

1 STATE OF CALIFORNIA  
2 STATE WATER RESOURCES CONTROL BOARD  
3  
4

5 In the Matter of: )  
6 )

7 CACHUMA PROJECT HEARING, PHASE 2 )  
8 UNITED STATES BUREAU OF )  
9 RECLAMATION APPLICATIONS 11311 )  
10 AND 11332 )  
11 )  
12 )  
13 )  
14 )

REBUTTAL TESTIMONY  
OF THOMAS R. PAYNE,  
FISHERIES BIOLOGIST

15  
16  
17 **Q. PLEASE STATE YOUR NAME, TITLE AND PRESENT AFFILIATION.**

18 **A.** My name is Thomas R. Payne. I am the principal associate and owner of Thomas R.  
19 Payne & Associates, a fisheries consulting firm located in Arcata, California.  
20

21 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

22 **A.** The purpose of my testimony is to provide technical rebuttal to the written testimony of  
23 Thomas P. Keegan on the effects of WR 89-18 flow releases on steelhead.  
24

25 **Q. PLEASE SUMMARIZE YOUR PROFESSIONAL AND EDUCATIONAL**  
26 **QUALIFICATIONS REGARDING YOUR TESTIMONY.**

27 **A.** I have Bachelor and Master of Science degrees in fisheries biology from Humboldt State  
28 University and have been employed professionally as a fisheries biologist for over 30  
29 years. I have worked on salmon aquaculture projects, aquatic toxicity studies, and fish  
30 habitat and abundance surveys in both private and public sectors. Since 1982, I have  
31 specialized in using the Instream Flow Incremental Methodology to assess the impact of  
32 flow alterations on aquatic habitat, along with conducting water temperature modeling,  
33 monitoring populations of various fish species, and creating PHABSIM computer  
34 software to implement these types of studies.  
35

36 **Q. PLEASE SUMMARIZE YOUR EXPERIENCE ON THE SANTA YNEZ RIVER.**

37 **A.** I grew up in Southern California and remember seeing the Santa Ynez River on several  
38 family trips and later on my own. In 1993 I was retained as a fisheries biologist to work  
39 on water rights issues and walked the river between Lompoc and Buelton mapping  
40 aquatic habitat and evaluating fish passage. I also worked with DWR staff reviewing  
41 their PHABSIM flow study sites and studied most all of the downstream tributaries for  
42 habitat enhancement potential. Over that time I have frequently contributed to studies of  
43 the Cachuma Project area and been to the river on several occasions.  
44

45 **Q. ON PAGE 12 OF HIS WRITTEN TESTIMONY, MR. KEEGAN STATES THAT**  
46 **"HIGH FLOW PULSE RELEASES...CAN ADVERSELY AFFECT JUVENILE**  
47 **STEELHEAD AND THEIR FOOD RESOURCES THROUGH DOWNSTREAM**

1 **DISPLACEMENT INTO UNSUITABLE HABITATS.” DO YOU AGREE WITH**  
2 **THIS STATEMENT?**

3 A. I would agree with this statement if the “high flow pulse releases” Mr. Keegan refers to  
4 were actually high enough to cause physical displacement of juvenile steelhead. In the  
5 context of WR 89-18 flow releases, however, I do not agree. I believe the physical effect  
6 of these flow releases in the Santa Ynez River is too small to cause displacement.  
7

8 **Q. WHAT EVIDENCE SUPPORTS YOUR CONCLUSION REGARDING THE**  
9 **POTENTIAL FOR PHYSICAL DISPLACEMENT?**

10 A. According to the testimony of Mr. Shahroody, the highest flow rate is 150 cfs for a  
11 Below Narrows account release. From his many years experience with the Santa Ynez  
12 River, Mr. Shahroody has characterized the physical aspects of the water rights release  
13 rate in terms of travel time and turbidity, and I have heard two others who have observed  
14 the releases confirm his descriptions. Mr. Shahroody has documented that the moving  
15 water front at 150 cfs takes over a day to travel about 9 miles from the dam to Solvang, a  
16 rate apparently on the high end of the range of his observations.  
17

18 The average velocity of water flowing that far in that time is just under one-half foot per  
19 second. Design criteria for screens to protect small, weak-swimming fish are one-third  
20 foot per second, only slightly slower. Many sources of habitat suitability criteria for  
21 rearing fry steelhead, including those mentioned by Mr. Keegan, show active use of one-  
22 half foot per second velocity, and juveniles are known to utilize one fps or higher. Since  
23 the normal rearing velocities for young steelhead equal or exceed the highest velocity of a  
24 water rights release, I conclude that physical displacement of juvenile steelhead is  
25 extremely unlikely.  
26


27 **Q. MR. KEEGAN ALSO STATES THAT TEMPORARY TURBID WATER**  
28 **CONDITIONS ARE CREATED BY WR 89-18 RELEASES, WHICH MAY**  
29 **AFFECT STEELHEAD FEEDING. DO YOU AGREE WITH THIS**  
30 **POSSIBILITY?**

31 A. The descriptions of Mr. Shahroody and others I have heard do not support the idea that  
32 water rights releases create even moderate turbidity, let alone enough to negatively affect  
33 steelhead feeding. I would conclude the opposite, that these releases are more likely to  
34 positively affect steelhead by making prey items temporarily more accessible.  
35

36 **Q. WHAT EVIDENCE IS THERE SUPPORTING YOUR CONCLUSION?**

37 A. First, the low velocities of the releases are not high enough to create turbidity through  
38 scour or erosion of fine streambed particles. One-half foot per second more typically  
39 allows for sediment deposition and not mobilization, particularly for the sand-sized  
40 particles which are prevalent in much of the lower Santa Ynez River. Second, the  
41 leading edge of the water front is described as containing organic particles like dried  
42 algae, leaf debris, twigs, and other detritus, but not being muddy with clays or fines that  
43 constitute turbidity. Many fish species, including steelhead, typically initiate foraging  
44 among disturbed organic particles looking for aquatic or terrestrial insects.  
45

1 I declare, under the penalty of perjury, that the foregoing testimony is true and correct to the best  
2 of my knowledge. Executed this 12<sup>th</sup> day of NOVEMBER, 2003, at SACRAMENTO CA

3  
4   
5 \_\_\_\_\_  
6 THOMAS R. PAYNE