

FEDERAL ENERGY REGULATORY COMMISSION  
Washington, DC 20426  
March 29, 2013

OFFICE OF ENERGY PROJECTS

Project No. 2246-058--California  
Yuba River Hydroelectric Project  
Yuba County Water Agency

Mr. Curt Aikens  
Yuba County Water Agency  
1220 F Street  
Marysville, CA 95901-4740

**Reference: Determination on Requests for Modifications to the Yuba River  
Hydroelectric Project Study Plan**

Dear Mr. Aikens:

Pursuant to 18 C.F.R. § 5.15 of the Commission's regulations, this letter contains the determination on requests for modifications to the Yuba County Water Agency's (YCWA) approved Yuba River Hydroelectric Project Study Plan. The determination is based on the study criteria set forth in sections 5.9(b) and 5.15(d) and (e) of the Commission's regulations, applicable law, Commission policy and practice, and staff's review of the record of information.

Background

YCWA filed an initial study report (initial report) for the Yuba River Project on December 3, 2012. YCWA proposed two new studies (Study 3.13--*Focused 2013 Foothill Yellow-legged Frog Surveys* and Study 3.14--*Focused 2013 Western Pond Turtle Surveys*) and one study modification (Study 2.5--*Water Temperature Monitoring*).

YCWA held an initial study report meeting on December 12, 2012, and filed a summary of the meeting on December 27, 2012. YCWA included modifications to Study 7.11, *Fish Behavior and Hydraulics near Narrows 2 Powerhouse* in the initial study report. Comments on the meeting summary and requests for new studies and study modifications were filed by the: (1) Forest Service; (2) National Park Service (NPS); (3) U.S. Fish and Wildlife Service (FWS); (4) National Marine Fisheries Service (NMFS); (5) California State Water Resources Control Board (Water Board); (6) California

Department of Fish and Wildlife (California Fish and Wildlife); and (7) Foothills Water Network (FWN).<sup>1</sup>

YCWA filed reply comments on February 27, 2013. In that filing, YCWA proposed modifications to Study 8.2--*Recreation Flow*.

### General Comments

A number of comments were received that do not address the proposed modifications to the studies. This determination does not address those comments, but rather addresses only the merits of the studies submitted pursuant to section 5.15 of the Commission's regulations and comments received thereon.

### Study Plan Determination

Pursuant to section 5.15(d) of the Commission's regulations, any proposal to modify an ongoing study must be accompanied by a showing of good cause why the proposal should be approved, and must include a demonstration that: (1) the approved studies were not conducted as provided for in the approved study plan; or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way. As specified in section 5.15(e), new study requests must also show good cause and a statement explaining: (1) any material changes in the law or regulations applicable to the information request; (2) why the goals and objectives of any approved study could not be met with the approved study methodology; (3) why the request was not made earlier; (4) significant changes in the project proposal or that significant new information material to the study objectives has become available; and (5) why the new study request satisfies the study criteria in section 5.9(b).

As indicated in Appendix A, Section I (Requests to Modify Approved Studies), modifications to 2 studies are approved as filed, modifications to 6 other studies are approved with minor modifications, and 9 modifications are not required. As indicated in Appendix A, Section II (Requests for New Studies), 2 new studies are approved as filed, 1 new study is approved with modifications, and 6 new studies are not required. No additional modifications to the study plan approved on September 30, 2011 are required. The specific modifications to the studies and the bases for modifying or not modifying YCWA's study plan are explained in Appendix B.<sup>2</sup> With respect to new studies,

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<sup>1</sup> NPS filed comments on January 25, 2013; the other relicensing participants filed comments on January 28, 2013. NMFS filed an erratum on February 14, 2013 and FWS filed supplemental comments on February 27, 2013. Responses to YCWA's comments were filed by NPS on March 23, 2013 and Forest Service on March 26, 2013.

<sup>2</sup> YCWA's proposed study modifications (Study 2.5—*Water Temperature* and Study 8.2--*Recreation Flow*) and proposed new studies (Study 3.13--*Focused 2013 Foothill Yellow-legged Frog*)

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Commission staff considered all study plan criteria in section 5.9 of the Commission's regulations; however, only specific study criteria that are relevant to the determination are referenced in Appendix B.

Finally, nothing in this study plan determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies.

If you have any questions, please contact Alan Mitchnick at (202) 502-6074 or [alan.mitchnick@ferc.gov](mailto:alan.mitchnick@ferc.gov).

Sincerely,

Jeff C. Wright  
Director  
Office of Energy Projects

cc: Mailing List, Public Files

Enclosures: Appendix A—Summary of Determinations on Proposed and Requested Study Modifications and New Studies  
Appendix B—Staff's Recommendations on Proposed and Requested Study Modifications and New Studies

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*Surveys and Study 3.14--Focused 2013 Western Pond Turtle Surveys*) are supported by the relicensing participants and would provide additional data to help characterize project effects. They are approved and not discussed further in this letter.

## APPENDIX A

SUMMARY OF DETERMINATIONS ON PROPOSED AND REQUESTED  
STUDY MODIFICATIONS AND NEW STUDIES

Study	Recommending Entity*	Approved	Approved with Modifications	Not Required
<b>I. Requests to Modify Approved Studies</b>				
1.1--Channel Morphology Upstream of Englebright Reservoir	Forest Service			X
1.2--Channel Morphology Downstream of Englebright Dam	NMFS		X	
2.1--Hydrologic Alteration	Forest Service, NMFS		X	
2.2--Water Balance/Operations Model	Forest Service, Water Board			X
2.5--Water Temperature Monitoring	YCWA	X		
3.5--Special-Status Amphibians – Foothill-Yellow Legged Frog Modeling	Forest Service, California Fish and Wildlife			X
3.9--Non-ESA Listed Fish Populations Downstream of Englebright Dam	FWS			X
3.11—Entrainment	Forest Service, California Fish and Wildlife, FWN		X	
6.1--Riparian Habitat Upstream of Englebright Reservoir	Forest Service, NMFS, FWN			X**
6.2--Riparian Habitat Downstream of Englebright Reservoir	NMFS, FWN, FWS			X
7.2--Narrows 2 Powerhouse Extension	NMFS, FWN			X
7.3--ESA-Listed Amphibians – California Red-legged Frog	FWS			X
7.8--Endangered Species Act (ESA)/California ESA-Listed Salmonids Downstream of Englebright Dam	FWS			X
7.11--Fish Behavior and Hydraulics Near Narrows 2 Powerhouse	YCWA, NMFS		X	
8.1--Recreational Use and Visitor Surveys	Forest Service		X	
8.2--Recreation Flow	YCWA, Forest Service, NPS, Water Board	X		
9.1--Primary Project Roads and Trails	Forest Service, NPS		X	

Study	Recommending Entity*	Approved	Approved with Modifications	Not Required
<b>II. Requests for New Studies</b>				
Fish Stranding Surveys	NMFS		X	
Mercury Transport and Speciation	California Fish and Wildlife, FWN			X
American Peregrine Falcon Nesting	Forest Service			X
Bullfrog Presence in FERC Project Boundary	FWS			X
Narrows 2 Powerhouse Entrainment	FWS			X
Engineering Structural Inspection of Slope Near Dark Day Boat Launch	Forest Service			X
Project Effects on Anadromous Fish Habitat and Passage Upstream of Englebright Dam	NMFS			X
Special-Status Amphibians – Focused 2013 Foothill Yellow-Legged Frog Surveys (Proposed Study 3.13)	YCWA	X		
Special-Status Turtles – Focused 2013 Western Pond Turtle Surveys (Proposed Study 3.14)	YCWA	X		

\*California Fish and Wildlife=California Department of Fish and Wildlife; FWN=Foothills Water Network; FWS=U.S. Fish and Wildlife Service; NMFS=National Marine Fisheries Service; NPS=National Park Service; Water Board=California State Water Resources Control Board; YCWA=Yuba County Water Agency.

\*\*Study ongoing—decision on need for modification is premature.

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## APPENDIX B

### STAFF'S RECOMMENDATIONS ON PROPOSED AND REQUESTED STUDY MODIFICATIONS AND NEW STUDIES

The following discusses modifications to the study plan approved on September 30, 2011, and comments thereon, including staff's basis for recommending or not recommending certain modifications to the study plan or new studies.

#### I. MODIFICATIONS TO APPROVED STUDIES

##### **Channel Morphology Upstream of Englebright Reservoir (Study 1.1)**

The goal of the study is to quantify or characterize river form, process, and interaction with the riparian zone in reaches upstream of Englebright reservoir potentially affected by project operations under annual regulated and unimpaired coarse sediment supply and transport regimes.

##### Requested Study Modification

The Forest Service requests that the Yuba County Water Agency (YCWA) utilize its sediment transport analysis to consider the effects of the change in the 1.5- to 5-year flow events on Oregon Creek and the Middle Yuba River below the diversions. The Forest Service does not indicate why the additional analysis would be necessary.

##### Comments on the Study Modification

YCWA indicates that it followed the study plan that was developed in consultation with the stakeholders and approved by the Commission and that the analyses requested by the Forest Service would represent additional effort and cost. YCWA notes that data for the analyses requested by the Forest Service is available and was provided to participants as required by the approved study plan.

##### Discussion

Our review of the *Channel Morphology Upstream of Englebright Reservoir Study* (Study 1.1) indicates the approved study did not specify discrete discharge values for which YCWA should provide sediment transport estimates. Instead, the study plan required that YCWA develop a sediment transport model capable of providing relicensing participants estimates of transport over a wide range of discharge values from below 11 cubic feet per second (cfs) to over 20,000 cfs. Therefore, we conclude that YCWA followed the approved study plan and note that study results should provide the capability to supply the information that the Forest Service seeks.

For these reasons, the Forest Service's proposed modifications to Study 1.1 do not meet the criteria for study modification listed under section 5.15(d) or (e), because the original study followed the approved study plan.

#### Staff Recommendation

None.

### **Channel Morphology Downstream of Englebright Reservoir (Study 1.2)**

The goal of the study is to quantify or characterize river form and process in the Yuba River downstream of the Englebright dam, and to assess potential impacts to the river form and process due to continued operation of the project.

#### Requested Study Modification

The National Marine Fisheries Service (NMFS) states that YCWA surveyed a greater portion of the channel (valley width) than was required by the approved study plan (bankfull). NMFS requested that YCWA modify tables 3.6-3, 3.6-4, 3.6-5, and figures 3.6-1 and 3.6-2 to separate large woody material (LWM) survey results within the bankfull channel from those outside the bankfull channel (i.e., floodway and valley width). NMFS states that these modifications are necessary to properly understand the characteristics and caliber of LWM within the active channel of the Lower Yuba River and allow adequate comparisons with other regional LWM studies to help develop potential environmental measures related to the project's effects on LWM supply to the Lower Yuba.

#### Comments on the Study Modification

YCWA states that it followed the study plan that was developed in consultation with the stakeholders and approved by the Commission and suggests that additional data or alternative breakdowns of results presented are not necessary to develop environmental measures. Specifically, YCWA notes that tables 3.6-1 and 3.6-2, and Attachment 1-2Q in the technical memorandum, describe the location of the LWM both laterally and longitudinally in the channel, key pieces of LWM are individually located and mapped, and a qualitative description of the LWM distribution is included in the technical memorandum. YCWA explains that the surveys indicate that 93 percent of the LWM data is outside of bankfull and the majority of what is in bankfull is trapped at the base of willow stands or is accumulated in piles with smaller woody material against willows. YCWA believes that this information is adequate to inform license requirements.

### Discussion

Our review of the *Riparian Habitat Downstream of Englebright Reservoir Study* (Study 6.2) indicates the approved study specified that YCWA sample LWM to the extent of bankfull channel. We acknowledge that YCWA's more extensive LWM sampling includes the bankfull channel and that the additional data collected provides useful informational value. However, we agree with NMFS that by including these additional data in its analyses -- collected in areas historically, but not actively inundated by the Yuba River, YCWA does not accurately describe the role and function of LWM in the Yuba River, an objective of the approved study. NMFS' recommended alternative analysis would more accurately describe the potential project effects on the role and function of LWM in the active channel of the Yuba River.

### Staff Recommendation

We recommend that YCWA modify Study 6.2, *Riparian Habitat Downstream of Englebright Reservoir*,<sup>3</sup> to include analyses that separate LWM survey results within the bankfull channel from those outside the bankfull channel (i.e., floodway and valley width).

### **Hydrologic Alteration Study<sup>4</sup> (Study 2.1)**

The purpose of the study was to characterize various metrics of hydrologic alteration due to operation and maintenance of the project.

#### *Seasonal Flood Peak Analysis*

### Requested Study Modification

NMFS states that YCWA did not perform the seasonal flood peak analysis according to the study plan because flood peaks as defined by YCWA contradict any reasonable definition of a flood event. NMFS requested that YCWA modify the seasonal

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<sup>3</sup> Although the majority of results from LWM surveys downstream of Englebright dam are presented in Technical Memorandum 1.2, much of the LWM sampling methodology is described in Study 6.2.

<sup>4</sup> The Forest Service and NMFS made several requests that YCWA analyze different data sets than required by the study plan, or present results in a different format than were presented in the study reports. The Commission staff does not analyze these requests here as modification requests because there is no indication that YCWA has not fulfilled the requirements of the study plan. These requests are more appropriately addressed during the application phase.

flood peak analysis by changing the definition of a flood peak to the 30-day maximum flow for all years under without-project conditions.

### Comments on the Study Modification

YCWA contends that it followed the study plan. YCWA says the study plan is not specific as to what constitutes a flood peak. The study plan says “*Flood peaks, as defined as significant storm or spring runoff event, will be characterized for three time periods, the fall, winter and spring seasons.*” YWCA states that its flood peak definitions are reasonable, especially considering project operations.

### Discussion

YCWA based its definition of a flood peak with consideration of project operations. For the stations located on the Yuba River below Englebright dam, YCWA selected the value 4,130 cfs, which equals the combined capacity of the Narrows I and II powerhouses. By YCWA’s logic, if flows exceed the capacity of the two powerhouses, then a spill event is occurring and 4,130 cfs could reasonably be called a flood peak. Similarly, the flood peaks selected by YCWA below the diversion dams, 50 cfs on Oregon Creek and 100 cfs on the Middle Yuba River, were selected because they were larger than the minimum required release and likely indicative of spill conditions occurring. The diversion dams on Oregon Creek and Middle Yuba River divert approximately 800 cfs each. Therefore, in YCWA’s view, if a 50-cfs flow occurs on Oregon Creek or if a 100-cfs flow occurs on Middle Yuba, both of which are larger than the minimum required release below the diversion dams, then the dams are spilling and a flood event is underway.

### *Comparison of NMFS and YCWA Flood Peak Definitions*

<b>Site</b>	<b>NMFS (cfs) *</b>	<b>YCWA (cfs)</b>
Yuba R. @ Smartsville	6,768	4,130
Yuba R. @ Marysville	7,514	4,130
Oregon Creek below Log Cabin Diversion	273	50
Middle Yuba below Our House Diversion	936	100
M. Yuba above confluence with N. Yuba	1,526	150

\* Thirty-day maximum without-project flow values are taken from tables 3.3-2, 7, 17, 22, and 32 of Technical Memorandum 2.1.

Because of the ability of the Yuba River Project to capture, divert and store water, fewer flood peaks should occur under the with-project condition. However, due to the unreasonably small value with which YCWA defined a flood peak, especially applied to the without-project data set, the opposite occurs. Under the without-project condition, flows frequently would remain higher than the unrealistically small definition of a flood

for weeks, if not months, at a time, meaning a long duration event in a normal flow would count as a single flood event. A second unrealistic result from YCWA's methodology is that there are significantly more flood events occurring in the drier fall season than in the wetter winter or spring seasons. This too, results from defining a flood peak with such a small value. In the drier season, under without-project conditions, the stream flow would oscillate around the low threshold that defines a flood, with each oscillation potentially counted as a flood event.

As conducted, due to a poorly chosen flood peak threshold, the analysis is not informative of the impact of the project on the number, and timing of seasonal floods. We conclude that YCWA did not conduct the study in accordance with the study plan [section 5.15(d)(1)], because the flood peak thresholds do not reasonably fit the definition described in the study plan.

#### Staff Recommendation

We recommend modifying the seasonal flood peak analysis for each of the five sites using the peak flow definition proposed by NMFS, that is, the 30-day maximum flow under without-project conditions.

#### *Snowmelt Recession*

#### Requested Study Modification

NMFS requested a modification to the Hydrologic Alteration Study to require YCWA to present the median Julian date of peak snowmelt, and the average duration of the snowmelt period under the with-project conditions.

#### Comments on the Study Modification

YCWA states that Julian date of the start of the snowmelt recession is independent of the project and is largely an upstream phenomenon. YCWA contends that it is not required by the study plans to provide these metrics.

#### Discussion

The study plan says that:

*“For the snowmelt season the median of the Julian calendar date of the peak and an approximation of the seasonal duration of the snowmelt runoff season will be determined.*

*The average rate of change in flow during the snowmelt recession in cfs per day will be determined **for the two hydrologic data sets** as the average change in the flow rate on successive days within a defined time period of the start and end of the spring snowmelt recession for each year.” (Emphasis added.)*

YCWA concludes that based on the wording of the study plan, it is not required to compute the median Julian calendar date of the peak of snowmelt recession and the average duration of snow melt under the with-project conditions. For the with-project scenario, YCWA concludes it is only required to provide the average rate of change in flow during the snowmelt recession.

The average snowmelt recession rate in cfs/day is calculated by subtracting the base flow from the highest peak daily flow occurring during the snowmelt season, and dividing the difference between these two values by the number of days between the peak flow date and the date flow reaches the base flow. YCWA did compute and report the with-project average snowmelt recession rate. To calculate this metric, YCWA had to have had the peak flows, the peak flow dates, and the durations of the recession periods--thus this information is readily available yet not presented in the report.

The overall goal of the Hydrologic Alteration Study is to “characterize various metrics of hydrologic alteration due to the operation and maintenance of YCWA’s project.” In the snowfall recession study, five sites impacted by the project are analyzed using with- and without-project data sets. Yet, YCWA has interpreted the study plan as not requiring analysis of two key metrics as they are impacted by the project.

We conclude that YCWA has not conducted the analysis in accordance with the study plan [section 5.15(d)(1)], because they did not conduct the study in light of the clearly stated overall goal of the study plan.

#### Staff Recommendation

We recommend that YCWA modify the study by providing the median Julian date of peak snowmelt and the average duration of the snowmelt recession using with-project data to calculate the two metrics.

#### **Water Balance/Operations Model (Study 2.2)**

The purpose of the study was to develop a water balance/operations model to simulate current and future operations of the project using historical hydrology to define a representative range of hydrological conditions, and to output resulting flows, reservoir storage, water surface elevations, and power generation.

### Requested Study Modification

The Forest Service and the California State Water Resources Control Board (Water Board) requested that the water balance/operations model be modified with the new flow regimes resulting from the nearly complete Yuba-Bear and Drum-Spaulding (YB-DS) relicensing process.

On March 26, 2013, the Forest Service clarified its request by stating that its intent was not that these flows be included in the base case model, rather it was requesting that these flows be included in the set of model scenarios that would be developed during discussions of protection, mitigation, and enhancement measures (PM&E).

### Comments on the Study Modification

YCWA says that the Water Balance/Operations Model Study is complete and the model was constructed and validated in accordance with the approved study plan. YCWA infers from the request that the Forest Service and Water Board believe that the baseline for flow into the project should be changed from existing conditions to the flows that would hypothetically occur under the new licenses.

YCWA says that the YB-DS relicensing process is not close to completion. YCWA says that the agencies neither specified which flows to use nor described a methodology for generating the new flows. YCWA expressed a willingness to run the water balance/operations model with the new flows if licenses for the upstream projects are issued in mid-2013 and the new licenses include new mean daily flows into the Middle and South Yuba Rivers above YCWA's facilities. YCWA states that just knowing the new YB-DS minimum release requirements is not sufficient to allow the calculation of new inflows to YCWA's project.

### Discussion

The goals and objectives of the Water Balance/Operations study were to develop a model that would address project operational decisions made during project operations for flood control, water supply, recreation, stream flows, and hydropower. The model should accurately reproduce observed reservoir levels, reservoir releases, and hydropower generation and provide output to inform other studies. The model should also allow for the simulation of changes to project operations to determine the effects of changes in project operations on reservoir levels, reservoir releases, and hydropower generation. The model is complete and is available to serve as a tool during the PM&E discussions to simulate operational changes and predict the resulting changes to flows, hydropower, and reservoir levels.

The model has been developed in accordance with the study plan and calibrated and validated within acceptable levels of accuracy. The development of a working model and the development of baseline conditions is all that was required to complete the study. The use of historical inflows to the Middle Yuba River and the South Yuba River represent the baseline condition and their use does not mean that the study was conducted under anomalous conditions or that conditions have so changed in a material way [section 5.15(d)(2)] to require a study modification.

#### Staff Recommendation

None.

#### **Special-Status Amphibians–Foothill Yellow-legged Frog Modeling (Study 3.5)**

The goal of this study is to develop habitat-flow relationships for foothill yellow-legged frogs (FYLF) in stream reaches in which FYLF are known to breed and that are potentially affected by the project.

#### Requested Study Modification

The Forest Service requests that YCWA conduct 2-dimension (2D) model simulations for flow increments of 5 cfs from the current minimum instream flow up to the mid-calibration flow, 10-cfs increments from the mid- to high-calibration flow, and 50-cfs increments from the high-calibration flow up to a typical unimpaired spring peak flow for the Log Cabin diversion dam site. The Forest Service also requests that YCWA conduct 2D model simulations for flow increments of 10 cfs between the current minimum instream flow and mid-calibration flow, 25-cfs increments from the mid- to high-calibration flow, 50-cfs increments from the high- to the high-high-calibration flow, and 100-cfs increments from the high-high-calibration flow up to a typical unimpaired spring peak flow for the Our House diversion dam site. The Forest Service did not provide the basis for the flow range.

California Department of Fish and Wildlife (California Fish and Wildlife) supported the Forest Service's requested modifications and repeated most of the request.

#### Comments on the Study Modification

YCWA notes that the number of simulations requested by the agencies (more than 40 for the Log Cabin diversion dam site and more than 25 for the Our House diversion dam site) is significantly more than the five required at each site specified in the study plan. YCWA notes that multiple relicensing participant meetings to discuss model calibration are stipulated in the approved study, and anticipates that the successful discussion of simulation flows and analysis methods would take place collaboratively

with the relicensing participants at that time. YCWA and the Forest Service subsequently agreed that these meetings could be used to discuss simulation flows and analysis methods.

### Discussion

The approved study plan provides for collaborative discussions with all relicensing participants to determine flows to be evaluated. These meetings would be the appropriate means of developing the range, magnitude, and incremental steps of simulation flows.

### Staff Recommendation

None.

## **Non-Endangered Species Act Fish Populations Downstream of Englebright Dam (Study 3.9)**

The objectives of Study 3.9 were to: (1) characterize the fish community including species composition; (2) estimate species' relative abundance; (3) characterize species relative spatial distribution relating to project flows; and (4) characterize species-specific habitat utilization relating to project flows.

### Requested Study Modification

The U.S. Fish and Wildlife Service (FWS) contends that the results for Study 3.9 do not evaluate how species composition and species spatial distribution are related to project flows and that YCWA did not evaluate how species composition and relative abundance have changed over time. As such, FWS requests that YCWA modify Study 3.9 to include an analysis that would evaluate project effects. Specifically, FWS requests that Study 3.9 include: (1) an index of biotic integrity; (2) an evaluation of temporal changes in fish assemblages as a result of project operational changes; (3) a comparison of species diversity/assemblage changes over time evaluating the influence of project operation utilizing a linear regression model; (4) standardize historical survey data and report in fish/unit length; (5) adjust survey data to support a comparable analysis to historic sample data among sites, methods, and through time; (6) the use of linear regression models or hierarchical models to examine relationships between seasonal flows and stream characteristics and fish assemblages; and (7) an analysis of project effects (direct, indirect, and/or cumulative) on fish assemblages.

### Comments on the Study Modification

YCWA states that it performed Study 3.9 as required by the approved study plan and that the study did not require the quantitative analysis requested by FWS.

### Discussion

Our review of Technical Memorandum 3.11 indicates that YCWA has implemented the study plan as required.

FWS, however, now requests additional analysis and an evaluation of project effects. The study phase of the Commission's Integrated Licensing Process is designed to ensure the necessary data are collected to support the applicant's, stakeholder's, and the Commission's analysis of potential project effects. Based on this information, the Commission's regulations (sections 5.16 and 5.17) require applicants to prepare a preliminary licensing proposal (PLP) or draft license application (DLA), and a final license application (FLA). These regulations also require applicants to analyze potential project effects for each resource area. The data collected from each of the pre-filing studies, and other available information should be utilized (as appropriate) when conducting this analysis.

Both the PLP/DLA and the FLA with the associated environmental analyses are provided to all stakeholders and the Commission for comment. However, while it is expected that an applicant's analysis would be robust and defensible, we do not require that stakeholders and applicants reach consensus on the analysis of potential project effects. Instead, we ensure that all studies have been conducted in accordance with the approved study plan and results are made available to all, thus permitting all stakeholders, and Commission staff, to conduct their own analysis of the data, as necessary, to formulate any recommendations, terms and or conditions they deem appropriate.

As a result, while FWS' requests for additional analysis and an evaluation of project effects may be appropriate when providing comments on the applicant's PLP/DLA, and FLA, they are premature at this time.

### Staff Recommendation

None.

### **Entrainment (Study 3.11)**

Study 3.11 requires YCWA to determine if the withdrawal of water at the Project's Lohman Ridge and Camptonville Diversion tunnel intakes are likely to have

adverse effects on native fish populations and western pond turtle by characterizing entrainment rates into the two diversion tunnels through the use of passive integrated transponder (PIT)-tagged salmonids and tag detection antenna arrays installed at the tunnel entrances.

### Requested Study Modification

The Forest Service and California Fish and Wildlife (agencies) request nearly identical modifications to Study 3.11. The Foothills Water Network's (FWN) requested modification is similar. Specifically, the agencies request that the PIT tag antenna arrays at YCWA's diversion tunnels remain operational until November 2013. FWN requests that the arrays remain operational through the summer of 2013. Both the agencies and FWN state that the arrays were not operational 100 percent of the time during the study period, specifically when YCWA removed the arrays to allow cleaning of the trash racks following a high-flow event. In support of their request, the agencies noted that extending the monitoring season would allow the collection of entrainment data during storm events throughout the summer and early fall of 2013. During a study plan consultation meeting held by YCWA on March 11, 2013, the Forest Service suggested that YCWA may divert flows through the tunnel(s) outside of its typical diversion season during high flow events.<sup>5</sup>

### Comments on the Study Modification

In its response, YCWA notes that the approved study plan did not require the antenna array to remain in place through November 2013.<sup>6</sup> YCWA estimates that implementing the requested study plan modification would cost approximately \$30,000. YCWA does not propose to extend the entrainment monitoring season to November 2013.

### Discussion

The approved Study 3.11, section 5.3.4, specifies that YCWA will record the number of PIT-tagged juvenile/adult trout and pond turtles passing through each diversion intake from November 1, 2012 through July 15, 2013, and if the diversion season extends past July 15, 2013, YCWA will extend the monitoring until diversions end.

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<sup>5</sup> We note that the agencies have not filed any information with the Commission documenting the incidental high flow diversions.

<sup>6</sup> We note that Section 7 of the approved Study 3.11 identifies monitoring of entrainment to occur between November 2012 – August 2013.

While the agencies and FWN support their modification requests by stating that the antenna arrays were not operational 100 percent of the time, we note that YCWA indicates in its the interim technical memorandum (footnote 7) that “only the Lohman Ridge Tunnel Intake has required cleaning to date, which occurred on November 18.” The agencies’ and FWN’s expectation that the antenna arrays would provide 100 percent continuous monitoring coverage during the study season is unreasonable, particularly when sampling was missed on only one day on one tunnel and likely for only a few hours for maintenance purposes. As a result, we do not find that conditions during the study period were anomalous, and therefore, find that study plan modification is not necessary for this reason.

The Forest Service also raised concerns that YCWA may divert water outside of its typical diversion season (e.g., during a storm event) and that there is no provision to monitor entrainment during these incidental diversions. We note that these incidental diversions have not been documented in the Commission’s public record. Regardless of whether or not these incidental diversions occurred during the 2012 study season, the goal of the study is to determine if the withdrawal of water at the project’s Lohman Ridge and Camptonville diversion tunnel intakes has adverse effects on native fish populations and turtles. We note that salmonid emigration typically coincides with high-flow events and that these high-flow events may trigger incidental diversions by YCWA at the project’s Lohman Ridge and Camptonville diversion tunnel intakes. Therefore, while the two tunnels generally do not divert water from around mid- July through October, if incidental high flow diversions were to occur during this period of time, entrainment monitoring of the flow diversion would be appropriate and necessary to understand, enumerate, and identify any entrainment that may be occurring outside of the typical diversion season as a result of project operations.

#### Staff Recommendation

We recommend that YCWA, in addition to the required entrainment monitoring during the 2012-2013 diversion season, monitor entrainment during any incidental diversion that may occur after the 2012-2013 diversion season and until November 1, 2013, the beginning of the 2013-2014 diversion season. YCWA estimates that implementing the requested study plan modification would cost approximately \$30,000. and we find that this additional cost is warranted and consistent with the intent of the approved study plan.

#### **Riparian Habitat Upstream of Englebright Reservoir (Study 6.1)**

This study is designed to assess the condition of riparian habitats within river reaches upstream of Englebright reservoir that could potentially be affected by continued project operation and maintenance.

### Requested Study Modification

The Forest Service recommends use of a germination and hydrology model to assess the condition of the existing riparian vegetation and examine the relationships between the presence of dominant woody species and its placement in the channel.

NMFS also requests analysis/modeling of the relationships between flows and germination of hardwood species.

FWN requests YCWA develop a model and analyze potential viability of germination for riparian hardwood species. FWN notes that the lack of seedlings and recruits of some expected species in some project reaches are evidence of project effects on riparian condition, but did not provide specifics.

All three relicensing participants recommend use of a “recruitment box” model<sup>7</sup> evaluating the following target species: Fremont cottonwood, white alder, red willow, and Gooding’s willow.

### Comments on the Study Modification

YCWA noted that it is in the process of developing the stage/discharge and flow frequency analysis and will provide adequate time for the relicensing participants to review the data, and hold an additional consultation meeting in early April regarding the need for, and scope of, second-year studies if needed. YCWA believes that the flow-frequency data being developed would be adequate to provide information on recruitment of riparian species.

YCWA comments that the “recruitment box” model is used in a limited capacity to examine when germination is likely to take place, assuming proper temperature, substrate, and seed viability. YCWA does not believe that the value and use of the information would be worth the cost of between \$40,000 and \$60,000.

### Discussion

Recruitment modeling is a tool that could be useful in understanding the relationship between flow and germination of hardwood riparian species and determining the timing and magnitude of flow releases that may be necessary to perpetuate riparian conditions in reaches affected by project-related flow regulation.

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<sup>7</sup> This model can be used to predict flows needed for successful seedling recruitment based on site hydrology, seed release timing, and seedling tolerance to desiccation.

Section 5.3.3.3 of the approved Study 6.1 (modified on December 8, 2011) requires YCWA to assess the condition of existing woody riparian germination by collecting vegetation plot data along transects. The study outlined information that would be reviewed to determine if a focused study would be needed during the second study year to examine project effects on riparian vegetation seed germination. All vegetative data collected in the plots would be included in a seed germination evaluation, with specific focus on the following factors: (1) no seed germination or recruitment present; (2) mono-typic age stands with no obvious or recent link to a peak flow event; (3) decumbent or distressed vegetation; (4) lack of woody species present in areas with substrate capable of supporting woody vegetation; (5) stage/discharge and flow frequency analyses under existing and unimpaired by project conditions; (6) literature search as it pertains to riparian vegetation and any potential key indicator species in the Sierra Nevada; and (7) any additional pertinent items.

It is premature to determine if additional recruitment modeling as proposed by NMFS and FWN is necessary until YCWA completes the study report. As noted above, the stage/discharge and flow frequency analysis has not been completed and YCWA has not completed the seed germination evaluation. Information on colonization and reproduction of riparian species, along with the stage/discharge analysis, is critical in determining potential project-related effects.

#### Staff Recommendation

We recommend that the need for additional modeling be evaluated after completion of stage/discharge and flow frequency data, which are currently being developed by YCWA. That evaluation should address the factors outlined in section 5.3.3.3 of the study. This information should be included in the final study report expected to be filed by May 30, 2014.

#### **Riparian Habitat Downstream of Englebright Dam (Study 6.2)**

This study is designed to characterize riparian habitat in the Yuba River downstream of Englebright dam, focusing on riparian vegetation composition and age class structure, including regeneration and germination, and an evaluation of trends in riparian health and factors contributing to riparian conditions.

#### Requested Study Modification

NMFS requests that YCWA modify the study to include development of a recruitment box format analysis as proposed in Study 6.1, recommended above, but with sycamore added to the four woody plant species evaluated. FWN similarly requests that YCWA develop a model for determining project-related viability of germination for riparian hardwood species.

FWS requests that YCWA: (1) develop a model for determining project-related viability of germination for riparian hardwood species, using existing information; (2) analyze the characteristics of major cottonwood and sycamore stands, including age, vertical structure, and location related to river stage; and (3) develop a recruitment model in support of regeneration of large riparian trees, with emphasis on cottonwoods and sycamores.

FWN also requests that YCWA conduct additional analyses of the relationship between cottonwood age and diameter at breast height (DBH). To improve the precision of the analysis, FWN requests that YCWA use pooled data from 91 tree cores, which would represent a 95-percent confidence interval of +/- 3.9 years.

#### Comments on the Study Modification

As noted above, YCWA explained that it is in the process of developing the stage/discharge and flow frequency analysis and will provide adequate time for the relicensing participants to review the data, and hold an additional consultation meeting in early April regarding the need for, and scope of, second-year studies, if needed.

YCWA comments that the “recruitment box” model is used in a limited capacity to examine when germination is likely to take place, assuming proper temperature, substrate, and seed viability. YCWA does not believe that value and use of the information would be worth the cost of between \$40,000 and \$70,000. YCWA notes that the model does not include substrate type, which can affect germination and notes that the Yuba River downstream of Englebright dam has been severely disturbed by historic hydraulic and dredge-mining.

YCWA believes the level of confidence (~8 years) that FWN is seeking is not sufficient to determine the conditions under which the stands were established (e.g., correlate establishment year to flows). YCWA has agreed to provide additional scatter plots in the final technical memorandum to show the ages of the cored cottonwood trees in relation to years of establishment.

#### Discussion

Evaluation of the need for recruitment modeling was not required by study 6.2. NMFS and FWN did not provide a showing of good cause why the study should be modified, as required by section 5.15(d). YCWA conducted the study as required by the approved study. YCWA, however, proposes to have further discussion on the need for additional modeling after completion of the hydrological analysis.

YCWA cored 97 cottonwood trees in eight study sites. YCWA performed statistical tests to determine the viability of establishing a size/age-class relationship and found that neither canopy height nor DBH were strong predictors of tree age. As a result, statistical tests were not strong enough to link year of establishment to historical discharge data from specific years.

The improved precision of +/- 3.9 years that FWN raises would still be insufficient to correlate establishment to a particular year or flow condition. Therefore, it is not clear why FWN believes this additional analysis is warranted.

#### Staff Recommendation

None.

### **Narrows 2 Powerhouse Extension (Study 7.2)**

The goal of the study was to determine the need for and appropriate configuration of a Narrows 2 Powerhouse Intake modification in order to meet water temperature targets for Chinook salmon and steelhead.

#### Requested Study Modification

FWN and NMFS requested that YCWA complete Step 2 of the study that requires a new conceptual design of the Narrows 2 intake.

NMFS contends that YCWA has not conducted the study according to the approved study plan. In particular, NMFS believes YCWA has not followed the consultation requirement from the original study plan that states, *“In Step 1, YCWA proposes that it will collaborate with relicensing participants on the need to implement Step 2. Pursuant to our discussion above under Collaboration and Consultation on Study Plan Decisions, in the event a consensus to proceed to Step 2 cannot be reached, YCWA must file its proposal with regard to Step 2 with the Commission for review and approval.”*

In addition to meeting targeted thermal regimes, NMFS cited the potential benefit of reducing entrainment as a reason for proceeding with an alternative intake design. FWN recommended that the study be modified to require alternative designs whether or not water temperature targets are agreed to by relicensing participants

#### Comments on the Study Modification

YCWA says that conceptual design of a Narrows 2 intake should only be required if and when there is a clear need for an extension of the intake. YCWA says that neither

NMFS nor FWS presented any evidence to support their claims that a new design was necessary for water temperature control or entrainment prevention.

YCWA notes that it is following the consultation requirements of the study plan. On March 22, 2013, YCWA filed a letter summarizing the most recent River Management Team (RMT)<sup>8</sup> consultation meetings held on March 11, 2013. Participants agreed to delay the discussion of water temperature alternatives until participants had the opportunity to review the interim technical memorandum and consider the need for water temperature alternatives and potential flow measures downstream. YCWA says that if relicensing participants cannot reach a collaborative agreement, YCWA would file its proposal for the Commission's review and approval, but at the moment such a step is premature.

### Discussion

Although FWN and NMFS cite entrainment as a reason to proceed with Step 2, the objective of Study 7.2 was not to study entrainment. The need for entrainment studies at the Narrows 2 intake is being addressed by Study 3.7, *Reservoir Fish Populations* and Study 3.11, *Entrainment*.

Study 7.2 was approved with two steps. Step 1 requires consultation with the RMT to determine seasonal temperature requirements for the various life stages of important target species that inhabit the lower Yuba River and to determine whether existing flows and operating procedures were effective in meeting the temperature targets. Interim Technical Memorandum 7.2 documents the efforts by YCWA and the RMT to determine, the periodicity of life stages of the target species, suitable thermal regimes, and the probability that those thermal regimes could be met based on water temperature monitoring and modeling. Step 2 requires the development of a conceptual alternative intake design, and is only initiated if the targeted thermal regimes can not be met.

Step 1 of the study is being conducted in accordance with the study plan [section 15.5(d)(1)]. The collaborative consultation process regarding whether to require Step 2 is ongoing.

### Staff Recommendation

None.

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<sup>8</sup> The RMT is responsible to implement a detailed monitoring and evaluation study program for the lower Yuba River as specified in the Lower Yuba River Accord.

**ESA-listed Amphibians—California Red-legged Frog (Study 7.3)**

The goal of the study is to develop information concerning California red-legged frogs (CRLF) associated with reservoirs and ponds within the project boundary and stream reaches potentially affected by the project, and assess potential effects.

Requested Study Modification

FWS recommends that YCWA conduct protocol level surveys for CRLF at all 91 sites<sup>9</sup> identified in the study report determined to meet the minimum breeding habitat criterion of 20 weeks with permanent water.

FWS also comments that studies 3.4 and 3.6 provided new information on the presence of bullfrogs, which, due to similarities, they believe are excellent indicators of CRLF habitat. As a result, FWS also recommended that the CRLF surveys be conducted within 0.25 mile upstream and downstream of bullfrog observations.

FWN supports the FWS recommendations.

Comments on the Study Modification

YCWA considers full protocol surveys for all sites to be unreasonable and unnecessary because CRLFs may be presumed by FWS to occur in the area regardless of survey results. YCWA also disagrees with FWS' contention that bullfrog habitat is a reliable indicator of CRLF habitat, noting that bullfrogs are also successful in habitat that are not suitable for CRLF such as large reservoirs and large streams. YCWA notes that the cost of up to 696 (up to 8 surveys per site) individual surveys would be between \$500,000 and \$700,000. Surveys of an additional 3 to 4 miles of river based on the presence of bullfrog would add to this cost.

YCWA believes that if additional information is needed, efforts should be focused at carefully selected sites to answer specific questions that would be useful for future management and development of appropriate license conditions.

YCWA indicates that during previous meetings, YCWA and FWS agreed that for the purposes of this study, consultation would be considered complete and consultation would continue under both the Commission's Integrated Licensing Process and section 7 of the Endangered Species Act.

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<sup>9</sup> YCWA notes that based on a tabulation error, the number of sites is actually 87.

### Discussion

Surveys of CRLF habitat in the vicinity of bullfrogs is not part of the approved study, which is based on standard CRLF habitat characterization and survey protocols.<sup>10</sup> Further, although bullfrogs and CRLF have similar habitat requirements, not all bullfrog habitats would also be suitable for CRLF (water temperature, water depth, presence of predators, etc.). Therefore, we do not believe that the presence of bullfrog habitat is a reliable enough indicator of CRLF habitat to warrant the additional surveys.

The approved study plan required YCWA, after completion of the Site Assessment Report, to consult with FWS to determine if protocol-level CRLF surveys are needed. FWS did not provide a rationale for why all the sites needed to be surveyed. YCWA, in the technical memorandum, evaluated the sites in terms of potential project effects and suitability for CRLF. Many of these sites, although having standing water for at least 20 weeks, may not be suitable CRLF habitat because of the lack of vegetation or presence of predatory fish or bullfrogs. Further, many of these sites would not be affected by project operation or maintenance activities. For many of these sites, we could presume presence of the CRLF without the need for site-specific surveys. Development of the requested information would not necessarily lead to the development of license conditions (study criterion 5). For those reasons, we do not believe that it is appropriate to survey all 87 potential habitats.

### Staff Recommendation

We recommend that YCWA and FWS continue informal ESA consultation on the need for and extent of protocol level surveys.

### **Endangered Species Act (ESA)/California ESA-Listed Salmonids Downstream of Englebright Dam (Study 7.8)**

The purpose of the study was to document the number, size, and distribution of mesohabitats available for immigrating, holding and spawning adult and rearing juvenile Chinook salmon and steelhead; estimate annual run-sizes; characterize the temporal and spatial distributions of immigrating salmonids; characterize the spatial and temporal distribution of redds; characterize habitat-flow relationships for salmonid spawning; evaluate water temperature suitability for spawning; characterize the spatial, including habitat utilization, and temporal distributions of juvenile rearing; characterize habitat-flow relationships for juvenile rearing; evaluate water temperature suitability for juvenile rearing; characterize the seasonal and annual abundances of emigrating juveniles; characterize size structure and growth rates of emigrating juveniles compared with flows

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<sup>10</sup> The study plan methodology is based on FWS' revised guidance on site assessments and field surveys for California red-legged frog, August 2005.

and water temperatures; and evaluate the effects of flow fluctuations and ramping rates on the stranding.

### Recommended Study Modifications

FWS requested YCWA to analyze rotary screw trap (RST)<sup>11</sup> and Vaki Riverwatcher data<sup>12</sup> using the Yuba River Index (YRI) water year types (WYT). FWS believes that project effects on listed salmonids are likely to be more severe (and thus more likely to be detected) in years of limited water availability. In particular, FWS requested that the data depicted in the following figures and tables be re-analyzed after accounting for WYT: figures 3.2-14, 3.2-15, 3.2-17 through 3.2-22, 3.2-24, 3.2-27, 3.2-28, 3.2-42 through 3.2-46, and tables 3.2-11, 3.2-13, and 3.2-28 through 3.2-32. FWS is not asking for additional data collection.

### Comments on the Study Modification

YCWA does not agree that these additional analyses are necessary in order to accomplish the goals of the study. YCWA notes that Interim Technical Memorandum 7.8 provides annual RST data such that FWS can analyze the RST data using any WYT index, or collapsed combination of WYTs, that they choose.

### Discussion

FWS requested additional analysis of the data collected as part of the study. The requested analysis is not required by the approved study plan.

We believe that the request is not a study modification but rather a request for an alternative analysis of the data generated by the study. This request would be more appropriately made during review of the PLP or DLA.

As we discussed above, though FWS' requests for additional analysis may be appropriate when providing comments on the applicant's PLP/DLA, and FLA, they are premature at this time.

### Staff Recommendation

None.

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<sup>11</sup> Rotary screw traps are used to document the outmigration patterns of juvenile salmonids.

<sup>12</sup> Vaki Riverwatcher is an infrared and videographic detection device used to count adult Chinook salmon immigrants.

## **Fish Behavior and Hydraulics near Narrows 2 Powerhouse (Study 7.11)**

The purpose of the study was to determine how continued operation and maintenance of the Narrows 2 powerhouse may affect anadromous fish, especially ESA-listed species. As such, Study 7.11 was designed to: (1) document adult resident salmonids and adult anadromous salmonid behavior in the vicinity of the Narrows 2 facilities; (2) identify whether or not anadromous fish are reaching the Narrows 2 facilities; (3) determine what species and how many individuals may be potentially affected; (4) determine whether project facilities are causing injury or mortality to listed anadromous salmonids and/or delayed spawning activities; (5) describe behavioral activities by anadromous fish at all project operational conditions and during transition periods, including how Narrows 2 powerhouse operational changes influence species interaction with the Narrows 1 powerhouse; (6) document project operational flow conditions (discharge rate in cfs and flow velocity) and correlating operations to behavioral observations of anadromous fish; and (7) document incidental observations by YCWA personnel of anadromous fish interactions with the project and its operation.

### Requested Study Modification

NMFS comments that the study did not fully meet its goals and objectives. NMFS requested that YCWA modify Study 7.11 to include the following: (1) an acoustic- or radio-telemetry monitoring effort and additional analysis of historic acoustic telemetry data; (2) on-shore visual counts and fish observations; (3) fish stranding surveys; and (4) continued but modified Dual-frequency Identification Sonar (DIDSON) data collection. With the exception of the requested fish stranding surveys, we discuss each of NMFS' concerns with the study plan's implementation and its requested modifications below.

Because the fish stranding surveys constitute a request for a new study pursuant to section 5.15(e) of the Commission's regulations, we address this request below in *Section II--New Studies*.

### *Acoustic or Radio-Telemetry Study and Additional Analysis of Historic Acoustic Telemetry Data*

NMFS notes that YCWA summarized the results from 3 years of RMT acoustic-telemetry monitoring in the interim technical memorandum; however, NMFS finds that the telemetry data does not support an analysis of salmonid behavior in the vicinity of the Narrows 2 powerhouse as required by our July 24, 2012, determination on revised Study 7.11. As a result, NMFS requests that YCWA implement an acoustic- or radio-telemetry study to collect information on the behavior and presence of fish in the vicinity of the Narrows 2 powerhouse. Additionally, NMFS requests YCWA incorporate additional information from the 2009, 2010, and 2011 RMT acoustic study data into its final study

report, including: the number of total tagged fish observed in the vicinity of the Narrows 2 powerhouse; the number of adipose fin-clipped and non-fin-clipped fish that entered the reach; an analysis of each tagged fish that entered the reach, including the duration it stayed in the reach (fin-clipped or not); and; any results of its genetic analysis and/or information from recovered coded wire tags.

### Comments on the Study Modification

YCWA disputes NMFS' assertion that it did not comply with the July 24, 2012, determination, stating that it allowed YCWA to assess existing RMT acoustic telemetry data to address the movement and behavior of fish in the vicinity of Narrows 2 Powerhouse. YCWA also stated that it provided an overview of these data in its interim technical memorandum, and that it would provide a more detailed review the RMT data in its final technical memorandum. YCWA does not propose to conduct any new acoustic- or radio-telemetry studies.

### Discussion

YCWA is correct, the July 24, 2012, study determination allowed YCWA to use existing RMT acoustic telemetry data to address the movement and behavior of fish in the vicinity of Narrows 2 Powerhouse in lieu of conducting a radio/acoustic tagging effort as a component to study 7.11. However, the determination also stated that *"If it is determined that the existing RMT data, and concurrent project operations data are incomplete, incompatible, or insufficient to support such an analysis, we will consider the need for additional telemetry study..."* The determination also stated that *"YCWA should fully describe the observed correlation [between the movement and behavior of tagged fish and project operations] in its initial study report."*

While YCWA states that it would provide a more detailed review of the RMT data in the final technical memorandum, it did not describe any correlation between the movement and behavior of RMT-tagged fish and historical project operations as required. While YCWA's interim technical memorandum reported historic project operations (in mean monthly flow) for water years (WY) 1970-2008, YCWA only provided a very general qualitative description of the Narrows 2 powerhouse operations between 2009 and 2011, when the RMT acoustic-telemetry study was conducted.

Further, the interim technical memorandum for Study 7.11 raises questions regarding the usefulness of the RMT data. YCWA states that the RMT *"study has limitations as it applies to fish presence and behavior near the Narrows 2 Powerhouse."* and that the acoustic technologies utilized by the RMT were *"challenged due to background 'noise'"* and are *"non-directional – essentially, any detection recorded by a receiver can only be said to be generally proximate to the receiver."*

While further analysis of the RMT data as requested by the NMFS and proposed by YCWA would be useful information to understand the number, origin, and length of time fish stayed in the vicinity of the Narrow's 2 powerhouse, it is clear that the existing RMT acoustic-telemetry data are not sufficient to support an analysis to determine any correlation between the movement and behavior of tagged fish and project operations as required. We conclude that YCWA's study efforts did not achieve the goals and objectives of the study; therefore, consistent with section 5.15(d) of the Commission's regulations a study modification is necessary.

### Staff Recommendation

Because the existing RMT acoustic-telemetry data is insufficient to achieve the goals and objectives of the study, we recommend YCWA conduct a radio-telemetry study. YCWA should develop the radio-telemetry study after consultation with NMFS, FWS, and California Fish and Wildlife.<sup>13</sup> YCWA should implement the study during the spawning/migration season(s). The telemetry study should be designed to radio-tag and track a statistically significant sample of anadromous salmonids, document their movements within the Yuba River between DaGuerre Point dam and the Narrows 2 powerhouse and incorporate methods to obtain detailed fish movement data between the Narrows 1 & 2 powerhouses, and with an emphasis in the area of the Narrows 2 tailrace and bypass pool for the duration of the spawning/migration season.

In addition, YCWA should record all flow releases, including point of release (e.g., bypass facility, powerhouse, etc.) from the Narrows 2 project facilities on a 15-minute time step for the duration of the telemetry study.

YCWA should analyze the information from the radio-telemetry effort and flow release records to determine any correlation between the movement and behavior of tagged fish and project operations.

YCWA should incorporate the existing information from the 2009, 2010, and 2011 RMT acoustic study data into the final technical memorandum as requested by NMFS and provide an analysis of the number, origin, and length of time fish were in the general vicinity of the Narrow's 2 powerhouse.

We anticipate the cost associated with the development and implementation of the radio-telemetry study and associated analysis of operations and telemetry data to be \$250,000.

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<sup>13</sup> Given the specified shortcomings of the acoustic-technologies utilized by the RMT, we are recommending a radio-telemetry study.

*On-Shore Visual Counts and Fish Observations*

NMFS states that the snorkel surveys conducted by YCWA did not result in reliable abundance estimates of anadromous fish in the vicinity of the Narrows 2 facilities due to water visibility, velocity, and safety concerns. However, NMFS does not request the implementation of additional snorkel surveys. Instead, it requested that YCWA have a trained biologist conduct visual counts and fish behavior observations from the powerhouse deck and shoreline. NMFS specifies that YCWA conduct the visual counts during and after each operational change that shifts flows between the Narrows 2 powerhouse, bypass, and the Narrows 1 powerhouse.

Comments on the Study Modification

YCWA states that it provided a complete summary of fish observations from its bi-weekly snorkel surveys and relative to the project's operations. YCWA also notes that it reported fish observed from land prior to the snorkel surveys and observations made by YCWA facility operators. As a result, YCWA does not feel the additional effort requested by NMFS is warranted.

Discussion

Among other things, the July 24, 2012 study determination required YCWA to describe the behavioral activities of anadromous fish at all project operational conditions and during operational transition periods, including how Narrows 2 powerhouse operational changes influence fish interaction with the Narrows 1 powerhouse.<sup>14</sup> Specifically, the study required the direct observation of anadromous fish behavior by three methods: (1) snorkeling surveys; (2) monitoring operational changes using DIDSON; and (3) incidental documentation by YCWA personnel.

YCWA's snorkel surveys were an integral part of the study to document fish behavior and response to changes in project operations. While the approved study was implemented as required, YCWA's interim technical memorandum outlined limitations of the snorkel surveys with respect to visibility, stream velocities, and safety concerns. For example, stream side observations conducted by NMFS staff on October 25, 2012, documented more adult salmonid observations than were reported during the concurrent snorkel survey. Additionally, approximately 25 Chinook salmon were observed in the bypass pool from the powerhouse deck where snorkel surveys were precluded due to safety concerns. YCWA itself reported the behavior of most adult Chinook salmon observed during the snorkel surveys as "fleeing" from snorkelers, identifying a

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<sup>14</sup> Pacific Gas & Electric Company's (PG&E) Narrows 1 powerhouse, part of PG&E's Narrows Project (FERC Project No. 1403), is located on the opposite side of the Yuba River just downstream of the Narrows 2 powerhouse.

significant limitation of the snorkel surveys to observe anadromous salmonids behavior in response to project operations and their interaction with the Narrows 2 facilities.

NMFS' request for visual counts and fish behavior observations from the powerhouse deck and shoreline, during and after operational changes, would likely provide more accurate data than snorkel surveys with respect to the behavior of anadromous salmonids. We conclude that YCWA's study efforts did not achieve the goals and objectives of the study; therefore, consistent with section 5.15(d) of the Commission's regulations a study modification is necessary.

### Staff Recommendation

We recommend that YCWA modify the study to include shore-based anadromous salmonid counts and fish behavioral observations in the vicinity of the Narrows 2 project facilities immediately before, during, and after each operational change that shifts flows between the Narrows 2 powerhouse, bypasses, and the Narrows 1 powerhouse.

In addition YCWA project personnel should continue to collect incidental observations as provide for in section 5.3.3.3 of Study 7.11; however, instead of the "opportunistic" observations described in the study plan, the observations should be conducted at least twice on each day (upon arrival, and before departure) on days YCWA project personnel are present at the facility.<sup>15</sup> YCWA project personnel should record each observation event on the *Narrows 2 Fish Observation Record* form and enumerate and mark on a map (similar to that in attachment 7.11B of the interim technical memorandum) each observation of adult salmonid(s) in the vicinity of the Narrows 2 powerhouse. This information should be used to augment the radio-telemetry data (discussed above) when analyzing potential project effects on fish behavior.<sup>16</sup>

### *DIDSON Camera Data Collection*

NMFS raises concerns with YCWA's implementation of section 5.3.3.2 of the study, as it applied to monitoring with DIDSON. Specifically, NMFS notes two concerns: (1) on multiple occasions the DIDSON camera deployment did not occur as specified by the required study (the morning prior to the operational change); and (2) DIDSON monitoring did not occur during the annual maintenance period in September, as contemplated during the development of study plan. In its comments, NMFS also

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<sup>15</sup> On days that shore-based anadromous salmonid counts and behavioral observations are conducted by study personnel, incidental observations by YCWA project personnel would not be required.

<sup>16</sup> We recognize that radio telemetry tagging efforts will only tag a subset of the actual population and the incidental observations by YCWA personnel would be useful to quantify the presence of adult salmonids in the vicinity of the Narrows 2 powerhouse in conjunction with the radio telemetry effort.

recognized that preliminary DIDSON camera footage collected during project generation may be of little value as indicated by YCWA in its interim technical memorandum.

Specifically, regarding its first concern, NMFS states that DIDSON was not deployed on the morning of October 24, 2012, prior to the operational change on October 25, 2012, and deployment of DIDSON actually occurred only after the operational change was complete, inconsistent with the requirements of the approved study plan. NMFS also speculates that a similar delay in DIDSON deployment occurred during the second sampling event between August 31 and September 3, 2012, because the powerhouse was reportedly shutdown on August 31<sup>st</sup>.

Regarding NMFS' second concern that DIDSON monitoring did not occur during the Narrows 2 annual maintenance period in mid-September, NMFS explains that the annual maintenance period did not occur, as described by YCWA during the study plan's development. NMFS notes that the powerhouse was shut down August 31, 2012, and remained off-line for almost 2 months through October 2012. This is of particular concern to NMFS as it believes this seasonal period would have been a prime opportunity to capture DIDSON imagery during project operational changes when adult anadromous salmonids would most likely be present in the facility's vicinity. NMFS also notes that while this extended shutdown of the Narrows 2 powerhouse has been implemented each year since 2009, YCWA did not mention this operational condition during the study plan's development.<sup>17</sup> NMFS contends that, had it been informed of such a prolonged outage during the consultation and development of the study plan, this information would have influenced NMFS' recommendations for DIDSON monitoring.

As previously mentioned, NMFS recognized that preliminary DIDSON camera footage collected during project generation may be of little value. Specifically, YCWA stated in the interim technical memorandum that a preliminary review of the DIDSON camera footage showed that the footage was dominated by bubble waves during power generation and that visibility was estimated to be less than 10 feet.

NMFS requested that YCWA conduct additional DIDSON monitoring in 2013. NMFS states that this additional monitoring should occur during all operational changes between mid-July and mid-November, and as specified in the study plan with the following modification: (1) if, after full analysis of 2012 DIDSON video footage, DIDSON continues to be proven ineffective when the Narrows 2 powerhouse is generating due to bubbles, it is in favor limiting the amount of DIDSON data collected during generation periods and deploying the DIDSON only a few hours prior to an operational change (instead of on the morning of the day prior) and limiting data

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<sup>17</sup> During the study plan consultation and development, it was anticipated that Narrows 2 powerhouse operations would change approximately five times throughout the study season including a planned annual maintenance outage in mid-September.

collection when the facility is generating; and (2) if a prolonged outage of the Narrows 2 powerhouse occurs in 2013, as it has since 2009, NMFS requests a robust DIDSON sampling program be developed in consultation with NMFS and implemented throughout the outage period.

In addition to its 2013 DIDSON monitoring recommendation and given its concerns with the other limitations of Study 7.11 methodologies discussed above (i.e., inadequacy of RMT acoustic-telemetry data and snorkel survey effectiveness), NMFS suggests that YCWA establish yet another DIDSON monitoring program with multiple DIDSON cameras to compliment NMFS' other requested study plan modifications. Specifically, NMFS suggests that YCWA place a DIDSON camera upstream of the Narrows 2 powerhouse, directed downstream, to capture footage along the river channel between the aerated discharge of the powerhouse and the left river bank. NMFS also suggests YCWA conduct DIDSON monitoring from a boat and that YCWA use this mobile application to identify additional fixed DIDSON stations that would provide alternative vantage points to monitor fish activities in and around the Narrows 2 facilities.

#### Comments on the Study Modification

While YCWA acknowledges some technical difficulties with deploying the DIDSON, it does not specify what those difficulties were. YCWA does, however, state that it collected 290 hours of DIDSON footage and it is confident that its existing effort will be sufficient "to assess the viability of the DIDSON footage" and "extract all pertinent information." In response to NMFS' concern that DIDSON footage was not collected during the annual maintenance outage (as anticipated during the study plan's development), YCWA notes that multiple days of bypass operations were monitored after infrequent operational changes—which is effectively the same water release scenario. YCWA also notes that NMFS did not base its request on anomalous conditions or conditions that have changed since the Director's Determination.

YCWA does not propose any additional DIDSON monitoring efforts in 2013.

#### Discussion

Based on NMFS' comments and our review of YCWA's interim technical memorandum, we conclude that YCWA: (1) deviated from the required study methodology; and (2) because of the prolonged seasonal outage, did not monitor enough project operational changes to fully describe effects of the project on fish behavior.

It appears that YCWA has deviated from the required study methodology, on up to two of the three recorded events, by not timely deploying the DIDSON camera on the morning of the day prior to a planned operational change and monitoring that day and through the operational change. The study determination required YCWA to deploy a

DIDSON camera near the Narrows 2 powerhouse draft tubes to characterize behavioral responses to scheduled operational changes throughout the study season and during all scheduled operational changes. The approved study plan required that YCWA deploy a DIDSON camera “the morning prior to the operational change...” and that “the camera will continual monitor the day prior, day of, and the afternoon of the day following the operational change.” Failure to install the DIDSON sufficiently in advance of a change in operations (e.g., the morning before) could influence fish behavior (i.e., installation of the device in itself would influence the behavior of any fish that are present); and therefore, potentially bias study results. Additionally, failing to install the DIDSON prior to a change in project operations, as happened on October 25, 2012, results in a significant loss of data needed to assess the effects of the project on anadromous salmonid behavior.

YCWA’s limited information for Study 7.11 indicates that two of the three DIDSON camera deployments occurred between August 22 and September 3, for a total of six deployment days. The third and final monitoring event occurred October 25 – 29, 2012. As a result of the Narrows 2 powerhouse shutdown August 31, 2012 – October 25, 2012, no DIDSON monitoring was conducted between September 4, 2012 and October 24, 2012, a crucial period when salmon populations in the vicinity of the Narrows 2 powerhouse were likely at their peak.

While YCWA states it is confident that the 290 hours of DIDSON footage is sufficient to both “assess the viability of the DIDSON footage and extract all of the pertinent information from the [sic] using the camera,” YCWA did not address how the data gathered is sufficient to meet the goals of the study and did not address NMFS’ delayed camera deployment concerns. As a result, based on the information above, we find that YCWA did not conduct the study as provided for in the approved study plan and we fail to see how YCWA’s DIDSON camera deployment schedule meets the goals and objectives of the study. Therefore, consistent with section 5.15(d) of the Commission’s regulations, a study modification is necessary.

Because valuable information regarding anadromous salmonid behavior in the Narrows 2 tailrace was lost due to YCWA’s failure to properly deploy the DIDSON camera, we agree with NMFS that additional DIDSON monitoring in 2013 is warranted. In addition, even absent further review of the 2012 DIDSON camera footage, we agree that extended monitoring during generation periods is not useful given the limitations outlined by YCWA. Therefore, deployment of the DIDSON camera only a few hours before an operational change when changing from a state of generation to a state on non-generation, rather than 24 hours before, would eliminate wasteful monitoring and focus

efforts on the operational change itself.<sup>18</sup> Similarly, monitoring for only a few hours after an operational change from a state of non-generation to a state of generation, instead of up to 24 hours afterward as prescribed by the study plan would also be appropriate.

Deploying a DIDSON camera during the 2013 field season in a manner requested by NMFS would help eliminate any bias that may have resulted from delayed deployment of the DIDSON camera and provide an opportunity to recover missed monitoring opportunities. Additionally, DIDSON monitoring in 2013 could fill some of the data gaps that may have resulted from the continuous shutdown of the Narrows 2 powerhouse during the fall of 2012 and could support better monitoring coverage when the presence of salmon is at its peak in the vicinity of the Narrows 2 powerhouse.

Regarding NMFS suggestions that YCWA establish an additional DIDSON monitoring program to compliment its other requested study plan modifications, we question the need for this additional effort. Our recommended modifications of Study 7.11 should result in data that more fully describes project effects on fish in the vicinity of the Narrows 2 facility. As discussed above, we are recommending YCWA implement a radio-telemetry study, additional analysis of historic acoustic telemetry data, and enhanced on-shore visual counts and fish behavioral observations. While NMFS' suggested DIDSON monitoring program would complement and provide additional information on salmon presence and behavior when in the vicinity of the Narrows 2 powerhouse, NMFS has not demonstrated how this additional effort and cost is warranted given the other study modifications.<sup>19</sup>

#### Staff Recommendation

We recommend YWCA apply the methodologies described in Study Plan 7.11 during the 2013 field season, with the following modifications:

- 1) YCWA should conduct DIDSON monitoring during planned outages of the Narrows 2 powerhouse between July 15 and December 15, 2013.
- 2) YCWA should deploy a DIDSON camera and begin monitoring at least 4 hours prior to an operational change from a generation status to non-generation status.

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<sup>18</sup> Deploying DIDSON sufficiently in advance of a change in operations (at least 4 hours prior to the event to be monitored) should limit any influence the installation of the device would have on the behavior of any fish present during monitoring.

<sup>19</sup> We anticipate the deployment of two DIDSON cameras for the duration of the 2013 study season (mid-July – mid-November) would cost approximately \$350,000 - \$450,000 with data analysis and report preparation.

- 3) At the latest, YCWA should deploy a DIDSON camera and begin monitoring the morning of the day prior to an operational change from a non-generation status to a generation status and may discontinue monitoring 4 hours after the Narrows 2 powerhouse returns to a generation status.
- 4) If a prolonged outage of Narrows 2 powerhouse were to occur during the 2013 field season as it did in 2012, YCWA should consult with the NMFS on a periodic DIDSON deployment schedule to capture seasonal fish use and behavior in the vicinity of the Narrows 2 draft tubes during the project's outage.

### **Recreation Use and Visitor Surveys (Study 8.1)**

The goal of the *Recreation Use and Visitor Surveys Study* was to collect information on current recreation use and future demand for recreation activities at the project through visitor surveys, focus groups, and an inventory on the condition and accessibility of existing project facilities.

#### Requested Study Modification

Forest Service requested that YWCA modify the Recreation Study to include the following: (1) conduct inventory, condition, American with Disabilities Act (ADA) compliance, and use impact evaluations at Cottage Creek Campground and Cottage Creek Group Campground and conduct inventory, condition, and ADA compliance evaluations at Burnt Bridge Campground; (2) include an evaluation of outdated, out of code conditions of existing recreation facilities in the facility condition assessments (i.e., older restroom facilities at Schoolhouse); (3) evaluate the current condition of the 8-ball, Bullards Bar, Schoolhouse, and Old Camptonville Road trailheads; (4) conduct additional survey work in 2013 to reach 100 percent of the targeted number of surveys at the campgrounds, boat-in campsites, and dispersed sites; and (5) include residents from Brownsville, Challenge, and Clipper Mills in the recreation focus groups.

#### Comments on the Study Modification

YCWA states that data collection was not yet complete when the Initial Study Report was filed with the Commission on December 3, 2013. However, it indicates that the final technical memorandum would include additional surveys received through November 2012, which has resulted in a higher total number of surveys received and higher target percentages as shown in table 2.1-1 of its response to comments.<sup>20</sup> YCWA further states the target number of surveys for each facility in the study plan is merely an estimate in order to develop a logical field survey protocol. YCWA states a statistically

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<sup>20</sup> Response to comments filed by YWCA on February 27, 2013.

valid sample is not calculated with respect to each individual facility but rather according to the overall sample populations surveyed, which it indicates it has achieved.<sup>21</sup>

YCWA does not propose to modify the *Recreation Use and Visitor Surveys Study* because YCWA indicates it followed the study that was developed in consultation with the stakeholders and approved by the Commission on September 30, 2011.

### Discussion

As indicated above, the primary goals of the *Recreation Use and Visitor Surveys Study* were to: (1) describe the preferences, attitudes, and characteristics of the project's recreation users; (2) collect information about current project recreational use and future demand for recreation activities; and (3) collect information on the condition and accessibility of existing project facilities. Based on the *Recreation Use and Visitors Surveys Study* approved on September 30, 2011, and the interim technical memorandum filed with the Initial Study Report on December 3, 2011, YCWA followed the approved study, conducting recreational use surveys and a facilities conditions and accessibility inventory between from October 2011 to October 2012.

YCWA noted in its interim technical memorandum that both the Cottage Creek Campground and Burnt Bridge Campground are currently closed and not in good, functioning condition.<sup>22</sup> Cottage Creek Campground burned in a fire and was closed in both 2011 and 2012. Burnt Bridge Campground was closed initially by the Forest Service in 1979 due to low use levels and has since been decommissioned. For these reasons, YCWA did not include these facilities in the inventory, condition, and accessibility evaluations. Because the environmental conditions have changed at these two sites and YCWA has noted these changes in the interim technical memorandum, it would not be appropriate to conduct a facilities condition assessment at these campgrounds. Therefore, pursuant to section 5.15(d)(4) of the Commission's regulations, the study plan should be modified to eliminate Cottage Creek Campground and Burnt Bridge Campground from the *Recreation and Visitor Use Surveys Study* due to changes in the environmental conditions.

The approved study plan did not specify that the facility condition assessment include an evaluation of outdated, out of code conditions for existing recreation facilities at the project, nor did the study plan specify how the results were to be analyzed or presented. Further, the list of study sites for the inventory and evaluation of the facility condition and use impacts assessment did not include trailheads like 8-ball and

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<sup>21</sup> The target number of surveys for the Recreation Use and Visitor Surveys study was 762; YCWA completed 830 surveys.

<sup>22</sup> Page 17 of the Interim Technical Memorandum 8.1 filed by YCWA on December 3, 2013.

Schoolhouse.<sup>23</sup> For these reasons, Forest Service's proposed modifications to the *Recreation Use and Visitor Surveys Study* do not meet the criteria for study modification listed under section 5.15(d), because YCWA followed the protocol of the approved study plan. However, we note that both the photographic documentation of facilities provided in the interim technical memorandum and the data gathered from visitor surveys that YCWA would provide in the final technical memorandum should provide additional information on existing conditions, use, and visitor preferences at project facilities, including trailheads.

In the approved study, YCWA estimated a target number of visitor surveys (762 surveys) based on 2009 recreation use data. YCWA further determined a target number of surveys for each study site based on that same 2009 data and made reasonable target estimates on study sites that did not have recreation use data specific to those sites. Additionally, the approved study plan states that YCWA would make every attempt to secure the target number of surveys identified by site or site groupings but there may be sites where the target cannot be met.

We agree with YCWA that the target number of visitor surveys determined in the approved study was meant to be an estimate, not a requirement. Further, based on additional survey numbers provided in its response to comments, YCWA has not only met the overall target number of visitor surveys but it has met or exceeded the target number of surveys at 12 out of the 19 specified study sites. We conclude that YCWA conducted the study according to the approved study plan; therefore, pursuant to section 5.15(d) of the Commission's regulations, modifying the study to conduct additional visitor surveys is not necessary.

The Forest Service also requested that residents from Brownsville, Challenge, and Clipper Mills be included in the recreation focus groups. The approved study plan required YCWA to conduct up to four focus group meetings for both the Camptonville and Oregon House/Dobbins communities. Although the Brownville, Challenge, and Clipper Mills communities are in general proximity to the project, due to the distance from the project, these communities were not included in the resident focus groups. Further, Forest Service has not provided any new information that would warrant a study modification as per section 5.15(d) of the Commission's regulations. However, we note that the recreation use and visitor survey would provide use data on all visitors, including any visitors from Brownville, Challenge, or Clipper Mills.

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<sup>23</sup> Table 5.3.1-1 in the Revised Study Plan filed by YCWA on August 17, 2011, and approved by the Commission on September 30, 2011.

### Staff Recommendation

We recommend that study be modified to eliminate Cottage Creek Campground and Burnt Bridge Campground from the *Recreation and Visitor Use Surveys Study* due to a change in the environmental conditions.

### **Primary Roads and Trails (Study 9.1)**

The goal of the *Primary Roads and Trails Study* was to determine if continued use, operations, and maintenance of primary project roads and trails would result in adverse effects on the environment

### Requested Study Modification

The Forest Service requested that YCWA modify the *Primary Roads and Trails Study* to include assessment of the following roads and or road segments: (1) access to boat-in campground from Road E21 to east shore (Willow Creek arm); (2) Cottage Creek Campground Loop from Yuba County Road 169 into Section 24; (3) Moran Cove from the end of the Yuba County Road to the Day Use Area; (4) Moran Cove Spur from the Day Use area up into the drainage; (5) all entrances to the Schoolhouse Campground, Hornswoggle Campground, and Sunset Vista Point; (6) access to Dark Day facilities (segment of Yuba County Road 157); and (7) access to Cottage Creek facilities (segment of Yuba County Road 169).

The National Park Service also requests YCWA modify the study to include both the access to Dark Day facilities and Cottage Creek facilities.

Forest Service additionally requested that the roads listed in table 1 of its comments filed on January 25, 2013, should be considered as project recreation roads and added to the study.

Table 1. Historic Use and Potential Future Recreation Access Roads Identified by the Forest Service.

<b>FS Road Number</b>	<b>Road Name</b>	<b>Begin</b>	<b>End</b>	<b>Segment Length (Miles)</b>
18N08	Camp	YC	Sec 11	0.91
18N09	Ground	18N07	Sec 14	0.60
18N10	Wreck	YC 129	Sec 14	0.59
18N15	Slide Road	Yuba County 169	Sec 24	0.60
19N05	Cloudy	19N09	Sec 27	1.84
19N26	Reservoir	19N28	Sec 12	1.65
19N28	Bullards	19N00	Sec 12	1.20

Unnumbered	Off County Rd. 108	Yuba County 108	Sec 24 (near lake shore)	1.80
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### Comments on the Study Modification

YCWA states that although the Forest Service proposes that it include the access to boat-in campground from Road E21 to east shore (Willow Creek arm) in the roads assessment, the Forest Service provided no specific locality information, and YCWA is unaware of an existing road or boat-in campground at this location.

YCWA also notes that two of the road segments proposed by Forest Service have already been inventoried. The Cottage Creek Campground Loop from Yuba County Road 169 into Section 24 was included in the approved study, and a condition inventory has been performed on this road segment, as noted in Tables 2.1-2 (page 6) and table 3.1-1 (page 29) of its December 23, 2012 technical memorandum. YCWA also indicates that the Moran Cove Spur from the Day Use area up into the drainage is currently blocked by boulders placed by the Forest Service to prohibit vehicle traffic and to encourage use of the corridor as a trail. YCWA states it included this corridor as a trail segment in Study 8.1, *Recreation Use and Visitor Surveys*, as noted on page 9 of Technical Memorandum 8.1.

YCWA states that the entrances to the Schoolhouse Campground, Hornswoggle Campground, and Sunset Vista Point are all approximately 100 feet in length and are entirely within the right-of-way of County Road 8. YCWA also notes that the access to Dark Day facilities (segment of Yuba County Road 157) and the access to Cottage Creek facilities (segment of Yuba County Road 169) are Yuba County roads. YCWA states because these roads are all owned by the county, it does not have the authority to modify or maintain these roads outside of an agreement with Yuba County. YCWA does not propose to add or reassess these road segments as part of its study.

YCWA has agreed to add the segment of Moran Cove from the end of the Yuba County Road to the Day Use Area as a primary project road and conduct an assessment of the road condition if the current landowner over which the road passes consents.<sup>24</sup>

### Discussion

As indicated above, the primary goal of the Primary Roads and Trails Study was to determine if continued use, operations, and maintenance of primary project roads and trails would result in adverse effects on the environment. Based on the Primary Roads

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<sup>24</sup> YCWA noted in its response to comments filed on February 25, 2013, that this segment of Moran Road crosses about 0.1 mile of private land.

and Trails Study approved on September 30, 2011, and the December 3, 2012 technical memorandum, we conclude that YCWA followed the approved study plan.

YCWA states that it is unaware of existing access to a boat-in campground from Road E21 to east shore (Willow Creek arm) and the Forest Service does not provide further information on this proposed road or recreation facility. For this reason, we conclude Forest Service's recommended modifications to the Primary Roads and Trails Study does not meet the criteria for study modification listed under section 5.15(d), because the original study followed the approved study and no new information was provided on a change in environmental conditions or the discovery of an existing project facility.

YCWA noted that two of the road segments proposed by the Forest Service, Cottage Creek Campground Loop from Yuba County Road 169 into Section 24 and Moran Cove Spur from the Day Use area up into the drainage, have already been inventoried under studies 9.1 and 8.1, respectively. Our review of YCWA's technical memorandum indicates the same.

YCWA states that the entrances to the Schoolhouse Campground, Hornswoggle Campground, and Sunset Vista Point are all within the county right-of-way, and access to Dark Day facilities (segment of Yuba County Road 157) and the Cottage Creek facilities (segment of Yuba County Road 169) are Yuba County roads; therefore, it does not have the authority to modify or maintain these roads. However, if these roads serve as the primary access to project recreation facilities, they are considered to be project roads. We note that all roads included within the existing or future project boundary are the responsibility of YCWA to maintain over the term of a new license. Based on the new information presented by the Forest Service regarding project roads, we recommend that YCWA modify Study 9.1 to include an assessment of these roads.

Finally, the Forest Service proposes eight road segments with historical or potential future use that should be considered as project roads and included in the study. However, the Forest Service did not provide any information on the historical use or the potential future use of these road segments. The goal of this study was to assess existing project roads, not roads that were used historically or roads that may or may not be used to access project recreation facilities or opportunities in the future. For this reason, the Forest Service's proposed modification to include these road segments in the *Primary Roads and Trails Study* does not meet the criteria for study modification listed under section 5.15(d), because the original study followed the approved study and no information was provided on the existing use of the proposed road segments.

Staff Recommendation

We recommend that YCWA modify the study to include an assessment of the entrances to the Schoolhouse Campground, Hornswoggle Campground, and Sunset Vista Point and the access to Dark Day facilities (segment of Yuba County Road 157) and the Cottage Creek facilities (segment of Yuba County Road 169) in the Primary Roads and Trails Study.

## II. NEW STUDIES

### Fish Stranding Surveys

#### Recommended New Study

NMFS reports that it and other relicensing participants observed, on October 25, 2012, YCWA's operation of the partial-bypass.<sup>25</sup> As reported by NMFS, discharge from the partial-bypass resulted in a plume of water, extending approximately 115 feet downstream and 60-70 feet vertically in the air, cascading onto the river channel and bank. NMFS summarizes the operation of the partial-bypass as discharging approximately 300 cfs for approximately 4 hours in the morning and shutting down at about noon. NMFS reports that shortly after the shut-down of the partial-bypass, a "fresh" adult Chinook salmon carcass was discovered in a crevice behind a large boulder approximately 15 feet from the channel's wetted edge in an area that had been under the plume of the discharge. NMFS specifically states that, after the partial-bypass was closed, channelized flow could be seen draining back to the river from area the carcass was found. As such, NMFS suspects that this fish became stranded on the stream bank as a result of YCWA's operation of the partial-bypass. Therefore, NMFS requested that YCWA provide historical information on the operation of the partial-bypass including dates, duration, and discharge rate. Additionally, NMFS requested that as part of study 7.11 and during the 2013 study season, YCWA conduct stranding surveys along the right stream bank, for approximately 250 feet downstream, immediately following any use of the partial-bypass to check for stranded fish (study criterion 1).

#### Comments on the Study

YCWA states that the likelihood of adult salmon stranding as a result of the operation of the partial-bypass is "very low" and suspects that the salmon was not stranded as a result of project operations. Instead, YCWA believes the fish was naturally deceased after spawning and implies that the carcass may have washed up on shore or transported to its location by a predator. Therefore, YCWA does not believe that the additional effort to conduct stranding surveys after operation of the partial-bypass is warranted.

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<sup>25</sup> The partial-bypass is integral with the Narrows 2 powerhouse and has a hydraulic capacity of 650 cfs. The partial-bypass is utilized when partial flow (up to 650 cfs) of the Narrows 2 facility's hydraulic capacity needs to be bypassed around the turbine or when the Narrows 2 full-bypass (constructed in 2008)--which has a hydraulic capacity of 3,000 cfs--must be augmented. The total hydraulic capacity of the Narrows 2 penstock is 3,400 cfs.

### Discussion

The purpose of Study 7.11 is to determine how continued operations and maintenance of the Narrows 2 powerhouse facilities affect anadromous fish, especially federally-listed species. While it is unclear how the salmon carcass arrived at the location in which it was found, the timing of its discovery (within an area on the stream bank that had been wetted by the partial-bypass discharge) is cause for concern. Therefore, the new information provided by NMFS necessitates this new study pursuant to section 5.9(b)(4) of the Commission's regulations. Standing surveys in this area, as requested by the NMFS, could provide this additional information with respect to potential project effects on anadromous salmonids, the primary goal of Study 7.11 (study criterion 4). Additionally, while the NMFS did not support its request for historical information on the operation of the partial-bypass, in the event stranding surveys demonstrate operation of the partial-bypass is contributing to salmonid stranding, the historical operational data could be used to assess the frequency of the potential effect and the appropriateness of potential license conditions (study criterion 5).

### Staff Recommendation

YCWA should develop and implement a stranding survey study. YCWA should conduct this study immediately after operations of the partial-bypass cease. To ensure the stranding survey is consistent with generally accepted practices in the scientific community (study criterion 6), YCWA should develop a protocol after consultation with the NMFS, FWS, and California Fish and Wildlife, and include provisions for documenting location of stranded fish, condition of carcass (e.g., gravid, spent, signs of hemorrhage, rigor-mortis, decomposition, or wounds likely inflicted by predators), and include methods for documenting and handling any live fish that may be discovered. The stranding survey study and associated survey protocols should be filed with the Commission for approval by May 15, 2013.

Results of the stranding surveys should be included in study report for Study 7.11. Additionally, if results of the stranding survey indicated that operation of the partial bypass may be affecting salmonids, YCWA should include a summary of the historical operation of the partial-bypass, including frequency of use, seasonal use data, and typical duration of use.

Costs associated with the implementation of stranding surveys following the operation of the partial-bypass would be marginal and essentially associated with report preparation because a person who could conduct the stranding surveys would already be on-site during operational changes (study criterion 7).<sup>26</sup>

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<sup>26</sup> As discussed above, under NMFS requested modification to Study 7.11, *On-Shore Visual Counts and Fish Observations*, *Staff Recommendation*, we recommend that YCWA provide for shore-

## Mercury Transport and Speciation

### Recommended New Study

California Fish and Wildlife and FWN each requested that YCWA develop and conduct a new study to assess project effects on transport and speciation of mercury. While FWN recognizes that data collected by YCWA's *Bioaccumulation* study (Study 2.4) is useful for establishing fish consumption advisories, it states that the study results would not support an evaluation of potential project effects on mercury transport and speciation. California Fish and Wildlife does not indicate why the additional study would be necessary.

FWN indicates results from approved Study 2.3, *Water Quality*, appear to demonstrate a positive correlation between total suspended sediment and the concentration of mercury in the tailraces for Colgate powerhouse and the Narrows 2 powerhouse, and therefore, demonstrate evidence of a project effect. FWN indicates that two new independent studies<sup>27</sup> (Fleck et al., 2011; Marvin-DiPasquale et al., 2011) provide merit to its hypothesis that hydropower operation may increase the yield of toxic methylated mercury, to downstream reaches by converting elemental or particulated mercury into a more reactive form (reactive or dissolved mercury) – a process known as speciation. FWN notes that reactive mercury is more easily converted to the methylated form. FWN recommends that, using methodology recently developed to detect reactive mercury, YCWA sample reactive mercury in project tailraces and simultaneously at project spill areas, wherein water passing downstream of the project is not subject to passing through hydropower facilities. FWN implies that the difference between the recorded measurements would provide an indication of the project's effect upon the speciation and resulting downstream transport of reactive mercury.

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based anadromous salmonid counts and behavior observations in the vicinity of the Narrows 2 project facilities during and after each operational change that shifts flows among the Narrows 2 powerhouse, bypasses, and the Narrows 1 powerhouse.

<sup>27</sup> Fleck, J.A., C.N. Alpers, M. Marvin-DiPasquale, R.L. Hothem, S.A. Wright, K. Ellett, E. Beaulieu, J.L. Agee, E. Kakouros, L.H. Kieu, D.D. Eberl, A.E. Blum, and J.T. May. 2011. The effects of sediment and mercury mobilization in the South Yuba River and Humbug Creek Confluence Area, Nevada County, California: Concentrations, speciation, and environmental fate—Part 1: Field characterization. U.S. Geological Survey Open-File Report 2010-1325A. 104 pp.

Marvin-DiPasquale, M., J.L. Agee, E. Kakouros, L.H. Kieu, J.A. Fleck, and C.N. Alpers. 2011. The effects of sediment and mercury mobilization in the South Yuba River and Humbug Creek confluence area, Nevada County, California: Concentrations, speciation and environmental fate—Part 2: Laboratory Experiments. U.S. Geological Survey Open-File Report 2010-1325B. 54 pp.

### Comments on Study

YCWA states that available data from approved studies 2.3, *Water Quality*, and 2.4, *Bioaccumulation* provide information regarding mercury in project waters. YCWA notes that study 2.3 measured mercury and methylmercury levels in project reservoirs and in stream reaches affected by the project and study 2.4 employed the Water Board's Surface Water Ambient Monitoring Program's methodologies, the results of which, could be used to develop mitigation measures such as consumption recommendations, for targeted fish species in the three project impoundments (New Bullards Bar Reservoir, Our House Diversion Dam Impoundment and Log Cabin Diversion Dam Impoundment). YCWA disagrees that the cited new information used to form the hypothesis for the new study is relevant to the project. YCWA also notes that the requested methodology would be unable to determine the source of mercury, and therefore, the requested study would not inform the development of licensing requirements

### Discussion

FWN has cited the availability of significant new information, both in the form of results gathered as a result of approved studies and from recently completed studies performed elsewhere as a primary basis for the request for a new study of mercury transport and speciation.

We agree with FWN that YCWA's study results seem to indicate that the transport of mercury increases with increasing turbidity. However, existing information in scientific literature clearly establishes that suspended sediment can transport mercury to downstream waters (Gummer, 1980; Caldwell et al., 2000).<sup>28</sup> Mercury concentrations may vary in association with hydrologic events or other environmental events, such as precipitation and wildfires (Balogh, et al., 1998), and sources of mercury vary widely (Rudd, 1995; Branfireun et al., 1996; Norton et al., 2000).<sup>29</sup> Furthermore, scientific

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<sup>28</sup> Caldwell, C.A., C.M. Canavan, and N.S. Bloom. 2000. Potential effects of forest fire and storm flow on total mercury and methylmercury in sediments of an arid-lands reservoir. *The Science of the Total Environment*. 260:125-133.

Gummer, W.D. 1980. Variability and loading of mercury in a small prairie river. *Bulletin of Environmental Contamination and Toxicology*. 25:530-536.

<sup>29</sup> Balogh, S.J., M.L. Meyer, and K.D. Johnson. 1998. Diffuse and point source mercury inputs to the Mississippi, Minnesota, and St. Croix Rivers. *The Science of the Total Environment*. 213:109-113.

Branfireun, B.A., A. Heyes, and N.T. Roulet. 1996. The hydrology and methylmercury dynamics of a precambrian shield headwater peatland. *Water Resources Research*. 32:1785-1794.

literature does not necessarily yield evidence that reservoirs result in either a large decrease or increase in mercury bioaccumulation relative to that observed in the upstream river or downstream tailwaters (Philips et al., 1987; Giesy et al., 1994; Giesy et al., 1995; Brigham et al., 1999).<sup>30</sup> Therefore, we do not agree with FWN that YCWA's study results necessarily indicate a causal nexus to project-related effects (study criterion 5), or that the existing study results are relevant as significant new information material to the study objectives, pursuant to §5.15(e)(4) of the Commission's regulations.

FWN indicates that the findings of two new independent studies referenced above (Fleck et al., 2011; Marvin-DiPasquale et al., 2011) suggest that operation of hydropower facilities may act as a mechanism through which mercury speciates to a more reactive form. Our review of these studies indicates that the investigators reported on increases in downstream mercury concentrations resulting from reservoir suction dredging operations, not hydroelectric operations. Dredging, unlike the operation of most conventional hydropower intakes, disturbs sediments deep in a reservoir, known sinks for mercury, and sources for methylated mercury. The cited studies do not indicate, nor does FWN explain how the results of the new dredging studies are directly transferable to conventional

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Norton, S.A., C.T. Hess, J.A. Cangelosi, M.J. Norris, E.R. Perry, J.S. Kahl, and D.L. Courtemanch. 2000. Discrimination between regional and point-source atmospheric Hg pollution using sediment records from drainage lakes, Maine, USA. 11th Annual Conference on Heavy Metals in the Environment. University of Michigan, School of Public Health, Ann Arbor, Michigan (CD-ROM).

Rudd, J.W. 1995. Sources of methylmercury to freshwater ecosystems: A review. *Water, Air, and Soil Pollution*. 80:697-713.

<sup>30</sup> Brigham, M.E., D.P. Krabbenhoft, M.L. Olson, and J.F. DeWild. 1999. Methylmercury in flood control impoundments and natural waters of northwestern Minnesota, 1997-1998. Mercury in the Environment --Proceedings of a Specialty Conference. Air and Waste Management Association, Minneapolis, MN. Sept.15-17, 1999. p. 202.

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Philips, G.R., P.A. Medvick, D.R. Skaar, and D.E. Knight. 1987. Factors affecting the mobilization, transport, and bioavailability of mercury in reservoirs of the Missouri River basin. Fish and Wildlife Report 10. U.S. Fish and Wildlife Service, Washington, D.C.

hydropower operations. Therefore, we do not agree with FWN that the cited studies are relevant as significant new information material to the study objectives that would justify as new study as per section 5.15(e)(4) of the Commission's regulations.

As previously noted, FWN recommends that YCWA sample reactive mercury in project tailraces and simultaneously at project spill areas, wherein water passing downstream of the project is not subject to passing through hydropower facilities. First, we note that the requested methodology appears to require the sampling of water from different origins in the water column. Surface waters that spill over dams are known to contain less concentrations of mercury than deep, anoxic, hypolimnetic waters that typically enter hydropower intakes. (Regnell, 1997; Canavan et al., 2000).<sup>31</sup> Therefore, the study design appears biased. Secondly, we agree with YCWA and note that the requested methodology would not provide the capability to determine the source of reactive mercury. Additionally, the requested methodology would be incapable of identifying the mechanism responsible for the speciation of any reactive mercury found in tailraces. Therefore, we question how the study results could be used to identify specific project operational effects, and therefore, how the results would inform the development of license requirements and note that the requested methodology does not specify whether or not results could support any form of statistically-defensible predictive output (study criterion 6).

We agree with YCWA that results of approved studies 2.3, *Water Quality*, and 2.4, *Bioaccumulation* provide adequate information regarding mercury in project waters, including concentrations of mercury and methylmercury, as well as information on bioaccumulation. We conclude that FWN has not provided the evidence necessary to justify a new study as per section 5.15(e)(4) of the Commission's regulations

#### Staff Recommendation

None.

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<sup>31</sup> Canavan, C.M., C.A. Caldwell, and N.S. Bloom. 2000. Discharge of methylmercury enriched hypolimnetic water from a stratified reservoir. *The Science of the Total Environment*. 260:159-170

Regnell, O., G. Ewald, and E. Lord. 1997. Factors controlling temporal variation in methyl mercury levels in sediment and water in a seasonally stratified lake. *Limnology and Oceanography*. 42:1784-1795

## **American Peregrine Nesting**

### Recommended New Study

The Forest Service requested that YCWA complete a new American peregrine falcon nesting study. The study area would include suitable habitat within 0.25 mile of New Bullards Bar dam and a nearby quarry, which is located on Forest Service land. The Forest Service based the need for surveys on observations by Forest Service biologists near New Bullards Bar dam in July 2010 and January 2013, which may indicate active nesting.

The Forest Service believes that project-related operation and maintenance could potentially affect nesting peregrine falcons (study criterion 4) and provided a generally accepted study methodology (study criterion 6).

### Comments on the Study

Although YCWA did not survey for nesting peregrine falcons, YCWA identified suitable habitat for the falcon in the technical memorandum required by Study 7.6, *CESA-Listed and Fully Protected Wildlife—California Wildlife Habitat Relationships*.

YCWA notes that it does not propose any activities near New Bullards Bar dam that would disturb nesting falcons; if such activities were proposed in the future in the vicinity of peregrine falcon nesting habitat as identified in the technical memorandum, nesting falcons could be protected by adhering to appropriate limited operating periods or surveys could be conducted at that time.

### Discussion

The multiple observations of falcons provide evidence that peregrine falcons could be nesting in the project area. Any maintenance activities conducted at or near New Bullards Bar dam or disposal of dredged materials at the quarry could adversely affect falcon nesting if those activities occurred during the nesting season and in close proximity to the nest. However, given the lack of maintenance activities planned, the known locations of suitable nesting habitat, the availability of measures to prevent disturbance to falcons, and ability to conduct recent surveys prior to any future activities, we do not believe there is a need for the surveys to inform license conditions (study criterion 5).

### Staff Recommendation

None.

## **Bullfrog Presence in FERC Project Boundary**

### Recommended New Study

FWS requested a new study to determine the extent of bullfrog occupancy in project waters and the amount of suitable CRLF habitat within the project boundary where CRLFs have been displaced. FWS believes that information on bullfrog occupancy developed under studies 3.4 and 3.6 only covers a part of the stream reaches affected by the project and potentially colonized by bullfrogs (study criterion 4). FWS notes that project impoundments create open-water conditions that attract bullfrogs and flows downstream of impoundments create warmwater habitats that support bullfrog breeding (study criterion 5). FWS believes that the requested auditory surveys for adult male bullfrog vocalizations during mid-summer would provide an understanding of where bullfrog breeding occurs so that bullfrog control measures can ultimately be implemented in those areas where bullfrogs are likely to predate upon or extirpate CRLFs or foothill yellow-legged frogs.

FWS recommends that auditory surveys for adult male bullfrog vocalizations during mid-summer be accomplished by walking project creeks and rivers, and by boating project reservoirs (study criterion 6).

FWN supports FWS' study request.

### Comments on the Study

YCWA believes that substantial information on the extent of bullfrog distribution in the project boundary and on project-affected streams has already been compiled and summarized in Technical Memorandum 3-4. YCWA explains that bullfrogs were not heard or observed at Log Cabin diversion dam impoundment, despite considerable field efforts by YCWA, including work in the summer. It also states that one adult bullfrog was found during fish collection at Our House diversion dam impoundment; however, no tadpoles were found and bullfrogs were not heard during other field studies at the impoundment. YCWA notes that bullfrogs have been heard at Moran Cove on New Bullards Bar reservoir. YCWA also notes that project operation has no ability to affect the suitability of habitat for bullfrogs downstream of Our House and Log Cabin diversions.

YCWA does not believe that FWS presented study methods that are scientifically valid and accepted. YCWA estimates that the surveys would cost \$30,000 to \$40,000, more than the \$10,000 estimated by FWS.

### Discussion

Bullfrogs are a major threat to California red-legged frogs. Bullfrogs not only prey upon CRLF, but they also compete for space and food. Even though bullfrogs are found in similar habitats throughout the Sierra Nevada, the presence of bullfrogs identified as a result of Studies 3.4 and 3.6 could be considered new information that was not available before completion of the studies. FWS, however, did not previously comment on the lack of information on the distribution of bullfrogs in the project area.

FWS provided a general description of the survey methods, but did not provide much detail (e.g., time of day, number of surveys, weather conditions, access, etc.) as required by study criterion 6.

Although FWS provided a general nexus between the project and presence of bullfrogs, it did not provide specific information to justify the need to conduct bullfrog surveys for the entire project area (study criterion 5). Not all project reaches that are affected by project operation would influence the presence of bullfrogs, and some habitats would not be suitable for CRLF regardless of bullfrog presence. Further, it is not clear how the information from the study would lead to license requirements (study criterion 5). Not all areas would be good candidates for bullfrog control as bullfrog control has generally been restricted to small ponds; control of large reservoirs and rivers has not been shown to be practical.<sup>32</sup>

### Staff Recommendation

We recommend that YCWA and FWS continue informal ESA consultation on the need for bullfrog surveys.

## **Narrows 2 Powerhouse Entrainment**

### Recommended New Study

FWS reiterated its request for a Narrows 2 powerhouse entrainment study, noting an outstanding need to address *O. mykiss* (steelhead/rainbow trout) entrainment and outmigration at the Narrows 2 powerhouse.

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<sup>32</sup> Adams, M.J., and C.A. Pearl. 2007. Problems and opportunities managing invasive bullfrogs-- Is there any hope? In: Gherardi, F., ed., *Biological Invaders in Inland Waters: Profiles, Distribution, and Threats*, Chapter 38. pp. 679-693.

### Comments on the Study

YCWA said that the request was a reiteration of an earlier request and that the criteria for initiating a new study had not been met. YCWA asserted that the proposed study fell short of several of the required criteria for approval, including a nexus between project operations and the resources to be studied, steelhead trout. YCWA also noted that it was not generally accepted in the scientific community that *O. mykiss* that exhibit the natural tendencies of an anadromous steelhead trout were even present in Englebright reservoir.

### Discussion

In the original study plan determination, it was determined that the request for an entrainment study at the Narrows 2 Powerhouse was premature, pending the results of Study 3.7, *Reservoir Fish Populations* and Study 3.11, *Entrainment*.

Study 3.7, *Reservoir Fish Populations* is complete. The study reported that the majority of the *O. mykiss* captured in Englebright reservoir were taken near the surface by electrofishing. Temperatures near the surface never exceeded 20°C making it unlikely that the fish needed to seek deeper water to find preferred temperature and DO conditions. The fish caught in deep water, near the intake, included two rainbow and one brown trout, representing 20 percent of the catch at that site, suggesting that only a small portion of fish capable of frequenting deep water would be found in proximity of the intake.

Study 3.11, *Entrainment*, analyzes the potential entrainment of fish from the Middle Yuba River into the Lohman Ridge diversion tunnel and from Oregon Creek into Camptonville diversion tunnel. The tunnels divert water to Bullards Bar reservoir. The Commission staff modified the applicant's proposed study plan to evaluate the project effects on the population as a whole and for the duration of a season's operation. The modified study plan was designed to detect a migration event that occurs in response to a spike in streamflow, shift in water temperature, or as a result of a biological or other environmental trigger. We noted at the time that the study might provide information on adfluvial downstream migrations that would inform the need for additional entrainment analysis at Narrows 2 intake. Study 3.11 is not yet complete.

We believe that the proposed entrainment study still lacks a connection between project operations and the resource, steelhead trout, to be studied (study criterion 4) Furthermore, Study 3.11 is still underway and its results would better inform the Commission of the need for additional information (study criterion 3).

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Staff Recommendation

None.

**Engineering Structural Inspection of Slope near Dark Day Boat Launch**Recommended New Study

The Forest Service requested YCWA perform an Engineering Structural Inspection of the eroding bank near Dark Day Boat Launch. Erosion and sedimentation from an unstable slope above the facility is affecting access to the boat launch area. Previous attempts to stabilize the slope have not been successful. The Forest Service requests that YCWA complete an engineering structural inspection of the slope in order to determine if a permanent solution is possible.

Comments on the Study

YCWA recommended that this study not be adopted because the Forest Service did not describe the need for the study in light of existing information (study criterion 4), nor provide a methodology (study criterion 6), nor provide a level of effort or cost for the study (study criterion 7). YCWA also states that the Forest Service failed to identify the slope instability issue in the initial study development process and gave no reason as to why they did not make this study request earlier.

Alternatively, YCWA suggests that the solution to the problem is to address the issue as a PM&E measure as part of the licensing process, or outside the relicensing process if earlier resolution is appropriate.

Discussion

The Forest Service failed to meet the requirements for several study criteria (4, 6 and 7) and did not explain why the request was not made earlier.

Erosion and sedimentation control measures to remediate a specific site are typically handled as PM&E measures in a license application. YCWA has expressed a willingness to work with the Forest Service to resolve this issue either as a PM&E measure in the relicensing process, or sooner, if need be.

Staff Recommendation

None.

## **Project Effects on Anadromous Fish Habitat and Passage Upstream of Englebright Dam**

### Recommended New Study

NMFS requested that YCWA conduct a suite of eight studies (including 47 elements) related to the effects of the project on anadromous fish habitat and fish passage upstream of Englebright dam. NMFS previously recommended these studies in a March 7, 2011 letter as part of its comments on YCWA's revised study plan. NMFS believes that issuance of the Biological Opinion for operation of the Army Corps of Engineers' Englebright dam,<sup>33</sup> issued on February 29, 2012, is new information that now justifies the need for these studies. NMFS estimates that these studies would cost between \$1 and \$2 million.

### Comments on the Study

YCWA commented that given the Congressional and economic hurdles facing potential introduction of anadromous fish upstream of Englebright dam, introduction is not reasonably certain to occur.

### Discussion

The Army Corps of Engineer's Englebright dam currently blocks upstream fish passage. However, all the project facilities, with the exception of Narrows 2 powerhouse, are located upstream of Englebright dam. We addressed these NMFS-recommended studies in our September 30, 2011, study plan determination. We found that NMFS failed to demonstrate a nexus between project effects and providing anadromous fish passage upstream of Englebright dam (study criterion 5). In a letter dated December 9, 2011, the three-person Formal Dispute Resolution Panel agreed that there was no nexus to project effects because anadromous fish are not present above the dam.

NMFS justifies its request for these new studies based on new information, the issuance of a Biological Opinion to the Army Corps of Engineers. However, despite this issuance, it remains uncertain when fish passage might occur upstream of Englebright dam, how fish passage would be accomplished, or which part of the basin would be targeted. To our knowledge, the Army Corps of Engineers has not developed, approved, or funded any fish passage plans. Further, the Biological Opinion is under revision and is under legal review. Therefore, we conclude there is no "new information" with respect to project effects on anadromous fish and, therefore, NMFS' request for new studies does

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<sup>33</sup> Biological Opinion on the U.S. Army Corps of Engineers' Continued Operation and Maintenance of Englebright Dam and Reservoir, Daguerre Point Dam, and Recreational Facilities on or around Englebright Dam.

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not satisfy the criteria new studies set forth by section 5.15(d) of the Commission's regulations.

Staff Recommendation

None.

Document Content(s)

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