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12 **STATE OF CALIFORNIA**  
13 **STATE WATER RESOURCES CONTROL BOARD**

14 In the Matter of: )  
15 )  
16 ) **CLOSING STATEMENT OF**  
17 **CACHUMA PROJECT HEARING, PHASE 2** ) **CALIFORNIA DEPARTMENT**  
18 **UNITED STATES BUREAU OF** ) **OF FISH AND GAME**  
19 **RECLAMATION APPLICATIONS 11331** )  
20 **AND 11332** )

21  
22 **I.**

23 **INTRODUCTION**

24 The State Water Resources Control Board ("SWRCB") has reached a critical juncture in  
25 its supervision of the United States Bureau of Reclamation's ("Bureau") water rights for the  
Cachuma Project on the Santa Ynez River. For the first time in the fifty-plus years of this  
project's operations, the SWRCB has affirmative evidence that will allow an initial  
determination of measures that might be implemented to help preserve and move towards the  
restoration of a formerly magnificent run of steelhead trout (*Oncorhynchus mykiss*) as well as  
bestow crucial protection on other public trust resources that have been decimated for so many  
years.

1 Evidence demonstrates with undeniable certainty that the construction of Bradbury Dam  
2 and the ongoing operation of the Cachuma Project have had a ruinous effect on steelhead in the  
3 Santa Ynez River, which have nearly been extirpated. This species is currently included within  
4 an "endangered" listing pursuant to the federal Endangered Species Act ("ESA"). The California  
5 Department of Fish and Game ("DFG") thus respectfully requests that the SWRCB take steps  
6 towards satisfying its public trust duty by modifying Permits 11308 and 11309 to include terms  
7 designed to protect these essential resources. DFG recommends that modified permit terms  
8 include the flow recommendations in NOAA Fisheries' Biological Opinion ("BO") and the  
9 Lower Santa Ynez River Fish Management Plan ("FMP"). However, DFG is *emphatic* in its  
10 recommendation that these modifications should only be considered the first phase in an ongoing  
11 adaptive management strategy.  
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13 It is currently unclear whether the recommended flow releases contained in the FMP and  
14 BO afford adequate protection to steelhead downstream of Bradbury Dam. As a legislative  
15 expression of the Public Trust Doctrine, Fish and Game Code Section 5937 ("Section 5937")  
16 should serve as the guiding framework in ultimately determining the success of the  
17 recommended flow releases in achieving downstream fish protection. Currently, steelhead in the  
18 lower Santa Ynez do not appear to be in "good condition" within the meaning of Section 5937.  
19 In fact, it is unclear whether good condition will be established even after the recommended flow  
20 releases are put into full operation. It is thus critically important that the SWRCB verify the  
21 success of these measures before affording them any measure of permanence.  
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23 DFG requests that the SWRCB continue its reserved jurisdiction over the Bureau's  
24 permits. It should mandate the submission of studies and monitoring data to help determine  
25 whether continued progress is being made towards putting steelhead in good condition. And

1 ultimately, the SWRCB should reopen these permits at a date certain or upon a future triggering  
2 event to analyze whether alternative flow releases will be necessary in order to fully discharge its  
3 public trust duty. It is crucial to this future determination that the SWRCB order the immediate  
4 development of measurable success criteria, which are currently absent from both the FMP and  
5 BO.

6 Finally, DFG believes that it is absolutely vital that the SWRCB order the immediate  
7 commencement of a proper study of the feasibility of providing passage for steelhead around  
8 Bradbury Dam. State and federal resource agencies are in strong agreement that such passage  
9 will be a keystone in ultimately restoring the Santa Ynez steelhead run to a self-sustaining level.  
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11 DFG believes that by executing the above actions, the SWRCB will make a positive  
12 move towards restoring the steelhead and other resources in the Santa Ynez River that have been  
13 in dire need of protection for so many years.

## 14 II.

### 15 **PERMITS 11308 AND 11309 SHOULD BE MODIFIED BECAUSE THE** 16 **CONSTRUCTION AND OPERATION OF THE CACHUMA PROJECT IMPACTS** 17 **STEELHEAD AND OTHER PUBLIC TRUST RESOURCES AND THE SWRCB HAS** 18 **AN INDEPENDENT, AFFIRMATIVE DUTY TO PROTECT SUCH RESOURCES** 19 **WHENEVER FEASIBLE**

20 In its supplemental notice for Phase 2 of the Cachuma Project Hearing, the SWRCB  
21 posed as Key Hearing Issue Number 3, "Should Permits 11308 and 11309 be modified to protect  
22 public trust resources?" DFG answers this question in the affirmative, believing that the SWRCB  
23 is under an independent, mandatory duty pursuant to the Public Trust Doctrine to make  
24 modifications to the aforementioned permits held by the Bureau. These modifications are made  
25 necessary by the Cachuma Project's past, current, and future impacts to steelhead and other  
public trust resources.

1           The seminal case of National Audubon Society v. Superior Court, 33 Cal.3d 491, 446  
2 (1983), clearly established the SWRCB's affirmative duty to take the public trust into account  
3 whenever feasible in the allocation of water resources. The Court in that case held that, "[T]he  
4 state must bear in mind its duty as trustee to consider the effect of the taking [of water] on the  
5 public trust and to preserve, so far as consistent with the public interest, the uses protected by the  
6 trust." (*Id.* at 446-447). Fisheries are among the ecological interests included within the public  
7 trust. (*Id.* at 435). The aforementioned language suggests that the SWRCB must not only  
8 *consider* the impacts of diversion and use on fisheries when allocating water, it must also take  
9 measures to *affirmatively protect* such interests when to do so would be feasible and in the public  
10 interest. The primary method for the SWRCB to execute such protections is by placing  
11 conditions on water use in the permits it issues.

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13           The construction and operation of the Cachuma Project as a water supply and flood  
14 control project has had well-documented and devastating impacts on the Santa Ynez River  
15 steelhead run. Prior to the construction of Bradbury Dam, the steelhead population in the Santa  
16 Ynez River was estimated to be between 20,000 to 30,000 individuals. (NOAA Fisheries Exhibit  
17 6, p. 1). In fact, DFG historical records indicate that the river once supported the largest  
18 steelhead run in southern California. (*Id.* at p. 3; DFG Exhibit 2, p. 13). Currently, however,  
19 NOAA Fisheries (formerly the National Marine Fisheries Service, or "NMFS") indicates that the  
20 Santa Ynez River steelhead run has been virtually extirpated, being less than 200 adults. (NOAA  
21 Fisheries Exhibit 6, p. 1). Immediately following the construction of Bradbury Dam, DFG had  
22 recommended that water be released to provide migration, spawning, and nursery flows to help  
23 preserve the downstream steelhead population. (DFG Exhibit 2, p. 14). Unfortunately, these  
24 measures were never mandated. (*Id.*). In addition to a lack of support flows following  
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1 construction, Bradbury Dam became a barrier blocking access to nearly all the prime, historic  
2 spawning and rearing habitat for steelhead in the upper river. (Id.). Due to these impacts, the  
3 Santa Ynez steelhead run has been considered at a high risk of extinction. (Id.). Now, five  
4 decades after the construction and authorization of the Cachuma Project, there are still no  
5 mandatory terms in the Bureau's water right permits to protect steelhead or to provide passage of  
6 steelhead around Bradbury Dam. Such terms are now clearly necessary.

7  
8 NOAA Fisheries issued its BO to the Bureau in 2000 for ongoing Cachuma Project  
9 operations after the Southern California steelhead Evolutionary Significant Unit ("ESU") was  
10 listed as "endangered" under the ESA. (Staff Exhibit 9). The BO contains a number of  
11 Reasonable and Prudent Measures and Conservation Recommendations that are designed to  
12 avoid "jeopardy" to steelhead downstream of Bradbury Dam. (Id.) Also in 2000, the FMP was  
13 finalized and submitted to the SWRCB. (DOI Exhibit 1f). The FMP was developed by a working  
14 group composed of state, federal, and local agencies, including DFG. (Id. at p. I-1 to I-3). Similar  
15 to the BO, the FMP recommends a number of flow and non-flow related measures in the  
16 operation of the Cachuma Project which are intended to provide some benefit to steelhead  
17 downstream of Bradbury Dam. (Id. at p. I-3). In order to satisfy its public trust obligations  
18 pursuant to National Audubon, DFG believes that the SWRCB must integrate the measures  
19 recommended in the FMP and BO into the Bureau's Cachuma Project permits as interim  
20 measures.

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22 The Bureau and the Cachuma Conservation Release Board and Santa Ynez River Water  
23 Conservation District, Improvement District No. 1 (hereinafter "Member Units") seem to suggest  
24 that it is not necessary to modify the permits to include these terms, since they claim to be  
25 successfully protecting public trust resources by independently carrying out the FMP and BO

1 measures on their own. However, this argument fails for several reasons. First, not including  
2 permit terms for protection of public trust resources would essentially leave the SWRCB's  
3 mandatory and independent public trust obligations under National Audubon unsatisfied. Under  
4 the terms of that decision, the SWRCB must take independent steps to protect and preserve  
5 public trust resources. (National Audubon, 33 Cal.3d at 446-447). Without mandatory, resource-  
6 protective permit terms, the SWRCB would be left with no independent enforcement authority if  
7 Bureau fails to meet the terms of the FMP and BO. The SWRCB would thus effectively cede its  
8 public trust obligations to NOAA Fisheries and to the promises of the Bureau and the Member  
9 Units.  
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11 Second, even though many of the Reasonable and Prudent Measures in the BO are legally  
12 considered mandatory, the measures contained in the FMP are not. If the Bureau and the  
13 Member Units fail to meet the recommended measures in the FMP, they would not violate any  
14 required obligation. However, if the SWRCB includes the FMP's terms in the permits, those  
15 recommended measures would become a legally-mandated duty.

16 Finally, the SWRCB cannot fully satisfy its public trust responsibilities by assuming that  
17 the independent requirements of the FMP and BO will fully achieve public trust protection.  
18 NOAA Fisheries has testified that the BO only weighed the so-called "jeopardy" standard under  
19 the ESA. (NOAA Exhibit 1, p. 2; Recorder's Transcript, hereinafter "RT," p. 628, lines 11-22).  
20 As will be explained below, substantial evidence submitted in this hearing demonstrates that  
21 additional resource-protective measures may be necessary in the future to adequately protect the  
22 public trust in keeping with Section 5937. Further SWRCB mandates are necessary in order to  
23 drive the adaptive management process towards adequate public trust protection instead of  
24 simply being content with the BO's lesser "no jeopardy" standard. If the SWRCB allows the  
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1 Bureau to operate in keeping with the BO and stays silent in the permits in regards to future  
2 public trust measures, it will not have fully accounted for the stringent standards of the Public  
3 Trust Doctrine. (RT p. 746, lines 1-17).

### 4 III.

#### 5 **SUBSTANTIAL EVIDENCE INDICATES THAT IT IS CURRENTLY UNCERTAIN** 6 **WHETHER THE MEASURES CONTAINED IN THE FMP AND BO PROVIDE** 7 **ADEQUATE PUBLIC TRUST PROTECTION TO STEELHEAD DOWNSTREAM OF** 8 **BRADBURY DAM PURSUANT TO FISH AND GAME CODE SECTION 5937**

9 Evidence submitted in this hearing suggests that, despite the fact that the BO and FMP  
10 have been in effect for several years, the Bureau's operation of the Cachuma Project is not in  
11 compliance with Section 5937. Such compliance will ultimately determine the level of adequacy  
12 of protection of public trust resources. The record demonstrates that there is significant  
13 uncertainty whether the actions in the FMP and BO will put steelhead in good condition.

#### 14 **A. Adequate Flows for Protection of Public Trust Resources Downstream of Bradbury** 15 **Dam Should Be Defined by the Requirements of Fish and Game Code Section 5937**

16 The SWRCB's full exercise of its duty to public trust resources through water allocation  
17 should be defined by ultimately mandating sufficient flow releases from Bradbury Dam to satisfy  
18 Section 5937. That section states that, "The owner of any dam shall allow sufficient water at all  
19 times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass  
20 over, around or through the dam, to keep in good condition any fish that may be planted or exist  
21 below the dam." Both the California courts and the SWRCB have stated that Section 5937 is a  
22 legislative expression of the Public Trust Doctrine. (California Trout v. State Water Resources  
23 Control Board, 207 Cal.App. 585, 255 Cal.Rptr. 184, 209, 212 (1989); SWRCB Order 95-2 p. 6).  
24 Courts have upheld the applicability of Section 5937 to the Bureau's dam operations based on  
25 the terms of Section 8 of the Reclamation Act (43 U.S.C. § 372, 383). (Natural Resources

1 Defense Council v. Patterson, 791 F.Supp. 1425, 1432 (1992); Natural Resources Defense  
2 Council v. Houston, 146 F.3d 1118 (1998)). The SWRCB has stated that it is reasonable under  
3 California Constitution Article X, Section 2 to release enough water to keep fish in good  
4 condition below dams pursuant to Section 5937. (SWRCB Order 95-2, p. 6). Therefore,  
5 although the SWRCB has stated that it is not under a mandatory duty to apply Section 5937 to  
6 the Cachuma Project (SWRCB Order 95-2, p. 6-7), the fact that this provision mirrors the Public  
7 Trust Doctrine suggests that it should be the ultimate framework for measuring the adequacy of  
8 downstream water releases for public trust resources. DFG respectfully requests that the SWRCB  
9 acknowledge this concept in its order following these proceedings.  
10

11 **B. Substantial Evidence Suggests that Steelhead Below Bradbury Dam Are Not**  
12 **Currently in Good Condition Pursuant to Fish and Game Code Section 5937**

13 Testimony presented in this hearing suggests that the Bureau's flow releases from  
14 the Cachuma Project are not meeting the requirements of Section 5937, since fish do not  
15 appear to be in "good condition" below Bradbury Dam. Although the meaning of "good  
16 condition" has not yet been defined by statute or regulation, a working definition used by  
17 DFG (DFG Exhibit 4, p.6) has been developed through both court proceedings and prior  
18 hearings before the SWRCB. This definition is outlined in detail in an article authored by  
19 Dr. Peter Moyle, Michael Marchetti, Jean Baldrige, and Thomas Taylor entitled "Fish  
20 Health and Diversity: Justifying Flows for a California Stream" (DFG Exhibit 6) and was  
21 used in the Putah Creek Council v. Solano County Water Agency trial in 1996. The so-  
22 called "Moyle definition" was distilled from a prior definition developed by DFG  
23 Fisheries Biologist Darrell Wong for SWRCB proceedings regarding Mono Lake in  
24 1993.  
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1           The Moyle definition states that fish are in good condition when three tiers of fish  
2 health are evident: 1) Individual Level; 2) Population Level; and 3) Community Level.  
3 (DFG Exhibit 6, p. 5). All three tiers of this definition must be met for fish to be in good  
4 condition. (RT p. 389, lines 10-12). Evidence submitted in this hearing by several  
5 parties, including two of the authors of the aforementioned article, suggest that the  
6 Bureau's flow releases do not meet all three tiers of the definition and may, in fact, not  
7 be ultimately achieved by full implementation of the FMP and BO flow  
8 recommendations.  
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10           Ms. Jean Baldrige, testifying for the Member Units, stated that the Individual  
11 Level of "good condition" is currently being met for steelhead, since individuals  
12 captured during trapping operations and observed during snorkel surveys are "disease-  
13 free, exhibit appropriate size, and are able to exhibit predator avoidance reactions." (MU  
14 Exhibit 226, p. 43). However, substantial evidence suggests that the remaining two tiers  
15 of fish health in the Moyle definition are not currently being met.

16           Although Ms. Baldrige states that the "habitat criteria" within the Population  
17 Level of the Moyle definition will be met following completion of the FMP actions (MU  
18 226, p. 44), this statement is somewhat deceiving since it suggests that good condition at  
19 the Population Level will be met even though all of the requirements of this tier do not  
20 appear to be established. Specifically, the Population Level, in addition to including  
21 adequate habitat, also requires that "all life history stages" of a particular species as well  
22 as habitats for those life stages have a broad distribution. (DFG Exhibit 6, p. 6). Ms.  
23 Baldrige fails to mention any evidence or other statements indicating that all life stages  
24 of steelhead and their corresponding habitats have a broad distribution in the lower Santa  
25

1 Ynez below Bradbury Dam. In addition to this requirement, Dr. Peter Moyle testified  
2 that there must also be “a viable population size” of fish at the Population Level of his  
3 definition. (RT p. 802, lines 5-9). Specifically, there must be “a population that is self-  
4 sustaining...really one that is large enough so it will not go extinct from random factors  
5 or unusual events...” (Id.). Ms. Baldrige admitted that her testimony fails to conclude  
6 that steelhead in the Santa Ynez River below Bradbury Dam have a viable population  
7 size. (RT p. 387, line 22 through p. 388, line 1). In fact, Dr. Moyle states that “[t]he fact  
8 that steelhead are listed strongly suggests the population is not at good condition at the  
9 population level.” (RT p. 802, lines 14-16). NOAA Fisheries testified that 100 adult  
10 steelhead (a currently estimated population count for steelhead in the lower Santa Ynez,  
11 NOAA Fisheries Exhibit 6, p. 4) is probably not a viable population size. (RT p. 754,  
12 lines 12-15). Thus, it appears that the full requirement of good condition for steelhead at  
13 the Population Level is not currently being met.

15 It is worth noting that Ms. Baldrige testified that a definition of viable  
16 population size for steelhead is not included as success criteria in the FMP. (RT p. 423,  
17 lines 3-5). This strongly suggests that the FMP may not, in its current form, be geared  
18 towards achieving good condition at the Population Level under the Moyle definition.  
19 NOAA Fisheries testimony suggests that the BO will not restore steelhead to a self-  
20 sustaining and viable population size. (RT p. 745, lines 9-14). Thus, it appears that the  
21 BO is also not necessarily designed to achieve good condition at the Population Level  
22 upon full execution of its terms.

24 In regards to the Community Level, Ms. Baldrige stated that steelhead fail to  
25 meet this tier of the Moyle definition. (MU Exhibit 226, p. 45). This is reportedly due to

1 a preponderance of non-native fish in the lower Santa Ynez system. (Id.). Such non-  
2 native fish do not fall within the requirement of a domination of "co-evolved species"  
3 within the Moyle definition. (DFG Exhibit 6, p. 6). Ms. Baldrige seems to suggest that  
4 the FMP actions will not change this situation. (MU Exhibit 226, p. 45)

5 Thus, it appears that two of the three required levels of the Moyle definition are  
6 not currently being met and may not be met in the future with the full execution of the  
7 FMP and BO flow recommendations. Although Ms. Baldrige seems to suggest in her  
8 testimony that steelhead may never achieve good condition at the Community Level due  
9 to the number of non-native fish in the lower mainstem and the alleged difficulty in  
10 removing such introduced species (MU Exhibit 226, p. 45), Dr. Moyle suggests that such  
11 non-native species do not need to be entirely eradicated in order to achieve good  
12 condition at the Community Level. (RT p. 858, lines 13-18). In fact, he stated that good  
13 condition can still be met when a large variety of non-native species and a small variety  
14 of natives are present in a stream system. (RT p. 859, lines 14-21). In such a situation,  
15 good condition can be achieved so long as the population levels within each non-native  
16 species are kept to a low level in comparison to larger population levels in each native  
17 species. (Id.). Thus, a goal of reaching Section 5937 compliance should not be dismissed  
18 outright based on the difficulty of fully eradicating non-natives. Adequate control of the  
19 non-natives is sufficient.  
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21  
22 In conclusion, substantial evidence suggests that full public trust protection  
23 pursuant to Section 5937 is not currently being achieved and may not be achieved in the  
24 future by the full execution of the flow releases suggested by the FMP and BO.  
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IV.

**BASED ON THE SHARED UNCERTAINTY AS TO WHETHER FISH BELOW BRADBURY DAM WILL ACHIEVE GOOD CONDITION PURSUANT TO FISH AND GAME CODE SECTION 5937, THE SWRCB SHOULD INTEGRATE THE TERMS OF THE FMP AND BO INTO PERMITS 11308 AND 11309 ONLY AS INTERIM PUBLIC TRUST MEASURES**

In Key Hearing Issue Number 3(a), the SWRCB requested suggested flow requirements that will protect public trust resources. Based on the aforementioned discussion, it remains unclear whether the flow releases recommended in the FMP and BO will put steelhead in "good condition" under Section 5937. Therefore, DFG respectfully requests that the SWRCB include these flow release recommendations only as interim measures and specifically continue its reserved jurisdiction over the Permits 11308 and 11309. The permits should be reopened at a date certain or upon a triggering event in order to make a future determination as to whether these flow releases adequately protect the public trust following their full implementation.

**A. Substantial Evidence Indicates That the Terms of the FMP and the BO Were Designed Only as Interim Public Trust Measures**

Testimony by DFG and NOAA Fisheries suggests that the FMP and the BO were designed as interim measures for public trust protection. DFG steelhead experts testified that they believe that both the FMP and the BO are a promising first step towards ultimately achieving Section 5937 compliance for the Bureau's operation of the Cachuma Project. (DFG Exhibit 4, p. 4; RT p. 536, line 17 – p. 537, line 11). However, they also testified that it is currently uncertain whether they will ultimately achieve the goal until a number of years after these measures are put in place. (*Id.*). DFG's "Steelhead Restoration and Management Plan for California" (DFG Exhibit 2) lays out a number of short-term goals for the Santa Ynez River. (*Id.* at p. 17; DFG Exhibit 1 p. 7-

1 8). These goals include: 1) the restoration of spawning and rearing habitat conditions in  
2 Santa Ynez lower mainstem tributaries; 2) the provision of interim water releases from  
3 Lake Cachuma; 3) investigations of steelhead status and habitat needs; and 4) the  
4 investigation of the feasibility of modifying downstream water right releases to benefit  
5 fish and wildlife. All of these measures appear to be represented in the FMP (DOI  
6 Exhibit 1f). However, the long-term objectives identified in the Steelhead Plan, such as  
7 1) the ultimate establishment of a permanent flow regime to satisfy Section 5937; and 2)  
8 a study of the feasibility of providing fish passage around Bradbury Dam, are not met in  
9 either the FMP or BO. The feasibility of providing passage for steelhead around  
10 Bradbury has not yet been adequately studied. (RT p. 384, lines 7-10; DFG Exhibit 7, p.  
11 3-5; CT Exhibit 30, p. 14).

12  
13 NOAA Fisheries' has testified that the Cachuma Project should be operated on an  
14 interim basis in keeping with the terms of the BO. (RT p. 640, lines 6-9). Mr. James  
15 Lecky, the Assistant Regional Administrator for Protected Resources in that agency's  
16 Southwest Region, has plainly indicated that the BO doesn't directly address the  
17 protection of resources under the Public Trust Doctrine either below or above Bradbury  
18 Dam. (RT p. 746, lines 1-17). Testimony by the Member Units indicates that the FMP  
19 was designed as a temporary measure. Dr. Charles Hanson indicated that there is  
20 continuing uncertainty as to whether the recommended actions in the FMP will  
21 ultimately achieve objectives on the Santa Ynez River. (RT p. 381, line 23 through p.  
22 382, line 5). With such uncertainty in mind, it seems clear that these flow  
23 recommendations can only be considered interim.  
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1           Therefore, in the opinion of the individuals and agencies that developed both the  
2 FMP and the BO, the inherent uncertainty remaining in regards to their effectiveness in  
3 protecting the public trust suggests that they should only be considered stop-gap terms.

4       **B.     The Effectiveness of the FMP and BO Flow Releases in Protecting Public**  
5       **Trust Resources Pursuant to Fish and Game Code Section 5937 Should Be**  
6       **Evaluated by the SWRCB Following Their Full Implementation**

7           Substantial evidence demonstrates that DFG, NOAA Fisheries, the Member  
8 Units, and California Trout ("Cal Trout") all agree that the success of the FMP and BO  
9 should be verified following full execution in order to ensure that they are actually  
10 effective in protecting public trust resources.

11           DFG testified that it will not be certain until number of years<sup>1</sup> after the FMP and  
12 BO are fully executed whether these measures fully achieve adequate public trust  
13 protection. (DFG Exhibit 4, p. 4; RT p. 536, line 17 through p. 537, line 11). Responses  
14 in the steelhead population should be measured after full implementation. (DFG Exhibit  
15 4, p. 4). Dr. Hanson testified on behalf of the Member Units that it would probably be  
16 prudent to continue with fishery studies, accumulate data, compare the data to overall  
17 objectives for steelhead on the Santa Ynez, and then make a judgment call as to the  
18 effectiveness of proposed public trust measures. (RT p. 382, lines 13-19). NOAA  
19 Fisheries stated that the BO was based on limited information and that the suggested  
20 measures in that document need to be tested for effectiveness through future observation  
21 and adaptive management. (RT p. 628, lines 4-9). Mr. Tom Keegan, testifying on behalf  
22 of Cal Trout, stated that the success or failure of any measures are put in place by the  
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25 <sup>1</sup> Dr. Robert Titus, testifying on behalf of DFG, suggested that it may be ten years before success of the measures is known. It will perhaps take two generations of steelhead, or about six years, before it will be known whether steelhead populations are shifting towards anadromy as a result of the suggested measures. (RT p. 538, line 11 through p. 539 p. 13).

1 SWRCB should be verified. (RT p. 779, lines 6-11). He also suggested that systematic  
2 and suitable seasonal monitoring and focused studies of each steelhead life stage's  
3 response to adopted flow measures should be carried out. (CT Exhibit 30, p. 16).

4         Based on the above considerations, DFG respectfully requests that the SWRCB include  
5 the terms of the FMP and the BO in Permits 11308 and 11309 only as interim measures as part  
6 of an ongoing adaptive management strategy. The permits should be reopened at a date certain or  
7 upon a triggering event and additional or alternative public trust protections should be integrated  
8 into the permits if future data indicate that the full implementation of the recommended FMP and  
9 BO flow releases do not achieve adequate public trust protection pursuant to Section 5937.

10         Although the Settlement Agreement submitted by the downstream water right holders  
11 (MU Exhibit 220A) seems to suggest that any material change from the FMP and BO flow  
12 measures will terminate the agreement, DFG believes that the SWRCB should not allow this fact  
13 to foreclose effective future adaptive management actions. DFG is highly supportive of the  
14 voluntary settlement of water right disputes when full resource protection is addressed. However,  
15 the parties to the Settlement Agreement failed to consult with or seek the approval of the relevant  
16 resource agencies, such as DFG and NOAA Fisheries, prior to executing this agreement. (RT p.  
17 253, line 24 through p. 254, line 6). Therefore, DFG believes that the Settlement Agreement does  
18 not represent a true consensus of the full range of interests on the lower Santa Ynez and does not  
19 clearly preserve the ability to continue future adaptive management towards eventual compliance  
20 with Section 5937. Therefore, DFG respectfully requests that the SWRCB not put a stamp of  
21 approval on the Settlement Agreement until such time as it is amended to clearly allow a full  
22 range of future adaptive management measures.

V.

**MEASURABLE SUCCESS CRITERIA MUST IMMEDIATELY BE ESTABLISHED AND ONGOING STUDIES AND MONITORING DATA SHOULD BE MANDATED TO ALLOW THE SWRCB TO EVALUATE THE EFFECTIVENESS OF THE FMP AND BO IN PROTECTING PUBLIC TRUST RESOURCES PURSUANT TO FISH AND GAME CODE SECTION 5937**

In Key Hearing Issue 3(b), the SWRCB requested input from the parties as to what other measures besides flow recommendations are necessary to protect public trust resources. DFG believes that the SWRCB should mandate the development of measurable success criteria for the FMP and BO measures and should also require ongoing studies and the regular submittal of monitoring and reporting data in order to help evaluate the effectiveness of these measures in ultimately achieving adequate public trust protection.

Currently, measurable success criteria are not included in either the FMP or the BO. (DFG Exhibit 4, p. 4-5). There is currently no established definition of a viable population size of steelhead. (RT p. 390, lines 2-7; p. 389, lines 16-17). DFG therefore suggests that the SWRCB mandate the immediate development of such success criteria, since they will be absolutely crucial in establishing an effective adaptive management strategy and determining whether the goals of the FMP and BO are achieved. (DFG Exhibit 4, p. 4-5; CT Exhibit 30, p. 14).

DFG also suggests that the SWRCB should order the continued development of fisheries monitoring and reporting data on the Santa Ynez River. Such data should be regularly submitted to the SWRCB in order to ensure that progress towards protection of public trust resources can be evaluated by your agency as a fair and neutral party in the ongoing adaptive management process. The data will allow the SWRCB to determine whether the flow requirements in the FMP and BO are being met. In addition, data development will allow the evaluation of corresponding responses in the steelhead fishery.



1           Testimony in the hearing indicates that monitoring is currently impossible at the so-called  
2 “Highway 154 Reach,” which is a crucial gauging spot for meeting the FMP and BO flow  
3 objectives. (RT p. 391, line 14 through p. 392, line 3). There is thus no way to verify that the  
4 flow measures are being met in their entirety. (RT. P. 395, lines 11-13). Although a study to  
5 develop an alternative monitoring program is currently underway, nearly a year and a half have  
6 passed without its completion. (RT p. 392, line 18). Therefore, DFG recommends that the  
7 SWRCB order the completion of this program by a date certain in the near future following the  
8 conclusion of these proceedings. DFG is concerned that the alternative monitoring program will  
9 not be completed absent an affirmative requirement pursuant to an SWRCB order.

10           NOAA Fisheries testified that an ESA recovery plan for Southern California ESU  
11 steelhead would include success criteria for determining recovery. Despite this fact, DFG  
12 believes that the SWRCB must still push for the immediate establishment of such criteria in  
13 order to satisfy its independent public trust responsibilities. As discussed above, the SWRCB has  
14 an affirmative duty to protect public trust resources whenever feasible pursuant to the mandate of  
15 National Audubon (658 P.2d 719, 728). Absent a method to gauge the success of the public trust  
16 protections it mandates, the SWRCB will not be able to satisfy that duty with any certainty.  
17 Waiting for NOAA Fisheries to develop success criteria will cede the state’s public trust power  
18 to the federal government. NOAA Fisheries testified that there is no mandatory deadline for  
19 completion of a steelhead recovery plan. (RT p. 750, lines 12-14). Thus, it is entirely foreseeable  
20 that years could pass without any success criteria being in place and therefore no benchmark to  
21 allow the SWRCB to evaluate whether its public trust measures are indeed successful. NOAA  
22 Fisheries also testified that the measures contained in a future recovery plan would not  
23 necessarily trigger a mandatory duty to comply on the part of the Bureau. (RT p. 726, lines 14-  
24 19). Thus, even if NOAA Fisheries does establish success criteria, it is foreseeable that they will  
25 not be able to mandate that such criteria be satisfied.

1 In order to facilitate the development of success criteria and to allow for the collection  
2 and reporting of data, DFG suggests that the SWRCB establish a management team which is  
3 composed of representatives from DFG, NOAA Fisheries, the United States Fish and Wildlife  
4 Service, the United States Forest Service, and the Bureau. If the SWRCB decides to establish a  
5 process in keeping with the existing Adaptive Management Committee ("AMC"), DFG believes  
6 several enhancements to the AMC process should be established. Testimony in the hearing made  
7 clear that the AMC has not met with any regularity since the release of the FMP. (RT p. 132,  
8 lines 17-25; RT p. 133 line 16 through p. 134 line 5). DFG believes that the SWRCB therefore  
9 must use its public trust authority to force the AMC to work with more effectiveness and  
10 regularity. Towards that end, DFG suggests that the AMC should be required to submit quarterly  
11 reports to the SWRCB that include, but are not limited to, meeting minutes, progress reports,  
12 study plans, study results, monitoring data, and any other relevant work products. These  
13 quarterly reports should be made available to all interested parties, including the Member Units.  
14 Any study reports or study results should be independently peer reviewed. DFG believes that  
15 requiring the submittal of this information to the SWRCB will either 1) spur the AMC towards a  
16 more regular and effective process; or 2) indicate to the SWRCB if the AMC is failing to make  
17 progress.

## 18 VI.

### 19 **THE SWRCB SHOULD ORDER THE IMMEDIATE COMMENCEMENT OF A** 20 **FEASIBILITY STUDY FOR PASSAGE OF STEELHEAD AROUND BRADBURY DAM,** 21 **SINCE THIS WILL BE A KEY ELEMENT IN ULTIMATELY RESTORING THE** 22 **SANTA YNEZ STEELHEAD RUN TO A SELF-SUSTAINING POPULATION**

23 In Key Hearing Issue 3(b), the SWRCB requested input from the parties as to what  
24 measures besides flow releases are necessary to protect public trust resources. In response to this  
25 issue, DFG respectfully requests that the SWRCB order the immediate commencement of a  
thorough feasibility study of providing passage for adult and juvenile steelhead around Bradbury

1 Dam. As part of that order, the SWRCB should set a completion date in order to drive the timely  
2 development of the study. The provision of steelhead passage will be an indispensable element in  
3 ultimately restoring the Santa Ynez steelhead run.

4       Substantial evidence demonstrates that the construction of Bradbury Dam blocked access  
5 to nearly all the prime, historic steelhead spawning and rearing habitat in the upper Santa Ynez  
6 River watershed. (DFG Exhibit 2, p. 14). All of the fisheries agencies and organizations  
7 participating in this hearing agree that passing steelhead around Bradbury Dam into this prime  
8 habitat will be a key element in ultimately restoring the steelhead run to a self-sustaining level.  
9 (RT p. 661, line 24 through p. 662, line 5; DFG Exhibit 4, p. 7; CT Exhibit 30, p. 14). The  
10 Member Units, DFG, and Cal Trout all agree that, to date, the feasibility of providing such  
11 passage has not been adequately studied. (RT p. 384, lines 7-10; DFG Exhibit 7, pp. 3-5; CT  
12 Exhibit 30, p. 14). Ms. Jean Baldrige suggested in testimony that such a study is a part of the  
13 Member Units' plan for ongoing investigations. (RT p. 384, lines 10-16). However, such a study  
14 has not yet been adequately undertaken. Based on the substantial agreement of the parties on this  
15 issue, DFG again respectfully requests that the SWRCB order the immediate commencement of  
16 a passage feasibility study.

17  
18       Although the Member Units suggest in testimony that potential obstacles exist in regards  
19 to providing steelhead passage around Bradbury Dam, DFG does not believe that these obstacles  
20 should foreclose the study. As DFG's hydraulic engineer, Mr. Marcin Whitman, testified in the  
21 hearing, the premature dismissal of possibly valid passage concepts should be avoided. (DFG  
22 Exhibit 7, p. 9). Although DFG currently stocks hatchery rainbow trout in Lake Cachuma, our  
23 agency testified that such stocking can be immediately stopped should they present a conflict  
24 with native steelhead passed around Bradbury Dam. (RT p. 1096, lines 8-14). Concerns over  
25

1 hybridization can thus be mitigated. The height of Bradbury Dam presents unique challenges in  
2 constructing fish passage. In fact, fish ladders have not yet been constructed for dams of such  
3 height to date. However, Mr. Whitman testified that engineering concepts should not be  
4 dismissed in the feasibility analysis stage simply based on the fact that they have not been done  
5 before. (DFG Exhibit 7, p. 9). In fact, Mr. Whitman gave examples of several important projects  
6 in the state that, at the time of their design and construction, were unprecedented. (Id. at pp. 10-  
7 11).

8  
9 The Member Units have suggested that genetic studies of rainbow trout upstream of  
10 Bradbury Dam should be completed before the feasibility of providing passage can be  
11 commenced. DFG is diametrically opposed to this idea, since it will only contribute to further  
12 delay in moving towards completing a keystone in restoring the steelhead run. (RT p. 1100, lines  
13 14-23). As our agency testified, if any evidence suggests that hybridization exists between native  
14 rainbows and hatchery stocks in the upper watershed, DFG can simply stop stocking fish in Lake  
15 Cachuma to prevent further hybridization. (RT p. 1099, lines 22-23). DFG further testified that if  
16 hybridization was present, this should not preclude a passage project. (RT p. 1100, line 24  
17 through p. 1101, line 3). Such hybridized fish would very likely still contain significant portions  
18 of steelhead genes. (RT p. 1101, lines 5-12). DFG believes that genetic studies of rainbow trout  
19 upstream of Bradbury Dam will provide useful information. However, our agency maintains that  
20 such studies can and should be executed concurrently with the passage feasibility study.

21  
22 A potential obstacle was raised in regards to the possible closure of Lake Cachuma as a  
23 recreational fishery if endangered steelhead were passed above Bradbury Dam. However, as  
24 DFG has testified, our agency can prevent fishing for steelhead while still allowing for a  
25 recreational fishery for other species. (RT p. 599, line 17 through p. 600, line 14). These methods

1 include fishing gear restrictions, which would allow the use of lures designed for other species  
2 such as bass, while banning gear that is designed to catch rainbow trout or steelhead. (Id.)

3 The cost of providing steelhead passage was also raised as a concern. While this should  
4 clearly be a consideration in determining the feasibility of possible passage options, DFG  
5 testified that this should not be the *sole* concern. (DFG Exhibit 7, pp. 12-14). Our agency  
6 believes that it is clear that the cost of a passage project should not foreclose a *study* of passage  
7 feasibility. This is especially so when an analysis of potential project costs will ultimately be a  
8 component of the study anyway.

9  
10 The state and federal fisheries agencies agree that the SWRCB should set a completion  
11 date for the steelhead passage feasibility study. (RT p. 590, lines 22-25; RT p. 738, lines 18-22).  
12 Any order should also require that regular progress updates be submitted to the SWRCB, since  
13 testimony in the hearing suggested that the AMC, which is the existing working group for Santa  
14 Ynez issues, has only had sporadic meeting dates since the completion of the FMP. (RT p. 132,  
15 lines 17-25; RT p. 133, line 16 through p. 134, line 5). DFG believes both regular progress  
16 updates and a fixed deadline will alleviate this problem. In addition, our agency recommends that  
17 the passage feasibility study proceed under the supervision of the relevant resource agencies,  
18 including DFG, NOAA Fisheries, and the Bureau.

19  
20 An approach for carrying out the feasibility study, developed through the cooperation of  
21 the fisheries agencies and organizations represented in this proceeding, is attached as *Appendix 1*  
22 for review by the SWRCB.

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VII.

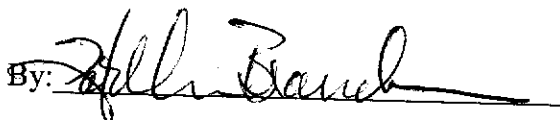
CONCLUSION

Based on the above considerations, DFG respectfully requests that the SWRCB take the following actions:

1. Modify the terms of Permits 11308 and 11309 to include the flow recommendations included in the FMP and BO. These modifications should be considered as interim measures that require verification of their success in protecting public trust resources.
2. Acknowledge in any order that Fish and Game Code Section 5937 is the appropriate framework for ultimately defining the adequacy of flow releases from Bradbury Dam for the protection of downstream public trust resources.
3. Order the immediate development of measurable success criteria to assist in verifying the success of the FMP and BO in protecting public trust resources.
4. Mandate the establishment of a management team which is composed of representatives from DFG, NOAA Fisheries, the United States Fish and Wildlife Service, the United States Forest Service, and the Bureau of Reclamation.
5. Mandate the submission of quarterly reports from this management team to the SWRCB that include, but are not limited to, meeting minutes, progress reports, study plans, study results, monitoring data, and any other relevant work products. Quarterly reports should be made available to all interested parties, including the Member Units. All study plans, reports and/or results should be independently peer reviewed.
6. Order the immediate commencement of an adequate study of the feasibility of providing passage for steelhead around Bradbury Dam. In addition, the SWRCB should set a firm deadline to spur the efficient development of the study.
7. Set a definite future date or triggering event to reopen Permits 11308 and 11309 and receive evidence as to the effectiveness of the FMP and BO recommendations as well as to receive evidence regarding any alternate permit terms that will achieve full public trust protection pursuant to Section 5937 and the Public Trust Doctrine.

DFG believes that these actions will be an important step towards ultimately providing crucial protection to steelhead and other public trust resources in the Santa Ynez River.

Dated February 17, 2004

By: 

Harlee Branch, Staff Counsel

## **APPENDIX 1**

## Santa Ynez River Fish Passage Feasibility Analysis

### **I. Underlying Principles**

To approach an assessment of the feasibility of providing fish passage on the Santa Ynez River, a phased and systematic methodology is recommended, framed by the following underlying principles:

- assemble a wide array of possible passage alternatives,
- do not reject any fish passage alternative out of hand without adequate, detailed analysis,
- assume passage is feasible, rather than it is not feasible, since it is practiced regularly throughout the United States in widely varying geographic/geologic circumstances,
- comprehensive, objective analysis performed under the auspices and direct supervision of the State Water Resources Control Board and responsible agencies:
  - California Department of Fish and Game
  - NOAA Fisheries
  - U.S. Bureau of Reclamation,
- public participation via formal advisory consultation with water diversion/delivery contractors, public interest conservation groups, and any other interested parties, and
- implementation in a phased, experimental approach under adaptive management methodology with measurable, objective performance criteria for success or failure of actions attempted.

This assessment, performed by fish passage specialists from each of the public trustee agencies, should be done in as transparent a fashion as possible, with quarterly progress summaries made available to all interested parties, and Phase I should be completed in a timely fashion, within a period of 12-18 months. The Bureau, in consultation with the Department and NOAA, should begin any field work to implement fish passage recommendations emerging from the feasibility study within 6-12 months of receiving the recommendation.

### **II. Recommended Phased Study Approach**

The fish passage feasibility study done on the Santa Ynez River should be performed in a phased, adaptive management protocol. This begins with an analysis of temporary measures that might be taken at existing low steelhead population levels, and progresses to less temporary measures when fish passage actions taken at existing low population levels become effective at improving and stabilizing the size of the run in the Santa Ynez River (the goal of any fish passage program). For each of the phases in this stepwise approach, objective, measurable performance criteria must be established beforehand in order to provide a yardstick against which to measure success or failure of proposed fish passage actions to be taken.

Phase I of such an approach begins at current, low (endangered) population numbers, a starting point. The methodology consists of following up serial questions about feasibility: Can spawners be effectively trapped? Can they be transported? Do they use the translocation site habitat for spawning? Are more smolts produced as a result? Can smolts be effectively trapped and transported below Bradbury Dam? And so forth.



Phase II begins when Phase I results have shown that it is feasible to trap adult upmigrant spawner steelhead in the Santa Ynez River, and downmigrating smolts, have shown that spawners and smolts may be translocated without undue mortality, and that smolt production is rising over time in the Santa Ynez River as a result of these efforts, such that overall returning spawner numbers move out of the tens to the hundreds. More discussion of Phase II is given below.

Phase III would be implemented when the results of the less temporary measures proposed in Phase II begin to likewise show further improvements in run size on the Santa Ynez River, and returning spawners gain in numbers from the several hundreds to over a thousand returning spawner steelhead in years the sandbar is open at Surf. See below for further discussion of Phase III.

See Section V below for further detail.

Concurrent with Phase I of the fish passage feasibility study, but separate from such study, complementary studies should be undertaken to examine carrying capacity and habitat qualities of various possible receiver sites for transported spawner steelhead, and an analysis or review of existing trout population genetic structure (above and below dam) should be completed to answer questions about any potential genetic effects, positive or negative, of translocating migrating spawner steelhead to above-Dam habitats. There is no information required from these complementary studies to begin Phase I fish passage feasibility study. These studies can be useful to inform subsequent fish passage implementation Phases.

### **III. Possible Alternatives for Overall Feasibility Analysis (Upstream Migrants)**

As described above in the discussion of underlying principles, no alternative should be dismissed casually. Each should receive complete and detailed analysis before an assessment of feasibility is made. An explicit cost-benefit analysis should be provided for each component of the feasibility study. Some of the alternatives that should be analyzed are listed below, but this is by no means a comprehensive list; that list should be compiled by the Fish Passage Feasibility Study team.

- Complete Fish Ladder or Fishway
- Hilton Creek as Partial Instream Conveyance Plus Fish Ladder with Controlled Descent into Reservoir Holding Pen (coupled with Downmigrant trap actions)
- Trap and Transport Facility on Bureau Property at Stilling Basin or in Hilton Creek
  - Instream, Hilton Creek: Simple floating picket weir and temporary trap, and/or
  - Instream, Mainstem on Bureau property: Same floating picket weir and temporary trap
- Trap types: adaptive management will determine method depending on critical factors such as streamflow, debris, number of fish, etc., but may include a floating picket weir, or a more permanent concrete weir and holding tanks.
- Transport methods: Again, adaptive management will determine the optimal method or combination of methods based on critical factors such as weather, road conditions, numbers of fish, etc. Methods can include ground, barge, or air transport.
- Release sites:

- Santa Cruz Creek and tributaries (closest)
- Mainstem between RedRock Day Use Area and Gibraltar Dam
- Mono and Indian Creeks
- N. Fork Juncal
- Mainstem above Gibraltar Reservoir
- Mainstem above Juncal
- Alisal Creek above Alisal Dam

#### **IV. Possible Alternatives for Overall Feasibility Analysis (Downstream Migrants-adults and smolts collected in a common facility)**

Moving spawners to good spawning and rearing habitat is only half of the issue of moving anadromous fish around dams. Downstream migrants, both adult and smolt, must also be accounted for. A variety of methods are available to assist downmigrating fish in their passage to the ocean.

- At Reservoir Outlet Works—a floating collector at Bradbury Dam with holding tanks
- At Tributary Inlets to Cachuma Reservoir—Floating collectors and holding tanks on reservoir in each inlet bay with guide nets to the collectors.
- Instream Collectors—temporary, partial duty traps on tributaries with holding tanks
  - Trap types: instream floating conical trap, instream ramp trap, floating picket weir
- Collector types: floating barge with gulper (with or without guide nets), floating, fixed location gulper at reservoir outlet works
- Transport Methods: adaptive management will determine optimal transport methods depending again on critical factors such as weather, road condition, streamflows, numbers of fish, etc.
- Downmigrant Release Sites
  - River below Bradbury Dam (or Stilling Basin)
  - Intermediate Site
  - Lagoon

#### **V. Phased Implementation Protocol based on Adaptive Management Principles**

For each of the implementation phases, objective and measurable criteria for determining success or failure should be established as yardsticks to gauge the results of actions against each question posed.

##### Phase I: Low Population Size Methodology—a starting point

Phase I, Steps 1 through 4 actions could be accomplished entirely within one winter adult migration season, provided at least several dozen adult fish were trapped successfully. Radio telemetry tags would be attached to all transported adult fish. Step 5 should be accomplished that same year in the spring with screw and/or ramp traps in tributaries where spawning was observed by trapped and transported adult fish. Step 6 should be accomplished over the course of the following one or two years with the same screw or ramp traps deployed in spring and summer and possibly in winter, with adult trapping and transport occurring in each winter migration season. Step 7 would be accomplished beginning in the

second spring following the initial adult trap and transport action, and would be continued every spring and early summer thereafter with screw traps, ramp traps, or temporary floating collectors in the reservoir to sample smolt-ready fish produced. Control groups could be established by collecting naturally produced juveniles from tributaries in which no trapped adults had been placed. Step 8 could be accomplished beginning in the second year following the initial adult trap and transport action by moving smolting steelhead downstream via several transport methods. Step 9 would begin as early as 3 seasons following the initial adult trap and transport action.

**Step 1: Test Adult Trapping Efficacy**

Question: Can adults be trapped with any regularity during migration period?

Suggested Method: Temporary upstream migrant trap facility at Bradbury Dam and/or Hilton Creek

**Step 2: Test Transportation Efficacy**

Questions: What is survivorship rate of transported adults under different transport length scenarios?

What is most effective method to transport: truck, barge, fixed-wing aircraft, helicopter, some combination?

Suggested Method: Test different transport methods to chosen upstream release sites.

**Step 3: Test Release Efficacy, Alternate Release Sites**

Questions: Do released adults move upstream?

Are some release points better than others to facilitate movement of spawners to spawning habitat?

Are some tributaries better than others at facilitating this? (This is a larger question and cross-relates to habitat surveys of tributaries)

Suggested Method: Radio-telemetry tags on released fish to monitor movement

**Step 4: Monitoring of use of spawning habitat by adult spawners**

Questions: Do released adults actually use tributary or upper basin mainstem spawning habitat?

Are redds produced?

Suggested Method: Radio telemetry tags on released fish with on-ground spawning surveys

**Step 5: Monitoring YOY production from redds**

Questions: Do YOY fry successfully emerge from redds?

What is survivorship rate of fry to juveniles in tribs or upper basin mainstem rearing habitat?

Suggested Method: Temporary downstream migrant fry/smolt trap facility in tributary streams, monitoring, and either direct release or transport to release site below Bradbury Dam.

**Step 6: Monitoring juvenile survivorship in tributary/upper mainstem habitat**

Question: What is survivorship rate of juveniles in tribs and upper mainstem?

Suggested Method: Same as above.

**Step 7: Test smolt trapping and, Monitoring for Smolt production**

Questions: Are smolts produced? Can successful smolt trapping be carried out?

Suggested Solution: Traps can be partial sample collection such as floating tributary conical or ramp traps, or more permanent full collection gulpers. Start with a floating instream smolt/fry trap to determine smolt readiness and estimated production, graduate to larger capacity, more permanent facilities in reservoirs if production is successful.

**Step 8: Test Transport of Smolts below Bradbury Dam**

Question: Can trapped smolts be effectively transported below Bradbury Dam?

What is most effective method of transporting smolts? Truck, Barge, Helicopter?

Do smolts transported below Bradbury Dam move downstream after release?

Are there ways to facilitate downstream movement (fences, flow pulses, etc?)

Suggested Method: Again, test various transport methods. Evaluate direct and delayed mortality, homing return efficacy, etc.

**Step 9: Monitoring for return of tagged smolts (pit tags, fin clips, etc)**

Question: Can smolts be effectively tagged so that returning adult migrants can be tied to trap-and-transport-assisted smolt production?

Suggested Method: Pit tags and/or coded wire tags on a selected sub-sample of smolts.

Phase II. Moderate Population Size Methodology

If the low population size efforts result in increased numbers of adults returning below Bradbury Dam, a moderate-duty system designed, say, for up to 1,000 annual adult spawners, could be tested in a phased adaptive management protocol similar to the one described above.

Such a system might include

--A semipermanent barrier weir and trap across both Hilton Creek and the mainstem with water-to-water transfer of captured fish from trap to transport tank and tank to release point. Pump-back attraction flow might be desirable to enhance adult fish attraction efficiency. Design and construction of such a semi-permanent trap facility would require approximately 2 years at the outside, assuming construction permits could be obtained without appeal from regulatory agencies. This activity could begin as early as the same winter season of the initial adult trap and transport action, with actual construction phased in when results of the initial spawning success and juvenile survival tests are evaluated.

An alternative to trapping low in Hilton Creek and the nearby mainstem would be to use Hilton Creek as a partial ladder, ensuring configuration and attraction flows so that upmigrating adults are facilitated in finding Hilton Creek attractive. Integrated with the plunge-pool and chute barrier modifications, Hilton Creek at the highest elevation of US Bureau of Reclamation property can be modified to trap upmigrating spawners to be transported around Cachuma Reservoir into, for example, the closest high-quality tributary, Santa Cruz Creek and its tributaries.

Another permutation of this that should be given serious evaluation is the feasibility of constructing a small ladder or fishway from the upper Bureau property boundary on Hilton Creek upward and over the dam (less than 100 foot lift) with a controlled variable length descent and into a receiving pen in the Reservoir just below the Bureau's maintenance and office facility near the spillway gates. Fish may then

be held in good condition for sorting, genetic identification as necessary, and subsequent transport to receiver tributaries for spawning. Design and construction of such a ladder and descent system would require approximately two to three years, and such effort could begin as early as the initial adult trap and transport action.

Phase II juvenile collection would be effected by construction of one or more floating collectors in the Cachuma and possibly Gibraltar reservoir, with or without guide nets. Design and construction of a floating collector that could be placed in either reservoir could be accomplished within 2 years, and could be initiated at beginning of the initial adult trap and transport action in Phase I or initiated once Phase I results indicated that Phase II methodology would be more effective than Phase I.

### Phase III. Higher Population Size Methodology

If the first two phased steps prove successful, a larger, high-service trap system designed for up to several thousand adult spawners annually in high water years should be evaluated. This might consist of a permanent concrete barrier dam at Hilton Creek and across the mainstem at the foot of Bradbury Dam, a permanent trap and holding system, hopper hoist system, brail crowder panels, and associated handling equipment with at least three 1,000 to 2,000 gallon aerated, refrigerated tank transport systems. Pump-back attraction flow would facilitate adult fish attraction efficiency. This larger, permanent adult trap could be designed and constructed within 4 to 5 years from inception, and could begin concurrently with the initial adult trap and transport action or deferred until the results of Phase II have reached the point where this would be the most likely method to produce consistent long-term sustainability of the run

In both Phases II and III, juvenile fish collection and bypass systems would be required for Bradbury Dam and reservoir, and, depending on locations selected for adult release, Gibraltar Dam/Reservoir, Juncal Dam/Reservoir, and Alisal Dam/Reservoir as well. Several feasible alternatives for collecting and bypassing smolt steelhead exist. Permanent, full-collection instream collectors are not recommended due to the volume of woody debris and sediment in high flows rendering instream devices relatively unreliable. Development and evaluation of floating collectors located at the inlet of each tributary below adult release points into the respective reservoirs should be studied. An alternative that should also be evaluated is the relative survivorship of downmigrating smolts within the reservoirs with an eye toward capture at collectors located at or near the Dam sites. Design and construction of floating collectors could be accomplished within 4 years of the initial adult trap and transport action. Smolt survival studies could be accomplished during the first outmigration season following the initial trap and transport action, which is likely to be from one to three years following inception of Phase I. These studies would be continued concurrently with the conceptual design of the juvenile collection system. The preferred site for collection would become known as a result of the smolt survival studies, with the final design of the smolt collection system dependent upon the preferred location.

Such floating collectors would include attraction flows provided by low-head electric pumps supplied with fixed-grid or generator power to produce attraction flows between 30-250 cfs. Each collector would include a barge with transfer boat and holding tanks, sorting and handling facility, and water-to-water transfer of juvenile fish to downstream transport tank system or bypass pipe to shore-based facility.

The simplest collector system would include a single floating collector at each dam, located near the existing outlet works. Reservoir migration survival studies would be required to verify the feasibility of this option. This can be accomplished via through-reservoir survival radio tag tracking studies to assess potential losses to predators and migration success.

In the event that through-reservoir studies show an at-dam collector undesirable or infeasible, individual collectors would be required at each tributary inlet into which adults have been transported and released. Each inlet collector would include an exclusion barrier net positioned far enough out in the reservoir to lower average net approach velocity to below the structural strength of net material. Design and construction of multiple juvenile collectors would be accomplished at the same pace as for a single collector, with the required construction period increased proportionately to permit completion of each individual unit.

Alisal Dam, Alisal Creek, Tributary to Santa Ynez River below Bradbury Dam

For access above and below Alisal Dam, the scale of a passage system similar to that discussed above would be proportionally less than the systems designed for the much larger storage dams on the mainstem Santa Ynez River. A juvenile collection system may consist of nothing more than bypass outlets designed to meet bypass criteria for smolts (30fps max. velocity, smooth interior, gradual bends > 3 diameters in radius, no exit plunge in excess of 25 fps, etc.) A small fish ladder for adult passage might be feasible, and, if not, a simple floating picket weir or fixed Braille weir can be used. Design and construction of an adult passage system for Alisal Dam would require no more than 2 years, and such effort could begin entirely independent of mainstem Santa Ynez fish passage facility study and design.