These species are considered to be of lower sensitivity. They generally do not fall under specific State or Federal regulatory authority, and specific mitigation considerations are generally not required for these species.

The potential for special-status plant species to occur in the Project vicinity was determined based on a review of literature and special-status species databases, as well as botanical surveys conducted in 1997 and 2005 (Yadon 2005). Only two special-status plant species, virgate eriastrum (*Eriastrum virgatum*) and Lewis’s clarkia (*Clarkia lewisii*) were found in the project vicinity. One small population of virgate eriastrum (an annual species), consisting of 20 to 30 plants in 1997, was found at the eastern edge of the floodplain of the Carmel River in the northern portion of the project vicinity (Ecosystems West 1997). Virgate eriastrum is on List 4 of the California Native Plant Society (CNPS) Inventory, and does not fall under specific State or Federal regulatory authority. Lewis’s clarkia was found along the jeep trail that is a proposed access route for Alternatives 1, 2, and 3, as well as the proposed sediment disposal site for Alternatives 1 and 2, and the diversion dike area for Alternative 3. This species is also a CNPS List 4 taxon.

Several special-status terrestrial wildlife species are known to occur or may occur in the Project vicinity (MPWMD 1984). A list of special-status wildlife species with potential to occur in the Project area was developed based on a review of literature and data sources that span over 90 years, including general wildlife references (Ingles 1965, Call 1978, Stebbins 2003, Small 1994); CDFG reports on special-status wildlife (Remsen 1978, Williams 1986, Jennings and Hayes 1994); California Wildlife Habitat Relationships (CWHR) species-habitat models (Zeiner et. al. 1988, 1990a, 1990b), records from the California Natural Diversity Database (CNDDB 2005), the catalogue records of the major northern California vertebrate museum collections (California Academy of Sciences 2005, Museum of Vertebrate Zoology 2005). Records of known occurrences of special-status wildlife species and habitats in the region, previous wildlife studies conducted in the area, and consultant staff biologist’s experience with the target species from the 2000 RDEIR were also used.

Biotic resources surveys of the project study vicinity were conducted by Ecosystems West in from April to August, 1997, with follow-up surveys during July 1998. Dr. Richard Arnold conducted a survey for Smith's blue butterfly in June 1997. ENTRIX, Inc. conducted additional field surveys from April to August 2005, including vegetation and special-status plant surveys. Special-status plant species surveys were conducted in May and July 2005. Surveys were conducted throughout the project area, including along the Tularcitos access road and existing access roads requiring improvements, at the concrete batch plant site, at the dam itself (including the fish ladder), at the sediment disposal site, along the conveyor route to the sediment disposal site, and in those areas where sediment will be excavated.

Special-status wildlife species documented as occurring in the study area include: California red-legged frog (*Rana aurora draytonii*), foothill yellow yellow-legged frog (*Rana boylii*), western pond turtle (*Actinemys* [=*Clemmys*] *marmorata*), two striped garter snake (*Thamnophis hammondii*), Monterey dusky-footed wood rat (*Neotoma fuscipes luciana*), Cooper's hawk (*Accipiter cooperi*), osprey (*Pandion haliaetus*), and yellow warbler (*Dendroica petechia brewster*). A single, nonbreeding willow flycatcher (*Empidonax traillii*) was reported in May 1997 in riparian habitat considered suboptimal for the species. No other Federal or State listed threatened or endangered bird species was found in the Project Area. Numerous California red-legged frogs have been documented upstream and downstream of San Clemente Dam. The available habitat for foothill yellow-legged frog is marginal, but one specimen was observed in 2005 in San Clement Creek, within one mile of the dam. Western pond turtles have been observed downstream from San Clemente Dam and potential habitat occurs on the site.

Potentially suitable habitat for other special-status wildlife species also exists in or near the Project Area, including: California tiger salamander (*Ambystoma californiense*), Coast Range newt (*Taricha torosa torosa*), coast horned lizard (*Phrynosoma coronatum*), Townsend's big-eared bat (*Plecotus townsendii townsendii*), California mastiff bat (*Eumops perotis californicus*), pallid bat (*Antrozous pallidus*), double-crested cormorant (*Phalacrocorax auritus*), sharp-shinned hawk (*Accipiter striatus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), and yellow-breasted chat (*Icteria virens*). No Smith's blue butterflies (*Euphilotes enoptes smithi*), suitable habitat or preferred host plants were detected during the surveys.

Federally-listed Steelhead is the most important management species of the fish species present in the Carmel River watershed. It is a Fish Species of Special Concern in California (CDFG 1995).

Special status species with the potential to occur within the Project Area are summarized in Table 1.

Table 1: Special Status Species with Potential to Occur in Vicinity of the Project Area			
Species	**Scientific Name**	**Federal Status**	**State Status**
Plant species			
Virgate eriastrum	*Eriastrum virgatum*	None	List 4 of the CNPS[1]
Lewis's clarkia	*Clarkia lewisii*	None	List 4 of the CNPS[1]
Fish species			
Steelhead	*Oncorhynchus mykiss*	ESA - Threatened	California Species of Special Concern
Wildlife species - documented in Project Area			
California red-legged frog	*Rana aurora draytonii*	ESA - Threatened	California Species of Special Concern
Foothill yellow-legged frog	*Rana boylii*	None	California Species of Special Concern
Western pond turtle	*Actinemys* [=*Clemmys*] *marmorata*	None	California Species of Special Concern
Two striped garter snake	*Thamnophis hammondii*	None	California Species of Special Concern
Monterey dusky-footed wood rat	*Neotoma fuscipes luciana*	None	California Species of Special Concern
Cooper's hawk	*Accipiter cooperi*	None	California Species of Special Concern
Osprey	*Pandion haliaetus*	None	California Species of Special Concern
Yellow warbler	*Dendroica petechia brewster*	None	California Species of Special Concern
Willow flycatcher	*Empidonax traillii*	None	CESA Endangered, 1991 (includes all subspecies)
Wildlife species – suitable habitat occurs, individuals not documented			
California tiger salamander	*Ambystoma californiense*	ESA - Threatened	California Species of Special Concern
Coast Range newt	*Taricha torosa torosa*	None	California Species of Concern
Coast horned lizard	*Phrynosoma coronatum*	None	California Species of Special Concern
Townsend's big-eared bat	*Plecotus townsendii townsendii*	None	California Species of Special Concern
California mastiff bat	*Eumops perotis californium*	None	California Species of Special Concern
Pallid bat	*Anatropous pallid us*	None	California Species of Special Concern
Double-crested	*Phalacrocorax auritus*	None	California Species of

Table 1: Special Status Species with Potential to Occur in Vicinity of the Project Area			
Species	**Scientific Name**	**Federal Status**	**State Status**
Plant species			
cormorant			Special Concern
Sharp-shinned hawk	*Accipiter striatus*	None	California Species of Special Concern
Bald eagle	*Haliaeetus leucocephalus*	ESA – Threatened, delisted June 2007[2]	California Endangered Species
Golden eagle	*Aquila chrysaetos*	None	California Species of Special Concern
Yellow-breasted chat	*Icteria virens*	None	California Species of Special Concern

[1] California Native Plant Society (CNPS) Inventory, List 4 species generally do not fall under specific State or Federal regulatory authority, and specific mitigation considerations are generally not required for these species.
[2] USFWS Ruling on delisting June 29, 2007.

2. PURPOSE

The purpose of this plan is to establish standards and measures to avoid or minimize potential adverse effects to federal and state listed wildlife and plants that inhabit areas that may be affected by Project construction activities, and to benefit California Species of Special Concern.

3. RESPONSIBILITIES AND COORDINATION

This Plan will be implemented by CAW and the Contractor on the project site. CAW and the Contractor have the responsibility for providing all necessary guidance on the project site to their respective employees, and operating under the requirements of this Plan. Prior to construction, the “applicant” will contact the appropriate authorities to establish communications, obtain permits (as applicable), and/or fulfill other obligations as directed by regulatory agencies.

3.1. SUPERVISION, INSPECTION AND MONITORING

Environmental Inspectors will be designated to implement supervision and inspection activities during construction and post-construction activities. The Environmental Inspector will be responsible for ensuring compliance with the requirements of this Plan, the environmental conditions of the applicable permits, the mitigation measures required by environmental permits, other environmental permits and approvals, and environmental requirements in landowner easement agreements.

The Environmental Inspector will verify that the limits of authorized construction work areas and locations of access roads are properly marked before construction begins; and verify the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, or areas with special requirements along the construction work area.

The “applicant” will designate a field contact representative (FCR) who will be responsible for overseeing compliance with protective stipulations for listed species. The FCR must be on site during all Project activities. The FCR shall have authority to halt all activities that are in violation of the stipulations. The FCR shall have a copy of all stipulations when work is being conducted on the site. The FCR may be a project manager, CAW representative, or a contract biologist.

The FCR will have the authority to halt all non-emergency Project activity should danger to a listed species arise. Work shall proceed only after hazards to the listed species are removed, the species is no longer at risk, or the individual has been moved from harm’s way by the authorized biologist.

All listed species surveys and monitoring work within areas where pre-construction surveys have demonstrated the potential to affect one or more listed species will be accomplished by a qualified biologist. The biologist will be responsible for assisting crews in compliance with protection measures, performing surveys prior to implementation of construction activities, as needed, to locate and avoid sensitive species, and monitoring compliance.

CAW as “applicant” will ensure that activities are confined to the authorized work areas by means of project assessments. The assessments may be conducted by the authorized biologist. Should the assessment find that maintenance activities extended beyond the approved work areas, the Corps, USFWS, and CDFG shall ensure that the “applicant” and its contractors use appropriate measures to restore the disturbed areas.

This Plan and a copy of the Notice of Intent will be kept at all of the construction sites (if practical) or at the nearest contractor office or trailer. This Plan will be available to a responsible agency representative upon request.

3.2. EDUCATION PROGRAM

All “applicant” employees and Contractors involved with construction activities will be required to attend a special-status species education program. Aspects of the program addressing special-status species subject to regulatory authority of the USFWS, NMFS and CDFG will be approved by those agencies. All construction and monitoring employees will participate in the education program prior to initiation of activities. New employees will receive formal, approved training prior to working on-site. At a minimum, the program will cover the distribution of listed species, general behavior and ecology of these species, sensitivity to human activities, legal protection, penalties for violation of state and federal laws, reporting requirements, and Project avoidance, minimization and mitigation measures.

3.3. REPORTING

Encounters with a listed species shall be reported to an authorized or qualified biologist. These biologists will maintain records of all listed species encountered during Project construction activities. This information will include for each individual: the location (narrative, vegetation type, and maps) and date of observation; general conditions and health; any apparent injuries and state of healing, and; if moved, the location from which it was captured and the location in which it was released.

Within 60 days of completion of construction activities, the FCR and authorized biologist shall prepare a report for the Corps, USFWS, NMFS, and CDFG documenting the effectiveness and practicality of the measures in this Plan. The report also will make recommendations for modifying the measures in this Plan to enhance species protection or improve the utility of the permit. The report will provide information on the actual acreage disturbed by various aspects of the operation.

4. PROTECTION MEASURES - GENERAL MEASURES

4.1. PRECONSTRUCTION SURVEYS

Pre-construction surveys for listed plant and wildlife species will be conducted according to USFWS and CDFG protocols. Alternatively, surveys for potential habitat of special-status species will be conducted in the area of construction locations. Surveys and habitat assessments previously conducted for San Clemente draw-down operations will be used to help focus surveys in areas where species occurrence and/or presence of suitable habitat for special-status species have been documented.

A pre-construction survey of the Project Area will be conducted by a qualified biologist(s) no more than 14 days prior to the onset of activities. Burrows or nests of special-status species outside of, but near, the construction area will be prominently flagged at that time so that they may be avoided during work activities. Construction actions will avoid disturbing such sites to the extent possible. In the event an occupied habitat is found within the proposed construction site, a qualified biologist will be on-site during construction.

4.2. CONSTRUCTION MEASURES

All surface-disturbing activities within the range of any listed species will be conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Impacts to habitat will also be minimized to the maximum possible extent.

The area of disturbance will be confined to the smallest area practicable, considering topography, placement of facilities, location of potential special-status species habitat, nesting sites or dens, public health and safety, and other limiting factors. As needed, work area boundaries will be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying. Special habitat features identified by the qualified biologist, will be avoided to the extent possible. To the extent possible, previously disturbed areas within the Project sites will be used for the stockpiling of excavated materials, storage of equipment, locations of trailers, parking of vehicles, and any other surface-disturbing activity. The qualified biologist, in consultation with the “applicant”, will ensure compliance with these measures.

- All activities will be restricted to pre-determined areas. If unforeseen circumstances require expansion of these areas, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures will be implemented within the expanded work areas based on the judgment of the regulatory agencies and CAW's biological consultant. Work outside of the original work area will proceed only after receiving written approval from the Corps, USFWS, NMFS and/or CDFG, depending on regulatory authority, describing the exact location of the expansion.

- Established routes of travel to and from the construction and inspection sites will be used. Cross-country use of vehicles and equipment will be strictly prohibited. During project activities, vehicle parking and material stockpiles will be located in existing disturbed areas to the extent practicable.
- Employees will exercise caution when commuting to the Project area and while traveling the Project Area during construction activities. To minimize the likelihood for vehicle strikes of listed species, speed limits when commuting to project areas on project roads will not exceed 20 miles per hour.
- All construction pipes, culverts, or similar structures that are stored at a construction site for one or more nights will be inspected before the pipe is used or moved. If wildlife species are present, they will be allowed to exit on their own or an authorized biologist will move them out of harm's way.
- Trash and food items will be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
- Employees will not bring pets to the Project site.
- Firearms will be prohibited from the activity sites.
- Upon completion of each activity on a Project site, all unused material and equipment will be removed from the site.

Spill control measures will be implemented to minimize the risk of contamination of the Carmel River downstream of the project area. CAW will implement a Spill Prevention, Containment, and Countermeasure (SPCC) Plan during construction of improvements to the San Clemente Dam Seismic Retrofit Project (CAW 2007a). This SPCC Plan outlines specific preventive measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and to expedite cleanup of any release that may occur during construction activities. For emergency situations involving a leak or spill or any other immediate safety hazard, the "applicant" will notify the appropriate regulatory field office, as outlined in the SPCC. As a part of this emergency response, the USFWS, NMFS, and CDFG may require specific measures to protect listed species. During cleanup and repair, the agencies also may require measures to recover damaged habitats.

Sediment erosion control measures will be implemented, as described in the Stormwater Pollution Prevention Plan (CAW 2007a) and the Botanical Resources Management Plan (CAW 2007b). Disturbed areas will be revegetated, as described in the Botanical Resources Management Plan.

Upon locating an individual of a dead or injured special-status species, the "applicant" will make initial notification to USFWS, NMFS and/or CDFG, consistent with regulatory authority, within 3 working days of its finding. The notification for special status wild-life species must be made by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766). Notification for steelhead must be made to NMFS and CDFG. The report shall include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Animals injured through “applicant” activities shall be transported to a qualified veterinarian for treatment at the expense of the “applicant”. If an injured animal recovers, the CDFG will be contacted for final disposition of the animal.

The “applicant” will endeavor to place the remains of intact special-status species with educational or research institutions holding the appropriate state and federal permits per their instructions. If such institutions are not available or the animal’s remains are in poor condition, the information noted above shall be obtained and the carcass left in place. Arrangements regarding proper disposition of potential museum specimens shall be made with the institution by the Corps, USFWS, NMFS, and/or CDFG through a biologist prior to implementation of the action. Animals injured by project activities should be transported to a qualified veterinarian. Should any treated animals survive, the appropriate agency field offices should be contacted regarding the final disposition of the animals.

Where necessary, CAW will restore disturbed areas in a manner that will assist in the re-establishment of biological values within the disturbed area. Methods of such restoration will include the reduction of erosion, re-spreading of topsoil, and planting with appropriate native shrubs, depending upon the appropriateness or effectiveness in a given area. Restoration activities will be consistent with measures provided in the Botanical Resources Management Plan (CAW 2007b).

4.3. Construction Measures for Specific Activities (and Associated Wildlife and Fish Impacts)

Channel Dewatering

Under the Proponent’s Proposed Project, Alternative 1, 2 or 3, the plunge pool and up to about 400 feet of Carmel River channel downstream the San Clemente Dam will be dewatered during construction. Under the Proponent’s Proposed Project, the Carmel River will not be dewatered to upgrade the piers and bridge deck at the Old Carmel River Dam (OCRD). Under the Proponent’s Proposed Project, approximately 100 feet of Tularcitos Creek channel will be dewatered for access road construction activities.

Two downstream cofferdams will be installed to isolate the plunge pool from the Carmel River. A pump will lower the water level in the pool and the pool will be filled with crushed rock to support the base of a tower crane. The fill material will be removed once construction activities are complete and the pool will be restored to pre-disturbance condition.

Streamflow from reaches that will be dewatered will be directed into flex pipes that are appropriately sized for each location and the river or stream will be diverted around the construction site. Preconstruction surveys will be conducted for wildlife. Species-specific rescue and relocation programs will be implemented for aquatic species, including amphibians, reptiles, and fish. Additional details for these programs are described in *Section 5 Species-Specific Measures.*

Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)

Under the Proponent's Proposed Project, construction of the new Tularcitos access route could affect Monterey dusky-footed wood rat, coast horned lizard, pallid bat, California red-legged frog, western pond turtle, two-striped garter snake, yellow warbler and other special-status wildlife species. This activity will not occur under Alternatives 1, 2, 3, and 4.

For the Proponent's Proposed Project, the following measures will be implemented. preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation based on the results of surveys. Erosion controls, including erosion control fencing, will be implemented to minimize loss of construction material along existing roads that are cut into the slope of the Carmel River canyon, as well as along the plunge pool access road as specified, to reduce impacts from falling debris. These barriers also will keep California horned lizards and western pond turtles out of the construction and traffic corridor. Such barriers will be buried at least 3 to 6 inches in the ground.

Cachagua Access Road Improvements (Alternatives 1, 2, or 3) (WI-9)

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, or 3 (not the Proponent's Proposed Project or Alternative 4). Widening and improving existing access roads could potentially result in minor indirect impacts to Monterey dusky-footed wood rat, pallid bat, and other special-status wildlife species or their habitat. Preconstruction surveys will be implemented and avoidance measures implemented, where practicable. To minimize the potential impact, the left abutment staging area, which already has been disturbed, will be used. To avoid or minimize impacts from falling debris to aquatic species such as California red-legged frogs, foothill yellow-legged frogs, western pond turtles, two-striped garter snakes and fish along the Carmel River, erosion control Best Management Practices (BMP's) will be implemented to protect the Carmel River channels (CAW 2007a,b).

Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-4)

The Carmel River and San Clemente Creek will be diverted around San Clemente Reservoir and the San Clemente Dam site. A sheet pile cutoff wall will collect and divert water from the river and creek into pipes designed to carry up to 50 cfs for the Carmel River and up to 10 cfs for San Clement Creek. The water will be diverted through pipes along both creeks to a location approximately 500 feet downstream of San Clemente Dam, where flow will be returned to the Carmel River.

Upstream of the reservoir, approximately 1,200 feet of the Carmel River and 800 feet of San Clemente Creek will be affected under the Proponent's Proposed Action. Under Alternative 1 or 2, approximately 6,000 feet of the Carmel River and approximately 1,350 feet in San Clemente Creek will be affected. Under Alternative 3, approximately 4,752 feet of the river upstream of the dam and about 1,350 feet in San Clemente Creek will be affected. Under the Proponent's Proposed Action, this activity is scheduled for the construction season of year 2, under

Alternative 1 during years 2 and 3, under Alternative 2 for three construction years, and under Alternative 3 for two years. Therefore protection measures will be implemented during those years.

The intakes of both pipes will be screened consistent with CDFG and NMFS criteria to prevent the entrainment of fish, frogs, and other aquatic organisms. Preconstruction surveys will be conducted for wildlife. Species-specific rescue and relocation programs will be implemented for listed aquatic species, including amphibians, reptiles, and fish. Additional details for these programs are described in *Section 5 Species-Specific Measures.*

<u>Reservoir Sediment Removal (Alternatives 1, 2, or 3) (WI-11)</u>

Under Alternatives 1, 2 or 3 (not the Proponent's Proposed Project or Alternative 4), the reservoir will be drawn down and sediment will be removed from San Clemente Reservoir.

California red-legged frogs and tadpoles, Coast Range newt larvae, and western pond turtle juveniles and hatchlings will be removed from the sediment bed before commencing vegetation removal or sediment excavation, or if individuals are missed in the rescue operation. Prior to any sediment excavation and before California red-legged frogs have been cleared completely from the reservoir bed, vegetation on the sediment bed will be removed with chainsaws and other handheld cutting devices (except "weedwhackers"). After hand clearing of vegetation is completed, the monitoring biologist will resurvey the reservoir bed to determine if any California red-legged frogs or tadpoles remain within the reservoir sediment bed. After ten days pass in which no further California red-legged frogs or tadpoles, Coast Range newt larvae, or western pond turtle juveniles or hatchlings are found in aquatic habitat in the reservoir bed, machine operations including mechanical vegetation removal and sediment excavation will be allowed to commence in the reservoir bed. Additional measures are described in *Section 5 Species-Specific Measures.*

<u>Sediment Transport and Disposal (Alternatives 1 or 2) (WI-12)</u>

Under Alternatives 1 or 2 (not the Proponent's Proposed Project or Alternatives 3 and 4), the proposed sediment disposal site (4R) and conveyor route from the Carmel River canyon to Site 4R may contain habitat for some of the special-status wildlife species. Species most likely to be affected include coast horned lizard, Monterey dusky footed wood rat, and perhaps California tiger salamander or Coast Range newt. Pre-construction surveys of Site 4R and the conveyor route will be conducted by qualified wildlife biologists for these species or their habitat, to assess the likely presence or habitat use by any special-status wildlife species. If listed species habitat or individuals could be harmed, Best Management Plans will be developed to avoid or mitigate damage to special-status wildlife species habitat or individuals.

<u>Bypass Channel Excavation (Alternative 3) (WI-13)</u>

Under Alternative 3, a bypass channel will be constructed. Brushland and riparian habitat clearing and channel excavation will remove some habitat for aquatic species including the California red-legged frog, Coast Range newt and the western pond turtle. These activities may also affect other special-status terrestrial wildlife species, particularly the Monterey dusky-footed wood rat. Impacts on terrestrial species will be assessed by preconstruction surveys. Special-status species habitat will be flagged.

A California red-legged frog adult and tadpole and western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction. Additional measures are outlined in *Section 2 Species-specific Measures* of this Plan.

5. SPECIES-SPECIFIC MEASURES

Only personnel authorized by the USFWS or NMFS shall handle federally listed species.

5.1. PLANTS

Under the Proponent's Proposed Project and Alternatives 1, 2, and 3, (not Alternative 4), populations of virgate eriastrum and/or Lewis's clarkia potentially may be affected. Both virgate eriastrum and Lewis's clarkia are on List 4 of the CNPS Inventory, and do not fall under specific state or federal regulatory authority. However, to the extent possible, populations of CNPS List 4 species will be avoided during construction activities.

Populations of one special-status species are found near the Tularcitos access route (Proponent's Proposed Project and Alternative 2). Some direct loss of the virgate eriastrum population could occur near the edge of the batch plant footprint. Populations of Lewis's clarkia were found along the existing access road from Cachagua Road and at the sediment disposal site (Alternatives 1 and 2). Alternative 3 may affect populations of Lewis's clarkia along the existing access road from Cachagua Road and at the sediment disposal site. Improvements made to this road for construction access could result in additional impacts to this species.

5.2. CALIFORNIA RED-LEGGED FROG

5.2.1. Survey and Relocation Program

Prior to initiating construction activities, surveys will be conducted for California red-legged frogs in Project-affected areas known to have, or with the potential to have, California red-legged frog. Other special-status aquatic amphibian and reptile species will be surveyed concurrently. Preconstruction and construction surveys will be consistent with the most recent USFWS survey guidance (USFWS 2005).

When California red-legged frogs are observed in the area, the USFWS will be notified, and California red-legged frogs will be captured and relocated by a USFWS-approved biologist to nearby suitable habitat. Suitable river habitats will be identified as potential release sites prior to start of project activities. The survey and relocation program will be modified, if necessary, to be consistent with a mitigation plan to be developed in cooperation with the USFWS and consistent with any terms and conditions required in the Biological Opinion (BO) to be developed as part of during the ESA Section 7 consultation. Any additional terms and conditions that may be part of the USFWS BO for California red-legged frog will be implemented to minimize "incidental take" to the fullest extent practicable.

If bullfrogs are observed, attempts will be made to capture and kill them. This will be done only by a biologist who has extensive experience in differentiating all life stages of bullfrogs from all life stages of native frogs and toads, and who is approved by the USFWS for this purpose.

USFWS-authorized biologists will be present during construction to assist in the implementation of on-site mitigation measures for California red-legged frog and to monitor compliance.

5.2.2. Measures for Specific Activities

<u>Cofferdam Construction and Plunge Pool Dewatering (Proponent's Proposed Project or Alternatives 1, 2, or 3) (WI-3)</u>

The construction of a cofferdam and subsequent draining of the plunge pool could affect any California red-legged frogs that may be present. Under the Proponent's Proposed Project and Alternatives 1, 2, and 3 (not Alternative 4) the following measures will be implemented.

Prior to the construction of the cofferdam and subsequent draining of the plunge pool, a preconstruction survey will be conducted at the plunge pool and downstream to the point at which the bypass pipeline will discharge water into the river. California red-legged frogs observed in the area will be captured and relocated, as described above. Construction fencing will be installed to prevent relocated frogs from returning to the area during the construction period.

A biological monitor will monitor the construction site for the duration of the cofferdam construction and the draining of the plunge pool. The biological monitor for amphibians and reptiles will coordinate with the fisheries biologist so that both are present during fish rescue operations to facilitate the safe removal and relocation of any remaining California red-legged frogs. To reduce the risk for predation on juvenile California red-legged frogs as the plunge pool water levels recede, garter snakes will be captured by a biologist who has a MOU from CDFG to handle special-status reptiles (two-striped garter snake) and released up to one-quarter mile downstream in the Carmel River.

If bullfrogs are observed, attempts will be made to capture and kill them.

<u>Notching Old Carmel River Dam (Proponent's Proposed Project or Alternative 1, 2, 3 or 4) (WI-4)</u>

Under the Proponent's Proposed Project or any of the alternatives, the Old Carmel River Dam will be notched. Prior to dam notching operations, the protocol survey and relocation program described above will be implemented for California red-legged frogs along the Carmel River up to one-half mile downstream of Old Carmel River Dam. Other special-status aquatic amphibian and reptile species will be surveyed concurrently. California red-legged frog populations are known to occur in this reach. If work on the dam is interrupted for more than two weeks, surveys and relocation activities will be repeated if the initial surveys indicated the presence of special-status species habitat or populations.

If other listed species are found, the USFWS will be consulted to institute a take avoidance program.

Concrete Batch Plant Construction and Operation (Proponent's Proposed Project) (WI-5)

Under the Proponent's Proposed Project, a concrete batch plant will be constructed and operated. A preconstruction survey and relocation program for California red-legged frog, as described above, will be implemented in the Carmel River immediately adjacent to the site for the concrete batch plant. The presence of other special-status species will be noted. Erosion control fencing or a similar barrier will minimize movement of frogs back into work areas. A biological monitor will accompany the crew during excavation and installation of the fence to prevent harm to frogs that may be active along the fence route.

Reservoir Drawdown or Elimination without Sediment Removal (Proponent's Proposed Project or Alternative 4) (WI-7) Not Alt 1, Alt 2, Alt 3

Under the Proponent's Proposed Project and Alternative 4 (No Project), the permanent lowering of the San Clemente Reservoir maximum pool will result in a permanent reservoir footprint matching the pool present during existing operations when the flashboard gates are down.

Under these two alternatives, during fish rescue operations, a USFWS-approved biologist will be present to relocate any California red-legged frogs, including subadults and tadpoles. Frogs captured will be removed and either released or relocated according to a predetermined relocation plan. All other native frogs and toads will be released. Any bullfrogs, including tadpoles, encountered during the fish rescue operations will be killed.

A California red-legged frog population monitoring and bullfrog eradication program will be developed and implemented as part of the mitigation plan, in consultation with the USFWS and CDFG as part of the Project permitting process. A program will be undertaken to assess and monitor the relative abundance of bullfrogs and California red-legged frogs in the reservoir and its upper reaches. The program will include a bullfrog eradication program that removes adults, subadults, and egg masses from the reservoir and its upper reaches. This program will be implemented to give the native frog species a "head start" within Project-affected reaches and upstream enhancement/mitigation sites. The bullfrog eradication program will be implemented during the construction and/or drawdown period between July and August. All methods and techniques will be lawful and in accordance with the California Fish and Game Code. Only USFWS-approved biologists will be delegated to identify and destroy egg masses and larval forms of bullfrogs. The program also will include an assessment of bullfrog diet in order to determine the future need for any bullfrog control in the project area and nearby. Concurrent control and monitoring of other non-native predators (e.g., crayfish [*Pacifasticus leniusculus*] and centrarchid fishes) may be included in the program in order to minimize adverse impacts of the Project on California red-legged frogs and other aquatic species. The monitoring and bullfrog eradication program will be implemented for two to three years during Project construction, beginning after USFWS approval of the program and following issuance of a USFWS BO.

Monitoring of California red-legged frog and bullfrog populations will be continued for two years following completion of the Project. If monitoring conducted during and after construction activities indicate that bullfrog populations in enhancement and mitigation sites are increasing and California red-legged frog populations are decreasing, the bullfrog eradication program may be continued for an additional two years. Annual reports will be submitted to the appropriate regulatory agencies, including but not limited to, USFWS, the Corps, and CDFG.

During several years of past drawdown operations, monitoring of, and adjustments to, enhancement sites has been implemented. As part of the mitigation program, additional California red-legged frog habitat mitigation sites will be restored and monitored. Potential sites will be identified within the Carmel River and potentially in off-stream sites suitable for breeding. Qualified personnel will conduct periodic inspections of California red-legged frog enhancement and mitigation sites to assure that habitat objectives for each site are sufficiently met, i.e., that physical conditions (e.g., basin sediment deposit and overhead vegetation) and bullfrog populations are conducive to California red-legged frog reproduction. Mitigation monitoring will be conducted during two to three years that Project activities are implemented and for an additional two years after, for a total period of at least five years. Implementation and reporting will be concurrent with population monitoring and bullfrog eradication program described above.

As part of the existing Settlement Agreement with USFWS, CAW may be a major party in the preparation of a Habitat Conservation Plan (HCP). This HCP may include population monitoring and bullfrog study and potential control programs. Any future frog population monitoring and bullfrog control programs developed as part of this HCP may supercede the aforementioned frog monitoring and bullfrog eradication program.

<u>Reservoir Drawdown or Elimination and Sediment Removal (Alternatives 1, 2, or 3) (WI-10, WI-11)</u>

Under Alternatives 1, 2 or 3 (not the Proponent’s Proposed Project or Alternative 4), reservoir drawdown activities will be implemented and sediment from San Clemente Reservoir will be removed. The following protection measures will be implemented.

A biologist permitted and approved by the USFWS to relocate California red-legged frogs will monitor and oversee all terrestrial wildlife-related activities associated with the drawdown and subsequent activities in the reservoir bed. As the drawdown commences and the reservoir water level declines, the USFWS-approved biologist and crew will rescue California red-legged frogs and tadpoles from the inlet streams and pools in the sediment bed, and relocate them to appropriate aquatic habitat at previously selected secure sites within one mile of San Clemente reservoir. The relocation program will use techniques and procedures specified in the USFWS BO for this project.

This program will commence after April 15, to allow all California red-legged frog eggs to hatch and the tadpoles to grow large enough to be easily identified and differentiated from bullfrog tadpoles. Bullfrogs and bullfrog tadpoles taken during this operation will be killed, and adult bullfrog stomach contents examined to determine if a need exists for bullfrog control at San Clemente Reservoir. Other native wildlife taken incidentally during these operations will be transported to secure habitat (that may be the same sites selected for relocation of California red-legged frogs and tadpoles). This operation will continue throughout the reservoir drawdown, vegetation clearing, and sediment excavation operations; hand vegetation clearing will commence immediately after the drawdown begins.

Prior to any sediment excavation and before California red-legged frogs have been cleared completely from the reservoir bed, vegetation on the sediment bed will be removed with chainsaws and other handheld cutting devices (except “weedwhackers”). Vegetation removed with hand tools will be limited to no lower than 12 inches above grade, to protect California red-legged frogs. Cleared vegetation will be removed from the reservoir bed immediately and taken to an off-site location. After hand clearing is completed, the monitoring biologist will resurvey the reservoir bed to determine if any California red-legged frogs or tadpoles remain within the reservoir sediment bed. After ten days pass in which no further California red-legged frogs or tadpoles, Coast Range newt larvae, or western pond turtle juveniles or hatchlings are found in aquatic habitat in the reservoir bed, machine operations, including mechanical vegetation removal and sediment excavation, will be allowed to commence in the reservoir bed. Grubbing and mechanical stump removal will be performed only after hand clearance is completed and after the monitoring biologist has confirmed that the reservoir sediment bed is free of California red-legged frogs and tadpoles.

After all vegetation is removed, the monitoring biologist will re-survey the reservoir sediment bed a final time to ascertain that California red-legged frog, Coast Range newt larvae, and western pond turtle juveniles and hatchlings are absent from the site. Sediment excavation to the desired level, including all removal, grading and reshaping of the sediment bed, will then commence. If sediment excavation is not accomplished within one season, these procedures will be repeated at the initiation of each construction season to relocate sensitive species that may have re-colonized the reservoir bed.

Bypass Channel Excavation (Alternative 3) (WI-13)

Under Alternative 3, a bypass channel will be constructed. A California red-legged frog adult and tadpole and western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction.

5.3. AQUATIC REPTILES

Cofferdam Construction and Plunge Pool Dewatering (Proponent’s Proposed Project, Alternatives 1, 2, or 3) (WI-3)

Under the Proponent’s Proposed Project or Alternatives 1, 2, or 3, a cofferdam will be constructed the plunge pool drained. This has the potential to affect any western pond turtles and other special-status species that may be present. Prior to the construction of the cofferdam and subsequent draining of the plunge pool, a preconstruction survey will be conducted for western pond turtle, concurrently with amphibian surveys, at the plunge pool and downstream to the point at which the bypass pipeline will discharge water into the river. If western pond turtles are observed in the area, attempts will be made by a qualified biologist to capture them (trap/net) and relocated them, as directed by CDFG under the MOU for the mitigation plan. Western pond turtles will be relocated to a nearby downstream pond or a pool reach of a stream. Construction fencing will be installed to prevent relocated turtles from returning to the area during the construction period.

A biological monitor will be placed at the construction site for the duration of the cofferdam construction and the draining of the plunge pool. The biological monitor for amphibians and reptiles will coordinate with the fisheries biologist so that both are present during fish rescue operations to facilitate the safe removal and relocation of any remaining turtles.

Two-striped garter snakes and common garter snakes (*Thamnophis sirtalis*) may congregate around the plunge pool as it recedes. These snakes will will be captured by a biologist who has a MOU from CDFG to handle special-status reptiles (two-striped garter snake) and released up to one-quarter mile downstream in the Carmel River.

<u>Reservoir Drawdown or Elimination with Sediment Removal (Alternatives 1, 2, or 3) (WI-10)</u>

Under Alternatives 1, 2 or 3 (not the Proponent's Proposed Project or Alternative 4), reservoir drawdown activities will be implemented. The drawdown has the potential to isolate western pond turtles and impact juveniles.

As the drawdown commences and the reservoir water level declines, qualified biologists will rescue western pond turtle juveniles and hatchlings from the inlet streams and pools in the sediment bed, and relocate them to appropriate aquatic habitat at previously selected secure sites within one mile of San Clemente reservoir. Other native wildlife taken incidentally during these operations will be transported to secure habitat (that may be the same sites selected for relocation of California red-legged frogs and tadpoles and western pond turtle juveniles and hatchlings). This operation will continue throughout the reservoir drawdown, vegetation clearing, and sediment excavation operations; hand vegetation clearing will commence immediately after the drawdown begins.

<u>Bypass Channel Excavation (Alternative 3) (WI-13)</u>

Under Alternative 3, a bypass channel will be constructed. A western pond turtle juvenile and hatchling relocation program will be conducted to clear the sediment bed of these species prior to vegetation removal, sediment redistribution, channel excavation, and roadway construction.

5.4. California Horned Lizard

<u>Concrete Batch Plant Construction and Operation (Proponent's Proposed Project) (WI-5)</u>

Under the Proponent's Proposed Project (not other alternatives), construction of the batch plant and associated facilities may temporarily impact available habitat for California horned lizard. Although lizards were not observed during field surveys, suitable open habitat for these lizards may occur along the Carmel River, and MPWMD staff have reported seeing lizards on existing roads in the vicinity of the proposed batch plant.

A preconstruction survey will be conducted for California horned lizards and results will be reported to CDFG. If horned lizards are found, protection measures will be implemented, including relocating horned lizards to a safe area outside of the area and installing erosion control fencing or a similar barrier to minimize movement of horned lizards back into work areas. The barrier will be buried at least 3 to 6 inches in the ground. Mesh size will not exceed one-half inch and material will be heavy gauge polybutylene or equivalent. A qualified biological monitor will accompany the crew during excavation and installation of the fence to prevent harm to horned lizards that may be active along the fence route.

Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)

Under the Proponent's Proposed Project, Tularcitos access road improvements will be implemented. Damage to coast horned lizards could occur from grading operations. Protection measures for coast horned lizards or other special-status wildlife found in the area will include preconstruction surveys, rescue and relocation operations, predator control, and the development of other measures through consultation, based on the results of preconstruction surveys. Erosion control fencing will be installed, which will keep California horned lizards out of the construction and traffic corridor.

5.5. BATS

In locations within the Project area where potential nesting or roosting habitat for special-status bat species (pallid bat, California mastiff bat, and/or Townsend's big-eared bat) occurs, a preconstruction survey will be conducted. Surveys will be conducted by a biologist with expertise in bat biology. Visual survey techniques and acoustic monitoring equipment will be used to determine whether bats are likely to use any of these structures. If evidence of bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites.

If special-status bat species are observed, CDFG will be notified and mitigation measures previously agreed upon with the agency may be implemented. Additional measures will be implemented at any roost site that cannot be avoided. Such measures may include establishment of buffer zones or installation of exclusion barriers under the supervision of a qualified bat biologist.

Dam Strengthening (Proponent's Proposed Project) (WI-1)

Under the Proponent's Proposed Project, dam strengthening activities have the potential to disrupt bat nesting habitat. Potential nesting or roosting habitat for bats occurs in rock crevices on the slope where the new right abutment wall will be constructed. A preconstruction survey will be conducted for bat roosts in rock crevices in the right embankment area. If bats are observed nesting or roosting in the area, CDFG will be notified and mitigation measures will be implemented, such as establishment of buffer zones or installation of exclusion barriers.

Tularcitos Access Road Improvements (Proponent's Proposed Project) (WI-6)

Under the Proponent's Proposed Project, Tularcitos access road improvement activities have the potential to affect pallid bats. Damage to potential pallid bat roosting habitat may result from the destruction of rock outcrops and other formations. Pre-construction surveys of rock outcrops and other formations along the Tularcitos route will implemented to see if pallid bat roosts are present. If evidence of pallid bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites. Additional measures will be implemented at any roost site that cannot be avoided, such as establishment of buffer zones or installation of exclusion barriers.

Removal of Ancillary Facilities (Alternatives 1, 2, or 3) (WI-2) Not PP, Alt 4

Under Alternatives 1, 2 or 3 (not Proponent's Proposed Project or Alternative 4), removing the valve house from atop San Clemente Dam and removing other anthropogenic structures from near the dam may displace special-status bat species from traditional roosts. Unidentified species of bats use the valve house and other nearby buildings as day roosts. Removing those structures could displace roosting bats and may increase mortality if the structures are removed when newborn or very young bats are present in the roosting colonies.

Surveys will be conducted to determine whether bats are likely to use any of these structures. If evidence of bat use is discovered, roost sites will be mapped by GPS and flagged. Construction will be routed to avoid roost sites. Additional measures will be implemented at any roost site that cannot be avoided, such as establishment of buffer zones or installation of exclusion barriers. If possible, structure removal will be scheduled after juvenile bats are weaned and capable of flight, as determined by a biologist with expertise in bat biology.

Cachagua Access Road Improvements (Alternatives 1, 2, or 3) (WI-9)

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, and 3, but not under the Proponent's Proposed Project or Alternative 4. Widening and improving existing access roads could potentially result in minor indirect impacts to pallid bat and other special-status wildlife species. So long as the low pipeline access road will not be used, rock crevices and cavities that may provide day and/or night roost sites for pallid bats will not be affected. Pre-construction surveys of rock outcrops and other formations along the access route will be conducted. If evidence of pallid bat use is discovered, roost sites will be mapped by GPS and flagged in the field. Construction will be routed to avoid roost sites.

5.6. BIRDS

Under the Proponent's Proposed Project, or Alternatives 1, 2, or 3 (not Alternative 4), vegetation removal and other construction-related disturbance have the potential to affect nesting birds. Under the Proponent's Proposed Project, Tularcitos access road improvement activities also have the potential to affect nesting birds.

Potential impacts to special-status birds from vegetation removal and other construction activities include potential disturbance to breeding individuals during the nesting season, particularly if nests occur in or adjacent to the construction sites. Possible impacts to breeding birds will depend on a number of variables, including species affected, nest location, topographical shielding, breeding phenology, and type of construction activity.

Tree removal will be restricted to the minimum number of trees necessary to allow access by construction vehicles. To the extent possible with other construction constraints, vegetation removal will be accomplished between August 1 and March 1. If any vegetation removal must be conducted between March 1 and August 1, pre-construction surveys for breeding birds (either special-status or others protected by the Migratory Bird Treaty Act and the California Migratory Bird Act) will be conducted in these areas. If any active nests are found, they will be isolated by a species-specific buffer area (from 50 to 500 feet) and avoided until the eggs are hatched and the nestlings fledged.

<u>Concrete Batch Plant Construction and Operation (Proponent's Proposed Project) (WI-5)</u>

Under the Proponent's Proposed Project, a concrete batch plant will be operated and constructed. The proposed batch plant is more than 2,000 feet from a known, active, Cooper's hawk nest and yellow warbler nesting area. However, increased construction vehicle traffic from the batch plant to the dam site could cause increased noise and dust.

A preconstruction survey will be conducted to determine if the documented Cooper's hawk nest is active at the onset of construction. If the nest is active, this will be reported to CDFG and a noise abatement program will be implemented for passing vehicles. The program will include standard mitigation measures, such as prohibiting the use of air horns or jake (engine) brakes. Construction vehicles will be prohibited from parking near the CVFP and traffic will be directed as far away from the nest as practical. Gravel or crushed rock will be placed to buffer noise and minimize dust generation in vicinity of nest (see Botanical Resources Management Plan for dust abatement measures). Existing native vegetation will be maintained between the nest and the existing road corridor, including the large valley oak tree west of Settling Pond Number 1.

5.7. MONTEREY DUSKY-FOOTED WOOD RAT

<u>Tularcitos Access Road Improvements (WI-6, WI-9)</u>

Under the Proponent's Proposed Project, construction of the new Tularcitos access route has the potential to damage or destroy a known Monterey dusky-footed wood rat nest located near Tularcitos Creek.

Cachagua access road improvements may affect special-status wildlife under Alternatives 1, 2, and 3 (not under the Proponent's Proposed Project or Alternative 4). Widening and improving existing access roads could potentially result in minor indirect impacts to Monterey dusky-footed wood rat. Use of the Center Court Drive access road will reduce impacts affecting known Monterey dusky-footed wood rat nest located near Tularcitos Creek, but may indirectly impact a nest observed above the road in July 1998. Widening of the existing access roads may disturb trees that provide nesting structures for Monterey dusky-footed wood rats.

GPS data will be used to indicate the location of the existing Monterey dusky-footed wood rat nest(s) relative to the proposed route on project construction maps. A preconstruction survey will be conducted for Monterey dusky-footed wood rats and their nests in areas of any proposed route or proposed access road widening or improvement. If wood rat nests are found, they will be reported to CDFG and flagged for avoidance, and construction routes and activities will be planned to avoid the nests. Stakes, flags or plastic tape will be used to enforce avoidance. If any wood rat nests are found that cannot be avoided, trapping and relocation of the wood rat(s) upstream or to a suitable adjacent stream nearby will be implemented according to CDFG requirements.

Tree removal will be restricted to the minimum number of trees necessary to allow access by construction vehicles (also see Botanical Resources Management Plan).

5.8. STEELHEAD

Water Quality Protection Measures (Proponent's Proposed Project, Alternatives 1, 2, 3, or 4) (F-6)

Construction activities on stream crossings, bridges, and adjacent roads have the potential to result in sedimentation and turbidity in streams. Reservoir drawdown and river diversion activities have the potential to affect turbidity, temperature and dissolved oxygen levels in the Carmel River downstream of San Clemente Dam.

Activities in Streams and on Roads
Erosion control measures will be implemented to protect water quality in any Project-affected waterways during construction as described in the SWPPP (CAW 2007a) and Botanical Resources Plan (CAW 2007b). An erosion control and road drainage plan (Section 4.1 of EIR) will be implemented. Stream margins will be revegetated when construction work is completed (see Botanical Resources Management Plan (CAW 2007b).

Activities in the Reservoir
During reservoir drawdown, all inflow will be allowed to flow through the reservoir and turbidity control will be managed by moderating the rate of drawdown. The rate of drawdown will be limited to 0.05 foot per day, consistent with the NMFS BO for drawdown activities. During construction drawdown, all or most of the inflow to the reservoir from the Carmel River and San Clemente Creek will be piped around the reservoir. This will provide an option to regulate water releases from the reservoir into the river, if needed. If the last few acre-feet of water become highly turbid, the reservoir may be lowered by the use of well points. This will avoid releasing turbid, warm, surface water directly into the river.

Sediment dewatering will occur after the reservoir has been emptied. Water from well points in the reservoir will be treated to reduce turbidity and temperature, and increase dissolved oxygen levels prior to release downstream. The water will be aerated and cooled prior to release into the river.

Reservoir drawdown will be timed to occur when water temperature loading is not critical. Reservoir drawdown and pumping of water from the plunge pool at the base of San Clemente Dam will be occur early in the year, prior to the warmest summer period when high temperatures occur in the area. As the water level is lowered and surface water temperatures rise during the day, drawdown will switch from a surface release to release through well points. Surface releases will be restricted to night or early morning periods.

Diversion pipes around the reservoir will be sited in locations that favor shade, or pipes will be buried beneath a shallow layer of sand. Where the pipe is exposed to full sun and it is not possible to bury it, the pipe will be painted white to reflect light.

Water quality will be monitored in the reservoir during drawdown, as required in the NMFS BO for drawdown activities. The dissolved oxygen criteria will be consistent with the BO, at 5.0 mg/L. Water will be aerated either as it leaves the diversion pipes or with a mechanical aerator prior to release in the river. Low dissolved oxygen in reservoir water is quickly moderated when water falls over the dam.

Dewatering the Plunge Pool
Turbidity due to dewatering the plunge pool at the base of San Clemente Dam will be regulated by the rate at which the plunge pool is pumped down. If needed, the water will be treated prior to release into the river, similar to treatment of water from the reservoir.

Dewatering the plunge pool will occur after reservoir dewatering.

5.8.1. Fish Rescue and Relocation Program

Portions of the Carmel River and its tributaries will be dewatered for construction activities. A fish rescue and relocation program will be implemented for fish in affected reaches, including Steelhead.

A fish rescue will be implemented prior to the complete diversion of water from any stream channel. NMFS-approved biologists will conduct rescue and relocation efforts for steelhead. The stream channel to be dewatered will be isolated with nets. Any fish in the area will be captured, removed, and relocated to other suitable areas of the Carmel River. Fish will be rescued using block nets, seines, dip nets, and backpack electrofishing. Electrofishing will follow guidelines established by NMFS (2000).

5.8.2. Measures for Specific Activities

<u>Channel Dewatering (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-1, FI-2)</u>
The plunge pool and up to about 400 feet of Carmel River channel downstream the San Clemente Dam will be dewatered. Under the Proponent's Proposed Project, the Carmel River will not be dewatered to upgrade the piers and bridge deck at the OCRD.

A fish rescue and relocation program will be will be implemented prior to the complete diversion of water from these stream channels and the plunge pool, as described above.

<u>Access Route Improvements (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-1)</u>
Road improvements along the Carmel River between the Sleepy Hollow Ford and OCRD have the potential to result in sedimentation and increased turbidity along about a mile of the Carmel River from OCRD downstream to the Sleepy Hollow Ford during the construction season. Erosion control measures will be implemented to protect water quality in Project-affected waterways during construction as described in the SWPPP (CAW 2007a) and Botanical Resources Plan (CAW 2007b). An erosion control and road drainage plan (Section 4.1 of EIR) will be implemented. Stream margins will be revegetated when construction work is completed (see Botanical Resources Management Plan (CAW 2007b).

During construction of the road from OCRD to San Clemente Dam, tree removal will be minimized to the extent practical. Tree removal will be limited to only those limbs or trees that require cutting to provide clear access along the Carmel River between Sleepy Hollow Ford and the OCRD.

Road fill will be needed to raise the access road above frequent flood elevations. The fill will be placed on a fabric or rubber liner on the floodplain. Riprap or boulders that are too large for the river to move during floods will be used to face the road fill. The boulder covering, road-fill and fabric of the rubber liner will be removed after access to the base of the dam is no longer needed.

<u>Diversion of Carmel River and San Clemente Creek around San Clemente Reservoir (FI-4) and Reservoir Drawdown (Proponent’s Proposed Project, Alternative 1 2 or 3) (FI-5)</u>

The Carmel River and San Clemente Creek will be diverted around San Clemente Reservoir and the San Clemente Dam site. Water will be diverted through pipes along both creeks to a location approximately 500 feet downstream of San Clemente Dam. The intakes of both pipes will be screened according to CDFG and NMFS criteria to prevent the entrainment of fish, frogs, and other aquatic organisms.

Fish traps will be installed upstream of diversion points to capture downstream migrating fish prior to reservoir drawdown. Fish will be transported around the diversion reach and released into the Carmel River.

A fish rescue and relocation program will be implemented in the diverted channels between the diversion points in the Carmel River and San Clemente Creek and the reservoir. Some diversion of water will occur to reduce the flow in the channels to be rescued. Block nets will be installed to prevent fish from moving from the reservoir into the stream. Drawdown of the reservoir will begin after all fish are rescued from the channels.

A fish rescue will be implemented in the reservoir during drawdown. Rescued fish will be relocated to other suitable habitat downstream of San Clemente Dam in the Carmel River.

Under the Proponent’s Proposed Project, the reservoir water level will be lowered to 510 feet above mean sea level (MSL). Sheet piles will be installed in the reservoir around an inoperable mid-level intake gate located 31 feet below the spillway. The area between the dam and sheet piles will be excavated and the intake gate will be repaired. The intake will be moved to a location in the proximity of the sluice gate. The water level will be lowered to the bottom of the reservoir after the intake gate is repaired. During reservoir drawdown, a temporary fish screen, meeting NMFS and CDFG criteria, will be installed around the repaired intake gate.

Under Alternative 1, the reservoir water level will be lowered to 504 feet, which will completely dewater the reservoir. If lower storage in the reservoir during the spring months affects Steelhead upstream passage, a trap and truck operation will be implemented. Fish rescues will be implemented for two consecutive years. Fish traps operated at the inflowing channels to the reservoir will mitigate downstream passage.

<u>Stream Sediment Removal, Storage, and Associated Restoration (Alternative 1) (FI-14)</u>

Under Alternative 1, approximately 4,752 feet of channel in the Carmel River and about 1,350 feet in San Clemente Creek will be eliminated during the two years it will take to remove sediment from the reservoir and notch the dam. The channels will be flooded during the winter between construction seasons of years 2 and 3.

During the construction season of year 3, geomorphically appropriate channels will be reconstructed and revegetated. The Carmel River and San Clemente Creek channels will be reconstructed through the excavated sediments. The channels will be rebuilt with gravel, cobble and boulder materials salvaged during sediment removal. Channels will be geomorphically appropriate to the new valley gradient and substrate sizes. The channels will be revegetated with native trees and shrubs. Approximately 6,500 feet of channel will be constructed in the Carmel River and about 1,350 feet in San Clemente Creek.

<u>Stream Sediment Removal, Storage and Associated Restoration (Alternative 2)</u>

Under Alternative 2, the dam and most of the sediment behind it will be removed. The reservoir will be excavated down to 480 to 500 feet in elevation in the construction season of year 3 and in year 4 to the original bed of the river, around elevation 460 feet. At the end of the construction season of year 3, the reservoir will fill with approximately 1,000 acre-feet (AF) of water before it will spill.

Fish rescues will be implemented during the three consecutive years of construction. To mitigation for operation of a 500 AF and 1,000 AF reservoir in construction years 3 and 4, respectively, upstream passage will be maintained through the fish ladder or via the trap and truck operation. Fish traps operated at the inflowing channels to the reservoir will mitigate downstream passage.

The Carmel River and San Clemente Creek will be completely rebuilt with gravel, cobble, and boulder materials salvaged during sediment removal. Channels will be restored based upon an understanding of their historic conditions. Restoration of the channels will be based upon the uncovered topography and a geomorphic understanding of appropriate channel dimensions, considering substrate size, gradient, and valley width. The restored channel length will be similar to the channel lengths that existed prior to the construction of San Clemente Dam. The restoration will restore about 5,000 feet of Carmel River channel and about 2,2000 feet of San Clemente Creek channel. Riparian zones along the restored channels will be revegetated with native trees and shrubs (CAW 2007b).

<u>Stream Sediment Removal, Storage and Associated Restoration (Alternative 3)</u>

Sediments will be dewatered to near the original elevation of the bed of the river to allow for complete sediment removal in the San Clemente Creek arm of the reservoir and the Carmel River immediately upstream of the dam. The trap and truck operation will be implemented to maintain upstream fish passage.

Rock material from the diversion channel cut through the ridge separating the Carmel River from San Clemente Creek will be used to construct a cutoff wall across the Carmel River arm upstream of the diversion channel. Sediment will be excavated from about 800 feet of the existing San Clemente Creek channel.

Approximately 2,200 feet of the San Clemente Creek will be reconstructed to carry Carmel River flows, including about 850 feet of channel currently under the reservoir in the San Clemente arm. A new channel for the Carmel River will be constructed through the diversion bypass channel between the Carmel River and San Clemente Creek, and down the San Clemente Creek arm. The new configuration will include about 300 feet of constructed channel through the bypass and about 2,200 feet of newly constructed channel in the existing San Clemente Creek arm.

Channel restoration activities will include excavation and placement of gravel, cobble, and boulder materials salvaged during sediment removal. The new Carmel River channel will be geomorphically designed based upon flow capacity requirements, gradient, and valley width of the Carmel River. Habitat in restored channels will be revegetated with native trees and shrubs (CAW 2007b).

<u>Sluicing, Dredging or Sediment Transport (Alternative 2 or 3)</u>

Alternative 1 or 2 will remove the dam and most of the sediment behind it. Sedimentation may occur after dam removal in the winter following construction year 4. Erosion control and revegetation actions will be implemented in the reservoir zone during construction year 4 as the dam is being demolished. The channels through the former reservoir site will be restored to a geomorphically correct form.

<u>Reservoir Drawdown (Alternative 4)</u>

Reservoir drawdown will continue as an interim method to provide dam safety until the reservoir is filled with sediment. Drawdown will occur after June 15 and the reservoir will be drawn down to about 515 feet in elevation.

During drawdown, water quality will be protected as described in *Section 5.8.1. Water Quality Protection Measures* for activities in the reservoir.

A fish rescue and relocation program will be implemented in the reservoir during drawdown. Fish trapping and rescues will be implemented upstream of the reservoir for downstream migrating fish. Rescued fish will be relocated to suitable habitat in the Carmel River.

<u>Trap and Truck at Old Carmel River Dam (Proponent’s Proposed Project, Alternative 1, 2 or 3) (FI-3, FI-7)</u>

A trap and truck facility will be operated to mitigate for the closure of San Clemente Dam to upstream fish passage during the construction phase of the Proponent’s Proposed Project, or Alternatives 1, 2, or 3. The trap and truck facility will be located at the OCRD and will be operated whenever upstream migration is impaired at San Clemente Dam.

The fish ladder will be closed for a period of days to weeks, toward the end of the migration season during the construction season. The trap and truck facility will be constructed one year prior to reservoir drawdown and be operated to provide upstream migration during the drawdown.

The design of the facility will employ the most recent developments in fish passage design and the safe handling of fish to reduce the potential for injury and disease, and to minimize stress. The facility will be located at the OCRD and be operated whenever Steelhead upstream migration will be impaired at San Clemente Dam. Fish will be attracted into a ladder leading to a holding facility by redirecting flows from the river upstream of the OCRD into the ladder. Steelhead entering the ladder will move upstream to a holding facility. Both the ladder and holding facility will be supplied by water from the river upstream. Fish entering the facility will be trapped and held up to 24 hours. Trapped fish will be transported by truck to an upstream release sit in the Carmel River or San Clemente Creek. It is estimated that the transfer trip could take up to one hour.

Operators will closely track stream, holding facility, transport, and release water temperatures Injuries to fish and possible causes will be documented. Problems with trap and truck facilities will be quickly identified and addressed. If mortality rates exceed upper levels mandated by NMFS and CDFG, operations will be suspended until problems are identified solutions are established. A decision process will be developed during the permitting process to determine if and when the facility should be closed and fish left in the river to spawn below the Project area.

<u>Fish Ladder Repair and Sluicing Operations (Proponent’s Proposed Project) (FI-8, FI-9)</u>

Under the Proposed Project, the existing fish ladder will be demolished and replace by a new, vertical slot ladder. All flows less than about 55 cfs will be conveyed through the ladder and not over the spillway. During times that the dam spills, the ladder will carry about 77 cfs.

A sluice gate will be installed near the ladder entrance to maintain passage conditions upstream of the ladder and to keep the ladder free of sediment. Details of the size, location and orientation of the sluice gate are provided in MEI (2006a). Sluicing operations and maintenance are defined in the Sluicing Operations and Maintenance Plan (CAW 2007c).

Sluicing will occur as needed to maintain the upstream river channel for adult fish passage and will only occur when certain flow conditions are met. A gate will be installed on the upstream end of the ladder to prevent fish from moving out of the ladder before and during sluice gate operation. The fish ladder exit will be closed about 2 to 4 hours before sluicing begins. Sluicing will occur consistent with the operations and management plan, then the sluice gate will be closed and the ladder reopened. Adequate fish passage conditions are defined as a minimum of one foot of water depth in the channel upstream of San Clemente Dam. Sluicing operations will begin with short-duration sluices and impacts will be thoroughly evaluated to determine effects on downstream channels, habitat and fishes.

<u>Excavation or Dredging of Sediment for Fish Passage (Proponent’s Proposed Project) (FI-10)</u>

When sluicing sediment is not possible because of potential downstream impacts, mechanical sediment removal will be performed to maintain fish passage upstream of the fish ladder. Sediment will be removed with an excavator or a suction dredge. Sediment will be physically excavated during low flow conditions from upstream of the ladder. This activity will not occur during periods of peak Steelhead migration.

During dredging or excavation, flow through the fish ladder will be minimized and the upstream end of the ladder will be closed to prevent fish that are leaving the ladder from entering the excavation area. Flow into the ladder will be reduced to minimize suspended sediment from entering ladder flow. Recently deposited fine grained substrates impeding fish passage will be removed from the area upstream of the ladder and hauled and stored in the aggregate storage site.

<u>Fish Ladder Replacement (Alternative 1 or 3)</u>

The existing ladder will be replaced by a new, shorter vertical slot ladder.

Ongoing, as-needed, inspection of the river channel upstream of the fish ladder will be implemented to determine if adequate channel depths exist. As data accumulate, the frequency of inspection may be adjusted to the interval necessary to assure that sediment accumulation does not become problematic for fish passage.

A Sluicing Operation and Maintenance Plan will be implemented to maintain the upstream river channel for fish passage. The fish ladder exit will be closed during sluicing and/or dredging activities to protect fish.

<u>Downstream Fish Passage at San Clemente Dam (Proponent’s Proposed Project) (F-13)</u>

The spillway will be modified by raising the elevation of the two lateral spillway bays by 0.5 feet relative to the center. Spillways will be extended to directly spill into the plunge pool and not strike the thickened dam face.

During low flows, all surface flow will be carried through the fish ladder (up to 55 cfs.). At flows higher than 55 cfs, surface flow will begin to spill through the center spillway bay. For flows in the range of approximately 55 to 115 cfs, most of the flow (55 to 62 cfs) will pass through the ladder and the remaining flow will spill over the lower, center spillway (elevation 525.0). Above streamflows of approximately 115 cfs, spill will also occur at the two higher spillway segments (elevation 525.5 feet). The ladder will continue to operate during higher flows and will be designed to carry up to about 77 cfs when river flow volume is about 700 to 800 cfs or higher.

This configuration provides an increased depth of flow during lower flows, compared to the existing spillway and ladder configuration. The new spillway bays will be equivalent to, or better than, the existing spillway bays for fish passage. The fish ladder will pass all flows up to about 55 cfs, reducing the amount of time the reservoir spills and will provide safer passage down the ladder.

<u>Downstream Fish Passage at San Clemente Dam (Alternative 1)</u>

Under Alternative 1, the dam will be lowered by 21 feet and the height of the fall for fish will be reduced from about 65 feet to 44 feet. This will benefit downstream fish passage. A notch will be cut in the dam at an elevation at the dam thickening point. The low flow channel will be created within the notched dam spillway to provide increase depth of flow depth. A new, shorter ladder will pass all flows downstream at flows up to 60 cfs.

Downstream Fish Passage at San Clemente Dam (Alternative 3)

The dam will be lowered by 21 feet and the height of the fall will be reduced from about 65 feet to 44 feet. A low flow channel will be created within the notched dam spillway to provide increased depth. The new, shorter ladder will pass all flows downstream at flows up to 60 cfs.

Fish Screen Installation at San Clemente Dam Intake (Proponent's Proposed Project, Alternative 1, 2 or 3) (FI-ll)

A new fish screen meeting NMFS and CDFG criteria will be installed at the intake for the new CAW water diversion point, at the head of the San Clemente Reservoir, to eliminate entrainment into the diversion and minimize impingement.

Notching Old Carmel River Dam (Proponent's Proposed Project, Alternative 1, 2, 3 or 4) (FI-15)

The OCRD will be notched during the construction season of year 2 under the Proponent's Proposed Project, in year 3 under Alternative 1, or year 4 under Alternative 2. A large center section of the dam will be removed, leaving only the north and south abutments. The OCRD will no longer be a passage barrier.

Construction activities will occur for several weeks, up to a month, during the Steelhead rearing season in construction year 2. The plunge pool downstream of the OCRD will be dewatered and the river diverted around the site prior to construction activities. A portion of the channel upstream will be dewatered.

A fish rescue and relocation operation will be implemented in the plunge pool and dewatered stream channel, as described above. Rescued fish will be relocated to suitable habitat in the Carmel River.

When dam notching activities are complete, the channel upstream will be recontoured based on the expected geomorphic condition for the notched dam. Access roads will be removed and the new channel banks revegetated.

Sleepy Hollow Steelhead Rearing Facility (Proponent's Proposed Project, Alternative 1, 2, 3 or 4) (FI-16)

During construction periods, road construction, dewatering the plunge pool at the San Clemente Dam, diverting water around the reservoir, and reservoir drawdown have the potential to affect water quality at the Sleepy Hollow Steelhead Rearing Facility (SHSRF). Sediment delivered to the river below San Clemente Dam from sluicing or from sediment transported over the dam also may affect the SHSRF.

An alternative water supply will be made available to the SHSRF. Water may be pumped up from the Russell Wells and be made available to the SHSRF during construction years or during periods of excessive turbidity or sediment levels in the Carmel River.

Relocate CAW Water Diversion Upstream (Alternatives 1, 2, or 3) (FI-11)

Under the alternatives, the water supply diversion intake will be relocated from the current dam site to 6,000 feet upstream on Carmel River. An Operations Plan will be developed in conjunction with NMFS, CDFG, SWRCB, and the MPWMD that will provide flows for Steelhead habitat in this reach.

REFERENCES

California American Water Company (CAW). 2007a. Storm Water Pollution Prevention Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

CAW. 2007b. Botanical Resources Management Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

CAW. 2007c. Sluicing Operations and Maintenance Plan. Prepared by ENTRIX, Inc. Prepared for California American Water Company.

Yadon, V. A botanical report for six areas designated for possible alteration or disturbance in selecting a receiver site for sediment from behind the San Clemente Dam. Prepared for ENTRIX, Inc. Seattle, Washington.

Appendix W

WETLAND DELINEATION

FINAL

SAN CLEMENTE DAM SEISMIC SAFETY EIR/EIS PROJECT WETLAND DELINEATION

Prepared for:
CALIFORNIA-AMERICA WATER COMPANY
Monterey, CA

For Submittal to:

UNITED STATES ARMY CORPS OF ENGINEERS
San Francisco, CA

Prepared by:

ENTRIX, INC.
Walnut Creek, CA

Project No. 3018605

January, 2008

Page

Page

1.1 PROJECT BACKGROUND

The California American Water Company (CAW) proposes to implement the San Clemente Dam Seismic Safety Project to increase dam safety to meet current standards for withstanding a Maximum Credible Earthquake and passing the Probable Maximum Flood at the dam. The purposes and objectives for the project are to: 1) meet current standards for withstanding a MCE and PMF at the San Clemente Dam, 2) provide fish passage at the dam, maintain a point of diversion to support existing water supply facilities, water rights and services, and minimize financial impacts to California-American Water rate payers.

The Project area and various alternatives encompass the San Clemente Reservoir and portions of the Carmel River, San Clemente Creek, Tularcitos Creek, and an unnamed drainage. These areas include both potential jurisdictional wetlands and other waters of the U.S. Therefore, the San Clemente Dam Seismic Safety Project will require a permit from the Army Corps of Engineers (Corps) prior to starting the work.

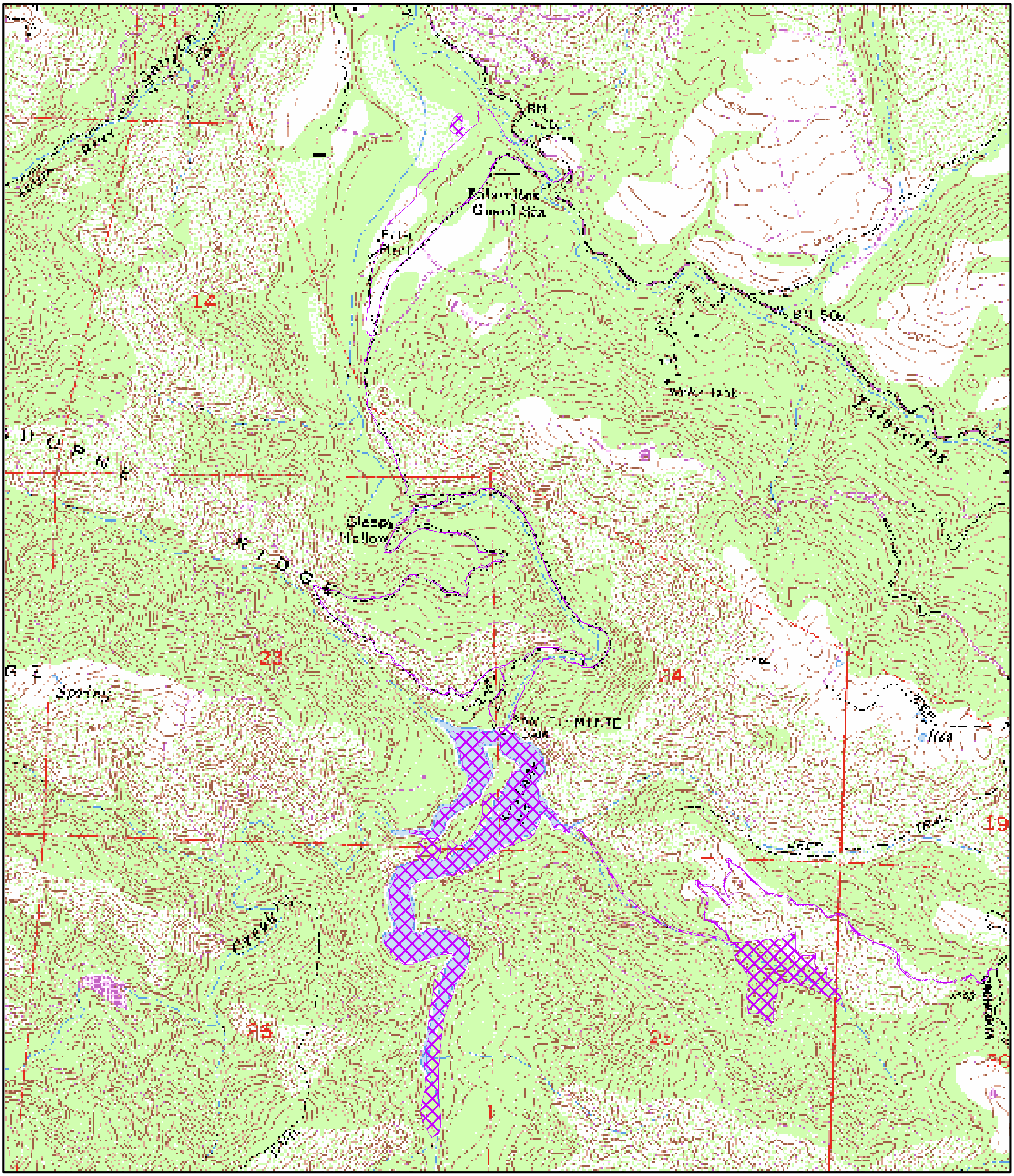
1.2 PROJECT LOCATION

The Project area is located along the Carmel River and several tributaries within Monterey County, California (Figure 1-1), including San Clemente Creek and Tularcitos Creek. The site is bounded by on the north by Carmel Valley Road and the Sleepy Hollow residential community on San Clemente Drive. Most of the land in the Project area and its vicinity is owned by CAW.

A set of figures depicting areas in which project-related activities intersect with potential jurisdictional waters of the U.S. is provided in Appendix A.

1.3 PROJECT DESCRIPTION

Construction is proposed at the project site in order to strengthen the existing dam to meet current safety standards. Prior to construction, access roads will be constructed or improved and staging areas will be cleared in the within the Project area. The proposed Project and one alternative would require the construction of a new crossing of Tularcitos Creek to reach the Project area directly from Carmel Valley Road without passing through the Sleepy Hollow community.



N

Project Area & Alternatives

Feet
0 385 770 1,540 2,310 3,080

1:24,000

USGS 7.5 minute quadrangle: Carmel Valley

Monterey

Project Area Inset

Figure 1-1
Project Area and Alternatives
San Clemente Dam
Seismic Retrofit EIR/EIS Project

ENTRIX

1.4 PURPOSE OF REPORT

The Corps has permit authorization over activities taking places in wetlands. Under the permit process, applicants are required to provide a wetland delineation of the project site as part of their permit application to the Corps. The purpose of this report is to present the results of an assessment of 1) the potential occurrence of jurisdictional wetlands at the project site and 2) the extent of other waters of the U.S. at the project site that may be under the jurisdiction of the Corps, pursuant to its authority under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The Project area includes relatively level floodplain areas and steep hillsides. The confluence of San Clemente Creek with the Carmel River is just upstream of the dam. The project site is primarily on wildlands, but some alternatives include access through a residential community at the Carmel Valley Road.

2.1 CLIMATE

Climatological information presented in the Soil Survey of Monterey County, California (USDA 1978) indicates that the area is characterized by a generally mild climate. Temperatures near the coast are uniform, but inland locations have summers that range from warm to hot. Winter temperatures inland may be below freezing. The average annual minimum temperature is 44.1 F, and the average annual maximum temperature is 70.7°F (WRCC 2005). The growing season in cultivated areas of Monterey County ranges from 200 to 350 days (USDA 1978). The average annual precipitation in the vicinity of the project is 17.4 inches in the valley (WRCC 2005). Most precipitation falls in winter.

2.2 VEGETATION

Based on literature review and field surveys, fifteen plant communities (habitat types) dominated primarily by native species were identified in the project vicinity. Six of these communities are riparian, four communities are upland forest or woodland types, and three communities are upland shrub-dominated types. The remaining two native plant communities are herbaceous. A number of sites within the Project area were mapped as intermediate between two recognized community types. Generally, these communities correspond to Sawyer and Keeler-Wolf's vegetation series (Sawyer & Keeler-Wolf 1995). Mixed stands may be described by Holland's vegetation classifications (Holland 1986), and these classifications have also been provided where they correlate with the series categories.

In addition to the native plant communities, sites that are classified as developed or disturbed/ruderal occur in the Project area. On these sites, human activity controls the vegetation present. The species of vegetation at these sites vary greatly, depending on micro-habitat conditions and disturbance and planting history. These sites are typically dominated by an assortment of weedy, mostly non-native annual and perennial grasses and herbs, unless they are occupied by developed facilities or landscaping.

The upland vegetation types present in the Project area and their dominant species are presented below. Brief descriptions of the riparian and wetland vegetation types occurring within the Project area follow.

UPLAND VEGETATION

Upland vegetation types in the Project area include Coast Live Oak Series (Coast Live Oak Forest) dominated by coast live oak, California Bay Series (California Bay Forest) dominated by California bay, Blue Oak Series (Blue Oak Woodland) dominated by blue oak (*Quercus douglasii*), a very small stand of Redwood Series (Upland Redwood Forest) dominated by coast redwood (*Sequoia sempervirens*), California Sagebrush Series, dominated by California sagebrush (*Artemisia californica*), Black Sage Series dominated by black sage (*Salvia mellifera*), California Sagebrush-Black Sage Series dominated by California sagebrush and black sage, Chamise Series dominated by chamise (*Adenostoma fasciculatum*), Chamise-black sage series dominated by black sage and chamise, Mock-Heather Scrub dominated by mock-heather (*Ericameria ericoides*), California Annual Grassland Series (Non-Native Grassland) dominated by non-native annual grasses and native and non-native herbs.

RIPARIAN VEGETATION

Riparian vegetation in the project area and vicinity includes one herbaceous type, two scrub types, and four forest types. Of these, the two scrub types, Narrowleaf Willow Series (Central Coast Riparian Scrub) and Mulefat Series (Mulefat Scrub), do not occur in the wetland delineation sites. These types are dominated by narrow-leaved willow (*Salix exigua*) and mulefat (*Baccharis salicifolia*), respectively.

One riparian forest type, California Sycamore Series (Sycamore Alluvial Woodland), also does not occur at any of the wetland delineation sites. This vegetation is dominated by California sycamore (*Platanus racemosa*).

Wetland and riparian vegetation types present at the wetland delineation sites include Central Coast Cottonwood-Sycamore Riparian Forest, White Alder Riparian Forest, Arroyo Willow Series (Central Coast Arroyo Willow Riparian Forest), and Coastal and Valley Freshwater Marsh. These types are described in more detail in the following sections.

Central Coast Cottonwood-Sycamore Riparian Forest

This community is the predominant riparian type on the flood plains of the Carmel River and Tularcitos Creek. The dominant species are large trees, including black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), California sycamore, red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), and white alder (*Alnus rhombifolia*). Coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and California bay (*Umbellularia californica*) are also found in this riparian forest.

Characteristic shrub species in areas of infrequent flooding include common snowberry (Symphoricarpos albus var. laevigatus), poison-oak (*Toxicodendron diversilobium*), and red-osier dogwood (*Cornus sericea*). Vines such as Pacific blackberry (*Rubus ursinus*) and virgin's bower (*Clematis ligusticifolia*) also may be abundant locally. The herb layer is generally sparse, but herb species such as slough sedge (*Carex barbarae*), stinging nettle (*Urtica dioica* ssp. *holosericea*), and Douglas' mugwort (*Artemisia douglasiana*) occur locally in the understory.

White Alder Riparian Forest

In areas within and adjacent to the Carmel River and San Clemente Creek channels that are subject to more frequent or more intense flooding, the tree canopy is sparser and less developed. Trees, primarily white alder and red willow, are interspersed with large shrubs such as narrow-leaved willow, mulefat, shrubby arroyo willow, and redosier dogwood. Shrubs and small trees may form dense thickets. A wide variety of herb species occurs in the more open areas. Stands of this community that occupy the edge of the previous high-water line of the reservoir around the reservoir pool have died since the maximum elevation of the reservoir has been lowered by the permanent removal of the flashboards.

Arroyo Willow Series (Central Coast Arroyo Willow Riparian Forest)

This community is dominated by the shrub arroyo willow, with red willow an associated species. The arroyo willow series occurs in two places in the northern portion of the project vicinity. The canopy of the arroyo willow forest is typically dense, with few understory plants. In the project vicinity, a few other shrubs such as coyote brush (*Baccharis pilularis*), poison-oak and vines such as Pacific blackberry may be present. The relatively sparse herbaceous understory includes Douglas' mugwort, California bee-plant (*Scrophularia californica*), and stinging nettle.

Coastal and Valley Freshwater Marsh

There are two retention ponds in the project vicinity north of the existing water treatment facility. These retention ponds are seasonally flooded. During the period in which the surveys were conducted in for the 2000 RDEIR, one of the retention ponds was flooded and created a freshwater marsh or pond habitat referable to the bulrush-cattail series. Viscid bulrush (*Scirpus acutus* var. *occidentalis*) and broad-leaved cattail (*Typha latifolia*) dominated this artificially created marsh habitat (Ecosystems West 1997).

Freshwater marsh areas are present along the Carmel River and San Clemente Creeks. These are generally an understory to the riparian shrub or tree canopy, but small stands without woody canopy are also present. These stands are dominat4ed by a variety of bulrushes, sedges, and other wetland species.

2.3 SOILS

Soils at the wetland study sites for the project belong to five soil mapping units (USDA 1978). One soil is defined as part of the Junipero-Sur complex, soil is defined as part of the Sheridan series, and one soil is defined as part of the rock-outcrop-xerorthent association. Psamments and fluvents, as well as xerorthents, have not been assigned to an association.

At the time the soil survey was completed, the bed of the reservoir was mapped as water. Because this was prior to the reduction in reservoir elevation, much of the now-exposed sediment in the reservoir has not been mapped. This sediment probably consists of psamments and fluvents. However, some of the exposed areas may no longer belong to either the frequently flooded or occasionally flooded categories.

Junipero-Sur complex soils are found on very steep to extremely steep slopes on mountains. These complexes consist of about 35 percent each of Junipero and Sur soils. The remainder consists of soils less than 20 inches deep to bedrock; very stony loamy sands; Sheridan, Vista, and Cienaba soils; and Rock outcrop-Xerorthents association. None of these soils are consider hydric except the Narlon component of Sheridan coarse sandy loam on 5 to 15 percent slopes (USDA 1998, 2004).

In a typical soil profile for the Junipero series, the surface layer from 0 to 5 inches is dark grayish brown sandy loam (very dark gray moist: 10YR 3/1). From 5 to 15 inches, the profile is a dark grayish sandy loam (very dark grayish brown moist: 10YR 3/2). From 15 to 30 inches, the profile is brown gravelly sandy loam (very dark grayish brown moist: 10 YR 3/2) (USDA 1978).

In a typical profile for the Sur series, the surface layer from 0 to 7 inches is a very dark grayish brown stony light sandy loam (very dark brown moist: 10YR 2/2), with gravel and cobblestones. From 7 to 24 inches, the profile is a brown stony light sandy loam (dark brown moist: 7.5 YR 4/4), with about 40 percent gravel, cobblestones, and subangular stones (USDA 1978).

Sheridan coarse sandy loam, 15 to 30 percent slopes is present near the upstream end of the reservoir. Sheridan soils are well-drained soils found on mountains and hills with slopes ranging from five to 75 percent. While these soils usually occur at elevations 1,000 to 3,000 feet, they may be found at elevations up to 5,000 feet on south facing slopes (USDA 1978). Soils included in the Sheridan coarse sandy loam, 15 to 30 percent slopes, map unit are Cieneba, Diablo, McCoy, Pfeiffer, San Andreas, and Vista soils. None of these soils are considered hydric except the Narlon component of Sheridan coarse sandy loam on 5 to 15 percent slopes and Diablo clay on 15 to 30 percent slopes (USDA 1998, 2002).

In a typical profile for the Sheridan series, the surface layer from 0 to 8 inches is a dark grayish brown coarse sandy loam (very dark brown moist; 10YR 2/2), with moderate medium and coarse subangular blocky structure. From 8 to 18 inches, the profile is a dark grayish brown coarse sandy loam (very dark brown moist: 10YR 2/2), with a strong medium and coarse granular structure. From 18 to 28 inches, the profile is a dark grayish brown coarse sandy loam (very dark brown moist: 10YR 2/2), with a strong medium granular structure (USDA 1978).

Rock-outcrop-xerorthent association units consist of rock outcrops and very shallow soils. This association is found on strongly sloping to extremely steep mountains. Four kinds of rock outcrop are included in this association. The rock outcrop type most likely to be found in the Project area consists of grano-diorite, granite, gabbro, greenstone, serpentine, and limestone (USDA 1978).

Psamments and fluvents along the Carmel River downstream of the dam are mapped as the frequently flooded category. This substrate has undulating areas of stratified sandy, gravelly, and cobbly sediments on floodplains. These soils are considered hydric soils (USDA 2004). The second category of psamments and fluvents are categorized as occasionally flooded and are also considered hydric soils (USDA 2004).

Dissected xerorthents are steep to extremely steep soils on river bluffs, steep escarpments of fans and terraces, and on the banks of deeply entrenched streams with narrow bottoms. Unconsolidated or weakly consolidated alluvium comprises these soils. The alluvium usually contains pebbles and cobblestones (USDA 1978). These soils are not considered hydric (USDA 1998, 2004).

2.4 HYDROLOGY

The study area includes water crossings on the Carmel River and Tularcitos Creek, an access road along the Carmel River, San Clemente Reservoir and the channels and floodplains of the Carmel River and San Clemente Creek immediately upstream of the dam, and a section of an unnamed tributary that reaches the Carmel River from the east. Potentially jurisdictional wetlands and other waters of the U.S. that may be affected by with Project activities are associated with these water bodies.

3.0 Methods

This section describes 1) the parameters used to determine potential jurisdictional wetlands of the United States based on the Corps' *Wetland Delineation Manual* (USACOE 1987) 2) the criteria used to determine other waters of the United States, and 3) the field methods used to apply these parameters.

3.1 CORPS PARAMETERS

Three parameters (vegetation, soils and hydrology) are used by the Corps to determine jurisdictional wetlands. A summary of these parameters is presented below.

3.1.1 HYDROPHYTIC VEGETATION

Hydrophytic vegetation is defined in the Corps' *Wetland Delineation Manual* (USACOE 1987) as *"macrophytic plant life that occurs in areas where the frequency and duration of soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present."* For a site to be defined as supporting hydrophytic vegetation, the dominant plant species must be species that, by virtue of physiological and reproductive adaptations, are adapted to wetland inundation or saturated soils. Table 3-1 provides a listing of plant categories and their indicator status (i.e., probability of occurrence in wetlands).

3.1.2 HYDRIC SOILS

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (SSS 1997). These soils usually support hydrophytic vegetation.

3.1.3 WETLAND HYDROLOGY

The driving force creating wetlands is "wetland hydrology"; that is, permanent or periodic inundation, or soil saturation, for a significant period (usually a week or more) during the growing season. Wetland hydrology refers to the hydrologic regime of an area that is periodically inundated, or the soils of which are saturated to the surface, at some time during the growing season. Ponded or standing water for seven or more days indicates wetland hydrology.

Table 3-1. Indicator Codes for Plant Species

INDICATOR CATEGORY	CODE	DESCRIPTION
Obligate Wetland Plant	OBL	Occurs almost always (estimated probability >99%) under natural conditions in wetlands.
Facultative Wetland Plant	FACW	Usually occurs in wetlands (estimated probability 67% to 99%), but occasionally found in non-wetlands.
Facultative Plant	FAC	Equally likely to occur in wetlands or non-wetlands (estimated probability 34% to 66%).
Facultative Upland Plant	FACU	Usually occurs in non-wetlands (estimated probability 67% to 99%), but occasionally found in wetlands (estimated probability 1% to 33%).
Obligate Upland Plant	UPL	Occurs in wetlands in other regions, but almost always occurs (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

+ indicates increased probability of occurrence in wetlands
- indicates decreased probability of occurrence in wetlands

3.2 FIELD METHODS

The methods used in the delineation of potential jurisdictional wetland areas at the project site are consistent with those 1) outlined in the Corps' *Wetlands Delineation Manual* (1987) and subsequent comments and 2) outlined in the National Food Security Act Manual (1996) and its amendments. Standard methods were employed to obtain data on the vegetation, soils and hydrology at the project site.

3.2.1 INITIAL IDENTIFICATION OF WETLANDS

Initial identification of potential wetlands was based on previous delineations at the site. Review of aerial photographs and field observations confirmed the presence of additional potential wetlands and other waters of the United States at proposed construction or disposal sites.

3.2.2 SELECTION OF SAMPLE SITES

A wetland delineation of the potential jurisdictional wetland areas was conducted by ENTRIX staff (Gretchen Lebednik, botanist, Keven Ann Colgate, biologist, Ruth Sundermeyer, biologist, and Gina Morimoto, biologist) on July 18-22, 2005; August 9 and 10, 2005; and February 27-28, 2006). Potential jurisdictional wetlands in the project area consisted of stream-side vegetation that transitioned in non-jurisdictional riparian or upland vegetation. Sample site locations were selected to establish the boundaries between the jurisdictional and non-jurisdictional components (see Figure A-1 in Appendix A). Fifty-six sample sites were selected (CB1A, CB1B, CB2A, CB2B, CF1A, CF1B, CF1C, CF1D, CF2A, CF2B, CF2C, CF2D, CRW1, CRW2, CRW3, CRW4, CRW5, CRW6, CRW7, CRW8, CRW9, CRW10, CRW11A, CRW11B, DR1A, DR1B, DR2A, DR2B, DR3A, DR3B, DR4A, DR4B, DR5A, DR5B, SC1, SC2, SC3, SC4, SC5, SC6, TC1A, TC1B, TC1C, TC1D, TC2A, TC2B, TC3A, TC3B, TC3C, TC3D, TR1A, TR2A, TR2B, TR3A, TR4A, TR4B).

3.2.3 HYDROPHYTIC VEGETATION

At each site, herbaceous vegetation in five-foot radius was identified. Woody vegetation was usually identified for a 30-foot radius, unless that extent crossed into another vegetation type. Hydrophytic vegetation was considered to be present if more than 50 percent of the dominant species had a wetland indicator status of FAC, FACW, or OBL. The indicator status of each species was obtained from the *National List of Plant Species that Occur in Wetlands: California* (USFWS 1988), which is summarized in Table 3-2. The taxonomy of plants is based on Hickman (1993).

3.2.4 HYDRIC SOILS

Due to wetness during the growing season, hydric soils usually develop certain morphological properties that can be readily observed in the field. Prolonged anaerobic soil conditions typically lower the soil redox potential and cause a chemical reduction of some soil components, mainly iron oxides and manganese oxides. This reduction affects solubility, movement, and aggregation of these oxides. Reduction is reflected in the soil color and other physical characteristics that are usually indicative of hydric soils.

Table 3-2. Wetland Plant Species Observed Within the 2006 San Clemente Dam Seismic Retrofit Wetland Delineation Study Area.

Scientific Name	Common Name	Indicator
Alnus rhombifolia	white alder	FACW
Artemisia douglasiana	mugwort	FACW
Baccharis salicifolius	mulefat	FACW
Bromus madritensis ssp. *rubens*	red brome	NI
Carex sp.	sedge	OBL to UPL
Clematis ligusticifolia	western white clematis	FAC
Cornus sericea	red-osier dogwood	FACW
Cyperus eragrostis	tall flatsedge	FACW
Eleocharis sp.	spikerush	OBL
Equisetum sp.	scouring rush	FACW -FAC
Euthamia occidentalis	western goldenrod	OBL
Helenium puberulum	sneeze-weed	FACW
Juncus sp.	rush	OBL to FAC
Leymus triticoides	beardless wildrye	FAC+
Mentha arvensis	wild mint	FACW
Platanus racemosa	California sycamore	FACW
Polypogon monspeliensis	annual rabbit's-foot grass	FACW+
Populus balsamifera ssp. *trichocarpa*	black cottonwood	FACW
Potentilla glandulosa	sticky cinquefoil	FAC
Ribes sp.	currant	varies
Rubus ursinus	California blackberry	FAC+
Salix lasiolepis	arroyo willow	FACW
Salix sp.	willow	OBL-FACW
Scirpus acutus var. *occidentalis*	viscid bulrush	OBL
Scirpus microcarpus	panicled bulrush	OBL
Scirpus robustus	alkali bulrush	OBL
Typha spp.	cattail	OBL
Umbellularia californica	California bay	FAC

Soil pits were excavated to 12 to 16 inches to examine the soil at each sample site where it was possible to dig. The soil chroma for each soil pit was characterized by the appropriate Munsell soil color chart (Munsell Color 1994). Each soil sample was described by its Hue notation of color, which indicates its relation to red, yellow, green, blue, and purple; its Value notation, which indicates lightness; and its Chroma notation, which indicates its departure from a neutral color of the same lightness. In this study area, pits could not be dug at many sites due to the presence of rocks, dense, woody roots, or other impediments to excavation. These sites were evaluated variously by observations of inundation during a portion of the growing season, extrapolation from similar sites, and confirmation of a mapped hydric soil type.

3.2.5 WETLAND HYDROLOGY

Numerous factors influence the wetness of an area including precipitation, stratigraphy, topography, soil permeability, and plant cover. The frequency and duration of inundation or soil saturation are important in separating wetlands from non-wetlands. Duration usually is the more important factor. Soil permeability, related to the texture of the soil, influences the duration of inundation and soil saturation. For example, clayey soils absorb water more slowly than sandy or loamy soils, and therefore have slower permeability and remain saturated much longer. The type and amount of plant cover also affect both the degree of inundation and duration of saturated soil conditions. Excess water drains more slowly in areas of abundant plant cover, thereby increasing duration of inundation and soil saturation. On the other hand, transpiration rates are higher in areas of abundant plant cover, which may reduce the duration of soil saturation.

At each sample site, the depth to saturated soil in the excavated pit was measured and primary indicators, such as inundation and water marks, were documented.

3.2.6 DATA FORMS

The data collected were used to complete the data forms for routine wetland determination, as specified in the Corps' *Wetlands Delineation Manual* (1987). The completed data forms are included in Appendix A.

3.2.7 OTHER WATERS OF THE UNITED STATES

Other waters of the United States were determined by estimating the ordinary high water mark (OHWM) on the reservoir and the streams with defined beds and banks in the Project area and alternatives and mapping the areas that lie below this elevation. In the sediment plain above the dam, the channel of the river braids and may shift. Although there are extensive stands of riparian vegetation in this area, other sections that have been exposed since the maximum water elevation was lowered are being colonized by upland species. In this area, other waters of the U.S. were defined by the wetted channel as it existed at the time of the delineations. The actual extent and location of these channels may vary from year to year.

This section describes the results of the wetland delineation and other waters of the U.S. present in the study area.

4.1 WETLANDS DELINEATION

The maximum extent of possible jurisdictional waters of the United States (as defined under Section 404 of the Clean Water Act) that may be directly affected by the proposed project or its alternatives is approximately 12.6 acres (5.1 hectares). The results of the wetland delineation are shown in Figure A-1 (Appendix A). This total does not include the approximately 2.1 acres (0.8 hectare) of wetlands identified in a strip between the access road and the Carmel River upstream of the concrete ford, but below the plunge pool (a reach that is approximately 6.570 feet long). The width of jurisdictional wetlands along this reach varies from 7 feet to 35 feet. At this time, that area is not expected to be impacted by project activities.

4.1.1 WETLANDS MEETING JURISDICTIONAL CRITERIA ABOVE SAN CLEMENTE DAM

The areas assessed above the dam encompass all of the areas potentially affected by the proposed project and the various alternatives along the Carmel River, San Clemente Creek, and Tularcitos Creek. Locations with potential jurisdictional wetlands and other Waters of the U.S. in the Project area for the Proponent's Proposed Project and alternatives include Tularcitos Creek at the new Tularcitos access road crossing, the concrete ford on an existing access road, the Old Carmel Dam bridge, the existing plunge pool access road along the east side of the Carmel River (which requires improvements), the plunge pool at the San Clemente Dam, and the reservoir flood plain upstream of the San Clemente Dam .

Olberding and Associates conducted a separate field survey of the CVFP settling basins in 1997. The U.S. Army Corps of Engineers (USACE) concurred with this study in determining that the settling basins are not considered to be jurisdictional wetlands or waters of the U.S. because they are artificial settling basins constructed on dry land for the purpose of collection and detention of piped sediment-laden water from the CVFP. CVFP activities are ongoing, the source of hydrology in the settling basins is artificial and, under normal circumstances, wetland vegetation would not be present.

Wetlands in the project area for the Proponent's Proposed Project and Alternatives consist primarily of riparian vegetation associated with the Carmel River, Tularcitos Creek, and the flood plain of the reservoir along the Carmel River and San Clemente Creek. This riparian vegetation would be classified as palustrine forested wetlands in the Cowardin system where the trees are taller than 20 feet, or as palustrine or lacustrine shrub-scrub wetlands where the woody vegetation is less than 20 feet tall (Cowardin 1979). Where only herbaceous vegetation is present, the Cowardin classification would be “palustrine emergent wetlands”, ranging from “permanently flooded” to “seasonally flooded”.

The 1994 delineation was conducted when much of this area was below the ordinary high water level of 537 feet. By 1997, when the ordinary high water level had been dropped to 525 feet, much of this area was exposed. The 1997 delineation report noted that there were areas at the base of slopes along the former shoreline that met all three criteria. Observations made at that time suggested that these features might continue to meet those criteria, although it was not clear that they would remain in the long term.

In the 2005 delineation, some of these areas were still identifiable, but they no longer met the criteria, with the exception of the shoreline of a pond at CRW10.

Areas meeting the criteria were mapped at CRW1, CRW2, CRW3, CRW4, CRW6, CRW7, CRW8, CRW9, CRW10, TR2A, TR4A, SC1, SC2, SC3, SC4, SC5, and SC6. At most of these sites, the jurisdictional wetland area consisted of small, narrow stands along the stream channels.

The TR2A, TR4A sites at the upstream end of the Carmel River arm of the reservoir were ponded backwater areas located adjacent to the main channel of the river. During high flow events these areas are hydraulically connected to the main channel and receive surface flow. Under normal conditions these sites are isolated from the main channel and water is typically ponded. Herbaceous vegetation at these wetland sites was dominated by cattails (*Typha* spp.) bulrushes (*Scirpus* spp.) sedges (*Carex* spp.) and nutsedges (*Cyperus* spp.). Woody vegetation was dominated by white alder (FACW) and willows (OBL to FACW). Wetland soils were indicated by low chroma colors (5 Y 3/1) without mottling where they were observable. At many locations, however, the stand was at the edge of inundation. No other indicators of hydric soil were observed. Typical indicators of hydrology at wetland sites included inundation or saturation in the upper 12 inches, water marks, drift lines and/or sediment deposits.

4.1.2 Wetlands Meeting Jurisdictional Criteria Below San Clemente Dam

Wetlands meeting jurisdictional criteria were mapped at the Tularcitos Creek, which transverses the concrete ford crossing of the Carmel River, along the Carmel River and parallel access road at the Old Carmel River Bridge, and at the plunge pool. Vegetation in these wetlands is generally dominated by white alder (FAC), black cottonwood (FACW), California sycamore (FACW), willows, (FAC to OBL), sedges (FAC to OBL), and California blackberry (FAC+), although numerous other indicator species were also recorded (Table 3-2). Soils in these areas were generally rocky, and many met the wetland criterion because they match the description of the mapped hydric soil unit. In a few instances where it was not possible to dig soil pits, the hydric condition of the soil was assumed, based on the hydrology, the dominance of obligate wetland species, or the conditions at a similar site nearby. Hydrologic indicators vary, but include saturation in the upper twelve inches, drift lines, and sediment deposits.

These wetlands include 0.02 acre (0.01 hectare) at the access road (bridge), 0.04 acre (0.02 hectare) at the plunge pool, 0.01 acre (0.004 hectare) at the Tularcitos crossing, 0.06 acre (0.02 hectare) at the concrete ford, 0.6 acre (0.2 hectare) at the Carmel River downstream of plunge pool, and 0.2 acre (0.08 hectare) along the Carmel River, San Clemente Creek, and reservoir pool.

4.2 OTHER WATERS OF THE U.S.

Other waters of the U.S. in the project area include the Carmel River, San Clemente Creek, Tularcitos Creek, the unnamed tributary drainage in which the sediment disposal site is located, and the lower reservoir shoreline of San Clemente Reservoir.

At the Tularcitos Creek crossing, the width at the OHWM averaged 12.5 feet (3.8 meters). The total area of jurisdictional other waters of the U.S. in the 100-foot long study area is 0.03 acre (0.01 hectare).

At the concrete ford crossing of the Carmel River, the width at the OHWM averaged 15.4 feet (4.7 meters). The total area of jurisdictional other waters of the U.S. in the 100-foot long study area is 0.04 acre (0.01 hectare).

At the plunge pool, the total area of jurisdictional other waters of the U.S. in the project area is 0.2 acre (0.08 hectare).

Above the dam, the total area of jurisdictional other waters of the U.S. is 10.9 acres (4.4 hectare). Of this, 0.2 acre (0.1 hectare) comprises the 1,749-foot (533 meters) length of San Clemente Creek, 4.1 acres (1.6 hectares) comprise the 9,543-foot (2,909 meters) length of the Carmel River with its side channels, and 6.84 acres (2.8 hectares) comprise the reservoir pool. Although the sediment floodplain of San Clemente Creek widens to almost 340 feet (104 meters) at the reservoir, it is considerably narrower for most of its length than the sediment floodplain of the Carmel River, which varies from 47 to 580 feet (14 to 177 meters) in width in this part of the project area.

At the sediment disposal site, the total length of jurisdictional other waters of the U.S. is 1,755 feet (534.9 meters). The total area of jurisdictional other waters of the U.S. is 0.12 acre (0.05 hectare). The main channel upstream of the jeep trail is 1,695 feet (516.6 meters) in length, with an average width of 3 feet (0.91 meter) providing 0.12 acre (0.05 hectare) of other waters of the U.S. Two side channels have defined beds and banks for short distances. These are 20 feet (6.1 meters) by an average of 1 foot (0.3 meter) wide and 40 feet (12.2 hectare) by 1 foot (0.3 meter) wide, providing 0.0005 acre (0.0002 hectare) and 0.001 acre (0.0004 hectare) of other waters of the U.S., respectively.

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APPENDIX A

Maps of Potential Jurisdictional Seasonal Wetlands and Other Waters of the U.S. at the San Clemente Dam Seismic Safety Project and Alternatives Sites in Monterey County, California

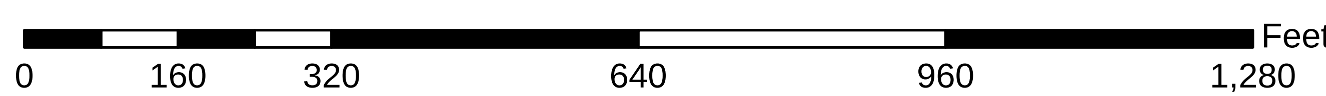
Legend

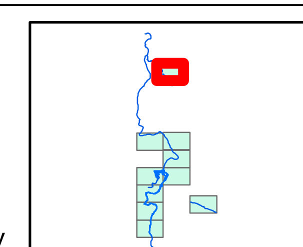
Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

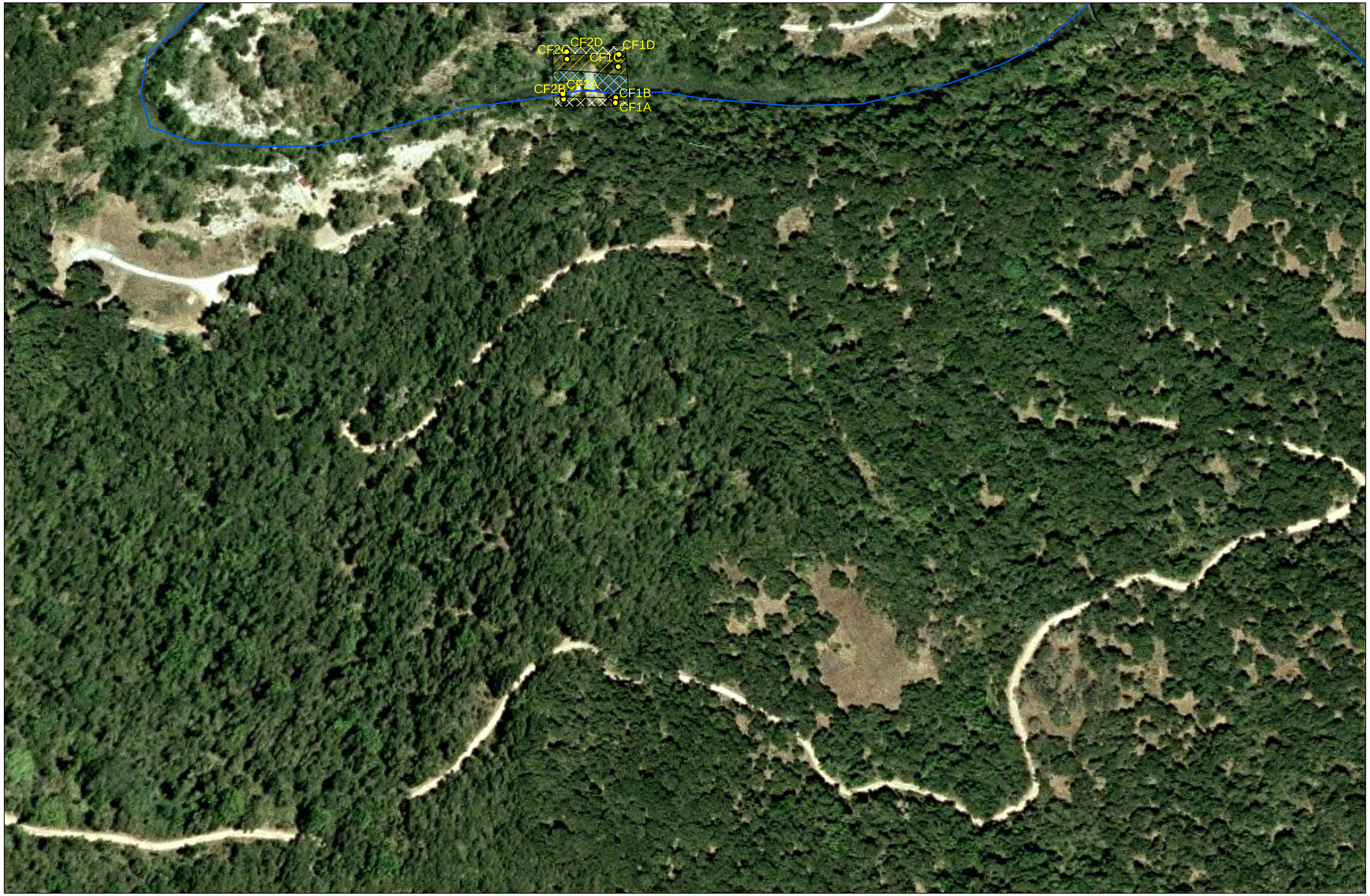




Project Vicinity

Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 1 of 10

ENTRIX



Legend

Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®

0 160 320 640 960 1,280 Feet

Project Vicinity

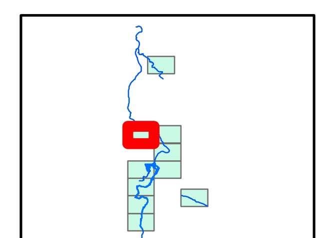


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 2 of 10

ENTRIX

Legend

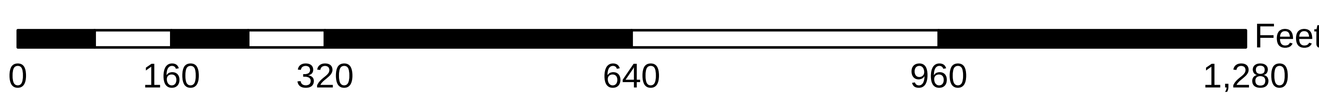
Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®



Project Vicinity

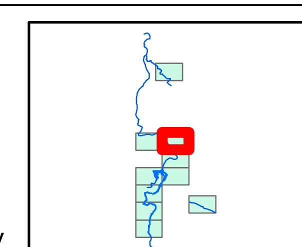


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 3 of 10

ENTRIX

Legend

Wetland Delineation Sites

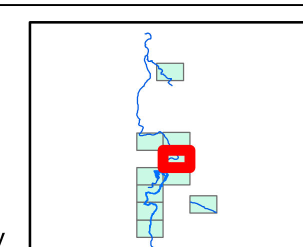
- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®

0 160 320 640 960 1,280 Feet



Project Vicinity

Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 4 of 10

ENTRIX

Legend

Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

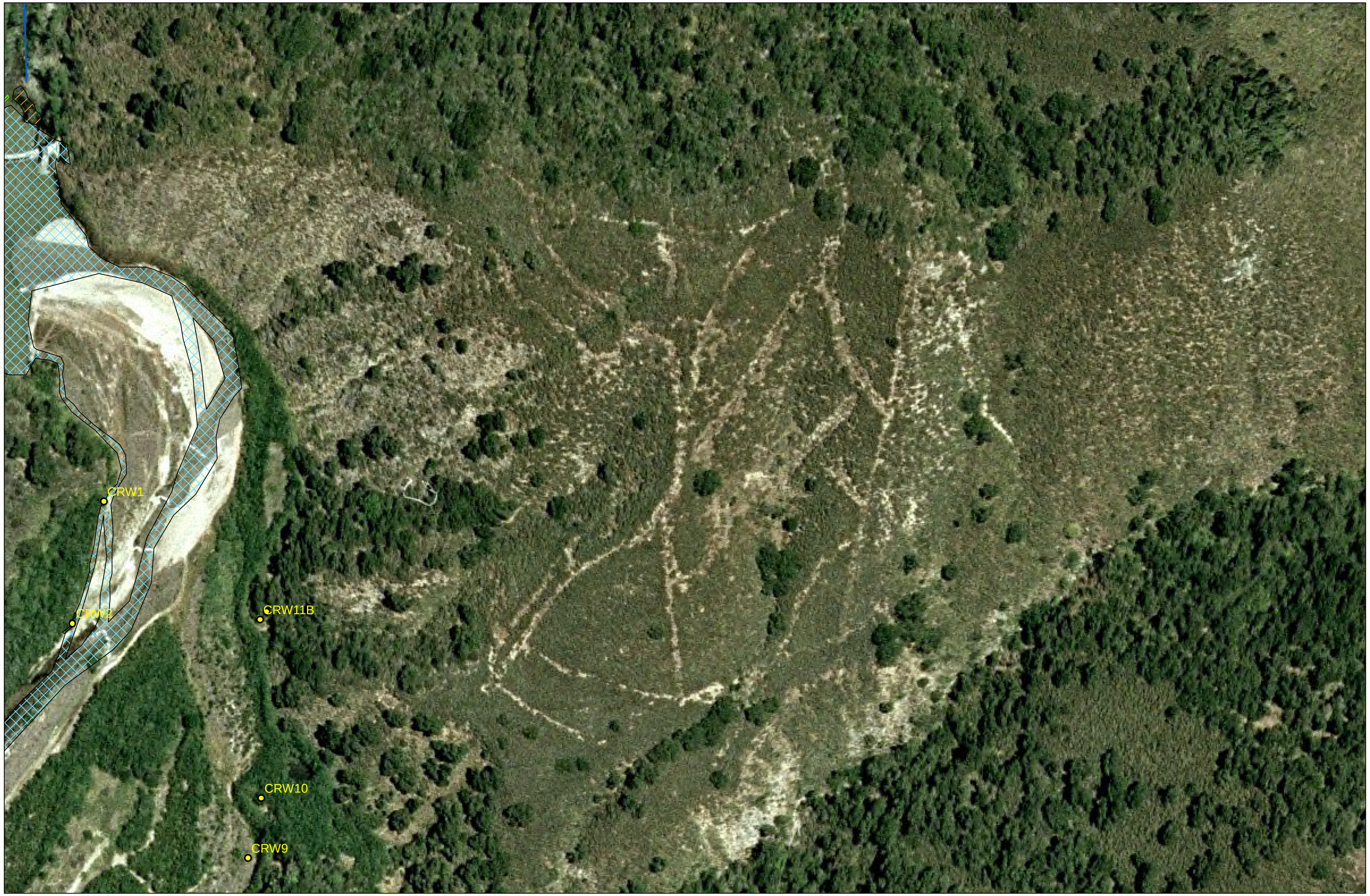
®

Feet
0 160 320 640 960 1,280

Project Vicinity

Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 5 of 10

ENTRIX



Legend

Wetland Delineation Sites

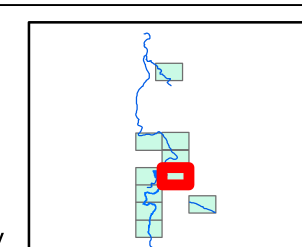
- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®

Feet
0 160 320 640 960 1,280



Project Vicinity

Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 6 of 10

ENTRIX

Legend

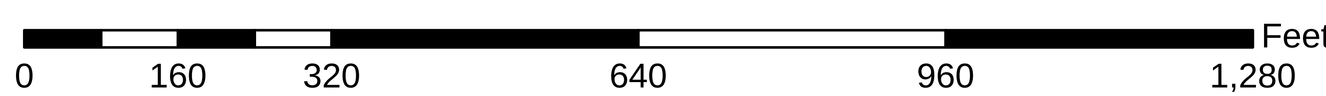
Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®



Project Vicinity

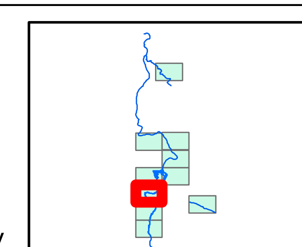


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 7 of 10

ENTRIX

Legend

Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®

0 160 320 640 960 1,280 Feet

Project Vicinity

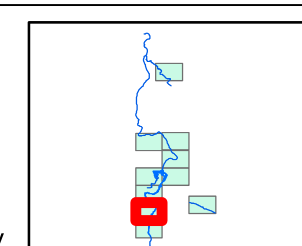


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 8 of 10

ENTRIX

Legend

Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

N

Feet
0 160 320 640 960 1,280

Project Vicinity

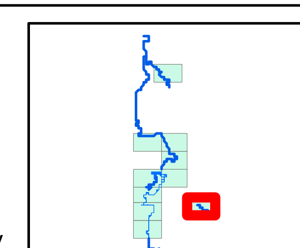


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 9 of 10

ENTRIX

Legend

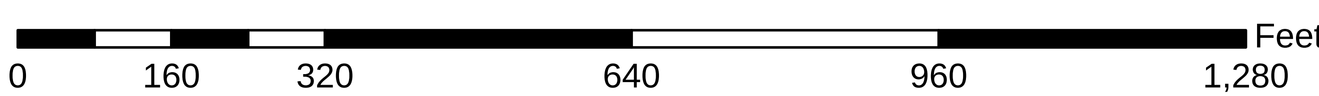
Wetland Delineation Sites

- Sample points
- Stream
- Freshwater marsh
- Jurisdictional riparian
- Other waters of the U.S.
- Upland riparian

1:2,400

Projection: NAD83
Datum: Lambert Conformal Conical

®



Project Vicinity

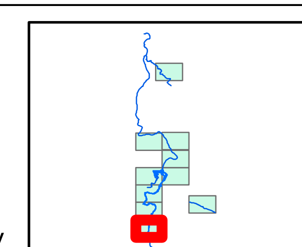


Figure A-1
Wetlands and Other Waters of the U.S. in the Project Area
Tile 10 of 10

ENTRIX

APPENDIX B
Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC1A
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus microcarpus*	H	OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☒ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Below OHWM

SOILS

Plot ID: TC1A

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Site is vegetated by obligate wetland indicator species and is below the OHWM.

TC1A is in section adjacent to channel. TC1B is upslope.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

No pit dug – could not penetrate roots

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/19/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC1B

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	9.		
2. *Salix sp.*	T	OBL-FACW	10.		
3. *Quercus agrifolia*	T	UPL	11.		
4. *Toxicodendron diversilobum*	S	UPL	12.		
5. *Rubus ursinus*	S	FAC+	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A__ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: TC1B

Map Unit Name
(Series and Phase) __Xerorthents, dissected

Drainage Class: _Variable
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): _N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

TC1A is in section adjacent to channel. TC1B is upslope.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

No pit dug – could not penetrate roots

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC1C
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus microcarpus*	H	OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: N/A (in.)

Depth to Saturated Soil N/A (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks:

SOILS

Plot ID: TC1C

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Site is vegetated by obligate wetland indicator species and is below the OHWM.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC1D

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	9.		
2. *Quercus agrifolia*	T	UPL	10.		
3. *Salix* sp.	S	OBL-FACW	11.		
4. *Ribes* sp.	S	varies	12.		
5. *Pteridium aquilinum*	H	FACU	13.		
6. *Rubus ursinus*	S	FAC+	14.		
7. *Clematis* sp.	V	varies	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): Probably 60% or more

Remarks: Clematis is probably *Clematis ligusticifolia*, a FAC indicator species.

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: N/A (in.)

Depth to Saturated Soil N/A (in.)

Remarks: Above the OHWM

SOILS

Plot ID: TC1D

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		10YR 3/2			

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

A 2-inch layer of lighter sand was present in part of the pit at depth below surface of 3 inches

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 7/19/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: TC2A
Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: TC2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	FACW	9.		
2. *Rubus ursinus*	S	FAC+	10.		
3. *Toxicodendron diversilobum*	S	UPL	11.		
4. *Clematis* sp.	V	varies	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 50% and probably 75%

Remarks: Clematis is probably *Clematis ligusticifolia* (FAC)

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below OHWM. Soil at channel appeared to be saturated at the surface.

SOILS

Plot ID: TC2A

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Could not penetrate roots without collapsing bank into stream. No pit dug.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)	(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present? (assumed)	Yes No		Is this Sampling Point Within a Wetland? Yes No

Remarks:

TC2A is in section adjacent to channel. TC2B is upslope.

Data Form
Routine Wetland Determination
(1987 CoE Wetlands Delineation Manual)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC2B
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	FACW	9.		
2. *Cornus sericea*	T	FACW	10.		
3. *Rubus ursinus*	S	FAC+	11.		
4. *Toxicodendron diversilobum*	S	UPL	12.		
5. *Clematis* sp.	V	varies	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 60%, probably 80%

Remarks: Clematis is probably *Clematis ligusticifolia* (FAC)

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

Field Observations:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Wetland Hydrology Indicators:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above OHWM, soil is not saturated at the surface. Upslope from TC2A.

SOILS | Plot ID: TC2B

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Could not dig pit through dense tree roots.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)	
Wetland Hydrology Present?	Yes No		
Hydric Soils Present?	Yes No		
		Is this Sampling Point Within a Wetland?	Yes No (Circle)

Remarks:

TC2A is in section adjacent to channel. TC2B is upslope.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC3A

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	9.		
2. *Umbellularia californica*	T	FAC	10.		
3. *Quercus agrifolia*	T	UPL	11.		
4. *Symphoricarpos* sp.	S	FACU - UPL	12.		
5. *Toxicodendron diversilobum*	S	UPL	13.		
6. *Rubus ursinus*	S	FAC+	14.		
7. *Pteridium aquilinum*	H	FACU	15.		
8. *Helenium puberulum*	H	FACW	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above OHWM

SOILS Plot ID: TC3A

Map Unit Name
(Series and Phase) Xerorthents, dissected
Drainage Class: Variable
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
		Light-colored			sandy

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rainy day. Colors could not be reliably determined under canopy

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No (Circle)	
Wetland Hydrology Present?	Yes No	(Circle)
Hydric Soils Present?	Yes No	Is this Sampling Point Within a Wetland? Yes No

Remarks:

TC3A is upslope from TC3B

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/20/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: TC3B

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TC3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	FACW	9.		
2. *Cornus sericea*	T	FACW	10.		
3. *Eleocharis* sp.	H	OBL	11.		
4. *Helenium puberulum*	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below OHWM.

SOILS

Plot ID: TC3B

Map Unit Name
(Series and Phase) __Xerorthents, dissected___________________________

Drainage Class: _Variable_______________
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): _N/A____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

Could not penetrate roots. No pit dug. All dominant species obligate or facultative wetland indicators

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks

TC3A is upslope from TC3B:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 7/20/2005
Applicant/Owner: California-American Water Company — County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Bare bank
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: TC3C
Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TC3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1.			9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

Remarks: Bank is bare – no vegetation.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: ______ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Below OHWM – other waters of the U.S.

SOILS Plot ID: TC3C

Map Unit Name (Series and Phase) Xerorthents, dissected Taxonomy (Subgroup): N/A	Drainage Class: Variable Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	(Circle) Is this Sampling Point Within a Wetland? Yes No

Remarks:

Below OHWM – other waters of the U.S.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 7/19/2005

Applicant/Owner: California-American Water Company — County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: TC3D

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TC3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	FACW	9.		
2. *Cornus sericea*	T	FACW	10.		
3. *Toxicodendron diversilobum*	S	UPL	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above OHWM

SOILS

Plot ID: TC3D

Map Unit Name
(Series and Phase) Xerorthents, dissected

Drainage Class: Variable

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Could not dig pit through dense tree roots.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No (Circle)		(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present?	Yes No	Is this Sampling Point Within a Wetland?	Yes No

Remarks:

Upslope from TC3C.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/18/2005

Applicant/Owner: California-American Water Company County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CF1A

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CF1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Carex* sp.	H	varies	10.		
3. unidentified grass	H	varies	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 67%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS Plot ID: CF1A

Map Unit Name (Series and Phase) Psamments and fluvents	Drainage Class: Excessive
Taxonomy (Subgroup): N/A	Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/18-19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒ Yes ☐ No Community ID: Coast live oak woodland
Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☒ No Plot ID: CF1B
Is the area a potential Problem Area? ☐ Yes ☒ No Transect ID: CF1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Quercus agrifolia*	T	UPL	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3. *Rubus ursinus*	S	FAC+	11.		
4. *Toxicodendron diversilobum*	S	UPL	12.		
5. *Pteridium aquilinum*	H	FACU	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 40%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: CF1B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Taxonomy (Subgroup): N/A

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		10YR 3/3	N/A	N/A	sandy

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No (Circle)		(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present?	Yes No	Is this Sampling Point Within a Wetland?	Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CF1C

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CF1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Salix* sp.	S	OBL-FACW	11.		
4. *Scirpus microcarpus*	H	OBL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A__ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS

Plot ID: CF1C

Map Unit Name
(Series and Phase) ___Psamments and fluvents_________________________

Drainage Class: __Excessive_____________

Taxonomy (Subgroup): __N/A_____________________________________

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/19/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CF1D

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CF1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Platanus racemosa*	T	FACW	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3. *Rubus ursinus*	S	FAC+	11.		
4. *Scirpus microcarpus*	H	OBL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >12 (in.)

Depth to Saturated Soil >12 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: CF1D

Map Unit Name
(Series and Phase) Psamments and fluvents

Taxonomy (Subgroup): N/A

Drainage Class: Excessive
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 3/3	N/A	N/A	Sandy, rock and cobble

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks: many roots

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 7/19/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: CF2A
Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: CF2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Alnus rhombifolia*	S	FACW	10.		
2. *Carex* sp.	H	OBL-FAC	11.		
4. unidentified grass	H	varies	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A__ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☒ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS

Plot ID: CF2A

Map Unit Name (Series and Phase) ___Psamments and fluvents_______________________ Taxonomy (Subgroup): __N/A______________________________	Drainage Class: __Excessive_____________ Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

____ Histosol	____ Concretions
____ Histic Epipedon	____ High Organic Content in Surface Layer in Sandy Soils
____ Sulfidic Odor	____ Organic Streaking in Sandy Soils
____ Aquic Moisture Regime	____ Listed on Local Hydric Soils List
____ Reducing Conditions	____ Listed on National Hydric Soils List
____ Gleyed or Low-Chroma Colors	____ Other (Explain in Remarks)

Remarks:
All cobble – no pit dug

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)	(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present?	Yes No		Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/19/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CF2B

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CF2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3. *Populus balsamifera* ssp. *trichocarpa*	S	FACW	11.		
4. *Toxicodendron diversilobum*	S	UPL	12.		
5. *Rubus ursinus*	S	FAC+	13.		
6. *Pteridium aquilinum*	H	FACU	14.		
7. *Carex* sp.	H	varies	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 71%, probably 86%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >13 (in.)

Depth to Saturated Soil >13 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: CF2B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-13		10Yr 4/3			Sandy site among cobbles

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 7/19/2005

Applicant/Owner: California-American Water Company — County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CF2C

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CF2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix lasiolepis*	S	FACW	10.		
3. *Alnus rhombifolia*	S	FACW	11.		
4. *Rubus ursinus*	S	FAC+	12.		
5. *Scirpus microcarpus*	H	OBL	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS Plot ID: CF2C

Map Unit Name (Series and Phase) Psamments and fluvents	Drainage Class: Excessive
Taxonomy (Subgroup): N/A	Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)		(Circle)
Wetland Hydrology Present? Yes No		
Hydric Soils Present? Yes No	Is this Sampling Point Within a Wetland? Yes No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/19/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CF2D

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CF2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Platanus racemosa*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Umbellularia californica*	T	FAC	11.		
4. *Salix lasiolepis*	S	FACW	12.		
5. *Baccharis pilularis*	S	UPL	13.		
6. *Rubus ursinus*	S	FAC+	14.		
7. *Scirpus microcarpus*	H	OBL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 86%

Remarks: ______

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: CF2D

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	
Is this Sampling Point Within a Wetland?	Yes No	(Circle)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 7/20/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: DR1A

Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: DR1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Carex* sp.	H	varies	10.		
3. *Mentha arvensis*	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 67 %, probably 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: N/A (in.)

Depth to Saturated Soil 0 (in.)

Remarks: Saturated at surface at edge, below OHWM

SOILS

Plot ID: DR1A

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

No pit dug. Soil was saturated at surface.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: DR1B

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: DR1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Platanus racemosa*	T	FACW	9.		
2. *Umbellularia californica*	T	FAC	10.		
3. *Rubus ursinus*	S	FAC+	11.		
4. *Stachys bullata*	H	UPL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Above OHWM, rocky slope

SOILS

Plot ID: DR1B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Very rocky slope, no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list, but this slope may not belong to that category.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: DR2A

Is the area a potential Problem Area? ☐Yes ☒No Transect ID: DR2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	S	OBL-FACW	10.		
3. *Alnus rhombifolia*	T	FACW	11.		
4. *Carex* sp.	H	varies	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 75%, probably 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below OHWM

SOILS

Plot ID: DR2A

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Taxonomy (Subgroup): N/A

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rocks, cobble, tree roots. No pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 7/20/2005

Applicant/Owner: California-American Water Company — County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: DR3A

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: DR3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Platanus racemosa*	T	FACW	10.		
3. *Alnus rhombifolia*	S	FACW	11.		
4. *Carex* sp.	H	varies	12.		
5. *Euthamia occidentalis*	H	OBL	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 80%, probably 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below the OHWM. Edge along channel is saturated at the surface.

SOILS   Plot ID: DR3A

Map Unit Name (Series and Phase) Psamments and fluvents	Drainage Class: Excessive
Taxonomy (Subgroup): N/A	Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Very rocky – no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	(Circle) Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: DR3B

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: DR3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Platanus racemosa*	T	FACW	9.		
2. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	10.		
3. *Genista monspessulana*	S	UPL	11.		
4. *Heteromeles arbutifolia*	S	UPL	12.		
5. *Toxicodendron diversilobum*	S	UPL	13.		
6. *Leymus triticoides*	H	FAC+	14.		
7. *Torilis arvensis*	H	UPL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 43%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Above OHWM

SOILS Plot ID: DR3B

Map Unit Name (Series and Phase) Psamments and fluvents Taxonomy (Subgroup): N/A	Drainage Class: Excessive Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Boulders – no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	(Circle) Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/20/2005

Applicant/Owner: California-American Water Company County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒ Yes ☐ No Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☒ No Plot ID: DR4A

Is the area a potential Problem Area? ☐ Yes ☒ No Transect ID: DR4

(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	10.		
3. *Populus balsamifera* ssp. *trichocarpa*	S	FACW	11.		
4. *Rubus ursinus*	S	FAC+	12.		
5. *Carex* sp.	H	varies	13.		
6. *Equisetum* sp.	H	FACW -FAC	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At ;east 83%, probably 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☒ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below the OHWM, in an area that was previously ponded

SOILS

Plot ID: DR4A

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations

Taxonomy (Subgroup): N/A

Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rocky – no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	
Is this Sampling Point Within a Wetland?	Yes No	(Circle)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California
Do Normal Circumstances exist on the site?	☒Yes ☐No	Community ID:	Central Coast cottonwood-sycamore riparian forest
Is the site significantly disturbed (Atypical Situation)?	☐Yes ☒No	Plot ID:	DR4A
Is the area a potential Problem Area? (If needed, explain on reverse side.)	☐Yes ☒No	Transect ID:	DR4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	10.		
3. *Populus balsamifera* ssp. *trichocarpa*	S	FACW	11.		
4. *Rubus ursinus*	S	FAC+	12.		
5. *Carex* sp.	H	varies	13.		
6. *Equisetum* sp.	H	FACW -FAC	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At ;east 83%, probably 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☒ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Below the OHWM, in an area that was previously ponded

SOILS

Plot ID: DR4A

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Taxonomy (Subgroup): N/A

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rocky – no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 CoE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site?	☒Yes	☐No	Community ID:	White alder riparian forest
Is the site significantly disturbed (Atypical Situation)?	☐Yes	☒No	Plot ID:	DR4B
Is the area a potential Problem Area? (If needed, explain on reverse side.)	☐Yes	☒No	Transect ID:	DR4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	S	OBL -FACW	10.		
3. *Umbellularia californica*	S	FAC	11.		
4. *Rubus ursinus*	S	FAC+	12.		
5. *Toxicodendron diversilobum*	S	UPL	13.		
6. *Artemisia douglasiana*	H	FACW	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 83%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Above the OHWM

SOILS

Plot ID: DR4B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16+		10YR 3/3			Sand, cobble, rock

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 7/20/2005

Applicant/Owner: California-American Water Company   County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: DR5A

Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: DR5
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Platanus racemosa*	S	FACW	10.		
3. *Carex* sp.	H	varies	11.		
4. *Equisetum* sp.	H	FACW -FAC	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): Al least 75%, probably 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below OHWM. Rock dike along channel

SOILS

Plot ID: DR5A

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rocky, no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/20/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: DR5B

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: DR5
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	10.		
3. *Salix* sp.	T	OBL-FACW	11.		
4. *Genista monspessulana*	S	UPL	12.		
5. *Rubus ursinus*	S	FAC+	13.		
6. *Baccharis pilularis*	S	UPL	14.		
7. *Leymus triticoides*	H	FAC+	15.		
8. *Torilis arvensis*	H	UPL	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 62%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Above OHWM

SOILS Plot ID: DR5B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Rock and boulders – no pit dug. Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	7/19/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Ruth Sundermeyer	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CB1A

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CB1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Rubus ursinus*	S	FAC+	10.		
2. *Cyperus eragrostis*	H	FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Below OHWM

SOILS   Plot ID: CB1A

Map Unit Name (Series and Phase) Psamments and fluvents	Drainage Class: Excessive
Taxonomy (Subgroup): N/A	Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	(Circle) Is this Sampling Point Within a Wetland? Yes No

Remarks:

CB1B is upslope from CB1A

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒ Yes ☐ No Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☒ No Plot ID: CB1B

Is the area a potential Problem Area? ☐ Yes ☒ No Transect ID: CB1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Populus balsamifera* ssp. *trichocarpa*	T	FACW	9.		
2. *Salix* sp.	S	OBL-FACW	10.		
3. *Baccharis pilularis*	S	UPL	11.		
4. *Rubus ursinus*	S	FAC+	12.		
5. *Artemisia douglasiana*	H	FACW	13.		
6. *Bromus madritensis* ssp. *rubens*	H	NI	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 83%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☒ Other
☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Appears to be above the OHWM, but some scattered water-borne detritus

SOILS   Plot ID: CB1B

Map Unit Name
(Series and Phase) ___Psamments and fluvents___

Drainage Class: __Excessive___
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): __N/A__

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

CB1B is upslope from CB1A

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 7/19/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Ruth Sundermeyer State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CB2A
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CB2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Carex* sp.	H	varies	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: _N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS Plot ID: CB2A

Map Unit Name (Series and Phase) Psamments and fluvents Taxonomy (Subgroup): N/A	Drainage Class: Excessive Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

____ Histosol	____ Concretions
____ Histic Epipedon	____ High Organic Content in Surface Layer in Sandy Soils
____ Sulfidic Odor	____ Organic Streaking in Sandy Soils
____ Aquic Moisture Regime	____ Listed on Local Hydric Soils List
____ Reducing Conditions	____ Listed on National Hydric Soils List
____ Gleyed or Low-Chroma Colors	____ Other (Explain in Remarks)

Remarks:

Rocky, no pit dug

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle) Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No	(Circle) Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 CoE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 7/19/2005

Applicant/Owner: California-American Water Company   County: Monterey

Investigator: Gretchen Lebednik and Ruth Sundermeyer   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: Central Coast cottonwood-sycamore riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: CB2B

Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: CB2

(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Aesculus californica*	T	UPL	9.		
2. *Platanus racemosa*	T	FACW	10.		
3. *Umbellularia californica*	T	FAC	11.		
4. *Toxicodendron diversilobum*	S	UPL	12.		
5. *Torilis arvensis*	H	UPL	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 20%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Above the OHWM

SOILS

Plot ID: CB2B

Map Unit Name
(Series and Phase) Psamments and fluvents

Drainage Class: Excessive

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): N/A

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Mapped type is a hydric soil, according to Monterey County Hydric Soils list.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SC1
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: SC1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix lasiolepis*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Scirpus microcarpus*	H	OBL	11.		
4. *Eleocharis* sp.	H	OBL	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil <11 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☒ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS

Plot ID: SC1

Map Unit Name
(Series and Phase) Water

Taxonomy (Subgroup): ______

Drainage Class: ______
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-11					sand

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SC2
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: SC2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Polypogon monspeliensis*	H	FACW+	9.		
2. *Cyperus eragrostis*	H	FACW	10.		
3. *Salix* sp.	S	OBL-FACW	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS Plot ID: SC2

Map Unit Name
(Series and Phase) Water

Drainage Class: ______
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ______

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SC3
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: SC3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Eleocharis* sp.	H	OBL	9.		
2. *Salix* sp.	S	OBL-FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS Plot ID: SC3

Map Unit Name
(Series and Phase) __Water______________________

Drainage Class: ______________

Taxonomy (Subgroup): ______________________

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present? (assumed)	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SC4
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: SC4
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus microcarpus*	H	OBL	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below OHWM

SOILS Plot ID: SC4

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Taxonomy (Subgroup): ______

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California
Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SC5
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: SC5
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix lasiolepis*	T	FACW	9.		
2. *Salix* sp.	T	OBL -FACW	10.		
3. *Scirpus microcarpus*	H	OBL	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below the OHWM

SOILS Plot ID: SC5

Map Unit Name
(Series and Phase) Water

Drainage Class:
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup):

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 8/9/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: SC6
Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: SC6
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus* sp. (tule-type)	H	OBL	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☒ Inundated
- ☒ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: 0-12 (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil: 0 (in.)

Remarks: Below the OHWM

SOILS Plot ID: SC6

Map Unit Name
(Series and Phase) Water

Drainage Class: ____

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California
Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CRW1
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CRW1
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix lasiolepis*	T	FACW	9.		
2. *Scirpus acutus var. occidentalis*	H	OBL	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: 8 (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☒ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks:

SOILS Plot ID: CRW1

Map Unit Name
(Series and Phase) Water

Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)	(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present? (assumed)	Yes No		Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 8/9/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: CRW2
Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: CRW2
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	OBL-FACW	9.		
2. *Eleocharis* sp.	H	OBL	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: 2-3 (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☒ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS

Plot ID: CRW2

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Taxonomy (Subgroup): ______

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CRW3
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CRW3
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus microcarpus*	H	OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☒ Other (explain in Remarks)

Remarks: Below the OHWM. Based on observations made in July 2005, this area was inundated for an extended period during the growing season. 100% of vegetation is obligate wetland indicator

SOILS

Plot ID: CRW3

Map Unit Name
(Series and Phase) Water

Taxonomy (Subgroup): ______

Drainage Class: ______
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)	(Circle)
Wetland Hydrology Present?	Yes No		
Hydric Soils Present? (assumed)	Yes No		Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project   Date: 8/9/2005
Applicant/Owner: California-American Water Company   County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto   State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No   Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No   Plot ID: CRW4
Is the area a potential Problem Area? ☐Yes ☒No   Transect ID: CRW4
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Scirpus* sp. (tule)	H	OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: 0-8 (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☒ Inundated
- ☒ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks:

SOILS Plot ID: CRW4

Map Unit Name
(Series and Phase) ___Water___________________

Drainage Class: ______________________
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): _____________________

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	8/9/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒ Yes ☐ No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☒ No — Plot ID: CRW5

Is the area a potential Problem Area? ☐ Yes ☒ No — Transect ID: CRW5
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Carex* sp.	H	varies	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☒ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks:

SOILS

Plot ID: CRW5

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ______

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		10YR 5/4 to 10YR 5/3			sand

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors

____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present? (assumed)	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	8/9/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CRW6

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CRW6
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Scirpus acutus var. occidentalis*	H	OBL	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: ____

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A_ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☒ Drift Lines
- ☒ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Below the OHWM

SOILS

Plot ID: CRW6

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ______

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 8/9/2005
Applicant/Owner: California-American Water Company — County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto — State: California

Do Normal Circumstances exist on the site? ☐Yes ☐No — Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☐No — Plot ID: CRW7
Is the area a potential Problem Area? ☐Yes ☐No — Transect ID: CRW7
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Carex* sp.	H	OBL-FAC	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Alder canopy on slope above.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: ______ (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

Remarks: Below the OHWM as indicated by bank cut

SOILS

Plot ID: CRW7

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ______

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate if probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? (assumed) Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Observed from opposite side of channel. At foot of steep bank and inaccessible.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 8/9/2005
Applicant/Owner: California-American Water Company — County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CRW8
Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CRW8
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	S	OBL-FACW	9.		
2. *Baccharis salicifolius*	S	FACW	10.		
3. *Typha* sp.	H	OBL	11.		
4. *Polypogon monspeliensis*	H	FACW+	12.		
5. *Scirpus robustus*	H	OBL	13.		
6. *Scirpus microcarpus*	H	OBL	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☒ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below the OHWM. May be backwater area

SOILS Plot ID: CRW8

Map Unit Name
(Series and Phase) ___Water___________________

Drainage Class: ____________
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ____________

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present? (assumed)	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project　Date: 8/9/2005
Applicant/Owner: California-American Water Company　County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto　State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No　Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No　Plot ID: CRW9
Is the area a potential Problem Area? ☐Yes ☒No　Transect ID: CRW9
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix* sp.	T	OBL-FACW	10.		
3. *Eleocharis* sp.	H	OBL	11.		
4. *Cyperus* sp.	H	varies	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 75%, probably 100%

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil ______ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☒ Drift Lines
☒ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Below OHWM. Appears to be backwater area. Along floodplain bank at edge of old channel.

SOILS

Plot ID: CRW9

Map Unit Name
(Series and Phase) Water

Drainage Class:

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup):

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Based on observations made in July 2005, this area was inundated for an extended period during the growing season. The substrate is probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present? (assumed)	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	8/9/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Arroyo Willow Series

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CRW10

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CRW10

(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	OBL-FACW	9.		
2. *Scirpus acutus var. occidentalis*	H	OBL	10.		
3. *Juncus* sp.	H	varies	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): At least 67%, probably 100%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: 0-8 (in.)

Depth to Free Water in Pit: ______ (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☒ Inundated
- ☒ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Edge of pool in side arm of reservoir floodplain.

SOILS Plot ID: CRW10

Map Unit Name
(Series and Phase) Water

Taxonomy (Subgroup): ____

Drainage Class: ____
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

The substrate if probably psamments and fluvents, although it is mapped as water, due to the historical maximum water level for the San Clemente Reservoir.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No (Circle)	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present? (assumed)	Yes No	Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 8/9/2005
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Gretchen Lebednik and Gina Morimoto State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Arroyo Willow Series
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: CRW11A
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: CRW11
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix* sp.	T	OBL-FACW	9.		
2. *Scirpus microcarpus*	H	OBL	10.		
2. *Euthamia occidentalis*	H	OBL	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☐ Aerial Photographs
☐ Other
☒ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	8/9/2005
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Gretchen Lebednik and Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Arroyo Willow Series

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: CRW11B

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: CRW11
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Salix lasiolepis*	S	FACW	9.		
2. *Baccharis pilularis*	S	UPL	10.		
3. *Carex* sp.	H	OBL-FAC	11.		
4. *Artemisia douglasiana*	H	FACW	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☒ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil >16 (in.)

Remarks:

SOILS Plot ID: CRW11B

Map Unit Name
(Series and Phase) ___Rock outcrop-xerorthent association________________

Taxonomy (Subgroup): ____

Drainage Class: ______________________
Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		10YR 3/2	none		

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors
____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

The substrate is probably psamments and fluvents.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	(Circle)	
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No		
				(Circle)
Is this Sampling Point Within a Wetland?	Yes	No		

Remarks:

SOILS

Plot ID: CRW11A

Map Unit Name
(Series and Phase) Rock outcrop-xerorthent association

Drainage Class: ______

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): ______

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16		10YR 5/3			sand

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:
No sand-specific indicators of hydric conditions.
The substrate may be psamments and fluvents.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	(Circle)
Wetland Hydrology Present?	Yes No	
Hydric Soils Present?	Yes No	

(Circle)

Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project — Date: 2/27/06
Applicant/Owner: California-American Water Company — County: Monterey
Investigator: Keven Ann Colgate, Gina Morimoto — State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: SITE 1
Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TR1 – PIT A
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Carex* sp. *	H	FACW	7.		
2. *Alnus rhombifolia*	T	FACW	8.		
3. *Rubus ursinus*	S	FAC+	9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: *No flower, cannot key to species. Likely *Carex barbarae* (FACW).

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☒ Aerial Photographs
☐ Other
☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)
Depth to Free Water in Pit: N/A (in.)
Depth to Saturated Soil N/A (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☐ Saturated in upper 12 inches
☒ Water Marks
☒ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Backwater area on the right bank (west bank). Indicators of flow include cut banks, drift, etc. Photo right bank facing upstream #101-0007.

SOILS

Plot ID: SITE 1-TR1-PIT A

Map Unit Name
(Series and Phase) Water

Drainage Class: ______

Taxonomy (Subgroup): ______

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-17	-	10 YR 3/2	NA	NA	fine loamy sand

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

No hydric indicators

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	2/27/06
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Keven Ann Colgate, Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: Freshwater marsh

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: SITE 2

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TR1-PIT A

(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Cyperus* sp. *or Scirpus* sp.*	H	FAC-OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: *No flower, cannot key to species. Based on inundated habitat this species is an indicator hydric status. Vegetation is only in small patches. Appears to be just beginning to re-colonize the area

.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☒ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☒ Saturated in upper 12 inches
- ☒ Water Marks
- ☐ Drift Lines
- ☒ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: 2 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil 0 (in.)

Remarks: Soil pit filled with water. Photo 008 and 009.

SOILS Plot ID: SITE 2-TR1-PIT A

Map Unit Name
(Series and Phase) Water

Drainage Class:

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup):

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	-	5 Y 3/1	NA	NA	FINE SAND

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Orange colored iron-like precipitate on soil surface and floating on water surface.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Site is a ponded backwater area.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	2/27/06
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Keven Ann Colgate, Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: SITE 2

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TR1-PIT B
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Rubus ursinus*	H	FAC+	9.		
2. *Alnus rhombifolia*	T	FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:
.

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
☐ Stream, Lake, or Tide Gauge
☒ Aerial Photographs
☐ Other
☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: __N/A__ (in.)

Depth to Free Water in Pit: ___0___ (in.)

Depth to Saturated Soil ___0___ (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
☐ Inundated
☒ Saturated in upper 12 inches
☒ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
☐ Oxidized root channels in upper 12 inches
☐ Water-stained Leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (explain in Remarks)

Remarks: Site is located on the edge of the backwater area, just within OHWM. Cut bank indicates hydrology.

SOILS Plot ID: SITE 2-TR1-PIT B

Map Unit Name
(Series and Phase) Water

Drainage Class:

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup):

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	-	2.5 Y 4/2	NA	NA	FINE SAND

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

No hydric soil indicators.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Site is a ponded backwater area.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project | Date: 2/28/06

Applicant/Owner: California-American Water Company | County: Monterey

Investigator: Keven Ann Colgate, Gina Morimoto | State: California

Do Normal Circumstances exist on the site? ☒Yes ☐No | Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No | Plot ID: SITE 3

Is the area a potential Problem Area? ☐Yes ☒No | Transect ID: TR1 – PIT A

(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Carex* sp.*	H	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: *No flower, cannot key to species. Likely *Carex barbarae* (FACW).

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☒ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☒ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: N/A (in.)

Depth to Free Water in Pit: N/A (in.)

Depth to Saturated Soil N/A (in.)

Remarks: Site is very similar to SITE 1 – PIT A. Pit is on the bank of the Carmel River within the OHWM. Hydric indicators are related to stream flow.

SOILS

Plot ID: SITE 3-TR1-PIT A

Map Unit Name
(Series and Phase) Junipero-Sur complex

Drainage Class: well drained to somewhat excessively drained
Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Pachic Ultic Haploxerolls - Entic Haploxerolls

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	-	10 YR 4/3	N/A	N/A	fine-medium sand

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

No hydric indicators. Soil is very sandy and well drained. Top layer is a thick organic layer composed of alder leaf litter, and organic detritus (drift, etc.).

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site: San Clemente Dam Seismic Safety Project Date: 2/28/06
Applicant/Owner: California-American Water Company County: Monterey
Investigator: Keven Ann Colgate, Gina Morimoto State: California
Do Normal Circumstances exist on the site? ☒Yes ☐No Community ID: Freshwater marsh
Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No Plot ID: SITE 4
Is the area a potential Problem Area? ☐Yes ☒No Transect ID: TR1 – PIT A
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Typha* sp.		OBL	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: * No flower, cannot key to species. Likely *Typha angustifolia* (narrow leaved cattail)

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☒ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

FIELD OBSERVATIONS:

Depth of Surface Water: 6 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil 0 (in.)

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☒ Inundated
- ☒ Saturated in upper 12 inches
- ☒ Water Marks
- ☒ Drift Lines
- ☒ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

Remarks: Ponded backwater area.

SOILS Plot ID: SITE 4-TR1-PIT A

Map Unit Name
(Series and Phase) __Junipero-Sur complex______________________________

Drainage Class: well drained to somewhat excessively drained___________

Taxonomy (Subgroup): _Pachic Ultic Haploxerolls_- Entic Haploxerolls_____

Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Other (Explain in Remarks)

Remarks:

Site is inundated and vegetated with obligate indicator species - no soil pit excavated.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE WETLANDS DELINEATION MANUAL)

Project/Site:	San Clemente Dam Seismic Safety Project	Date:	2/28/06
Applicant/Owner:	California-American Water Company	County:	Monterey
Investigator:	Keven Ann Colgate, Gina Morimoto	State:	California

Do Normal Circumstances exist on the site? ☒Yes ☐No — Community ID: White alder riparian forest

Is the site significantly disturbed (Atypical Situation)? ☐Yes ☒No — Plot ID: SITE 4

Is the area a potential Problem Area? ☐Yes ☒No — Transect ID: TR1 – PIT B
(If needed, explain on reverse side.)

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Alnus rhombifolia*	T	FACW	9.		
2. *Salix lasiolepis*	T	FACW	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Riparian woodland on mid-channel bar.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☒ Aerial Photographs
- ☐ Other
- ☐ No Recorded Data Available

WETLAND HYDROLOGY INDICATORS:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in upper 12 inches
- ☒ Water Marks
- ☒ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized root channels in upper 12 inches
- ☐ Water-stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (explain in Remarks)

FIELD OBSERVATIONS:

Depth of Surface Water: ___NA___ (in.)

Depth to Free Water in Pit: ___NA___ (in.)

Depth to Saturated Soil ___NA___ (in.)

Remarks: On edge of mid-channel bar within OHWM on left bank of Carmel River. Indicators of hydrology are related to flow.

SOILS Plot ID: SITE 4-TR1-PIT B

Map Unit Name
(Series and Phase) Junipero-Sur complex

Drainage Class: well drained to somewhat excessively drained

Field Observations
Confirm Mapped Type? Yes No

Taxonomy (Subgroup): Pachic Ultic Haploxerolls - Entic Haploxerolls

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-16	-	10 YR 4/3	NA	NA	fine-medium sand

Hydric Soil Indicators:

____ Histosol
____ Histic Epipedon
____ Sulfidic Odor
____ Aquic Moisture Regime
____ Reducing Conditions
____ Gleyed or Low-Chroma Colors

____ Concretions
____ High Organic Content in Surface Layer in Sandy Soils
____ Organic Streaking in Sandy Soils
____ Listed on Local Hydric Soils List
____ Listed on National Hydric Soils List
____ Other (Explain in Remarks)

Remarks:

No hydric indicators. Soil is very sandy and well drained. Top layer is a thick organic layer composed of alder leaf litter, and organic detritus (drift, etc.). Very similar to SITE 3 TR1 PIT A

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
Wetland Hydrology Present? Yes No
Hydric Soils Present? Yes No

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks:

Appendix X

AIR QUALITY CALCULATIONS

Emissions Summary

Estimated Daily Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Sleepy Hollow Route	0.43	0.00	0.10	0.01	0.01	16
Cachagua Route	0.53	0.00	0.13	0.01	0.01	20
Tularcitos Route	0.41	0.00	0.10	0.01	0.01	15
Typical	**0.46**	**0.00**	**0.11**	**0.01**	**0.01**	**17**

Estimated Annual Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Sleepy Hollow Route	0.02	0.00	0.01	0.00	0.00	0.8
Cachagua Route	0.03	0.00	0.01	0.00	0.00	1.0
Tularcitos Route	0.02	0.00	0.00	0.00	0.00	0.7
Typical	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.8**

Prime. Estimated Daily Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	13	0	1	0	0	386
Dam Site	430	0	523	25	62	322
Totals	**443**	**0**	**524**	**25**	**62**	**708**

Prime. Estimated Annual Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	19
Dam Site	54	0	66	3	8	23
Totals	**55**	**0**	**66**	**3**	**8**	**42**

Alternative 1. Estimated Daily Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	9	0	1	0	0	254
Dam Site	233	0	285	13	34	164
Totals	**241**	**0**	**286**	**13**	**34**	**419**

Alternative 1. Estimated Annual Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	0	0	0	0	0	13
Dam Site	35	0	43	2	5	25
Totals	**35**	**0**	**43**	**2**	**5**	**37**

Emissions Summary

Alternative 2. Estimated Daily Project Construction Emissions - Demo & desilt						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Site 4R	26	0	2	0	1	763
Dam Site	699	1	856	40	101	494
Totals	**725**	**1**	**858**	**40**	**101**	**1257**

Alternative 2. Estimated Annual Project Construction Emissions - Demo & desilt						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Site 4R	1	0	0	0	0	38
Dam Site	105	0	128	6	15	74
Totals	**106**	**0**	**128**	**6**	**15**	**112**

Alternative 3. Estimated Daily Project Construction Emissions - Demo & stabilize						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Site 4R						
Dam Site	465	0	570	27	67	329
Totals	**465**	**0**	**570**	**27**	**67**	**329**

Alternative 3. Estimated Annual Project Construction Emissions - Demo & stabilize						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Site 4R						
Dam Site	70	0	86	4	10	49
Totals	**70**	**0**	**86**	**4**	**10**	**49**

Project Option	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Significance Threshold	**137**	**150**	**550**	**82**	**137**	**82**
Proposed Project	443	0	524	25	62	708
Alternative 1	241	0	286	13	34	419
Alternative 2	725	1	858	40	101	1257
Alternative 3	465	0	570	27	67	329
Alternative 4	0	0	0	0	0	0

Emissions Summary

Estimated Daily Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Sleepy Hollow Route	0.43	0.00	0.10	0.01	0.01	16
Cachagua Route	0.53	0.00	0.13	0.01	0.01	20
Totals	**0.96**	**0.00**	**0.23**	**0.02**	**0.03**	**36**

Estimated Annual Access Road Construction Emissions						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Sleepy Hollow Route	0.02	0.00	0.01	0.00	0.00	0.8
Cachagua Route	0.03	0.00	0.01	0.00	0.00	1.0
Totals	**0.05**	**0.00**	**0.01**	**0.00**	**0.00**	**1.8**

Prime. Estimated Daily Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	13	0	1	0	0	386
Dam Site	430	0	523	25	62	322
Totals	**443**	**0**	**524**	**25**	**62**	**708**

Prime. Estimated Annual Project Construction Emissions - Thicken & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	1	0	0	0	0	19
Dam Site	54	0	66	3	8	23
Totals	**55**	**0**	**66**	**3**	**8**	**42**

Alternative 1. Estimated Daily Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Site 4R	9	0	1	0	0	254
Dam Site	233	0	285	13	34	164
Totals	**241**	**0**	**286**	**13**	**34**	**419**

Alternative 1. Estimated Annual Project Construction Emissions - Notch & desilt						
Location	NO_X	SO_X	CO	PM_{10}	VOC	PM_{10F}
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Site 4R	0	0	0	0	0	13
Dam Site	35	0	43	2	5	25
Totals	**35**	**0**	**43**	**2**	**5**	**37**

Emissions Summary

Alternative 2. Estimated Daily Project Construction Emissions - Demo & desilt						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Site 4R	26	0	2	0	1	763
Dam Site	699	1	856	40	101	494
Totals	**725**	**1**	**858**	**40**	**101**	**1257**

Alternative 2. Estimated Annual Project Construction Emissions - Demo & desilt						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Site 4R	1	0	0	0	0	38
Dam Site	105	0	128	6	15	74
Totals	**106**	**0**	**128**	**6**	**15**	**112**

Alternative 3. Estimated Daily Project Construction Emissions - Demo & stabilize						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Site 4R						
Dam Site	465	0	570	27	67	329
Totals	**465**	**0**	**570**	**27**	**67**	**329**

Alternative 3. Estimated Annual Project Construction Emissions - Demo & stabilize						
Location	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	tons/yr	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**	**tons/yr**
Site 4R						
Dam Site	70	0	86	4	10	49
Totals	**70**	**0**	**86**	**4**	**10**	**49**

Project Option	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**VOC**	**PM_{10F}**
	lbs/day	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**	**lbs/day**
Significance Threshold	**137**	**150**	**550**	**82**	**137**	**82**
Proposed Project	443	0	524	25	62	708
Alternative 1	241	0	286	13	34	419
Alternative 2	725	1	858	40	101	1257
Alternative 3	465	0	570	27	67	329
Alternative 4	0	0	0	0	0	0

Appendix Y

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT

AIR QUALITY CONFORMITY ANALYSIS

APPENDIX Y

SAN CLEMENTE DAM SEISMIC SAFETY PROJECT AIR QUALITY CONFORMITY ANALYSIS

Executive Summary

This analysis supports the Clean Air Act (CAA) conformity determination for the proposed San Clemente Dam Seismic Retrofit Project (Project). The proposed Project would involve thickening of the dam on the downstream side and providing abutment protection. The project would have four alternatives that are discussed briefly in this document. The proposed Project would be a Federal action and is subject to general conformity rules because it would be partially federally funded. The analysis demonstrates that the total NO_X and PM_{10} emissions from construction, while greater than the applicable EPA-defined de minimis level of 100 tons per year, would be less that the 1990 emissions budget when added to the existing and projected levels of emissions from all other sources in the North Central Coast Air Basin (NCCAB). The analysis also indicates that the NO_X and PM_{10} emissions associated with the Project would conform to the applicable requirements of and milestones in the California State Implementation Plan (SIP). Emissions of reactive organic compounds (ROC) from project construction would be de minimis (<100 tons per year). Therefore, ROC emissions from the Project would not interfere with attainment or maintenance or cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) under the CAA. Pursuant to the emissions and air quality impact estimates given in Section 4.2 of the EIR/EIS, ROC, NO_X, and PM_{10} emissions from the Project would not be regionally significant. A “regionally significant” action is defined as a Federal action for which the direct and indirect emissions of any pollutant represent 10 percent or more of a nonattainment or maintenance area’s emissions inventory for that pollutant (Reference: 40 CFR 51.853(I)). The design and content of this conformity analysis is based on the “General Conformity Determination under the Clean Air Act for the Ocean Express Pipeline Project”, prepared by Haley & Aldrich, Inc. October 8, 2004.

1.0 Introduction

The proposed Project would consist of thickening the dam on the downstream side and providing abutment protection, particularly on the right abutment (as seen facing downstream). The dam would be thickened by the placement of 50 to 60 cast-in-place concrete blocks, each approximately 50 feet in length and 10 feet in height, on the downstream face of the dam. Each block would be tied to the existing dam structure with reinforced steel dowels. The thickness of the new concrete would be approximately proportional to the original thickness at each location along the dam profile. The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. Road realignment includes construction of a new access road to provide a better line of sight and to bypass the Sleepy Hollow subdivision.

The Project would include four alternatives, which are as follows: 1) Dam Notching with partial sediment removal; 2) Dam Removal with total sediment removal; 3) Carmel River reroute and Dam Removal with in-place sediment stabilization 4) No project.

Under the Clean Air Act (CAA), a general conformity determination is required for projects that constitute a Federal action that would be undertaken in an ozone maintenance or nonattainment area for which the emissions of certain air pollutants would exceed applicable threshold rates. The Project would be considered a Federal action because it would be partially federally funded. The Project site would be located within the North Central Coast Air Basin (NCCAB), which is in nonattainment (transitional) with the state 1-hour ozone standard, nonattainment with the state PM_{10} standard, and in maintenance with the Federal 1-hour ozone standard. Therefore, the proposed Project requires a general conformity determination if the estimated actual emissions of nitrogen oxides (NO_X) or reactive organic compounds (ROCs), both ozone precursors, would exceed 100 tons per year (tpy), or if Particulate Matter (PM_{10}) would exceed 100 tpy. (Reference: 40 C.F.R. Part 51.853)

The Project would not involve the construction of any new, or modification of any existing stationary sources of air pollutant emissions. However, the Project would result in emissions of NO_X and ROCs, and PM_{10}, primarily from the temporary use of construction-related equipment and the periodic use of vehicles to transport workers to and from the project site. The NO_X emissions associated primarily with construction of Alternative 2 (dam notching) are estimated to exceed 100 tpy. The ROC emissions also associated primarily with construction of the Project would be below 100 tpy. The PM_{10} emissions associated primarily with construction Alternative 2 are estimated to exceed 100 tpy. Thus, a general conformity determination is required for the proposed Project. The purpose of the conformity determination, generally, is to ensure that the NO_X, ROC and PM_{10} emissions from the Project would not interfere with attainment or maintenance or cause or contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) under the CAA. Emissions estimates for Alternative 2 are used in this analysis because Alternative 2 would have the highest emissions estimates of any Project alternative.

The following analysis demonstrates that the total NO_X emissions and PM_{10} emissions associated with the Project, when evaluated together with the existing and projected levels of NO_X emissions and PM_{10} emissions from all other sources in the NCCAB, would be significantly lower than the 1990 NO_X and 2000 PM_{10} emissions budgets for the air basin. Due to the lack of data for PM_{10}, the State of California emissions estimate for PM_{10} for the year 2000 is used as the baseline emissions estimate in the analysis instead of 1990. The analysis also indicates that the NO_X emissions and PM_{10} emissions associated with the Project would conform to the applicable requirements of and milestones in the California State Implementation Plan (SIP). Refer to Section 5.3 of this document for the SIP analysis. Therefore no implementation of any additional design, construction or operational measures to address the NO_X and PM_{10} emissions associated with the Project would be necessary.

The ROC emissions associated with the Project would be well below the threshold of 100 tpy and would not be considered regionally significant. Therefore, further review under the general conformity review program is not required for ROC emissions associated with the project.

2.0 Regulatory Background

Under the CAA, each state is required to develop a SIP that specifies how air quality regions within the state will attain and/or maintain compliance with the NAAQS. In California, state law designates the California Air Resources Board (ARB) as the lead agency for all purposes related to the SIP. Section 176(c) of the CAA prohibits Federal entities from taking actions (e.g., funding, licensing, permitting, or approving projects) in NAAQS nonattainment or maintenance areas that do not conform to the SIP for the attainment and maintenance of NAAQS pursuant to Section 110(a) of the CAA. The purposes of a general conformity review are to ensure that federal actions do not interfere with the emissions budgets in the SIPs; ensure actions do not cause or contribute to new violations; and ensure attainment and maintenance of the NAAQS.

The conformity requirement also applies to metropolitan projects, programs, or planning activities. Section 176(c) requires that the administration of such projects, programs, or plans assure conformity with the SIP through an affirmation process, or General Conformity Finding. In November 1993, EPA promulgated two sets of conformity regulations to implement section 176(c) of the CAA – the Transportation Conformity Regulations (applicable to highways and mass transit projects) and the General Conformity Regulations (applicable to all other Federal actions). The requirements under 40 CFR Part 93, Subpart B, apply to states that have not adopted an EPA-approved general conformity review program. State conformity regulations must be consistent with EPA's regulations for state programs (Reference: 40 CFR Part 51 Subpart W). Federal actions for which the associated emissions of criteria air pollutants exceed certain thresholds are subject to the general conformity regulations unless specifically exempt or otherwise covered by the transportation conformity regulations, e.g. actions with de minimis emissions, exempt actions listed in the rule, or actions covered by a Presumed to Conform demonstration (a pre-approved list).

The first step in conducting a general conformity analysis for non-exempt actions is to quantify emissions of nonattainment or maintenance area pollutants from the proposed action and compare those emissions to the applicable de minimis thresholds. The NCCAB is in nonattainment (transitional) with the state 1-hour ozone standard, nonattainment with the state PM_{10} standard, and in maintenance with the Federal 1-hour ozone standard (and in attainment or unclassified for all other criteria air pollutants). Therefore, the applicable de minimis thresholds for NO_X and ROCs (as ozone precursors) are 100 tpy, and the threshold for PM_{10} is 100 tpy.

If emissions of any criteria pollutants of concern would exceed the applicable thresholds, the second step, requiring completion of a general conformity analysis, is triggered. The baseline criterion for determining conformity is whether the total direct and indirect air pollutant emissions associated with the proposed action comply or are consistent with the applicable requirements in the relevant SIP. In addition to meeting the baseline criterion, conformity also must be demonstrated by one of the following criteria: (1) emission increases are included in the SIP; (2) state agrees to include increases in the SIP; (3) in areas without SIPs, no new violations of NAAQS and/or no increase in the frequency/severity of violations; (4) offset emissions increases; and (5) mitigation requirements (Reference: 40 CFR Part 51.858). Emissions must also not be regionally significant, meaning that for a Federal action, the direct and indirect emissions of any pollutant must not represent 10 percent or more of a nonattainment or maintenance area's emissions inventory for that pollutant (Reference: 40 CFR 51.853(I))

Section 176(c) of the CAA and the conformity rules assign primary oversight responsibility for conformity determinations to those Federal agencies that are responsible for issuing the underlying authorizations for the proposed action. The Federal agency is required to provide notice of its draft conformity determination to the appropriate EPA Region, state and local air quality agencies and, if applicable, affected Federal land managers. Notice also must be provided to the agency designated pursuant to section 174 of the CAA and the Metropolitan Planning Organization (MPO). The notice must describe that proposed action, the agency's draft conformity determination and specify that interested parties have 30 days within which to submit written comments on the draft determination. The Federal agency issuing the draft conformity determination must make the draft determination available for review by any person who requests a copy. The Federal agency will then review any comments on the draft conformity determination and address any significant comments in its final conformity determination. Within 30 days of the date on which the Federal agency publishes its final conformity determination, the Federal agency must notify the appropriate EPA Region, state and local air quality agencies and other interested parties, provide public notice of the final conformity determination, and make the comments and responses to comments on the draft conformity determination available to any person who requests this information. (Reference: 40 CFR Part 51.856)

3.0 Proposed Action

Proposed Project (Dam Thickening)

The proposed seismic retrofit project consists of thickening the dam on the downstream side and providing abutment protection, particularly on the right abutment (as seen facing downstream). The dam would be thickened by the placement of 50 to 60 cast-in-place concrete blocks, each approximately 50 feet in length and 10 feet in height, on the downstream face of the dam. Each block would be tied to the existing dam structure with reinforced steel dowels. The thickness of the new concrete would be approximately proportional to the original thickness at each location along the dam profile. For example, above elevation 465 feet, the dam would be thickened by 80%, ranging from 4.2 to 8.8 feet of concrete added; below elevation 465 feet, 9 feet of concrete would be added.

The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. Road realignment includes construction of a new access road to provide a better line of sight and to bypass the Sleepy Hollow subdivision. The new road would start at Carmel Valley Road about 800 feet west of San Clemente Drive, cross Tularcitos Creek over a new bridge, and provide access to the proposed staging area and batch plant. The existing road between the staging area and the filter plant would be upgraded and widened.

Detailed descriptions of the proposed constructions are contained in Section 3.2 of the EIR/EIS.

Alternative 1 (Dam Notching with partial sediment removal)

Approximately 1.5 million cubic yards of sediment would be removed in planes approximately parallel to the existing surface of the sediment in the reservoir. This approach would minimize the amount of sediment movement in the winter. In combination with reservoir dewatering and sediment pre-draining activities described below, it would also help maintain the excavation work above the groundwater level for as long as possible. A portion of the original streambed that existed in 1921 would be exposed in the upper reaches of the Carmel River and San Clemente Creek during the second season of sediment removal operations. Excavation of sediment above the water table would be performed using self-loading scrapers or similar self-propelled excavating equipment. The scrapers would transport the material to a central stockpile area within the reservoir area, where the material would be allowed to drain further. The stockpile area would be located at the mouth of the ravine where the sediment disposal site is located.

Following partial sediment removal, San Clemente Dam would be notched to approximately elevation 506 feet in the area of the existing spillway bays would reduce the pressure on the dam sufficiently to avoid catastrophic failure of the dam during a MCE event. Notching to this elevation would also be sufficient to prevent overtopping of the dam during the PMF. Notching would be accomplished by saw-cutting the concrete in large blocks. Approximately 700 cubic yards of concrete would be removed. A large tower crane would be used to remove the sawcut concrete blocks and to place the new concrete at the dam and fish ladder. The crane would be located downstream of the dam in the drained plunge pool to provide adequate access to the dam and fish ladder. The concrete blocks would then be further broken up into pieces of sizes that could be loaded and transported by off-highway trucks to the sediment disposal pile for use in erosion control. A large excavator equipped with a hydraulic hammer would be used to reduce the size of the concrete blocks as needed. Light blasting may also be used to break up the largest concrete pieces into smaller, more manageable pieces.

The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. Road realignment includes construction of a new access road to provide a better line of sight and to bypass the Sleepy Hollow subdivision. The new road would start at Carmel Valley Road about 800 feet west of San Clemente Drive, cross Tularcitos Creek over a new bridge, and provide access to the proposed staging area. The existing road between the staging area and the filter plant would be upgraded and widened.

Detailed descriptions of the Alternative 1 constructions are contained in Section 3.2 of the EIR/EIS.

Alternative 2 (Dam Removal with total sediment removal)

Approximately 2.5 million cubic yards of sediment would be removed in planes approximately parallel to the existing surface of the sediment in the reservoir. This approach would minimize the amount of sediment movement in the winter. In combination with reservoir dewatering and sediment pre-draining activities described below, it would also help maintain the excavation work above the groundwater level for as long as possible. A portion of the original streambed that existed in 1921 would be exposed in the upper reaches of the Carmel River and San Clemente Creek during the second season of sediment removal operations. Excavation of sediment above the water table would be performed using self-loading scrapers or similar self-propelled excavating equipment. The scrapers would transport the material to a central stockpile area within the reservoir area, where the material would be allowed to drain further. The stockpile area would be located at the mouth of the ravine where the sediment disposal site is located.

Following total sediment removal, San Clemente Dam would be demolished using explosives. This involves the demolition and removal of about 7,000 to 8,000 cubic yards of concrete from the site. The concrete debris would be further broken up into pieces of sizes that could be loaded and transported by off-highway trucks to the sediment disposal pile for use in erosion control. A truck-mounted crane may be used to drill the holes into the dam and load the explosives. The crane could be located downstream of the dam in the drained plunge pool to provide adequate access to the entire footprint of the dam, from the crest down to the foundation. The crane would also be used to lift out the concrete debris. Large excavators equipped with hydraulic hammers or shears would be used to reduce the size of the concrete debris as needed. Blasting would also be used to break up the largest concrete pieces into smaller, more manageable pieces. The existing fish ladder on the left (west) abutment of the dam would be demolished and removed. The instrument hut near the left abutment would be removed. The dam tender dwelling would be preserved and possibly converted to other uses.

The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. The existing road between the staging area and the filter plant would be upgraded and widened.

Detailed descriptions of the Alternative 2 are contained in Section 3.2 of the EIR/EIS.

Alternative 3 (Carmel River reroute and Dam Removal with in-place sediment stabilization)

In order to permanently bypass the sediment disposal area on the Carmel River, a diversion channel would be constructed to connect Carmel River to San Clemente Creek. Blasting operations would be required to remove the large volume of rock between the two reservoir arms. Blasting operations would include clearing and grubbing of the blast area; an explosives magazine established onsite to store explosives; pre-drilling of rock to place explosives; and pre-splitting of rock at the channel boundaries to define the channel geometry. The total blasted volume of rock is estimated at about 145 acre-feet, or about 234,000 cubic yards (MEI, 2005). Most of the blasted rock would be broken into 1-foot pieces or smaller. It is anticipated that minor operations would be required to reduce a small percentage of the blasted rock into 1-foot size and smaller with hoe-rams and similar equipment. A portion of the 1-foot and larger pieces of blasted rock would be separated for use in armoring of the diversion dike face that would be exposed to river flows.

At the conclusion of the diversion and partial sediment removal processes, San Clemente Dam would be demolished using explosives. This involves the demolition and removal of about 7,000 to 8,000 cubic yards of concrete from the site. The concrete debris would be further broken up into pieces of sizes that could be loaded and transported by off-highway trucks to the base of the stabilized slope and sediment disposal pile for use in erosion control. A truck-mounted crane may be used to drill the holes into the dam and load the explosives. The crane could be located downstream of the dam in the drained plunge pool to provide adequate access to the entire footprint of the dam, from the crest down to the foundation. The crane would also be used to lift out the concrete debris. Large excavators equipped with hydraulic hammers or shears would be used to reduce the size of the concrete debris as needed. Light blasting would also be used to break up the largest concrete pieces into smaller, more manageable pieces. The existing fish ladder on the left (west) abutment of the dam would be demolished and removed. The instrument hut near the left abutment would be removed. The dam tender dwelling would be preserved and possibly converted to other uses.

The 3-mile access road to SCD from Carmel Valley Road would require realignment and improvements to accommodate heavy equipment used for construction activities. The existing road between the staging area and the filter plant would be upgraded and widened.

Detailed descriptions of the Alternative 3 constructions are contained in Section 3.2 of the EIR/EIS.

Alternative 4 (No project)

Under the No Project (Action) Alternative, the reinforcement of the dam would not occur and the dam would remain as it is. The fish ladder would be improved under the No Action Alternative. The rate and timing of flow releases into the Carmel River would continue to be negotiated annually with NOAA Fisheries, the CDFG and MPWMD, as long as the reservoir remained operable. Retrofit construction impacts would not occur. The reservoir would fill up with sediment and sediment would eventually flow downstream naturally. Interim dam safety measures would continue under the No Action Alternative. In 2003 DSOD required modifications to SCD to meet interim dam safety requirements.

The 3-mile access road to SCD from Carmel Valley Road would not require realignment and improvements. The existing road between the staging area and the filter plant would not be upgraded and widened.

Detailed descriptions of Alternative 4 constructions are contained in Section 3.2 of the EIR/EIS.

4.0 Estimated Emissions

A general conformity analysis must consider direct and indirect emissions from non-exempt federal actions (or portions thereof). Direct emissions include those emissions of criteria air pollutant(s) or precursors that are caused by and occur at the same time and place as the Federal action (Reference: 40 CFR 51.852). Indirect emissions include those emissions of criteria air pollutant(s) or precursors that are caused by the federal action, but may occur later in time and/or may be further removed in distance from the action itself, although still reasonably foreseeable (Reference: 40 CFR 51.852). Indirect emissions must be included in the emissions estimate only if those emissions are caused by the Federal action and practicably can be controlled by the Federal agency. Indirect emissions typically include emissions from mobile sources and emissions generated by third parties that implement the proposed action.

The direct emissions associated with the Project would include emissions from construction equipment directly related to construction of the Project. Indirect emissions would include motor vehicle emissions associated with workers commuting to and from the job site.

Access road and bridge improvement and construction would result in temporary, short-term emissions of PM_{10} in and around the project area. The primary types of construction activities that would occur in the dam site area under the Proposed Project would be: 1) access road and bridge improvement and construction, 2) plunge pool dewatering, 3) foundation preparation, 4) parapet wall and spillway pier demolition, 5) concrete from construction, and 6) concrete pouring. The use of internal combustion engines in trucks, front loaders, backhoes, bulldozers, and other heavy construction equipment and vehicles, would result in temporary, short-term emissions of NO_X and ROCs. These NO_X, ROC and PM_{10} emissions would be restricted to the construction period for the Project and would terminate once construction was completed.

Refer to the Ambient Air Quality Analysis in Section 4.2 of the EIR/EIS for emissions estimates and calculations for each alternative.

5.0 Conformity Determination

5.1 Applicability Analysis

Total emissions of pollutants of concern from construction activities associated with the Project are outlined in the Air Quality section of the EIR/EIS (Section 4.2). To determine applicability of the general conformity determination requirements, these emission rates are compared to the applicable de minimis emission rates specified in 40 CFR 51.853(b)(2). For NO_X and ROCs in ozone nonattainment areas located outside an ozone transport region, the applicable emission rates are 100 tpy each for NO_X and ROC. For PM_{10} in a nonattainment area the applicable emission rate is 100 tpy. Since none of the exemptions listed in 40 CFR 51.853(c), (d) or (e) would be applicable to the Project, and the Project would not be presumed to conform in accordance with the requirements and procedures in 40 CFR 51.853(f)-(h), a conformity determination is required for NO_X and PM_{10} emissions from the Project. While NO_X and PM_{10} emissions would exceed the 100 tpy applicability threshold, pursuant to the emissions and air quality impact estimates given in Section 4.2 of the EIR/EIS, NO_X and PM_{10} emissions from the Project would not be regionally significant. A “regionally significant” action is defined as a Federal action for which the direct and indirect emissions of any pollutant represent 10 percent or more of a nonattainment or maintenance area’s emissions inventory for that pollutant (Reference: 40 CFR 51.853(I)).

Although ROC emissions would be well below the 100 tpy applicability threshold, the general conformity applicability analysis must also consider whether the total direct and indirect emissions from a Federal action would be regionally significant. Pursuant to the emissions and air quality impact estimates given in Section 4.2 of the EIR/EIS, ROC emissions from the Project would not be regionally significant and the conformity determination requirements do not apply to ROC emissions from the Project. Refer to Section 4.2 of the EIR/EIS and Appendix G for emission estimates and calculations.

5.2 Consistency with SIP

All general Federal actions subject to a conformity determination must satisfy certain criteria. First, the total direct and indirect emissions from the action must comply or be consistent with all applicable requirements and milestones in the relevant SIP, such as elements identified as part of reasonable further progress schedules, assumptions specified in the attainment or maintenance demonstration, prohibitions, numerical emission limits, and work practice requirements. (Reference: 40 CFR 51.858(c)). The following subsections demonstrate that the Project will comply and be consistent with the applicable requirements and milestones of the California SIP.

5.2.1 Control of Air Pollutant Emissions from Stationary Sources

EPA and the ARB have established requirements for the control of air pollutant emissions from stationary sources. The Project would not involve the construction or operation of any stationary sources of air pollutant emissions. All equipment that would be used in the construction and operation of the Project would be considered non-road or mobile sources. Therefore, the requirements under EPA and ARB regulations for control of air pollutant emissions from stationary sources would not apply to the Project.

5.2.2 Control of Air Pollutant Emissions from Mobile Sources

During the seismic retrofit of the San Clemente Dam contractors would use construction equipment that would result in mobile source emissions of PM_{10}, NO_X, SO_2, CO, PM_{10} fugitive and ROC fugitive. It is anticipated that this equipment would include trucks, front loaders, backhoes, bulldozers, and other heavy construction equipment and vehicles. All construction equipment associated with the Project would comply with all applicable EPA standards.

5.3 Accommodation of Emissions from the Project in SIP Emissions Budget

The NO_X emissions and PM_{10} emissions associated primarily with construction of the Project are estimated to exceed 100 tpy. Thus, a general conformity determination is being completed for the Project.

The ARB is responsible for ensuring compliance with the SIP and determines and documents whether the total direct and indirect emissions from the proposed Federal action would result in an emissions level that, together with all of the NO_X and PM_{10} emissions in the nonattainment area, would exceed the emissions budgets specified for each pollutant in the relevant SIP.

Federally mandated air quality planning is regulated by the Clean Air Act Amendments of 1990 (CAAA). Historically, the NCCAB was classified as a moderate nonattainment area for ozone and either unclassified or attainment for all other pollutants. In 1994 the MBUAPCD submitted a redesignation request (requesting redesignation from nonattainment to attainment) and the

Monterey Bay Unified APCD (MBUAPCD), the Association of Monterey Bay Area Governments (AMBAG) and the San Benito County Council of Governments adopted a Maintenance Plan for the region. The U. S. Environmental Protection Agency approved the redesignation to attainment status in April 1997.

The NCCAB is currently a nonattainment area for the State Ambient Air Quality Standards for ozone and inhalable particulate matter (PM_{10}). The 1991 Air Quality Management Plan for the Monterey Bay Area (AQMP) was the first plan prepared in response to the California Clean Air Act of 1988 (Act) that established specific planning requirements to meet the ozone standard. The Act requires that the AQMP be updated every three years. The 2004 AQMP is the fourth update to the 1991 AQMP with the first three completed in 1994, 1997 and 2000, respectively. The AQMP addresses only attainment of the state ozone standard. Attainment of the PM_{10} standard is addressed in a separate report. The California Clean Air Act also requires the MBUAPCD to prepare and submit a report to ARB summarizing progress in meeting the schedules for developing, adopting or implementing the air pollution control measures contained in the MBUAPCD's plans. The report is due by December 31 of each year and is included in the AQMP.

The NCCAB is in maintenance with the Federal 1-hour ozone standard, which means that the air basin used to be a nonattainment area and is now an attainment area. The NCCAB is under the authority of the MBUAPCD and thus MBUAPCD was required to write a Federal Maintenance Plan in 1994 for ozone. This document still applies today. The MBUAPCD is not required to update the plan but is required to continue monitoring ozone emissions.

Table Y-1 below compares the estimated emission rates for NO_X, PM_{10}, and ROCs from the proposed action Alternative 2 with the EPA-defined de minimis thresholds. The emissions rates from Alternative 2 are used because they would be the highest emissions rates for the proposed Project.

Table Y-1: Comparison of Estimated Emission Rates from Proposed Action with De Minimis Thresholds

Emissions Rates	**NO_X Emissions,** Tons/Year	**PM_{10} Emissions (fugitive and combustion)** Tons/Year	**ROC Emissions** Tons/Year
De Minimis Threshold	100	100	100
Highest Estimated Emission Rate from Proposed Action	106	118	15

Table Y-2 below compares the estimated emission rate of NO_X from the proposed action Alternative 2 with the 2005 projected emission rate in the MBUAPCD maintenance plan and the 1990 base-year emissions budget. The estimated emission rate from the proposed action is significantly lower than the projected and base-year emissions rates. When the estimated emission rate from the proposed action is added to the 2005 projected emissions rate, the result is still significantly lower than the 1990 base-year emissions budget.

Table Y-2: Demonstration of General Conformity of Action NO_X Emissions with SIP Budget

NO_X Emission Rates	NCCAB NO_X Emissions, Tons/Day
Estimated Emission Rate from Proposed Action	0.36
2005 Projected Emission Rate in Maintenance Plan	59.00
1990 Base-Year Emissions Budget	95.74

Source: Monterey Bay Unified Air Pollution Control District. 2004 Air Quality Management Plan for the Monterey Bay Region. Fourth Revision to the 1991 AQMP. Chapter 4. September 2004. "ROC" is referred to as "VOC" in the AQMP.

Table Y-3 below compares the estimated emission rate of PM_{10} from the proposed action Alternative 2 with the 2010 projected emission rate for San Joaquin Valley (which is upwind of the project site), the 2005 projected emission rate for the State of California, and the 2000 base-year emissions budget for the State of California. The estimate emission rate for the proposed action is significantly lower than the projected and base-year emission rates. When the estimated emission rate from the proposed action is added to the 2010 projected emissions rate for San Joaquin Valley, the result is still significantly lower than the 2000 base-year emissions budget. Due to lack of data for PM_{10}, projected and base-year emissions for the NCCAB are not included in the analysis.

Table Y-3: Demonstration of General Conformity of Action PM_{10} Emissions with SIP Budget

PM_{10} Emission Rates	NCCAB PM_{10} Emissions, Tons/Day
Estimated Emission Rate from Proposed Action	0.63
2010 Projected Emission Rate for San Joaquin Valley	4.5
2005 Projected Emission Rate for California	36
2000 Base-Year Emissions Budget for California	39

Source: Proposed 2003 State and Federal Strategy for California SIP Section II – Mobile Sources. Chapter C – Off-Road Compression-Ignition (Diesel) Engines.

Refer to the Ambient Air Quality Analysis in Section 4.2 of the EIR/EIS for emission estimates and calculations.

This conformity analysis demonstrates that the total direct and indirect air pollutant emissions associated with the proposed action would comply and would be consistent with the applicable requirements in the relevant SIP. In addition to meeting the baseline criterion, conformity is demonstrated by proposed mitigation requirements for NO_X and PM_{10} (Reference: 40 CFR Part 51.858).

Feasible Mitigation Measures (PM_{10})

There are several feasible mitigation measures that address the many sources of PM_{10} during the construction phase of a project (e.g., grading, wind erosion, entrained dust). Common measures include watering, chemical stabilization, or reducing surface wind speeds with windbreaks. Feasible mitigation measures for PM_{10} are identified below.

- Water all active construction areas at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Prohibit all grading activities during periods of high wind (over 15 mph).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Haul trucks shall maintain at least 2'0" of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Install wheel washers at the entrance to construction sites for all exiting trucks.
- Pave all roads on construction sites.
- Sweep streets if visible soil material is carried out from the construction site.
- Post a publicly visible sign, which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution
- Control District shall be visible to ensure compliance with Rule 402 (Nuisance).
- Limit the area under construction at any one time.

Feasible Mitigation Measures (NO_X)

For some industrial facilities (e.g., quarries, landfills), emissions of NO_X from construction equipment can be mitigated through controls on equipment and activity. This includes limits on the number of vehicles, type of fuel used, hours of daily operation, or duration of use. Feasible mitigation measures for NO_X are identified below.

- Limit the pieces of equipment used at any one time.
- Minimize the use of diesel-powered equipment (i.e., wheeled tractor, wheeled loader, roller) by using gasoline-powered equipment to reduce NO_X emissions.
- Limit the hours of operation for heavy-duty equipment.
- Undertake project during non-zone season.
- Off-site mitigation

6.0 Conclusions

The San Clemente Dam Seismic Retrofit Project would satisfy all of the requirements of a general conformity determination under applicable EPA and ARB regulations. This determination is based on the following factors:

- NCCAB is located in an air quality nonattainment area for ozone and particulate matter. Thus a general conformity analysis must be completed for those federal actions for which the NO_X, ROC, and PM_{10} emissions would exceed applicable emissions thresholds.

- Total direct and indirect ROC emissions from the Project would be de minimis and would not be regionally significant. Thus estimated ROC emissions from the proposed Project are presumed to conform with the California SIP.

- Total direct and indirect NO_X and PM_{10} emissions from the Project are estimated to exceed 100 tpy applicability threshold, requiring a general conformity analysis of NO_X and PM_{10} emissions associated with the Project.

- Potential emissions sources that would be utilized in construction of the Project comply or are consistent with all applicable requirements and milestones in the California SIP. All sources associated with the Project would be considered non-road or mobile sources, none of which would be subject to the requirements under EPA or ARB regulations for control of air pollutant emissions from stationary sources.

- The Total NCCAB NO_X emissions rate (conservatively estimated by adding estimated Project emissions to the projected 2005 emissions) would be well below the 1990 base-year NO_X budget for the NCCAB.

- The Total regional PM_{10} emissions rate (conservatively estimated by adding estimated Project emissions to the projected 2005 emissions) would be well below the 2000 base-year PM_{10} budget for the State of California.

- Other mitigating factors support the conformity determination. Emissions from the Project would be temporary and diffuse, occurring only during construction period of the seismic retrofit.

7.0 References

40 CFR Part 51, Subpart W – *Determining Conformity of General Federal Actions to State of Federal Implementation Plans.*

Haley & Aldrich, Inc. AES Ocean Express LLC. *General Conformity Determination under the Clean Air Act for the Ocean Express Pipeline Project*. October 8, 2004.

Monterey Bay Unified Air Pollution Control District. 2004 Air Quality Management Plan for the Monterey Bay Region. Fourth Revision to the 1991 Air Quality Management Plan for the Monterey Bay Region. September 2004.

Proposed 2003 State and Federal Strategy for California SIP Section II – Mobile Sources. Chapter C – Off-Road Compression-Ignition (Diesel) Engines.

Rule 702. General Conformity. Adopted October 20, 1994

Appendix Z

FIRE PREVENTION AND SUPPRESSION PLAN

San Clemente Dam Seismic Retrofit Project

Fire Prevention and Suppression Plan

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FIRE PREVENTION AND SUPPRESSION PLAN

1. INTRODUCTION

The Fire Prevention and Suppression Plan (Plan) identifies measures to be taken by the California-American Water Company (CAW) and its contractors (Contractor) to ensure that fire prevention and suppression techniques are carried out in accordance with federal, state, and local regulations. Measures identified in this Plan apply to work within the project area defined as the construction area, access roads, all work and storage areas, and other areas used during construction of the project.

2. PURPOSE

The risk of fire danger during pipeline construction is related to smoking, refueling activities, operating vehicles and other equipment off roadways, welding activities, and the use of explosive materials and flammable liquids. During pipeline operation, risk of fire is primarily from unauthorized entry into the construction area. During maintenance operations, risk of fire is from vehicles and pipeline maintenance activities that require welding.

This Plan establishes standards and practices that will minimize the risk of fire danger and, in case of fire, provide for immediate suppression.

3. RESPONSIBILITIES AND COORDINATION

This Plan will be implemented by CAW and the Contractor on the project. CAW and the Contractor have the responsibility for providing all necessary fire-fighting equipment on the project site to their respective employees, and operating under the requirements of this Plan. Prior to construction, CAW will contact the appropriate authorities to establish communications, obtain permits (if applicable), and/or fulfill other obligations as directed by fire control authorities. In addition to the above, CAW will:

- Ensure that prevention, detection, pre-suppression, and suppression activities are in accordance with this Plan and federal, state, and county laws, ordinances, and regulations pertaining to fire;
- Accompany agency representatives on fire tool and equipment inspections and take corrective action upon notification of any fire protection requirements that are not in compliance; and

The fire prevention and suppression measures described in this Plan will be in effect from the start of construction to the end of construction. These restrictions may change by advance written notice by fire control authorities. However, required tools and equipment will be kept in serviceable condition and be immediately available for fire suppression at all times.

4. FIRE PREVENTION MEASURES

4.1 Preconstruction and Construction

Methods and procedures that will be implemented prior to and during the construction period to minimize the risk of fire are described below.

4.1.1 Training

The Contractor will train all personnel about the measures to take in the event of a fire. The Contractor also will inform each construction crewmember of fire dangers, locations of extinguishers and equipment, and individual responsibilities for fire prevention and suppression during regular safety briefings. Smoking and fire rules also will be discussed with the Contractor and all field personnel during the project's environmental training program.

4.1.2 Smoking

Smoking is prohibited except in areas cleared and graded a minimum of 10 feet in diameter to mineral soil. All burning tobacco and matches will be extinguished before discarding. Smoking also is prohibited while operating equipment or vehicles, except in enclosed cabs or vehicles.

4.1.3 Spark Arresters

During construction, operation, maintenance, and termination of the ROW, all equipment operating with an internal combustion engine will be equipped with federally approved spark arresters. Spark arresters are not required on trucks, buses, and passenger vehicles (excluding motorcycles) that are equipped with an unaltered muffler or on diesel engines equipped with a turbocharger. Agency fire prevention officers will have full authority to inspect spark arresters on project equipment prior to its use on the project on federal lands and periodically during the construction project.

4.1.4 Parking, Vehicle operation, and Storage Areas

In no case will motorized equipment, including worker transportation vehicles, be driven or parked outside of the designated and approved work limits. Equipment parking areas, the construction area, staging areas, designated vehicle-parking areas, and small stationary engine sites, where permitted, will be cleared of all flammable material. Clearing will extend a minimum of 10 feet beyond the edge of the area to be occupied, but not beyond the boundaries of the approved project area, extra workspace, or ancillary site. Glass containers will not be used to store gasoline or other flammables.

4.1.5 Equipment

All motor vehicles and equipment will carry at least one long-handled (48-inch minimum), round-point shovel and one dry chemical fire extinguisher (5 B.C.). Individuals using power saws and grinders will have a shovel as described above, and an 8-ounce capacity fire extinguisher immediately available. All equipment will be kept in a serviceable condition and readily available.

4.1.6 Road Closures

The Contractor will notify the appropriate fire suppression agency of the scheduled closures prior to the open-cut crossing of a road. If required, the Contractor will construct a bypass prior to the open-cut installation of a road crossing, unless a convenient detour can be established on existing project approved roads or within project approved work limits. All bypasses will be clearly marked by the Contractor. During road closures the Contractor will designate one person, who knows the bypass, to direct traffic. The Contractor will minimize, to the extent possible, the duration of road closures.

4.1.7 Refueling

Fuel trucks will have a large fire extinguisher charged with the appropriate chemical to control electrical and gas fires. The extinguisher will be a minimum size 35-pound capacity with a minimum 30 B.C. rating. Power saw refueling will be done in an area that has first been cleared of material that could catch fire.

4.1.8 Burning

No burning of slash, brush, stumps, trash, explosives storage boxes, or other project debris will be permitted on the project. No lunch or warming fires or barbecue grills will be allowed.

4.1.9 Fire Guard

The Contractor will designate a Fire Guard on each construction crew prior to the start of construction activities each day. The Fire Guard must be physically able, vigilant, and suitably trained to detect fires and use required fire-fighting equipment, according to the requirements specified in the Construction Safety Manual (Appendix L). An alternate or back-up Fire Guard will be designated to assume responsibility, if the primary guard is unable to perform their duties. The Contractor will provide, if required by CAW, additional fire watch-people with radio communication to the Fire Guard should construction activities be too widely spread for one Fire Guard to manage effectively.

4.1.10 Fire Guard Communications

The Fire Guard will be responsible for maintaining contact with fire control agencies, and will be equipped with a radio or cellular telephone so immediate contact with local fire control agencies can be made. If cellular telephone coverage is not available, the Fire Guard will use the Contractor’s frequency to contact their radio base at the Contractor’s yard. From there, yard personnel will telephone emergency dispatch.

4.1.11 Welding

One 5-gallon backpack pump will be required with each welding unit in addition to the standard fire equipment required in all vehicles. All equipment will be kept in a serviceable condition and readily available.

4.1.12 Restricted Operations

The Contractor will restrict or cease operations on federal lands during periods of high fire danger at the direction of the BLM Fire Management Officer. Restrictions may vary from stopping certain operations at a given time to stopping all operations. CAW may obtain approval to continue some or all operations if acceptable precautions are implemented.

The responsible BLM Fire Management Officer will notify CAW the previous day if fire danger predictions call for restrictions the following day. If a sudden change in fire danger requires restrictions during the day, the BLM Fire Management Officer will notify CAW immediately. CAW will then notify the Contractor to restrict activities as soon as possible.

4.1.13 Monitoring

Construction and Environmental Inspectors for CAW will inspect the job site and the Contractor's operations for compliance with all provisions of this Plan. In addition, federal, state, and local fire control agencies may perform inspections in areas under their jurisdiction at their discretion.

4.2 Dam Operation

During dam operation, the risk of fire danger is minimal. The primary causes of fire in the dam vicinity would result from unauthorized entry by individuals utilizing the area for recreational purposes and from fires started outside of the dam vicinity. During operation, access to the dam site would be restricted, in accordance with jurisdictional agency or landowner requirements.

4.3 Dam Maintenance

During maintenance operations, CAW or its Contractor will equip personnel with basic fire-fighting equipment including fire extinguishers and shovels as described in Section 4.1.5, Equipment. Maintenance crews also will carry emergency response/fire control contact phone numbers.

5. FIRE SUPPRESSION

5.1 Suppression

The Contractor will take the following actions should a fire occur within the project area during construction.

- Take immediate action to suppress fires using all available manpower and equipment.
- Notify the Fire Guard.
- Immediately notify the nearest fire suppression agency of the fire location, action taken, and status (See Section 6.2).
- Immediately notify CAW of the fire location and action taken.
- Relinquish the Fire Guard’s direction of fire suppression activities to agency fire management officers upon their arrival.

Note: If required, personnel only may leave the construction area boundaries to accomplish fire suppression. Heavy equipment is not to leave the construction area to suppress a fire unless directed by a BLM Representative on federal lands or by the state or local fire officials on private and state lands.

If a reported fire is controlled, the Fire Guard will note the location and monitor the progress in extinguishing the fire. The Fire Guard, or their designee, will remain at the fire scene until it is fully extinguished. The extinguished fire will be monitored in accordance with procedures described in Section 5.2 below.

When requested by the BLM Fire Management Officer, the Contractor will make any equipment and personnel currently at the site temporarily available for fighting fires in the vicinity of the project. Payment for such services will be made at rates determined by the BLM Fire Management Officer.

5.2 Monitoring

The Contractor will mark the location and boundaries of all extinguished fires. The extinguished fire site will be monitored by the Contractor for a minimum of 24 hours. Monitoring includes walking the fire site perimeter, as well as crossing through the site. The Fire Guard will maintain a log of all extinguished fire locations for future reference.

6. NOTIFICATION

6.1 Notification Procedures

Construction crewmembers will report all fires, whether extinguished or uncontrolled, to the Fire Guard. If the fire is uncontrolled, the Contractor’s Fire Guard will call the nearest fire suppression agency (call 911) and the CAW Chief Inspector. Information regarding the location of the fire, property ownership, and closest access roads should be provided to the 911 Operator and CAW.

If a reported fire is controlled, but not extinguished, the Fire Guard will call to notify the nearest police/fire authorities (See Section 6.2) using the non-emergency telephone line to alert them of the situation. The status of the fire will be monitored by the Fire Guard and when extinguished, the nearest fire suppression agency will be notified.

CAW also will immediately contact the nearest landowner(s). CAW will maintain and provide the Contractor with an up-to-date list of landowner and land management agency contacts in the dam vicinity.

Contacts
Emergency contacts are as follows:

Construction	Phone Number	Office Location	BLM Contact
Monterey County	911 831-755-3700	Emergency Number County Sheriffs Office	
San Benito County	911 831-636-4080	Emergency Number County Sheriffs Office	

7. REFERENCES

Bureau of Land Management (BLM). Right-of-Way Plans of Development and Grants, BLM Manual Handbook H-2901-1.