

**From:** Staples, Rose  
**Sent:** Thursday, January 03, 2013 3:33 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Minami Amber; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pinhey, Nick; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Ulibarri, Nicola; Vasquez, Sandy; Verkuil, Colette; Viera, Chris; Wantuck, Richard; Welch, Steve; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Relicensing Newsletter-Vol 2 Issue 2 - Released  
**Attachments:** Don Pedro Newsletter Vol 2 Issue 2 Dec 2012.pdf

Attached is a copy of the latest issue of the Don Pedro Project Relicensing Newsletter. A copy has also been posted on the relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com) (Introduction Tab/Announcements).

Volume 2 | Issue 2



# Don Pedro



*A newsletter about the relicensing of the Don Pedro Project*

## Relicensing studies set to be reviewed

A major milestone of the Don Pedro Project relicensing process will occur January 17, 2013, when the Initial Study Report (ISR) is issued by the Districts and filed with the Federal Energy Regulatory Commission (FERC).

The ISR is a requirement of the Integrated Licensing Process as overseen by FERC. The ISR will contain progress reports on the more than 30 studies being

**MORE INSIDE:** Take a look inside for more detailed information about 2012 relicensing studies.

implemented by the Districts as required by FERC's December 2011 Study Plan Determination.

This large document will serve as part of the record of official information that FERC must consider as it deliberates over issuance of a new license, and what new conditions might be appropriate to accompany a new license.

This issuance of the ISR will then be followed up by an Initial Study Report Meeting on January 30-31, 2013 to be held in Modesto. Representatives from FERC will attend this public meeting along with other interested parties. The studies completed will be reviewed, the study results will be summarized and there will be a question and answer session.

Another important date comes 45 days later when relicensing participants can file comments on all the studies and request additional studies.

These dates are in accordance with an Oct. 12, 2012 letter issued to the Districts from FERC detailing target

### Initial Study Plan Meeting

**When:** January 30-31, 2013 | 8 a.m.

**Where:** MID Multipurpose Room, 1231 11th St., Modesto, CA

**What:** Studies will be reviewed, results will be summarized and Q&A will be held.

dates associated with the ISR. FERC issued its 140-page Study Plan Determination (SPD) in late 2011. In it, FERC approved a total of 34 studies to be conducted by the Districts as part of the relicensing process.

Most of the studies involve extensive field work and considerable coordination of logistics to execute the studies efficiently and consistent with the study plans approved by FERC. Some field work began as early as January 2012.



*Studies like the one pictured here will be summarized at a Jan. 30-31 meeting.*

### Important dates

**January 17, 2013**  
*Initial Study Report filed with FERC*

**January 24, 2013**  
*Training for Relicensing Participants interested in using the temperature models*

**January 30-31, 2013**  
*Initial Study Report Meeting*

**February 8, 2013**  
*Districts issue Initial Study Report Meeting Summary*

**March 10, 2013**  
*Relicensing Participants file with FERC any requests for new studies or modifications to studies*

### What's inside

- More than 20 different relicensing studies took place in 2012
- Workshops the cornerstone of public input process

# Dispute resolution process decision

On January 11, 2012, The National Marine Fisheries Service (NMFS) filed a Notice of Study Dispute contesting several aspects of the Federal Energy Regulatory Commission's (FERC) Study Plan Determination issued Dec. 21, 2011 regarding the Don Pedro Project.

As part FERC's Integrated Licensing Process (ILP), a hearing was held on the matter in front of a three-member advisory Technical Panel.

FERC issued its final decision on May 24, 2012, largely agreeing with the Districts' study plans and FERC's Determination, resulting in minor modifications to the Districts' studies. NMFS was disputing FERC's decisions about studies the Districts did not adopt in their plans.

The dispute process is detailed in the ILP regulations and involves the convening of a Technical Panel to consider the areas of dispute, and provide an opinion to FERC's Director of the Office of Energy Projects. The FERC Director makes the final decision giving due consideration to the opinion of the three-member Technical Panel.



## Numerous workshops, meetings highlight importance of public input

Public input is a critical component in the relicensing of the Don Pedro Project. This component is well illustrated in the fact that the Districts have held eight workshops with relicensing participants (RPs) since March 2012.

Three workshops regarding salmon and *O. mykiss* were held. There were three workshops on hydrology and operations modeling and one workshop each held discussing reservoir and river temperature modeling. Here's a rundown of the eight workshops.

Water & Aquatics Resources Study 5 (W&AR-5) Workshop No.1 was held in April 2012 and featured discussions about issues affecting Tuolumne River salmonids. W&AR-5 Workshop No.2 was held in June and covered similar issues in additional detail.

Water & Aquatics Resources Study 2 (W&AR-2) Workshops Nos. 1, 2 and 3 were held in April, September and October, respectively, and focused in areas surrounding Project Operations Model Development and hydrology.

A pair of workshops on Water & Aquatics Resources Study 3 (W&AR-3) discussed a Don Pedro Reservoir Temperature Model in April and October. Additionally, one workshop on the lower Tuolumne River Temperature Model was held in October.

**Eight public workshops regarding Don Pedro relicensing have been held since March 2012.**

### *Socioeconomic Study Plan*

In addition to the workshops, a public meeting discussing the Socioeconomic Study Plan was held in November 2012. The purpose of this meeting was to give an update on the progress of the Socioeconomic Study Plan, share information, seek relevant socioeconomic information from the public, and hear comments with respect to the plan.

The primary goals of the study on socioeconomic resources are to quantify the baseline economic conditions and resources in the region affected by the Don Pedro Project's water supply, flood control, and power benefits. In addition, the study will quantify the socioeconomic effects of the current project operations and develop methodologies and a framework that can be used to evaluate the potential socioeconomic effects of any proposed changes to project operations that may be considered as part of the relicensing process, including scenarios affecting the availability of agricultural and urban water supplies.

As usual, information about upcoming meetings and workshops is available on the relicensing website at [donpedro-relicensing.com](http://donpedro-relicensing.com). Additionally, documents and filings are available.



# Sampling of 2012 studies

As part of the relicensing process, the Districts are wrapping up the numerous studies that took place in 2012.

These include wide-ranging studies of recreation resources, cultural resources, botanical, wildlife and wetlands, and fish and river riparian resources.

What follows is a brief sampling of a few details from selected studies as part of the relicensing process. Reports from these studies and many others will be included in the Initial Study Report (ISR) to be filed Jan. 17, 2013.

## **Spawning Gravel Study (Water & Aquatics Resources Study 4)**

The purpose of the spawning gravel study is to examine gravel availability and spawning utilization as a means of determining the current spawning capacity and spawner/recruit relationships for Chinook salmon and *O. mykiss* in the lower Tuolumne River. Specific information obtained by this study will update information from prior studies in order to:

- characterize the current area, distribution, and use of spawning riffles in the lower Tuolumne River,
- develop average annual gravel transport rates from channel geometry and mapped changes in riffle areas since 1988, and 1999–2000, and
- provide estimates of maximum spawning run sizes supported by the spawning riffles under current conditions.

Bathymetric surveys and fine sediment and gravel mapping were completed in summer 2012. Depth and velocity measurements to include in the assessment of habitat criteria were collected in the field in October 2012 when flows were within suitable salmonid spawning ranges.

## **Amphibians listed under the Endangered Species Act (Terrestrial Resources Studies 7 and 8)**

The specific objectives of these studies are to:

- Identify and map known occurrences of the California Red-Legged Frog and California Tiger Salamander and determine, if appropriate, the closest known breeding locality;

- Evaluate the likelihood that either of these species currently exist in the study area using habitat assessments and historical records;
- Compile incidental observations of these species from other relicensing studies; and
- Provide information that can be used to develop a Biological Assessment and support a Biological Opinion.

GIS-based habitat assessments were completed for the study area. Surveys and field verification of potential habitat were completed between April and June 2012, including site visits during optimum temperatures for observations of the target species. No California Red-Legged Frog or Tiger Salamanders were observed.

## **Don Pedro Recreation Use Assessment (Recreation Resources Study 1)**

The goal of the recreation facility condition, public accessibility, and recreation use assessment is to provide information about the need for maintenance or enhancement of existing recreation facilities to support current and future demand for public recreation at the Don Pedro Reservoir. The objectives of the study are to:

- assess the condition of existing developed recreation facilities at the Don Pedro Project, including dispersed use areas
- estimate present capacity of recreation facilities at the Project to support present and future demand for public recreation (i.e., facility carrying capacity),
- describe the preferences, attitudes, and characteristics of the Project's recreation users
- collect information about current Project recreation activities and future demand for activities, and
- undertake a creel survey in coordination with Study Plan W&AR-17, Reservoir Fish Population.

In accordance with the study plan, visitor surveys have been conducted on a monthly basis since January 2012 at Blue Oaks, Fleming Meadows and Moccasin Point recreation areas. Visitor surveys will continue through December 2012. The facilities inventory and dispersed recreation impact evaluations were conducted in October 2012.





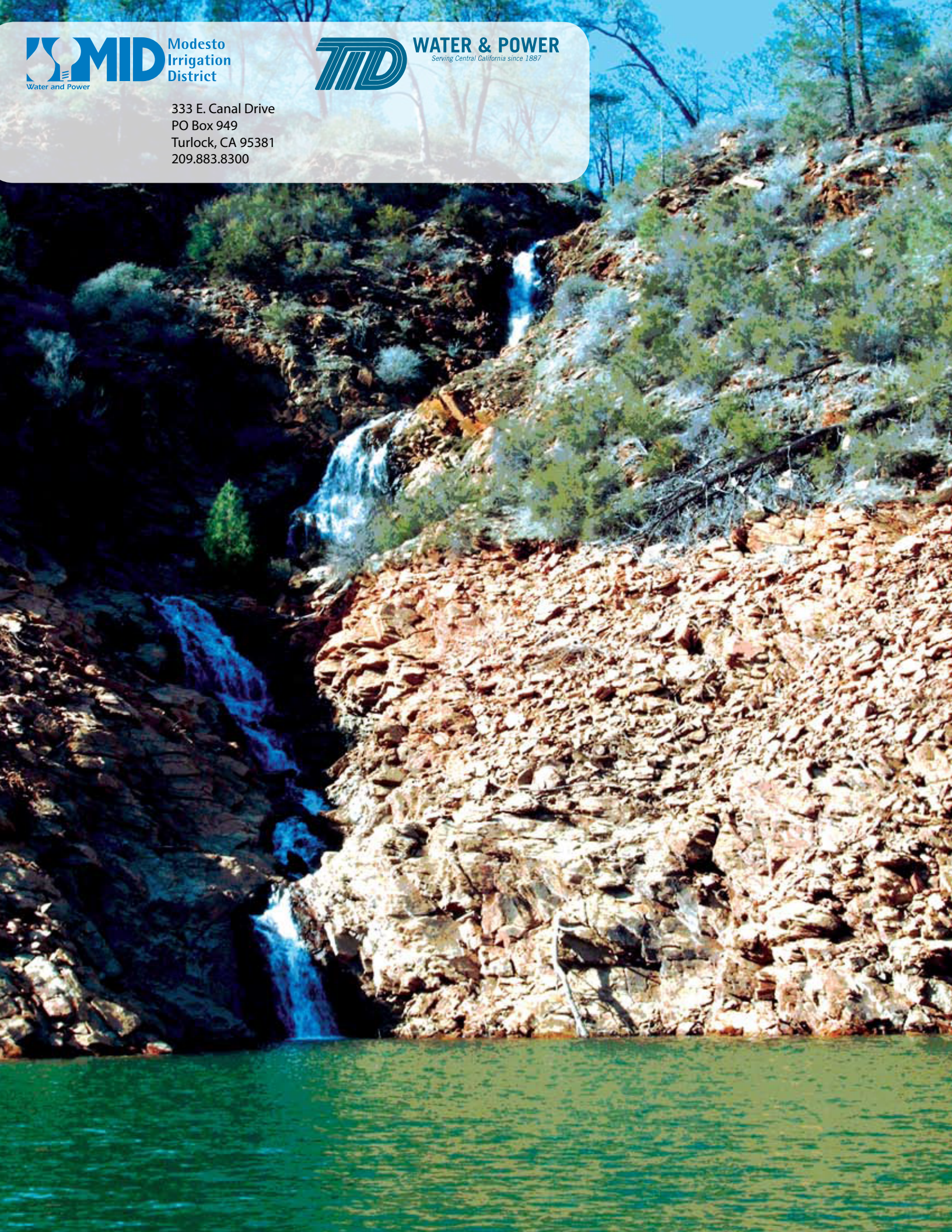


Modesto  
Irrigation  
District



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333 E. Canal Drive  
PO Box 949  
Turlock, CA 95381  
209.883.8300





From: Annie Manji [Annie.Manji@wildlife.ca.gov]

Sent: Tuesday, January 08, 2013 6:48 PM

To: Steve Rotherth; Dave Steindorf; William Jennings; Paul Marko; Bill Lyons; Bob Ott; Jerry Cadagan; Robert Shipley; Steve Welch; Martin Blake; Art Jensen; Nicole Sandkulla; Allison Boucher; Beth Brenneman; James Barnes; James Eicher; Jeff Horn; Lauren Fety; Peggy Cranston; Denean; Rhonda Morningstar Pope; Roselynn Lwenya; Charles Burt; Jenny Hatch; Duane Paul; Steve Pavich; Cindy Charles; Mary Motola; Chris Vierra; Riggs T; Dan Wheeler; Dave Wheeler; John Buckley; Rebecca Cremeen; Royal Robbins; Ann Hayden; Tim Byrd; Ron Slay; Minami Amber; Beniamine Beronia; Mein Janis; Damin Nicole; Frank Winchell; James Fargo; James Hastreiter; Lesley Kordella; Shana Murray; Ron Stork; Robert Hackamack; Maggie Dowd; Vern Shumway; Allison Willy; Deborah Giglio; Michelle Workman; Ramon Martin; Zac Jackson; Julia Jauregui; Harry Williamson; Janice Keating; Jesse Roseman; Chris Ott; Allison Schutte; Ray McDevitt; Timothy Findley; Le, Bao; Loy, Carin; Borovansky, Jenna; Devine, John; Staples, Rose; Mike Marshall; Douglas Wheeler; Ruth Porter; Joseph Lein; Noah Hughes; Todd Sill; Teresa Kinney; Sarah Shakal; Zeke Grader; Justin; Dan Steiner; Art Bowman; Jim Smith; David Linkard; Melissa Powell; George TeVelde; Vicki Stone; Jan Costa; Lloyd Mathiesen; Stanley Rob Cox; Reba Fuller; Kevin Day; Garth Stapley; Jack Bond; Jim Ridenour; Nick Pinhey; Bryan Wilson; Colette Verkuil; P Day; Zahra Hayat; Bill Amerine; Chris Shutes; John Stender; David O Romano; Lynette Asay; David K White; John Wooster; Kathryn Kempton; Larry Thompson; Maria Rea; Monica Gutierrez; Rhonda Reed; Richard Wantuck; Steve Edmondson; Thomas Holley; Stephen Bowes; Dan McDaniel; Jenan Saunders; Milford Wayne Donaldson; Susan Stratton; Mark Buckley; Maryann Moise Derwin; Richard Pool; Jeffrey Cowan; Mike Fleming; Donn W Furman; Ellen Levin; Michael Carlin; Tim Ramirez; William Sears; Marty McDonnell; John Mills; Nicola Ulibarri; Tom Orvis; Wayne Zipser; Michael Martin; Sandy Vasquez; Noah Hume; Scott Wilcox; Reggie Lewis; Tim Colvin; Doug Brewer; Thomas Terpstra; Laura Jensen; Brian Johnson; Chandra Ferrari; Eric Wesselman; Jessie Raeder; Patrick Koepele; Peter Drekmeier; Dan Madden; Ron Yoshiyama; Kevin Richardson; Lisa Holm; Mary Johannis; Peter Barnes; Susan Monheit; Julie Ganteinbein; Richard Roos-Collins; Annee Ferranti; Bob Hughes; Gretchen Murphey; Jennifer O'Brien; Mary Jane Taylor; Stephen Puccini; Tim Heyne; Anita Hellam; Bill Hudelson; Timi Horn; Elaine Gorman

Subject: Re: Don Pedro Initial Study Report 2-Day Meeting AGENDA January 30-31, 2013

Attachments: CDFG\_initial\_study.pdf

FYI

The California Department of Fish and Wildlife (CDFW) filed a letter outlining CDFW objectives for the upcoming ISR and the meeting. It was posted on the FERC website on Dec 21st, right before Christmas (and before we changed our name). As it took me till today to catch up on all the email correspondence I received from FERC around the end of the year, I thought I would highlight



that document for anyone who might be interested but missed seeing it in their mailboxes.

Thank you,  
Annie

\*\*(Please note that as of Jan 1, 2013 our new name is the California Department of Fish and Wildlife (CDFW) and new department web and email addresses took effect).\*\*

Annie Manji  
Statewide FERC Coordinator  
California Department of Fish and Wildlife Water Branch  
601 Locust Street  
Redding, CA 96001  
[Annie.Manji@wildlife.ca.gov](mailto:Annie.Manji@wildlife.ca.gov)



State of California - Natural Resources Agency  
DEPARTMENT OF FISH AND GAME  
Central Region  
1234 East Shaw Avenue  
Fresno, California 93710  
<http://www.dfg.ca.gov>

EDMUND G. BROWN, JR., Governor  
CHARLTON H. BONHAM, Director



December 14, 2012

Via Electronic Submission

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

Robert Nees  
Turlock Irrigation District  
Post Office Box 949  
Turlock, California 95381

Greg Dias  
Modesto Irrigation District  
Post Office Box 4060  
Modesto, California 95352

**Subject: California Department of Fish and Game Objectives for Initial Study  
Report and Meeting, Don Pedro Hydroelectric Project No. 2299,  
Tuolumne River**

Dear Secretary Bose and Messrs. Nees and Dias:

On December 7, 2012, the California Department of Fish and Game (Department or CDFG) received a final meeting agenda submitted on behalf of the Turlock Irrigation District and Modesto Irrigation District (Districts) for the Don Pedro Project (Project) Initial Study Report (ISR) meeting scheduled to be held on January 30-31, 2013. By this letter, the Department respectfully highlights a few of its objectives for the upcoming ISR scheduled to be filed on January 17, 2013, and the subsequent two-day ISR meeting.

The upcoming ISR and meeting are important pre-filing milestones in the Federal Energy Regulatory Commission (Commission or FERC) Integrated Licensing Process (ILP). The Department provides these objectives prior to the ISR and meeting dates in the interest of facilitating a productive and efficient exchange of information. Ideally, the ISR and meeting will serve to update all interested participants on the status of multiple ongoing studies seeking to identify and evaluate Project impacts. In reviewing the meeting agenda, we note that two key water and aquatic resource studies required by the Commission are not explicitly identified as topics of interest by the Districts. The Department is amenable to suggestions from the Districts regarding how to incorporate



our objectives into the ISR and meeting agenda, as long as the topics are fully addressed.

As background, in addition to the ILP relicensing studies, there are parallel study efforts underway pursuant to compliance with the current Project license. The Department is particularly interested in two studies the Commission is requiring pursuant to the July 16, 2009 Order on Rehearing, Amending License, Denying Late Intervention, Denying Petition, and Directing Appointment of Presiding Judge for a Proceeding on Interim Conditions, 128 FERC ¶ 61,035 (Paragraph (F) pages 44-45). Specifically, the Commission ordered as follows:

"The Turlock and Modesto Irrigation Districts (Districts) shall develop and implement an IFIM/PHABSIM study plan to determine instream flows necessary to maximize fall-run Chinook salmon and *O. mykiss* production and survival throughout their various life stages... In connection with the IFIM study, the Districts shall also develop a water temperature model to determine the downstream extent of thermally suitable habitat to protect summer juvenile *O. mykiss* rearing under various flow conditions and to determine flows necessary to maintain water temperatures at or below 68 degrees Fahrenheit from La Grange Dam to Roberts Ferry Bridge." (July 16, 2009 Order, 128 FERC ¶ 61,035, page 44.)

The Commission ordered the instream flow and water temperature modeling studies noted above prior to the start of the relicensing. As a result, those studies pre-date the Commission's December 22, 2011 determination of study plans necessary to inform a new license. Filings responsive to the Commission's July 16, 2009 Order are cataloged in the Commission's administrative record under P-2299 Sub Docket 072, while documents relevant to the ILP relicensing effort are generally found under P-2299 Sub Docket 075. These two processes also have distinct Commission lead staff, with the first overseen by the Division of Hydropower Administration and Compliance and the second by the Division of Hydropower Licensing. However, the two processes are inextricably linked even though they have different start times, sub-docket numbers and Commission staff. Both processes ultimately share the objective of developing information on Project impacts and potential mitigation measures utilizing instream flow and water temperature modeling tools.

As noted previously, the upcoming ISR and meeting is a significant milestone, providing the basis for participants to request modification of studies or new studies. This window of opportunity for modifying ongoing studies within the ILP is fairly narrow. Specifically, within 15 days following the ISR meeting, the applicant must file a meeting summary including any proposed modifications to ongoing studies or new studies. Within 30 days

of that meeting summary, any participant may file a disagreement or request for study modification or new studies pursuant to Title 18, Code of Federal Regulations, §5.15(c)(4). Based on the Commission's October 12, 2012 Extensions of Time for Filing the Initial Study Report and for the Initial Study Report Meeting, such requests for modifications and/or new studies from participants will be due on March 10, 2013.

Given the added complexity of not only ILP relicensing studies, but also the instream flow and water temperature modeling efforts ordered by the Commission in 2009, the Department anticipates the ISR will need to contain a substantial amount of information and cross-referencing. The intent of providing Department objectives prior to reviewing the report is to clarify our expectations and facilitate subsequent discussion of study modification or new study development. The Department's objectives are also intended to be consistent with the Commission's overall relicensing objectives of providing: 1) adequate consultation and comment by relicensing participants; and 2) oversight by Commission staff.

The following table provides a summary of key steps related to Commission-ordered studies with flow and water temperature modeling elements. While the studies required under the current license were initiated in 2009, approximately two years prior to the relicensing studies, for over a year and a half now there have been overlapping deadlines and products.

**Table 1 Summary of Milestones for Current License Flow and Temperature Modeling Studies and Relicensing Studies of Don Pedro Project**

<b>Date</b>	<b>Studies Developed Under Current License (2009 Commission Order)</b>	<b>Study Development Under New License (ILP)</b>
Jul 16, 2009	Commission Order, 128 FERC ¶ 61,035, requires development and implementation of IFIM and water temperature modeling studies	
Oct 14, 2009	Districts submit Final Study Plans with: 1-D PHABSIM, RIVER 2D Pulse Flow and HEC-5Q methodologies	
May 12, 2010	Commission Order, 131 FERC ¶ 62,110, modifies and approves Study Plans	



<b>Date</b>	<b>Studies Developed Under Current License (2009 Commission Order)</b>	<b>Study Development Under New License (ILP)</b>
Feb 10, 2011		Districts submit NOI and PAD and Study Plans
Mar 10, 2011	Districts submit FINAL HEC-5Q Water Temperature Report prepared by Stillwater Sciences	
Jun 10, 2011		CDFG, SWRCB, NMFS, FWS, BLM and multiple other participants submit Study Requests
Jul 25, 2011		Districts submit Proposed Study Plan for ILP
Aug 15, 2011	Districts request 1 year extension for 1D PHABSIM study	
Oct 24, 2011		CDFG and multiple other parties submit comments on District's Proposed Study Plan
Oct 31, 2011	Districts submit revised schedule for River 2D Pulse Flow Study Report	
Dec 22, 2011		Commission's Office of Energy Projects issues Study Plan Determination
Jun 18, 2012	Districts submit River 2D Pulse Flow Study Report	

Originally, the Commission-ordered studies initiated in 2009 were scheduled to be completed prior to the commencement of the ILP. However, due to delays in study implementation, the two parallel processes are now developing and reporting information concurrently. Linkages between studies begun under the current license and relicensing studies are cited throughout the administrative record. The following excerpts from the December 22, 2011 Study Plan Determination filed by the Commission's Office of Energy Projects highlight some of these relationships. The excerpts are organized by a relevant study plan requested by a relicensing party or proposed by the Districts.

Department Study Request - Instream Flow Study:

"After review of CDFG's October 24, 2011 comments, it appears as though no disputes regarding the ongoing IFIM study remain at this time. We note that, pursuant to Commission regulations, *the Districts will be required to present results of the ongoing IFIM study in its Initial Study Report. If CDFG believes additional information is needed at that time, a study modification can be requested within the ILP criteria.*"<sup>1</sup> [emphasis added].

US Fish and Wildlife Service (FWS) Study Request – Instream Flow and Juvenile Chinook Salmon Floodplain Rearing Study:

"We agree, however, with FWS that under the existing study, an analysis of floodplain inundation and frequency would be beneficial in identifying potential project effects upon potentially important salmonid rearing habitat (study criterion 5). *We note that the Districts state that this information can be attained by utilizing the results of the ongoing flow study in conjunction with available hydrologic data.* We note that ILP procedures allow for an evaluation of study results upon filing of the initial study report, and participants may request to amend an approved study or request a new study at that time. *Therefore, should the FWS feel that the information produced in the results of the ongoing flow study are still not sufficient to meet its informational needs, it may request to amend the approved flow study at that time.*"<sup>2</sup> [emphasis added].

Conservation Groups Study Request – Project Effects on Riparian Vegetation:

"We do not recommend that the Districts conduct the Conservation Groups-9 *Effects of the Project and Related Activities on Recruitment of Cottonwoods and Other Native Riparian Vegetation.* We do, however, recommend the Districts consult with the relicensing participants and review the results of the [FWS] GIS study and the *results of the IFIM study for the Don Pedro Project to determine the need for a second-year study*

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<sup>1</sup> Federal Energy Regulatory Commission's Office of Energy Projects December 22, 2011 Study Plan Determination, Appendix B, page 104.

<sup>2</sup> *Id.*, page 90.



*concerning the physical habitat relationship between flow and floodplain inundation in the lower Tuolumne River.”<sup>3</sup> [emphasis added].*

Districts' Proposed W&AR-4 Spawning Gravel Study:

“As amended in the revised study plan, the Districts' proposed W&AR-4 study would provide for an evaluation of spawning habitat at a range of observed and modeled flows. However, an empirical evaluation of flows in excess of 4,000 cfs, as requested by the Conservation Groups, could result in potential flooding in downstream areas, and is therefore unadvisable. *We note that the ongoing IFIM study should be able to model spawning habitat at such high flows (study criterion 6).*”

Finally, we agree with [National Marine Fisheries Service] NMFS that providing relicensing participants with data would allow relicensing participants to perform individual analyses in order to critically evaluate the reported results from any study (study criterion 6).<sup>4</sup> [emphasis added]

“We note that as amended in the Revised Study Plan, the Districts' proposed W&AR-4 study will provide for an evaluation of spawning habitat at a range of observed and modeled flows, as requested by the Water Board. *Should the results of the ongoing IFIM study indicate spawning flows that are significantly different that [sic] those mapped flows, the ILP process will allow for stakeholders to request a modification or request a new study upon filing of the Districts' Initial Study Plan.*”<sup>5</sup> [emphasis added].

Districts' Proposed W&AR-7 Predation Study:

“As agreed to by the Districts and relicensing participants, additional analysis may be needed to quantify the relationship of flow to floodplain inundation in the lower Tuolumne River, to better understand how floodplain inundation influences predation of juvenile salmonids... If the results of the predation study... suggest that *a second year of study may*

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<sup>3</sup> *Id.*, page 129.

<sup>4</sup> *Id.*, page 31.

<sup>5</sup> *Id.*, page 114.

*be needed, the Districts should propose such a study in its initial study report or explain why such a study is not needed.”<sup>6</sup> [emphasis added].*

*“As a part of the W&AR-7 Predation Study, we recommend that the Districts consult with the relicensing participants and review... the results of the IFIM study for the Don Pedro Project to determine the need for a second-year study concerning the physical habitat relationship between flow and floodplain inundation in the lower Tuolumne River. We also note that under the existing license, the Districts are conducting an instream flow study on the lower Tuolumne River that includes an assessment of floodplain habitat, which will be completed in early 2012.”<sup>7</sup> [emphasis added].*

As demonstrated in the foregoing excerpts, the ISR should provide results of the incremental methodology (IFIM) studies which were initiated in response to the Commission’s 2009 Order and articulate the linkages to several ongoing ILP studies. At a minimum, the ISR should describe:

- Relationship of instream flow to habitat for all life stages of fall-run Chinook salmon and *O. mykiss*.
- Relationship of floodplain inundation and frequency to juvenile salmon rearing habitat.
- Physical habitat relationship between flow and floodplain inundation.
- Relationship of flow to spawning habitat, including:
  - model results of flows sufficient to inundate floodplain, and
  - data sufficient for relicensing parties to conduct independent analyses.
- Relationship of flow to predation, including;
  - model results of flows sufficient to inundate floodplain.

There is a smaller subset of requested and proposed study plans focusing on water temperature impacts. Similar to the linkages between instream flow studies begun under the current license and relicensing studies, there is a link between relicensing

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<sup>6</sup> *Id.*, page 43.

<sup>7</sup> *Id.*, page 129.

studies and the water temperature studies required by the Commission in 2009. The following excerpts pertain to a study request made by the Department and the temperature model proposed by the Districts.

Department Study Request - Reservoir Water Temperature Management Feasibility Study:

"Information gathered in the proposed Water Temperature Modeling studies, both of the thermal dynamic structure of the reservoir and of the lower Tuolumne River, will provide information concerning the project effects on water temperature. However, we do agree with CDFG that the results of the proposed water temperature modeling may indicate a need for a reservoir water temperature management plan, including analysis of a temperature control device. *If the results of the Water Temperature Modeling studies indicate such a need, relicensing participants, including Commission staff, may request the study under sections 5.15(d) and 5.15(e) of the regulations, in the second year of study.*"<sup>8</sup> [emphasis added].

Districts' W&AR-16 Lower Tuolumne River Temperature Model:

"We recommend study W&AR-16 be modified to include provisions to: (1) produce output from the water temperature model in a format appropriate for use as input into the existing CalFed San Joaquin River Basin water temperature model; (2) model the flows necessary to meet the 7-day average of the daily maximum temperature as recommended by EPA (2003), and compare the results to the maximum weekly average temperature standard developed in Stillwater Sciences (2011); and (3) provide all data used in calibration or validation of the model in W&AR-16, as well as input files, to the relicensing participants."<sup>9</sup>

As indicated in the foregoing excerpts, the ISR should provide a recalibration of the HEC-5Q Water Temperature Model developed by Stillwater Sciences (2011) in response to the Commission's 2009 Order. At a minimum, these results should include:

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<sup>8</sup> *Id.*, page 103.

<sup>9</sup> *Id.*, page 62.

Secretary Bose  
December 14, 2012  
Page 9

- Output from the water temperature model in a format appropriate for use as input into the existing CalFed San Joaquin River Basin water temperature model.
- Identification of flows necessary to meet the 7-day average of the daily maximum temperature as recommended by EPA (2003).

The Department hopes the preceding compilation of key linkages between the ILP studies and study efforts previously ordered by the Commission clarifies some of the Department's objectives for the upcoming ISR and meeting. If you have any questions regarding the Department objectives described in this letter, please contact Annie Manji, Staff Environmental Scientist, at (530) 225-2315 or [amanji@dfg.ca.gov](mailto:amanji@dfg.ca.gov).

Sincerely,

*Andrew G. Gordon, Ph.D.*

*for* Jeffrey R. Single, Ph.D.  
Regional Manager, Central Region

cc: Jim Hastreiter  
Office of Energy Projects  
805 SW Broadway  
Fox Tower - Suite 550  
Portland, Oregon 97205

John Devine  
HDR Engineering, Inc.  
970 Baxter Boulevard, Suite 301  
Portland, Maine 04103



## References

Environmental Protection Agency. 2003. Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. Region 10 Office of Water, Seattle, WA. 57 pp.

Federal Energy Regulatory Commission. 2009. 128 FERC ¶ 61,035. Turlock Irrigation District and Modesto Irrigation District Project Nos. 2299-065 and 2299-053. Order on Rehearing, Amending License, Denying Late Intervention, Denying Petition, and Directing Appointment of a Presiding Judge for a Proceeding on Interim Conditions. Issued July 16, 2009. 46 pp.

Federal Energy Regulatory Commission. 2011. Turlock Irrigation District and Modesto Irrigation District Project No. 2299-075. Study Plan Determination for the Don Pedro Hydroelectric Project. Filed December 22, 2011 by Office of Energy Projects. 146 pp. (with appendices).

Stillwater Sciences. 2011. Tuolumne River water temperature modeling study. Final Report. Prepared by Stillwater Sciences, Berkeley, California for Turlock Irrigation District and Modesto Irrigation District, California. March 10, 2011. 13 pp.

**From:** Staples, Rose  
**Sent:** Thursday, January 17, 2013 6:30 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Minami Amber; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Project Relicensing ISR and Accompanying Study Reports E-Filed Today

The ISR and accompanying 23 study/progress reports have been e-filed with FERC today, and all should be available on FERC's E-Library at [www.FERC.gov](http://www.FERC.gov). I am also in the process of uploading the documents to the Don Pedro Relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com). (Documents / Initial Study Reports). Currently on the site are the ISR and the Recreation Resources study reports. I plan to upload Cultural Resources and at least part of the Terrestrial Resources study reports today, with the rest going up tomorrow.

Please also note that we are in the process of updating the website text, tab names, and other features to make it easier for you to find the information you need. For instance, the INTRODUCTION TAB is now ANNOUNCEMENTS! And on the documents page, note the column heading called RELEVANT. By clicking on this heading, you activate a selection window with the Don Pedro Study Plans listed, from which you can then select the Study for which you would like a listing of the documents on the site “relevant” to that Study.

If you have any difficulties accessing and/or downloading any of the reports (we filed / and uploaded the attachments as separate files to make the file sizes smaller and more easily accessible), please do let me know. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**

Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103

207.239.3857 | f: 207.775.1742

[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Staples, Rose  
**Sent:** Thursday, January 17, 2013 6:41 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Anderson, Craig'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Beniamine Beronia'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Brewer, Doug'; 'Buckley, John'; 'Buckley, Mark'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Fety, Lauren'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Lein, Joseph'; 'Levin, Ellen'; 'Lewis, Reggie'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Minami Amber'; 'Monheit, Susan'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wesselman, Eric'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'

**Subject:** Availability of Don Pedro Relicensing ISR / Study-Progress Reports on CD

Besides being available for viewing/downloading from FERC's E-Library and the Don Pedro Project Relicensing website, there will also be a quantity of CDs with the ISR and accompany study/progress reports available at the ISR Meeting on January 30-31, 2013 at the MID Offices in Modesto.



In addition, if you would like a CD shipped to you, please let me at [rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) and provide your address and any special shipping instructions. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Staples, Rose  
**Sent:** Wednesday, January 23, 2013 5:33 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Minami Amber; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** AGENDA RESEND-CALL-IN NUMBER-LIVE MEETING LINK to Don Pedro Relicensing ISR Meeting Jan 30-31

**For those who are unable to participant in person at the upcoming Don Pedro Relicensing Initial Study Report Meetings (January 30 and January 31, MID OFFICES in Modesto), please find below the call-in information, LIVE MEETING link, and meeting AGENDA.**

- **Call-in Phone Number 866-994-6437, Conference Code 5424697994**
- Online meeting information (below – same for both days)

- AGENDA (below)

## Join online meeting

<https://meet.hdrinc.com/jenna.borovansky/3D64F0F5>

[First online meeting?](#)

## Initial Study Report Meeting (Day 1)

Wednesday January 30, 2013 8:00 am – 5:30 pm

Meeting Location: MID Offices, Modesto

Time	Topic	
8:00	<b>Opening</b> – Agenda Review, Purpose of Meeting	
8:20	W&AR-15	Socioeconomics Study
8:40	W&AR-01	Water Quality Assessment
9:00	W&AR-02	Project Operations/Water Balance Model
9:25	W&AR-03	Reservoir Temperature Model
9:55	W&AR-04	Spawning Gravel Study
<b>Break – 10:20</b>		
10:35		IFIM Schedule and Update
10:45	W&AR-05	Salmonid Populations Information Integration
11:05	W&AR-06	Tuolumne River Chinook Salmon Population Model
11:30	W&AR-10	<i>Onchorhynchus mykiss</i> Population Study
<b>Lunch Break – 11:50</b>		
12:50	W&AR-07	Predation Study
1:15	W&AR-08	Salmonid Redd Mapping
1:40	W&AR-11	Chinook Salmon Otolith Study
2:05	W&AR-12	<i>Onchorhynchus mykiss</i> Habitat Assessment
2:30	W&AR-13	La Grange Reservoir Fish Assemblage and Population Study
<b>Break – 2:55</b>		
3:10	W&AR-14	Temperature Criteria Assessment
3:35	W&AR-17	Don Pedro Reservoir Fish Population Study
4:00	W&AR-18	Sturgeon Study
4:25	W&AR-19	Riparian Information Study
4:50	W&AR-20	<i>O. mykiss</i> Scale & Age Study
5:15	<b>Wrap-Up &amp; Review 1/31 Schedule</b>	

## Initial Study Report Meeting (Day 2)

Thursday January 31, 2013 8:00 am – 5:00 pm

Meeting Location: MID Offices, Modesto

Time	Topic	
8:00	<b>Opening</b> – Agenda Review, Purpose of Meeting	
8:15	CR-01	Historic Properties Study
8:40	CR-02	Native American Traditional Cultural Properties Study
9:05	TR-01	Special-Status Plants Study
9:30	TR-02	ESA- and CESA-Listed Plants Study
9:55	TR-03	Wetland Habitats Associated with Don Pedro Reservoir Study
Break – 10:20		
10:35	TR-04	Noxious Weed Survey
11:00	TR-05	ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle Study
11:25	TR-06	Special-Status Amphibians-Aquatic Reptiles Study
11:50	TR-07	ESA-Listed Amphibians - California Red-Legged Frog Study
Lunch Break – 12:15		
1:15	TR-08	ESA-List Amphibians - California Tiger Salamander Study
1:40	TR-09	Special-Status Bats Study
2:05	TR-10	Bald Eagle Study
2:30	RR-01	Recreation Facility and Public Accessibility Assessment
Break – 2:55		
3:10	RR-02	Whitewater Boating Take Out Improvement Feasibility
3:35	RR-03	Lower Tuolumne River Boatable Flow Study
4:00	RR-04	Visual Quality Study
4:25		<b>Wrap-Up and Next Steps</b>

Thank you

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)



**From:** Devine, John  
**Sent:** Wednesday, January 23, 2013 8:10 PM  
**To:** 'Peter Drekmeier'  
**Subject:** RE: Socioeconomics Study

Peter,

The Socioeconomics Study is still in progress, so just a progress report is provided. That can be found in the ISR document itself. There is also a schedule included in the Progress Report. Without looking, so I may be wrong, I think the draft report is scheduled to be issued by the end of June 2013.

**JOHN DEVINE**  
P.E.

**HDR Engineering, Inc.**  
Senior Vice President, Hydropower Services

970 Baxter Boulevard Suite 301 | Portland, ME 04103  
207.775.4495 | c: 207.776.2206 | f: 207.775.1742  
[john.devine@hdrinc.com](mailto:john.devine@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Peter Drekmeier [<mailto:Peter@Tuolumne.org>]  
**Sent:** Wednesday, January 23, 2013 7:38 PM  
**To:** Devine, John  
**Subject:** Socioeconomics Study

Hi John,

Will there be a draft of the Socioeconomics Study prior to next week's meeting? I couldn't find anything on the website.

Thanks.

-Peter

-----  
Peter Drekmeier  
Bay Area Program Director  
Tuolumne River Trust  
111 New Montgomery, #205  
San Francisco, CA 94105  
(415) 882-7252 x 302  
[peter@tuolumne.org](mailto:peter@tuolumne.org)  
<http://www.tuolumne.org/bayarea>

**From:** Staples, Rose  
**Sent:** Friday, January 25, 2013 10:33 AM  
**To:** 'steveburke49@gmail.com'  
**Subject:** Don Pedro Relicensing Email Group

Melissa Williams with Modesto Irrigation District has asked that I add you to the Don Pedro Relicensing Participants Email Group, which I have done so today. Besides confirming that this has been done, I wanted to share with you the following information, which was emailed to the group earlier this week, regarding the Initial Study Report Meeting scheduled for next Wednesday and Thursday at the MID Offices in Modesto. Copies of the Initial Study Report and the individual progress or study reports referenced in the Report can be viewed (and downloaded) from the Don Pedro Relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com): Documents Tab, Initial Study Report folder. Within the Initial Study Report folder you will then find sub-folders by Resources Group; i.e. Cultural Resources, Recreation Resources, Terrestrial Resources, and Water & Aquatic Resources. A CD of the documents will also be available at the ISR meeting—and you can also get one by sending me an emailed request, along with your shipping address.

**For those who are unable to participant in person at the upcoming Don Pedro Relicensing Initial Study Report Meetings (January 30 and January 31, MID OFFICES in Modesto), please find below the call-in information, LIVE MEETING link, and meeting AGENDA.**

- **Call-in Phone Number 866-994-6437, Conference Code 5424697994**
- Online meeting information (below – same for both days)
- AGENDA (below)

---

### **Join online meeting**

<https://meet.hdrinc.com/jenna.borovansky/3D64F0F5>

[First online meeting?](#)

---

## **Initial Study Report Meeting (Day 1)**

**Wednesday January 30, 2013 8:00 am – 5:30 pm**

**Meeting Location: MID Offices, Modesto**

<b>Time</b>	<b>Topic</b>	
<b>8:00</b>	<b>Opening – Agenda Review, Purpose of Meeting</b>	
<b>8:20</b>	W&AR-15	Socioeconomics Study
<b>8:40</b>	W&AR-01	Water Quality Assessment
<b>9:00</b>	W&AR-02	Project Operations/Water Balance Model
<b>9:25</b>	W&AR-03	Reservoir Temperature Model
<b>9:55</b>	W&AR-04	Spawning Gravel Study
<b>Break – 10:20</b>		
<b>10:35</b>		IFIM Schedule and Update

Time	Topic	
10:45	W&AR-05	Salmonid Populations Information Integration
11:05	W&AR-06	Tuolumne River Chinook Salmon Population Model
11:30	W&AR-10	<i>Onchorhynchus mykiss</i> Population Study
Lunch Break – 11:50		
12:50	W&AR-07	Predation Study
1:15	W&AR-08	Salmonid Redd Mapping
1:40	W&AR-11	Chinook Salmon Otolith Study
2:05	W&AR-12	<i>Onchorhynchus mykiss</i> Habitat Assessment
2:30	W&AR-13	La Grange Reservoir Fish Assemblage and Population Study
Break – 2:55		
3:10	W&AR-14	Temperature Criteria Assessment
3:35	W&AR-17	Don Pedro Reservoir Fish Population Study
4:00	W&AR-18	Sturgeon Study
4:25	W&AR-19	Riparian Information Study
4:50	W&AR-20	<i>O. mykiss</i> Scale & Age Study
5:15		Wrap-Up & Review 1/31 Schedule



## Initial Study Report Meeting (Day 2)

Thursday January 31, 2013 8:00 am – 5:00 pm

Meeting Location: MID Offices, Modesto

Time	Topic	
8:00	<b>Opening</b> – Agenda Review, Purpose of Meeting	
8:15	CR-01	Historic Properties Study
8:40	CR-02	Native American Traditional Cultural Properties Study
9:05	TR-01	Special-Status Plants Study
9:30	TR-02	ESA- and CESA-Listed Plants Study
9:55	TR-03	Wetland Habitats Associated with Don Pedro Reservoir Study
Break – 10:20		
10:35	TR-04	Noxious Weed Survey
11:00	TR-05	ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle Study
11:25	TR-06	Special-Status Amphibians-Aquatic Reptiles Study
11:50	TR-07	ESA-Listed Amphibians - California Red-Legged Frog Study
Lunch Break – 12:15		
1:15	TR-08	ESA-List Amphibians - California Tiger Salamander Study
1:40	TR-09	Special-Status Bats Study
2:05	TR-10	Bald Eagle Study
2:30	RR-01	Recreation Facility and Public Accessibility Assessment
Break – 2:55		
3:10	RR-02	Whitewater Boating Take Out Improvement Feasibility
3:35	RR-03	Lower Tuolumne River Boatable Flow Study
4:00	RR-04	Visual Quality Study
4:25		<b>Wrap-Up and Next Steps</b>

ROSE STAPLES  
CAP-OM

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[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Staples, Rose  
**Sent:** Tuesday, January 29, 2013 4:24 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Minami Amber; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro ISR Meeting Reminder - AGENDA-CALL-IN Number-LIVE MEETING Link  
**Attachments:** Day 1 Agenda.pdf; Day 2 Agenda.pdf

For your reference, I am resending the location, meeting times, agendas, and audio / Live Meeting links for the Don Pedro Project Relicensing INITIAL STUDY REPORT MEETING being held over a two-day period, beginning tomorrow, January 30, at the Modesto Irrigation District Offices in Modesto. The same call-in number and live meeting link will be used for both days, for those who are not able to participate in person.

# Don Pedro Project Relicensing Initial Study Report Meeting

## Day 1

Wednesday January 30, 2013 8:00 a.m. – 5:30 p.m.

Meeting Location: MID Offices, Modesto (1231 11<sup>th</sup> Street)

Call-In Number 866-994-6437 – Conference Code 5424697994

### Join online meeting

<https://meet.hdrinc.com/jenna.borovansky/3D64F0F5>

[First online meeting?](#)

Time	Topic	
8:00 a.m.	<b>Opening – Agenda Review, Purpose of Meeting</b>	
8:20 a.m.	W&AR-15	Socioeconomics Study
8:40 a.m.	W&AR-01	Water Quality Assessment
9:00 a.m.	W&AR-02	Project Operations/Water Balance Model
9:25 a.m.	W&AR-03	Reservoir Temperature Model
9:55 a.m.	W&AR-04	Spawning Gravel Study
10:20 a.m.	<b>Break</b>	
10:35 a.m.	<b>IFIM Schedule and Update</b>	
10:45 a.m.	W&AR-05	Salmonid Populations Information Integration
11:05 a.m.	W&AR-06	Tuolumne River Chinook Salmon Population Model
11:30 a.m.	W&AR-10	<i>Oncorhynchus mykiss</i> Population Study
11:50 a.m.	<b>Lunch Break (on your own)</b>	
12:50 p.m.	W&AR-07	Predation Study
1:15 p.m.	W&AR-08	Salmonid Redd Mapping
1:40 p.m.	W&AR-11	Chinook Salmon Otolith Study
2:05 p.m.	W&AR-12	<i>Oncorhynchus mykiss</i> Habitat Assessment
2:30 p.m.	W&AR-13	La Grange Reservoir Fish Assemblage and Population Study
2:55 p.m.	<b>Break</b>	
3:10 p.m.	W&AR-14	Temperature Criteria Assessment
3:35 p.m.	W&AR-17	Don Pedro Reservoir Fish Population Study

Time	Topic	
4:00 p.m.	W&AR-18	Sturgeon Study
4:25 p.m.	W&AR-19	Riparian Information Study
4:50 p.m.	W&AR-20	<i>Oncorhynchus mykiss</i> Scale & Age
5:15 p.m.	Wrap-Up & Review 1/31 Schedule	

## Day 2

Thursday January 31, 2013 8:00 a.m. – 5:00 p.m.

Meeting Location: MID Offices, Modesto (1231 11<sup>th</sup> Street)

Call-In Number 866-994-6437 – Conference Code 5424697994

### [Join online meeting](https://meet.hdrinc.com/jenna.borovansky/3D64F0F5)

<https://meet.hdrinc.com/jenna.borovansky/3D64F0F5>

[First online meeting?](#)

Time	Topic	
8:00 a.m.	Opening – Agenda Review, Purpose of Meeting	
8:15 a.m.	CR-01	Historic Properties Study
8:40 a.m.	CR-02	Native American Traditional Cultural Properties Study
9:05 a.m.	TR-01	Special-Status Plants
9:30 a.m.	TR-02	ESA- and CESA-Listed Plants Study
9:55 a.m.	TR-03	Wetland Habitats Associated with Don Pedro Reservoir
10:20 a.m.	Break	
10:35 a.m.	TR-04	Noxious Weed Survey
11:00 a.m.	TR-05	ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle
11:25 a.m.	TR-06	Special-Status Amphibians - Aquatic Reptiles
11:50 a.m.	TR-07	ESA-Listed Amphibians - California Red-Legged Frog
12:15 p.m.	Lunch Break (on your own)	
1:15 p.m.	TR-08	ESA-List Amphibians - California Tiger Salamander
1:40 p.m.	TR-09	Special-Status Bats
2:05 p.m.	TR-10	Bald Eagle Study
2:30 p.m.	RR-01	Recreation Facility and Public Accessibility Assessment
2:55 p.m.	Break	
3:10 p.m.	RR-02	Whitewater Boating Take Out Improvement Feasibility

Time	Topic	
3:35 p.m.	RR-03	Lower Tuolumne River Boatable Flow Study
4:00 p.m.	RR-04	Visual Quality Study
4:25 p.m.	Wrap-Up and Next Steps	

Thank you!

ROSE STAPLES  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)



**From:** Staples, Rose  
**Sent:** Wednesday, January 30, 2013 9:23 AM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Anderson, Craig'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Beniamine Beronia'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Brewer, Doug'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Fety, Lauren'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Lein, Joseph'; 'Levin, Ellen'; 'Lewis, Reggie'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Minami Amber'; 'Monheit, Susan'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wesselman, Eric'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'

**Subject:** Don Pedro Initial Study Report Meeting Slide Presentations

Especially for those who will be connecting to the Don Pedro Project Relicensing INITIAL STUDY REPORT MEETING today via LiveMeeting—as a backup if you experience connection difficulties—or if you are joining by audio only (866-994-6437 / Conference Code 5424697994), we have uploaded to the Don Pedro Relicensing website ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)) this morning a copy of each of the slide

presentations being used in today's ISR Meeting. Click on the ANNOUNCEMENT tab on the Home Page of the website—the presentations will be attached to the announcement posted earlier today. If you have any problems locating and/or accessing the documents, please let me know. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Staples, Rose  
**Sent:** Thursday, January 31, 2013 10:35 AM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Anderson, Craig'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Beniamine Beronia'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Brewer, Doug'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Fety, Lauren'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Lein, Joseph'; 'Levin, Ellen'; 'Lewis, Reggie'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Minami Amber'; 'Monheit, Susan'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wesselman, Eric'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Jan 31 Don Pedro ISR Meeting Slide Presentations

Similar to what we did yesterday, the slide presentations for today's **Initial Study Report Meeting** have been uploaded to the Don Pedro Project Relicensing website ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)) under the ANNOUNCEMENT tab (on the Home Page), as backup if you are connecting in to the meeting via

LiveMeeting or audio only. If you have any difficulties locating or accessing the presentations, please let me know. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Staples, Rose  
**Sent:** Thursday, January 31, 2013 6:43 PM  
**To:** 'Barnes, James'  
**Subject:** RE: Request for ISR historic properties study and TCP study

Thank you; I will also forward on the request for an estimated delivery date.

**ROSE STAPLES**  
CAP-OM

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Executive Assistant, Hydropower Services

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207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Barnes, James [<mailto:jjbarnes@blm.gov>]  
**Sent:** Thursday, January 31, 2013 6:19 PM  
**To:** Staples, Rose  
**Subject:** Re: Request for ISR historic properties study and TCP study

Thanks Rose. All I need is just the two cultural resources study progress reports CR-01 and CR-02 with ALL of the attachments. I do not need the other parts of the ISR. If my request is accepted by the Districts, what is the estimated delivery date? James

On Thu, Jan 31, 2013 at 3:10 PM, Staples, Rose <[Rose.Staples@hdrinc.com](mailto:Rose.Staples@hdrinc.com)> wrote:

Please be advised that I have received your information request below, and will be forwarding a copy of this message to the Districts for consideration of your request for Cultural Resources Study CR-02 Native American Traditional Cultural Properties-Attachment B, containing privileged information filed with FERC on January 17, 2013.

Could you please clarify that you would like a CD with the other parts of the INITIAL STUDY REPORT besides the Cultural Resources CR-01 Historic Properties Progress Report with Attachments A and B and CR-02 National American Traditional Cultural Properties Progress Report with Attachment A—or just the two Cultural Resources Study Progress Reports?

Thank you.

**ROSE STAPLES**  
CAP-OM

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207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Barnes, James [<mailto:jjbarnes@blm.gov>]  
**Sent:** Thursday, January 31, 2013 5:53 PM  
**To:** Staples, Rose  
**Subject:** Request for ISR historic properties study and TCP study



Hi Rose:

I'm an archaeologist with the Bureau of Land Management Mother Lode Field Office. I would like to get a copy of the ISR especially the portion of the ISR covering the Historic Properties Study and the Traditional Cultural Properties Study **with any confidential information included**. Thanks. PS: please let me know you got this email by responding.

My mailing address is

James Barnes, Archaeologist  
Bureau of Land Management  
Mother Lode Field Office  
5152 Hillsdale Circle  
El Dorado Hills, CA 95762  
916-941-3140

**From:** Staples, Rose  
**Sent:** Friday, February 08, 2013 4:25 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Minami Amber; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Initial Study Report Meeting Summary Filed Today with FERC

The Initial Study Report Meeting Summary for the Don Pedro ISR Meeting held on January 30-31, 2013, has been filed with FERC. A copy of the Summary has been uploaded to the Don Pedro relicensing website, under ANNOUNCEMENTS ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)). A copy will also be available on FERC's E-Library, most probably on Monday. If you have any difficulties accessing or downloading the document, please let me know. Thank you.

**From:** Allison Boucher [aboucher@bendbroadband.com]  
**Sent:** Monday, February 25, 2013 12:08 PM  
**To:** Staples, Rose  
**Subject:** RE: Lists Needed

Thanks.  
Allison

**From:** Staples, Rose [<mailto:Rose.Staples@hdrinc.com>]  
**Sent:** Monday, February 25, 2013 8:14 AM  
**To:** Allison Boucher  
**Subject:** RE: Lists Needed

In regards to the email group list of Don Pedro Project Relicensing Participants, you can CUT AND PASTE the group list into your own email the next time I send out an announcement (which will be later today)—or you should be able to REPLY ALL and send out a message to them all on top of my message.

Following is a list of the Don Pedro Project Relicensing Studies and their reference codes:

**Cultural Resources**

CR-01 Historic Properties Progress Report  
CR-02 Native American Traditional Cultural Properties Progress Report

**Recreation Resources**

RR-01 Recreation Facility Conditions and Public Accessibility Assessment  
RR-02 Whitewater Boating Take-Out Improvement Feasibility Study Report  
RR-03 Lower Tuolumne River Lowest Boatable Flow Study Report  
RR-04 Visual Quality Study Report

**Terrestrial Resources**

TR-01 Special-Status Plants Study Report  
TR-02 ESA- and CESA-Listed Plants Study Report  
TR-03 Wetland Habitats Associated with Don Pedro Reservoir Study Report  
TR-04 Noxious Weeds Study Report  
TR-05 ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle Study Report  
TR-06 Special-Status Amphibians and Reptiles Study Report  
TR-07 ESA-Listed Amphibians - California Red-Legged Frog Study Report  
TR-08 ESA-Listed Amphibians - California Tiger Salamander Study Report  
TR-09 Special-Status Wildlife - Bats Study Report  
TR-10 Bald Eagle Study Report

**Water & Aquatic Resources**

W&AR-01 Water Quality Assessment Study Report  
W&AR-02 Project Operations Water Balance Model Study Report  
W&AR-03 Reservoir Temperature Model Progress Report  
W&AR-04 Spawning Gravel in the Lower Tuolumne River Progress Report  
W&AR-05 Salmonid Population Information Integration and Synthesis Study Report  
W&AR-06 Tuloumne River Chinook Salmon Population Model

W&AR-07 Predation Study Report  
W&AR-08 Salmonid Redd Mapping Progress Report  
W&AR-10 *Oncorhynchus mykiss* Population Study  
W&AR-11 Chinook Salmon Otolith Study  
W&AR-12 *Oncorhynchus mykiss* Habitat Survey Study Report  
W&AR-13 Fish Assemblage and Population between Don Pedro Dam and La Grange Dam Study Report  
W&AR-14 Temperature Criteria Assessment (Chinook Salmon and *Oncorhynchus mykiss*) Progress Report  
W&AR-15 Socioeconomics Study  
W&AR-16 Lower Tuolumne River Temperature Model Progress Report  
W&AR-17 Don Pedro Reservoir Fish Population Survey Study Report  
W&AR-18 Sturgeon Study Report  
W&AR-19 Lower Tuolumne River Riparian Information and Synthesis Study Report  
W&AR-20 *Oncorhynchus mykiss* Scale Collection and Age Determination Study Report

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Allison Boucher [<mailto:aboucher@>]  
**Sent:** Monday, February 25, 2013 1:10 AM  
**To:** Staples, Rose  
**Subject:** Lists Needed

Rose,  
Do you have a list of participants with their email addresses?

Do you have a list of all the studies with their code names and descriptions?

Allison Boucher  
Tuolumne River Conservancy, Inc.  
[REDACTED]

HOME EMAIL ADDRESS REMOVED PER SECTION 2.4.3 DON PEDRO PAD

From: Staples, Rose  
Sent: Tuesday, February 26, 2013 11:05 AM  
To: 'Allison Boucher'  
Subject: RE: Participants

That would be James Eicher; his email address is james\_eicher@BLM.gov

Rose staples  
cAP-OMHDR Engineering, Inc.  
Executive Assistant, Hydropower Services  
970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
rose.staples@hdrinc.com | hdrinc.com

From: Allison Boucher [mailto:abouche [REDACTED]]  
Sent: Tuesday, February 26, 2013 12:20 AM  
To: Staples, Rose  
Subject: Participants

Rose,  
Who is the BLM representative? I need to contact him/her.

Allison Boucher  
Tuolumne River Conservancy, Inc.



From: Staples, Rose  
Sent: Monday, March 04, 2013 10:54 AM  
To: 'Brian Welde'  
Subject: RE: Don Pedro GIS Bathymetry Data

Thank you for your query; I will forward it to the Districts for consideration.

ROSE STAPLES, CAP-OM  
HDR Engineering, Inc.  
Executive Assistant,  
Hydropower Services  
970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
rose.staples@hdrinc.com | hdrinc.com

-----Original Message-----

From: Brian Welde [mailto:bwelde@angling-technologies.com]  
Sent: Saturday, March 02, 2013 12:19 PM  
To: Staples, Rose  
Subject: Don Pedro GIS Bathymetry Data

Mrs. Staples,

I own Angling Technologies, <http://mapper.angling-technologies.com>, an online interactive fishing map service for anglers. We have had a lot of requests to supply depth data for Don Pedro Reservoir and our research led us to the following publication - [http://www.donpedro-relicensing.com/Lists/Announcements/Attachments/84/DonPedroReservoirBathymetricStudyRept\\_20121018.pdf](http://www.donpedro-relicensing.com/Lists/Announcements/Attachments/84/DonPedroReservoirBathymetricStudyRept_20121018.pdf). I found you listed as a possible contact about this project on the Turlock Irrigation District home page.

I'm writing to see if I might be able to acquire and use the bathymetry data referenced. We can work with any type of spatial data format, cite all sources, and offer disclaimers that data is not for navigation.

Sincerely,

Brian Welde



From: Staples, Rose  
Sent: Friday, March 08, 2013 5:43 PM  
To: 'Allison Boucher'  
Subject: RE: email address

I do not have the name of the new biologist at TID, so let me contact them regarding that—or I may check in with John Devine when he returns to the office on Monday. As to our main contact at TID since Bob Nees' retirement, it is Steve Boyd (seboyd@tid.org). Thank you.

From: Allison Boucher [mailto:abouche [REDACTED]]  
Sent: Friday, March 08, 2013 12:14 PM  
To: Staples, Rose  
Subject: email address

Rose,  
I don't see the new TID biologist's email address on the emails. I also don't see Bob Nees' email. Who at TID is getting our emails? I would like to contact someone about the scheduling conflict with the TRTAC.  
Allison Boucher  
Tuolumne River Conservancy

From: Staples, Rose  
Sent: Saturday, March 09, 2013 3:05 PM  
To: Allison Boucher (aboucher [REDACTED])  
Subject: TID Biologist Contact Information

Allison, the TID biologist is Patrick Maloney; his email address is pemaloney@TID.org. Thank you.

ROSE STAPLES  
CAP-OM  
HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
rose.staples@hdrinc.com | hdrinc.com

From: Larry Thompson - NOAA Federal <larry.thompson@noaa.gov>  
Sent: Monday, March 11, 2013 12:31 PM  
To: Devine, John  
Cc: James Hastreiter; John Wooster - NOAA Federal; Thomas Holley - NOAA Federal; Richard Wantuck - NOAA Federal; David White - NOAA Federal; Kathryn Kempton - NOAA Federal; Greg Dias (Gregd@mid.org); Joy Warren; Godwin, Arthur F; agengr6@aol.com; Steve Boyd; Bill Paris; Tim O'Laughlin; Borovansky, Jenna; Staples, Rose  
Subject: Re: Information to fulfill Director's Determination Requirement

Thanks John.

I found those sections in the ISR, and refer to them in the comments NMFS intends to file today.

Larry

On Mon, Mar 11, 2013 at 9:22 AM, Devine, John <John.Devine@hdrinc.com> wrote:  
Larry,

Thanks for the inquiry. I am just back from vacation. The Districts provided a specific section in the Initial Study Report responding to the FERC direction provided by the Study Dispute. The information you are seeking is contained in Section 1.4.2 of the Initial Study Report entitled Requirements of FERC's Study Dispute Determination. Please see pages 1-8 through 1-11; Figures 1.4-1, 1.4-2, and 1.4-3; and Table 1.4-2. The figures show the effects of the diversions at La Grange Dam on flows to the lower Tuolumne River. The table lists all of the existing information the Districts have for the area between the diversion dam and the tailrace. Please let me know if I can provide anything further.

JOHN DEVINE

P.E.

HDR Engineering, Inc.

Senior Vice President, Hydropower Services

970 Baxter Boulevard Suite 301 | Portland, ME 04103

207.775.4495 | c: 207.776.2206 | f: 207.775.1742

john.devine@hdrinc.com | hdrinc.com

From: Larry Thompson - NOAA Federal [mailto:larry.thompson@noaa.gov]  
Sent: Tuesday, March 05, 2013 2:42 PM  
To: Devine, John; James Hastreiter  
Cc: John Wooster - NOAA Federal; Thomas Holley - NOAA Federal; Richard Wantuck - NOAA Federal; David White - NOAA Federal; Kathryn Kempton - NOAA Federal  
Subject: Information to fulfill Director's Determination Requirement

Hello John and Jim,

I am seeking the location, in the Initial Study Report, of information to fulfill the

requirements for NMFS' Request #1 "Effects of the Project and Related La Grange Complex Facilities on Anadromous Fish. "

As a result of the Study Dispute process, elements of this study were ordered (but modified by FERC).

The Director's Formal Study Dispute Determination (May 24, 2012) requires (p. 10):

"We recommend that the Districts identify and provide existing information, as part of the Initial Study Report, (related to Study NMFS-1, Element 3 and 6) on the Tuolumne River between La Grange dam and the La Grange gage. This additional information will provide a more comprehensive understanding of the potential effects of the Don Pedro Project on the hydrology of the Tuolumne River."

Jim, the language quoted above appears to lack detail as to what was ordered. Could you please clarify what is required?

John, I have searched for quite some time, and cannot find this La Grange reach information or discussion of it reported anywhere.

Could you please point me to the location(s) where this information is contained in the ISR report, or supporting documents?

Thanks in advance,

Larry

--

Larry Thompson  
NOAA Fisheries  
650 Capitol Mall, Suite 5-100  
Sacramento, CA 95814  
(916) 930-3613  
larry.thompson@noaa.gov

**From:** [Devine, John](#)  
**To:** [Martin, Ramon](#)  
**Cc:** [gregd@mid.org](#); Joy Warren ([Joy.Warren@mid.org](#)); [agodwin@mrgb.org](#); "William Johnston" ([\[REDACTED\]@mid.org](#)); [Steve E. Boyd \(seboyd@tid.org\)](#); [bparis@olaughlinparis.com](#); [Borovansky, Jenna](#)  
**Subject:** RE: ISR Meeting; Predation Study  
**Date:** Saturday, March 16, 2013 6:51:36 AM

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Thanks Ramon. We probably will have a couple of questions for you.

**JOHN DEVINE**  
P.E.

**HDR Engineering, Inc.**

Senior Vice President, Hydropower Services

970 Baxter Boulevard Suite 301 | Portland, ME 04103  
207.775.4495 | c: 207.776.2206 | f: 207.775.1742  
[john.devine@hdrinc.com](mailto:john.devine@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**From:** Martin, Ramon [[mailto:ramon\\_martin@fws.gov](mailto:ramon_martin@fws.gov)]  
**Sent:** Friday, March 15, 2013 6:21 PM  
**To:** Devine, John  
**Cc:** [gregd@mid.org](#); Joy Warren ([Joy.Warren@mid.org](#)); [agodwin@mrgb.org](#); 'William Johnston' ([agengr6@mid.org](#)); [Steve E. Boyd \(seboyd@tid.org\)](#); [bparis@olaughlinparis.com](#); [Borovansky, Jenna](#)  
**Subject:** Re: ISR Meeting; Predation Study

John,

Thanks for the update and we look forward to working with you and the Districts on any second year studies or reviewing any additional second year study proposals. Let me know if you have any questions regarding any of our comments to the ISR.

Thanks,  
Ramon Martin  
Assistant Program Manager  
Anadromous Fish Restoration Program  
US Fish and Wildlife Service  
850 S. Guild Ave., Suite 105  
Lodi, CA 95240  
(209) 334-2968 ext. 401  
(209) 334-2171 Fax

Our mission is, working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

On Fri, Mar 15, 2013 at 1:23 PM, Devine, John <[John.Devine@hdrinc.com](mailto:John.Devine@hdrinc.com)> wrote:

Ramon,



I wanted to respond to your February 27 email to me on the subject of potentially expanding the Districts 2013 Predation Study to include a juvenile Chinook survival study. On March 6, Andrea Fuller and you were able to further discuss the specifics of what USFWS has in mind which resulted in our understanding that:

- USFWS is requesting a juvenile Chinook survival study in the SJR from the mouth of the Tuolumne to Mossdale because of the limited data available in this reach, and
- USFWS is requesting that the Districts in their 2013 Tuolumne River Predation study include age and growth analysis for black bass species using scales or otoliths

As you know, at the ISR meeting, the Districts indicated they were considering repeating the 2012 Predation Study in 2013. The Districts have since decided to proceed with undertaking certain components of the Predation Study; namely, a second year of the predator abundance and predation rate sampling following the same methods as work completed in 2012. Study plans will be provided for review in the coming weeks. As part of the 2012 study, the Districts performed acoustic tracking of salmon smolts and predators to evaluate habitat use under three flow conditions during 2012. Due to timing and costs the Districts are not planning to undertake acoustic tracking in 2013. Based on your call with Andrea, we understand the USFWS was going to be requesting both of the studies referenced in the bullets above in your ISR comments. At the present time, we are amenable to expanding the 2013 Predation Study to include age and growth analysis of black bass species using scale samples. With regard to additional 2013 studies, the Districts will review and respond to all study requests contained in the recently filed ISR comments by April 9.

We have appreciated the active and constructive participation of the USFWS in the Don Pedro project relicensing, and look forward to continuing to work with you, Zac, and USFWS staff as we move forward.

**JOHN DEVINE**  
P.E.

**HDR Engineering, Inc.**  
Senior Vice President, Hydropower Services

970 Baxter Boulevard Suite 301 | Portland, ME 04103  
207.775.4495 | c: 207.776.2206 | f: 207.775.1742  
[john.devine@hdrinc.com](mailto:john.devine@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Ramon Martin [[mailto:ramon\\_martin@fws.gov](mailto:ramon_martin@fws.gov)]  
**Sent:** Wednesday, February 27, 2013 4:21 PM  
**To:** Staples, Rose  
**Subject:** Fw: Don Pedro Initial Study Report W&AR - 7 Predation Study

Rose,

Here is the email I sent to John earlier today that you can relay to the Districts.

Thanks,  
Ramon Martin

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**From:** Martin, Ramon [[mailto:ramon\\_martin@fws.gov](mailto:ramon_martin@fws.gov)]  
**Sent:** Wednesday, February 27, 2013 10:39 AM  
**To:** [john.devine@hdrinc.com](mailto:john.devine@hdrinc.com) <[john.devine@hdrinc.com](mailto:john.devine@hdrinc.com)>  
**Subject:** Don Pedro Initial Study Report W&AR - 7 Predation Study

John,

I just wanted to follow up with our request at the ISR Meeting on January 30th for the Districts to include juvenile Chinook salmon tagging with their predation study. We requested for the Districts to consider tagging juvenile Chinook salmon and collect habitat use, movement, and survival in conjunction with the predator tagging to assess how predators and Chinook salmon interact in the study reach during the Don Pedro Article 37 spring pulse flows. We would like to cooperate and provide input into your study design before you move forward with implementation this year. Let me know the status of the study and if you all have considered our request.

Thanks,  
Ramon Martin  
Assistant Program Manager  
Anadromous Fish Restoration Program  
US Fish and Wildlife Service  
850 S. Guild Ave., Suite 105  
Lodi, CA 95240  
(209) 334-2968 ext. 401  
(209) 334-2171 Fax

Our mission is, working with others, to conserve,  
protect and enhance fish, wildlife, and plants  
and their habitats for the continuing benefit  
of the American people.

## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Tuesday, April 09, 2013 5:46 PM  
**To:** Alves, Jim; Amerine, Bill; Anderson, Craig; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beniamine Beronia; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Brewer, Doug; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Colvin, Tim; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Ferranti, Annee; Ferrari, Chandra; Fety, Lauren; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayat, Zahra; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Lein, Joseph; Levin, Ellen; Lewis, Reggie; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Monheit, Susan; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Districts Response to Don Pedro ISR Comment Letters E-Filed Today with FERC

The Districts e-filed with FERC today their response to the Initial Study Report (ISR) comment letters filed. A copy of the response, along with the comment letters, have been uploaded to the [www.donpedro-relicensing](http://www.donpedro-relicensing) website (DOCUMENTS tab, Initial Study Reports Section, Study Comments folder). Their response should also be available on FERC's E-Library ([www.ferc.gov](http://www.ferc.gov)) soon, most probably tomorrow. Also included in this filing are the draft meeting notes from the March 27, 2013 Hydrology Workshop No. 4 and the final meeting notes from the October 26, 2012 W&AR-03 and W&AR-16 River and Reservoir Temperature Models Consultation Workshop No. 2.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

From: [Rose.Staples@hdrinc.com](mailto:Rose.Staples@hdrinc.com)

To: [jalves@modestogov.com](mailto:jalves@modestogov.com); [william\[REDACTED\]](mailto:william[REDACTED]); [craig.anderson@fws.gov](mailto:craig.anderson@fws.gov);  
[lynette@newman-romano.com](mailto:lynette@newman-romano.com); [james\\_barnes@blm.gov](mailto:james_barnes@blm.gov); [pbarnes@waterboards.ca.gov](mailto:pbarnes@waterboards.ca.gov);  
[Linda.Barrera@wildlife.ca.gov](mailto:Linda.Barrera@wildlife.ca.gov); [benamine@envres.org](mailto:benamine@envres.org); [martinblake\[REDACTED\]](mailto:martinblake[REDACTED]);  
[jbond@modestogov.com](mailto:jbond@modestogov.com); [Jenna.Borovansky@hdrinc.com](mailto:Jenna.Borovansky@hdrinc.com); [aboucher\[REDACTED\]](mailto:aboucher[REDACTED]);  
[Stephen.Bowes@nps.gov](mailto:Stephen.Bowes@nps.gov); [artbow\[REDACTED\]](mailto:artbow[REDACTED]); [beth\\_brenneman@blm.gov](mailto:beth_brenneman@blm.gov);  
[douglas.brewer@tetrattech.com](mailto:douglas.brewer@tetrattech.com); [johnb@cserc.org](mailto:johnb@cserc.org); [buckley@Portland.econw.com](mailto:buckley@Portland.econw.com);  
[steveburke49\[REDACTED\]](mailto:steveburke49[REDACTED]); [cburt@calpoly.edu](mailto:cburt@calpoly.edu); [tim.byrd@ejgallo.com](mailto:tim.byrd@ejgallo.com); [socialch\[REDACTED\]](mailto:socialch[REDACTED]);  
[mcarlin@sfwater.org](mailto:mcarlin@sfwater.org); [cindy\[REDACTED\]](mailto:cindy[REDACTED]); [timcolvin@tds.net](mailto:timcolvin@tds.net); [chixrnch@mlode.com](mailto:chixrnch@mlode.com);  
[J.cowan\[REDACTED\]](mailto:J.cowan[REDACTED]); [receptionist@mlode.com](mailto:receptionist@mlode.com); [pcransto@blm.gov](mailto:pcransto@blm.gov); [rebeccac@cserc.org](mailto:rebeccac@cserc.org);  
[ndamin@envres.org](mailto:ndamin@envres.org); [tmtc@mlode.com](mailto:tmtc@mlode.com); [Pday@mofo.com](mailto:Pday@mofo.com); [denean@buenavistatribe.com](mailto:denean@buenavistatribe.com);  
[mderwin@portolavalley.net](mailto:mderwin@portolavalley.net); [John.Devine@hdrinc.com](mailto:John.Devine@hdrinc.com); [mwdonaldson@parks.ca.gov](mailto:mwdonaldson@parks.ca.gov);  
[mdowd@fs.fed.us](mailto:mdowd@fs.fed.us); [WesternPalms\[REDACTED\]](mailto:WesternPalms[REDACTED]); [Peter@tuolumne.org](mailto:Peter@tuolumne.org);  
[steve.edmondson@noaa.gov](mailto:steve.edmondson@noaa.gov); [james\\_eicher@BLM.gov](mailto:james_eicher@BLM.gov); [James.Fargo@ferc.gov](mailto:James.Fargo@ferc.gov);  
[AFerranti@dfg.ca.gov](mailto:AFerranti@dfg.ca.gov); [cferrari@tu.org](mailto:cferrari@tu.org); [lfety@blm.gov](mailto:lfety@blm.gov); [TFindley@hansonbridgett.com](mailto:TFindley@hansonbridgett.com);  
[mcf7491\[REDACTED\]](mailto:mcf7491[REDACTED]); [rfuller@mlode.com](mailto:rfuller@mlode.com); [donn.w.furman@sfgov.org](mailto:donn.w.furman@sfgov.org);  
[jgantenbein@waterpowerlaw.com](mailto:jgantenbein@waterpowerlaw.com); [Deborah.Giglio@fws.gov](mailto:Deborah.Giglio@fws.gov); [vevado\[REDACTED\]](mailto:vevado[REDACTED]);  
[zgrader\[REDACTED\]](mailto:zgrader[REDACTED]); [monica.gutierrez@noaa.gov](mailto:monica.gutierrez@noaa.gov); [bhackamack\[REDACTED\]](mailto:bhackamack[REDACTED]);  
[James.Hastreiter@FERC.gov](mailto:James.Hastreiter@FERC.gov); [jhatch@caltrout.org](mailto:jhatch@caltrout.org); [Zhayat@mofo.com](mailto:Zhayat@mofo.com); [ahayden@edf.org](mailto:ahayden@edf.org);  
[anitajhellam\[REDACTED\]](mailto:anitajhellam[REDACTED]); [theyne@dfg.ca.gov](mailto:theyne@dfg.ca.gov); [thomas.holley@noaa.gov](mailto:thomas.holley@noaa.gov); [lholm@usbr.gov](mailto:lholm@usbr.gov);  
[jhorn@blm.gov](mailto:jhorn@blm.gov); [timihorn\[REDACTED\]](mailto:timihorn[REDACTED]); [b.hudelson\[REDACTED\]](mailto:b.hudelson[REDACTED]); [noahnsa\[REDACTED\]](mailto:noahnsa[REDACTED]);  
[rwhughes@dfg.ca.gov](mailto:rwhughes@dfg.ca.gov); [noah@stillwatersci.com](mailto:noah@stillwatersci.com); [zachary\\_jackson@FWS.gov](mailto:zachary_jackson@FWS.gov);  
[Julia.jauregu\[REDACTED\]](mailto:Julia.jauregu[REDACTED]); [deltakeep\[REDACTED\]](mailto:deltakeep[REDACTED]); [ajensen@bawsca.org](mailto:ajensen@bawsca.org);  
[Laura.Jensen@TNC.org](mailto:Laura.Jensen@TNC.org); [mjohannis@usbr.gov](mailto:mjohannis@usbr.gov); [bjohnson@tu.org](mailto:bjohnson@tu.org);  
[Christy.A.Jones@usace.army.mil](mailto:Christy.A.Jones@usace.army.mil); [Jsansley@duanemorris.com](mailto:Jsansley@duanemorris.com); [justin\[REDACTED\]](mailto:justin[REDACTED]);  
[jekeating66\[REDACTED\]](mailto:jekeating66[REDACTED]); [kathryn.kempton@noaa.gov](mailto:kathryn.kempton@noaa.gov); [tkinney86\[REDACTED\]](mailto:tkinney86[REDACTED]);  
[patrick@tuolumne.org](mailto:patrick@tuolumne.org); [lesley.kordella@ferc.gov](mailto:lesley.kordella@ferc.gov); [Bao.Le@hdrinc.com](mailto:Bao.Le@hdrinc.com);  
[Mortalis46\[REDACTED\]](mailto:Mortalis46[REDACTED]); [elevin@sfwater.org](mailto:elevin@sfwater.org); [rlewis@tcouncil.com](mailto:rlewis@tcouncil.com); [dslinkard\[REDACTED\]](mailto:dslinkard[REDACTED]);  
[Carin.Loy@hdrinc.com](mailto:Carin.Loy@hdrinc.com); [roselynn@buenavistatribe.com](mailto:roselynn@buenavistatribe.com); [maperanch\[REDACTED\]](mailto:maperanch[REDACTED]);  
[dmadden@turlock.ca.us](mailto:dmadden@turlock.ca.us); [annie.manji@wildlife.ca.gov](mailto:annie.manji@wildlife.ca.gov); [Dmarko\[REDACTED\]](mailto:Dmarko[REDACTED]);  
[mike@hetchhetchy.org](mailto:mike@hetchhetchy.org); [mmartin\[REDACTED\]](mailto:mmartin[REDACTED]); [ramon\\_martin@fws.gov](mailto:ramon_martin@fws.gov); [chixrnch2@mlode.com](mailto:chixrnch2@mlode.com);  
[damplo\[REDACTED\]](mailto:damplo[REDACTED]); [rmcdevitt@hansonbridgett.com](mailto:rmcdevitt@hansonbridgett.com); [marty\[REDACTED\]](mailto:marty[REDACTED]);  
[Jmein@envres.org](mailto:Jmein@envres.org); [sixbit\[REDACTED\]](mailto:sixbit[REDACTED]); [SMonheit@waterboards.ca.gov](mailto:SMonheit@waterboards.ca.gov);  
[rhonda@buenavistatribe.com](mailto:rhonda@buenavistatribe.com); [mary.motola@chukchansi.net](mailto:mary.motola@chukchansi.net); [gmurphey@dfg.ca.gov](mailto:gmurphey@dfg.ca.gov);  
[shana.murray@ferc.gov](mailto:shana.murray@ferc.gov); [JKO'Brien@dfg.ca.gov](mailto:JKO'Brien@dfg.ca.gov); [TomO@stanfarmbureau.org](mailto:TomO@stanfarmbureau.org); [rsce\[REDACTED\]](mailto:rsce[REDACTED]);  
[ottfarms.chris\[REDACTED\]](mailto:ottfarms.chris[REDACTED]); [duane.paul@cardno.com](mailto:duane.paul@cardno.com); [steve.pavich@cardno.com](mailto:steve.pavich@cardno.com);  
[rbpoo\[REDACTED\]](mailto:rbpoo[REDACTED]); [ruth.porter@hoganlovells.com](mailto:ruth.porter@hoganlovells.com); [chixrnch@lodelink.com](mailto:chixrnch@lodelink.com);  
[spuccini@dfg.ca.gov](mailto:spuccini@dfg.ca.gov); [jessie@tuolumne.org](mailto:jessie@tuolumne.org); [tramirez@sfwater.org](mailto:tramirez@sfwater.org); [maria.rea@noaa.gov](mailto:maria.rea@noaa.gov);  
[rhonda.reed@noaa.gov](mailto:rhonda.reed@noaa.gov); [drichardson@co.tuolumne.ca.us](mailto:drichardson@co.tuolumne.ca.us);  
[Kevin.A.Richardson@usace.army.mil](mailto:Kevin.A.Richardson@usace.army.mil); [jridenour@modestogov.com](mailto:jridenour@modestogov.com); [TRiggs@co.tuolumne.ca.us](mailto:TRiggs@co.tuolumne.ca.us);  
[royalrobbins\[REDACTED\]](mailto:royalrobbins[REDACTED]); [dave@newman-romano.com](mailto:dave@newman-romano.com); [rrcollins@waterpowerlaw.com](mailto:rrcollins@waterpowerlaw.com);  
[spreck@hetchhetchy.org](mailto:spreck@hetchhetchy.org); [jessetroseman\[REDACTED\]](mailto:jessetroseman[REDACTED]); [srothert@americanrivers.org](mailto:srothert@americanrivers.org);  
[nsandkulla@bawsca.org](mailto:nsandkulla@bawsca.org); [isaunders@parks.ca.gov](mailto:isaunders@parks.ca.gov); [aschutte@hansonbridgett.com](mailto:aschutte@hansonbridgett.com);  
[wsears@sfwater.org](mailto:wsears@sfwater.org); [sarah.shakal@humboldt.edu](mailto:sarah.shakal@humboldt.edu); [squabbob\[REDACTED\]](mailto:squabbob[REDACTED]); [vshumway@fs.fed.us](mailto:vshumway@fs.fed.us);

[blancapaloma\[REDACTED\]](#); [plranches\[REDACTED\]](#); [CNRf@elite.net](#); [jpsmith@ldpmarina.com](#);  
[Rose.Staples@hdrinc.com](#); [gstapley@modbee.com](#); [dave@americanwhitewater.org](#);  
[steinerc\[REDACTED\]](#); [john.stender\[REDACTED\]](#); [vstone@mewuk.com](#);  
[rstork@friendsoftheriver.org](#); [sstratton@parks.ca.gov](#); [mtaylor@dfg.ca.gov](#);  
[tterpstra@thtlaw.com](#); [\[REDACTED\]](#); [larry.thompson@noaa.gov](#);  
[Tmberliner@duanemorris.com](#); [\[REDACTED\]](#) [rulm@modestogov.com](#);  
[sandyvasquez\[REDACTED\]](#); [cverkuil@mofo.com](#); [chris.vierra@ci.ceres.ca.us](#);  
[richard.wantuck@noaa.gov](#); [arta\[REDACTED\]](#) [wengnut001\[REDACTED\]](#) [eric@tuolumne.org](#);  
[dan.wheelerhay\[REDACTED\]](#); [dave.wheelerhay\[REDACTED\]](#);  
[douglas.wheeler@hoganlovells.com](#); [David.K.White@noaa.gov](#); [scott@stillwatersci.com](#);  
[hbwillia44\[REDACTED\]](#) [alison\\_willy@fws.gov](#); [bwilson@mofo.com](#); [frank.winchell@ferc.gov](#);  
[john.wooster@noaa.gov](#); [michelle\\_workman@fws.gov](#); [rmyoshiyama@ucdavis.edu](#);  
[wayne@stanfarmbureau.org](#)

Subject: No Don Pedro Workshop Meetings Next Week--New Schedule Coming Soon

Date: Thu, 11 Apr 2013 22:23:13 +0000

We are currently developing a revised schedule for the Project Operations Model Base Case rollout, the Integrated Model Training, and the W&AR-6 Salmon Population Model Workshop (previously scheduled for April 18<sup>th</sup>). The new schedule will be issued next week—and I will advise you at that time as well as update the relicensing website calendar. So, therefore, there will be NO meetings/workshops next week. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Tuesday, April 30, 2013 5:11 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Lewis, Reggie'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Monheit, Susan'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro Relicensing 2013 Predation Study Plan Filed with FERC Today

The Districts have filed with FERC today the 2013 Predation Study Plan for the Don Pedro Project. The filing is on FERC's E-Library ([www.ferc.gov](http://www.ferc.gov)) and will be on the Don Pedro Project relicensing website shortly ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)). If you have any difficulties accessing and/or downloading the document, please let me know. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Tuesday, June 11, 2013 6:28 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** AGENDA for Don Pedro W-AR-7 2014 Draft Predation Study Meeting June 19 2013  
**Attachments:** DonPedroW-AR-7\_2014draftPredationStudyMtg\_130619.doc

In its May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project, FERC recommended that the Districts consult with FWS, NMFS, CDFW, and Conservation Groups in developing a draft 2014 Predation Study Plan to be submitted for Commission approval by August 1, 2013. The Districts invite you to participate in a meeting from 1:30 to 4:30 pm on June 19 at HDR's Sacramento office. The purpose of this meeting is to discuss and clarify recommendations provided in FERC's Determination. The draft 2014 Predation Study Plan will reflect this discussion and will be submitted to Relicensing Participants by July 8, 2013 for a 30-day review. The Districts are planning to file the study plan with FERC for approval by September 15, 2013.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)





## **Don Pedro Relicensing W&AR-07 – Draft 2014 Predation Study Meeting**

**Wednesday, June 19, 2013  
1:30 pm to 4:30 pm**

**HDR Offices  
2379 Gateway Oaks Drive, Suite 200, Sacramento, CA**

### **MEETING PURPOSE / AGENDA**

**PURPOSE:** The purpose of this meeting is to discuss and clarify recommendations made by FERC in its Determination, and the discussion will include:

- Review of study objectives
  - Predator abundance
  - Predation rates
  - Relative habitat use
- Predation rate sampling design
  - Summary and clarification of comments
  - Definition of study reach
  - Timing
  - Potential capture methods
  - Effort and certainty
- Predator abundance sampling design
  - Summary and clarification of comments
  - Definition of study reach
  - Timing
  - Potential capture methods
  - Effort and certainty
- Relative habitat use sampling design
  - Summary and clarification of comments
  - Scale

## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Thursday, June 13, 2013 8:24 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'

**Subject:** Don Pedro - Districts file Request for Time Extension on Filing Two New Study Plans  
**Attachments:** P-2299\_DP\_ReqExtnTimeFileStudyPlans\_130613.pdf

The Districts have filed with FERC today a *Request for Extension of Time to File* (see attached) the following two new study plans: 2014 Predation Study and the Juvenile Chinook Salmon Floodplain Rearing Hydraulic Analysis.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)



June 13, 2013

FERC Project No. 2299-075 California  
Don Pedro Hydroelectric Project

Secretary Kimberly D Bose  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington DC 20426

Subject: Request for Extension of Time to File Study Plans  
Don Pedro Hydroelectric Project No. 2299-075

Dear Ms. Bose:

Turlock Irrigation District and Modesto Irrigation District (collectively the "Districts") are in receipt of the Commission's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Project. In the Determination, the Commission directs the Districts to file two new study plans as follows:

- Predation Study
- Juvenile Chinook Salmon Floodplain Rearing Hydraulic Analysis

The May 21, 2013 letter indicates that these two study plans are to be filed with the Commission by August 1, 2013. Both study plans are to be developed through consultation with relicensing participants and provide 30 days for the consulted parties to provide written comments and recommendations. These two studies are important undertakings and the study plan details, especially those related to the Predation Study to be conducted in 2014, are likely to take significant time to work through with relicensing participants. Therefore, the Districts are requesting an extension of time to September 15, 2013 for filing the final study plans with the Commission for approval. The Districts have held initial conversations with several of the resource agencies. These resource agencies concur with the need for additional time to collaborate in the development of these study plans.

Sincerely,

Steven Boyd  
Turlock Irrigation District  
P O Box 95381  
Turlock CA 95381  
(209) 883-8364  
[seboyd@tid.org](mailto:seboyd@tid.org)

Greg Dias  
Modesto Irrigation District  
P O Box 4060  
Modesto CA 95352  
(209) 526-7566  
[gregd@mid.org](mailto:gregd@mid.org)

cc: Peter Barnes, SWRCB  
Annie Manji, CDFW  
Robert Hughes, CDFW  
Ramon Martin, USFWS  
Zac Jackson, USFWS

## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Tuesday, June 18, 2013 4:06 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Colvin, Tim'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayat, Zahra'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro June 19 2013 W-AR-07 Draft 2014 Predation Study Plan Meeting in Sacramento

Please find below the **Call-In Number, On-Line Meeting** link, and a repeat of the previously-issued **AGENDA** for the **June 19 W&AR-07 Draft 2014 Predation Study Plan Meeting** to be held at the HDR Offices in Sacramento (2379 Gateway Oaks Drive, Suite 200) beginning at 1:30 p.m.

1-866-994-6437 Call-in  
2300743 password

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[Join online meeting](#)

<https://meet.hdrinc.com/jenna.borovansky/3D64F0F5>

[First online meeting?](#)

**Wednesday, June 19, 2013**  
**1:30 pm to 4:30 pm**

## MEETING PURPOSE / AGENDA

**PURPOSE:** The purpose of this meeting is to discuss and clarify recommendations made by FERC in its Determination, and the discussion will include:

- Review of study objectives
  - Predator abundance
  - Predation rates
  - Relative habitat use
- Predation rate sampling design
  - Summary and clarification of comments
  - Definition of study reach
  - Timing
  - Potential capture methods
  - Effort and certainty
- Predator abundance sampling design
  - Summary and clarification of comments
  - Definition of study reach
  - Timing
  - Potential capture methods
  - Effort and certainty
- Relative habitat use sampling design
  - Summary and clarification of comments
  - Scale

Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

From: Staples, Rose  
Sent: Wednesday, July 10, 2013 10:10 AM  
To: 'Mike Marshall'  
Subject: RE: cost of re-licensing process?

Received your query, thank you. The Districts are the best source for this information, so I will be forwarding your request on to them today.

ROSE STAPLES  
CAP-OM  
HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
rose.staples@hdrinc.com | hdrinc.com

From: Mike Marshall [mailto:mike@hetchhetchy.org]  
Sent: Monday, July 08, 2013 5:58 PM  
To: Staples, Rose  
Subject: cost of re-licensing process?

Rose:

Is there a document or individual that can tell me how much TID/MID will spend on the participating in the re-licensing process? I don't need anything elaborate....just a ballpark number.

Thanks!  
Mike

Mike Marshall, Executive Director  
Restore Hetch Hetchy  
Join me in Yosemite on Muir's March July 28 - August 3, 2013 or Muir's Ride July 31 - August 3, 2013  
415.956.0401 office  
415.745.0626 cell  
101 Montgomery Street, Suite 2600  
San Francisco, California 94103  
www.hetchhetchy.org



Volume 3 | Issue 1



# Don Pedro



*A newsletter about the relicensing of the Don Pedro Project*

## FERC weighs in on Initial Study Report

As part of the joint Modesto Irrigation District-Turlock Irrigation District process to relicense the Don Pedro Project, the Federal Energy Regulatory Commission (FERC) issued its 45-page Determination on Requests for Study Modifications and New Studies on May 21, 2013.

FERC's determination follows the Districts' April 9, 2013 submittal to FERC of their Response to Relicensing Participants Comments regarding the Districts' Initial Study Report (ISR). As part of the Integrated Licensing Process (ILP), the Districts completed a number of environmental studies in 2012 and prepared reports which were provided to FERC and relicensing participants with the Jan. 17, 2013 submittal of the ISR. The studies are required in accordance with FERC's Study Plan Determination issued in 2011.

The reports included in the ISR were summarized by the Districts and their consultants at meetings with the public held Jan. 30-31. These open meetings served to summarize each study and address questions or initial comments on the studies. Attendance was excellent and many questions were addressed. Of key interest were the results of the lower Tuolumne River Predation Study, the Lower Tuolumne River Operations Model, and the Spawning Gravel Study.

Relicensing participants then had until March 9 to file comments on the reports, and the Districts had until April 9 to file their responses to those comments. Comments were received from the National Marine Fisheries Service, the United States Fish and Wildlife Service, National Park Service, California Department of Fish and Wildlife, the State Water Resources Control Board, various conservation groups, and the Bureau of Land Management. As part of the ILP,

### **INTERESTED IN STUDIES?**

Glance inside for more details about relicensing studies, including a planned 2014 study focusing on predation of young salmon by bass and pikeminnow.

FERC then resolves any remaining disagreements about the need for new studies or modifications to the studies already

completed by issuing its formal determination.

On April 9, the Districts responded to all the comments received, amounting to more than 100 separate responses. This response document was filed with FERC and is available online at [www.donpedro-relicensing.com/documents](http://www.donpedro-relicensing.com/documents).

The ISR contains status reports or results of field work completed for over 30 cultural, terrestrial, recreation, and resource studies. Work continues into 2013 analyzing results of these field studies, incorporating information into models, and responding to FERC's May 21, 2013 study plan determination.

## Important dates

**by Nov. 30, 2013**

**DRAFT License Application  
filed with FERC**

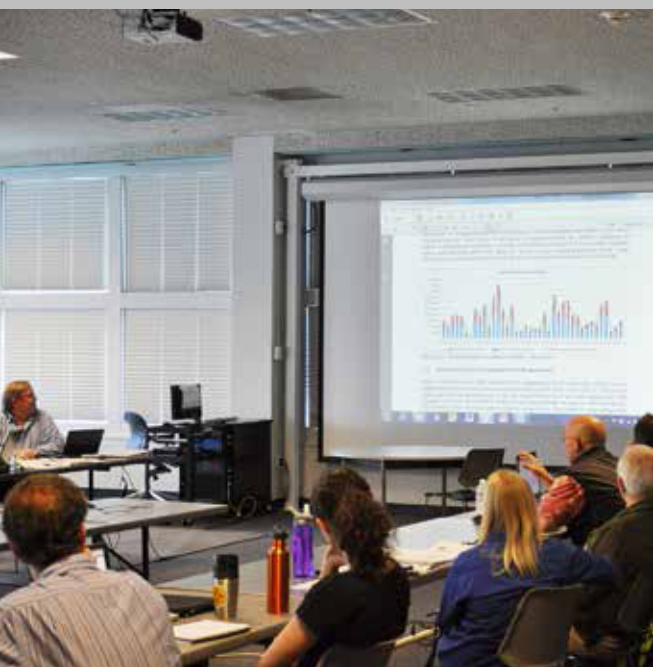
**by April. 30, 2014**

**Final License Application  
filed with FERC**



## What's inside

- Public workshops
- Studies
- Dry water year
- State flow proposal



## Hands-on analysis part of model workshops

Public workshops are one of many opportunities for public input regarding the relicensing process. Additionally, state and federal agencies, as well as non-governmental organizations, also are involved in the process.

Some examples of such participation occurred in May and June of 2013, when a series of workshops were held. During these workshops, the Districts released analytical models to relicensing participants.

These models, used as tools by the Districts and other participants as part

of the relicensing process, include the Lower Tuolumne River Operations Model Base Case, the Don Pedro Reservoir Temperature Model, the Lower Tuolumne River Temperature Model, and the Chinook Salmon Population Model.

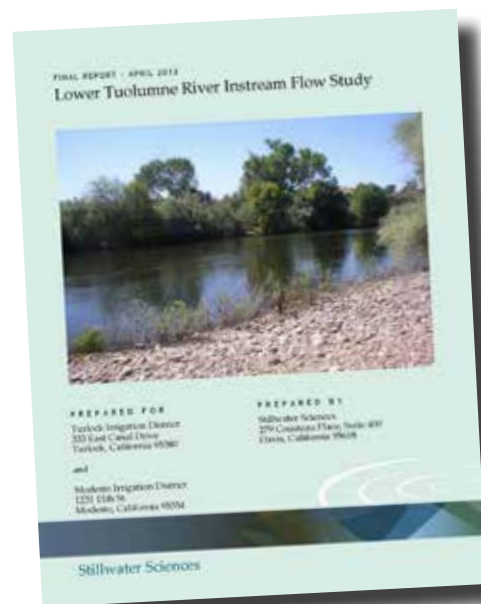
At the workshops, which were well-attended, background information and model assumptions were discussed, digital copies of the models were handed out, and participants had the opportunity to test the models and analyze model results based on varying inputs.

## More than three years in the making, IFIM study filed

The Districts' Lower Tuolumne River Instream Flow (IFIM) Study Report was filed with FERC on April 29, 2013 after more than three years of study effort, including extensive collaboration with resource agencies and other interested parties.

The instream flow study was to determine instream flows necessary to maximize fall-run Chinook salmon and O. mykiss production, and to maximize survival throughout their various life stages.

In a proceeding underway before relicensing, FERC issued a July 16, 2009 order directing the Districts to develop and implement an Instream Flow Incremental Method/Physical Habitat Simulation (IFIM/PHABSIM) study of the lower Tuolumne River.



Since initiation of the instream flow study, the Districts have initiated the relicensing process for the Don Pedro Project.

It is the Districts' intent to integrate the IFIM study results into all relicensing studies and analyses where pertinent.

## Second consecutive dry year

When operating a power plant that is fueled by falling water released from a reservoir, hydrology data and water year status take on increased interest and importance.

Thus is the case with the Don Pedro Project, which receives inflow from the Tuolumne River. The Tuolumne's 2013 water year is shaping up to be dry (among the 25 driest years in over 115 years of record keeping). Its full natural

flow this year will not reach 1.1 million acre-feet. Additionally, following a dry 2012, water supply is impacted more during consecutive dry years compared to non-sequential dry years.

Compare those consecutive years to the Department of Water Resources 50-year annual average of about 1.9 million acre-feet, and it's to see why many utilities are hoping for a wet 2014.





## State's flow plan raises concerns

A proposal by the California State Water Resources Control Board is in the works, and could require the Merced, Tuolumne, and Stanislaus rivers to dedicate 35 percent of unimpaired flow to fish and wildlife from February to June each year.

At current, Phase 1 of the board's update to its Bay-Delta Water Quality Control Plan is in the environmental review stages. The board's Substitute Environmental Document was the topic of public workshops in March 2013, with water agencies such as the MID and TID opposing the flow proposal, citing the potential harm to water and power customers and the region's economy, agriculture operations and water supply.

Of additional concern to the Districts is the timing of the board's proposal, which conflicts with many aspects of the relicensing process.

## Many studies finished, others in works

The Districts completed more than 20 relicensing studies in 2012, and more work is to be completed in 2013 and 2014, leading up to the April 2014 filing of the Districts' Final License Application for the Don Pedro Project.

In its May 21, 2013 Determination on Requests for Study Modifications and New Studies, FERC required that seven of the Districts' studies should be expanded to provide additional information and two new studies should be conducted, both of which had been proposed by the Districts. In addition to following FERC's Determination, the Districts will be conducting a study of the loss of salmon smolts resulting from predation by other fish species (primarily black bass and striped bass) in 2014.

Results of the 23 completed studies, and status reports on the remaining 12 in-progress studies are identified in the Districts' Initial Study Report (ISR). Completed studies include 10 terrestrial studies, three recreation studies, and 10 of the water and aquatic resources studies. The ISR, as well as hundreds of other documents related to the relicensing process,

are located on the Documents page at [www.donpedro-relicensing.com/documents](http://www.donpedro-relicensing.com/documents).

Another major milestone nearing is the filing of the Districts' Draft License Application. This draft application is for the specific purpose of obtaining comments and questions from all interested parties, and is required to be issued prior to November 30, 2013. The Final License Application must be filed before April 30, 2014.

**In other news:** On June 27, 2013, FERC granted the Districts' request for a time extension related to the La Grange diversion dam. In its order dated Dec. 19, 2012, FERC found that the La Grange diversion dam and TID's small power station was subject to FERC's licensing authority because it included a hydropower generating plant and is located on a navigable stream.

The Districts and conservation groups disagree with the La Grange decision and have sought rehearing. FERC has ordered the Districts to file a licensing plan, which they did on March 19, 2013. FERC is granting an extension of six months to the schedules the Districts' submitted in the licensing plan.



333 E. Canal Drive  
PO Box 949  
Turlock, CA 95381  
209.883.8300





## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Thursday, August 08, 2013 6:07 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackmack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro Draft 2014 Predation Study Plan for 30-Day Review  
**Attachments:** Draft 2014 Predation Study Plan\_130808.docx

I am forwarding the following message to you on behalf of Andrea Fuller of FISHBIO:

As directed in FERC's May 21 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project ("Determination"), the attached **Draft 2014 Predation Study Plan** is being provided for a 30-day review and comment period.

This draft reflects discussions with staff from California Department of Fish and Wildlife, NOAA Fisheries, State Water Resources Control Board, U.S. Fish and Wildlife Service, and Conservation Groups. We are appreciative of the collaborative contributions provided to date, and particularly for the written recommendations provided by Ramon Martin and Zac Jackson of the U.S. Fish and Wildlife Service.

Please provide comments by September 6 to Andrea Fuller at [andreafuller@fishbio.com](mailto:andreafuller@fishbio.com). Thank you.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

**STUDY PLAN W&AR-7**  
**TURLOCK IRRIGATION DISTRICT**  
**AND**  
**MODESTO IRRIGATION DISTRICT**

**DON PEDRO PROJECT**  
**FERC NO. 2299**

**Draft 2014 Predation Study Plan**

**August 7, 2013**

**1.0 Project Nexus**

The continued operation and maintenance (O&M) of the Don Pedro Project (Project) may contribute to cumulative effects on the timing and magnitude of stream flow in the lower Tuolumne River. Stream flows, in turn, potentially may contribute to cumulative effects on Chinook salmon (*Oncorhynchus tshawytscha*) outmigrant survival by contributing to changes in velocities, turbidity, and water temperatures that affect the timing and use of in-channel and floodplain habitats by salmon and predatory fish species.

**2.0 Resource Agency Management Goals**

The Districts believe that four agencies have resource management goals related to Chinook salmon and/or their habitat: (1) U.S. Department of Interior (USDOI), Fish and Wildlife Service (USFWS); (2) U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board, Division of Water Rights (SWRCB).

A goal of the USFWS (2001) Anadromous Fish Restoration Program (AFRP), as stated in Section 3406(b)(1) of the Central Valley Project Improvement Act, is to double the long-term production of anadromous fish in California's Central Valley rivers and streams. Objectives in meeting this long-term goal include: (1) improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity, and timing, and improved physical habitat; (2) improve survival rates by reducing or eliminating entrainment of juveniles at diversions; (3) improve the opportunity for adult fish to reach spawning habitats in a timely manner; (4) collect fish population, health, and habitat data to facilitate evaluation of restoration actions; (5) integrate habitat restoration efforts with harvest and hatchery management; and (6) involve partners in the implementation and evaluation of restoration actions.

NMFS has developed Resource Management Goals and Objectives for species listed under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq.) and the Endangered Species Act (ESA) (16 U.S.C. §1531 et seq.), as well as anadromous species that are not currently listed but may require listing in the future. NMFS' (2009) Public Draft Recovery Plan for Sacramento River Winter-run Chinook salmon, Central Valley Spring-run Chinook salmon, and Central Valley steelhead (Draft Recovery Plan) outlines the framework for the recovery of ESA-listed species and populations in California's Central Valley. For Central Valley steelhead, the relevant recovery actions identified for the Tuolumne River are to: (1) Conduct habitat evaluations, and (2) Manage cold water pools behind LaGrange and Don Pedro dams to provide suitable water temperatures for all downstream life stages. For Central Valley fall/late fall-run Chinook, the relevant goals are to enhance the Essential Fish Habitat downstream of the Project and achieve a viable population of Central Valley fall/late fall-run Chinook salmon in the Tuolumne River.

CDFW's mission is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFW's resource management goals, as summarized in restoration planning documents such as "Restoring Central Valley Streams: A Plan for Action" (Reynolds et al. 1993), are to restore and protect California's aquatic ecosystems that support fish and wildlife, and to protect threatened and endangered species under California Fish and Game Code (Sections 6920-6924).

### **3.0 Study Goals**

The 2014 predation study will provide information to increase understanding of the current effects of predation on rearing and outmigrating juvenile Chinook salmon and *O. mykiss* in the lower Tuolumne River. Specific information obtained by this study will update and supplement information from prior studies in order to:

- estimate relative abundance of predator fish species using in-channel habitats such as largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), Sacramento pikeminnow (*Ptychocheilus grandis*), and striped bass (*Morone sax atilis*), during February-May and July between RM 42 and RM 0, and compare to previous studies,
- estimate predation rates by stomach content sampling (e.g., TID/MID 1992) during juvenile Chinook salmon outmigration between RM 42 and RM 0 and compare to previous studies,
- document predator movement and distribution between RM 42 and RM 0 during juvenile salmon outmigration and July,
- identify mortality hot-spots such as individual run-pools and SRPs between RM 42 and RM 0 that potentially result in higher predation mortality on outmigrating juvenile Chinook salmon.

#### **4.0 Existing Information and Need for Additional Information**

Interannual variations in seasonal river flow and temperature affect the composition and distribution of the native and non-native fish assemblage, including predators of juvenile salmonids (Baltz and Moyle 1993; Brown and Moyle 1997; Brown 2000; Marchetti and Moyle 2001, Brown and Ford 2002). Surveys of predator species distribution and abundance have been carried out by CDFW and the Districts, and demonstrate increasing predator density downstream of the primary spawning reach of the lower Tuolumne River as well as changes in abundance and habitat use in various water year types (McBain & Trush and Stillwater Sciences 2006). The earliest predation study was conducted in 1987 by CDFW and included the release of 90,000 coded-wire-tagged (CWT) juvenile Chinook salmon from below La Grange Dam (River Mile [RM] 52). Recapture rates of CWT fish indicated only 30 percent of the released fish reached the San Joaquin River confluence (RM 0). Because the most plausible explanation for this observation was mortality by predation, additional predation investigations were undertaken by the Districts.

During 1989, the Districts conducted a follow-up predation study at nine sites in the lower Tuolumne River (TID/MID 1992, App. 22). Although this water year was relatively dry, the main objectives of the study were to obtain preliminary data on (1) the piscivorous predator population (species, abundance), (2) the rates of predation, and (3) the variability inherent in sites, timing of surveys, and numbers of fish examined. Twelve potential Chinook salmon predator species (two of which are native species) were captured during the pilot study. Of these 12 species, only two, one smallmouth and one largemouth bass, were found to contain Chinook juveniles in their stomach content. The estimated rate of predation for smallmouth bass, 0.44 fish per day, was over twice as high as that estimated for largemouth bass, 0.20 fish per day.

Habitat-specific predator abundance was estimated before and after the restoration of special run-pool (SRP) 9 by McBain & Trush and Stillwater Sciences (2006). Monitoring data from September–October 2003 showed that largemouth and smallmouth bass were the most abundant potential salmon predators at all project (SRP 9 and SRP 10) and control (Charles Road) sites. Two other potential salmon predators, Sacramento pikeminnow and striped bass, occurred at very low numbers in the sites sampled. Although no information on predation rate was collected for these species, due to the lower relative abundance of smallmouth bass, predation on Chinook salmon by smallmouth bass was considered to be less important than largemouth bass at that time. However, because relative abundance was shown to be variable between pre- and post-project monitoring assessments of the study sites, there is a need to update this information.

To examine whether water velocity and temperature influence predator and juvenile salmon habitat use at the completed SRP-9 Project discussed above, Stillwater Sciences and McBain & Trush (2006) conducted a predator tracking pilot study of three largemouth bass and one smallmouth bass at the same three sites. Prior habitat suitability modeling conducted at SRP 9

for pre- and post-project conditions using the River 2D model (Steffler and Blackburn 2002) indicated that channel restoration should alter water flows and velocities to provide a “safe-velocity corridor” for outmigrant salmon during relatively low flow conditions. However, juvenile Chinook salmon and piscivore-sized bass captured during the surveys were all found on inundated floodplains or in nearshore areas, and analysis of stomach contents indicated no predation on juvenile salmon and very low feeding rates by all predators examined. The small sample size and non-continuous (weekly) mobile-tracking surveys precluded conclusions regarding habitat use by predators or the relationship between predator location and river flow. Study recommendations included targeting lower flows than occurred during this study ( $< 7,000$  cubic feet per second [cfs]) when mid-channel areas can be more effectively surveyed and higher water temperatures facilitate increased predator feeding rates, and the use of additional observation methods such as electrofishing.

During 2012, the Districts estimated predation rates during March and May, predator abundance during the summer, and relative habitat use of juvenile Chinook salmon and predators to update information from previous predation studies to reflect the predator species composition and distribution in response to current conditions. Predation rates for largemouth bass and smallmouth bass were found to be lower than during the 1989 study, and flow thresholds of 300 cfs and 2,000 were found not to be useful in reducing collocation of Chinook salmon smolts and predators.

Based upon the predation studies reviewed above, predation of juvenile salmonids by introduced species such as striped bass, smallmouth bass, and largemouth bass can be a significant factor affecting Chinook salmon smolt survival in certain years. While the studies to date provide some estimates of predation rate and predator abundance, most sampling has been conducted under relatively dry conditions and more data is needed across years to determine how predator abundance and predation rates may be affected by flow, water temperature, and prey availability. The proposed 2014 predation study seeks to provide additional data to inform our understanding of the potential impacts of predation and mechanisms which may influence these impacts through completion of the following tasks:

- estimate relative abundance of predator fish species using in-channel habitats such as largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), Sacramento pikeminnow (*Ptychocheilus grandis*), and striped bass (*Morone sax atilis*), during February-May and July between RM 42 and RM 0, and compare to previous studies,
- estimate predation rates by stomach content sampling (e.g., TID/MID 1992) during juvenile Chinook salmon outmigration between RM 42 and RM 0 and compare to previous studies,
- document predator movement and distribution between RM 42 and RM 0 during juvenile salmon outmigration and July,
- estimate juvenile Chinook salmon mortality in multiple river segments to identify potential mortality hot-spots such as individual run-pools and SRPs between RM 42 and

RM 0 that may result in higher predation mortality on outmigrating juvenile Chinook salmon.

## **5.0 Study Methods**

This study consists of evaluating four components related to salmonid predation by native and non-native species in the lower Tuolumne River:

- estimate relative abundance of predator fish species using in-channel habitats such as largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), Sacramento pikeminnow (*Ptychocheilus grandis*), and striped bass (*Morone sax atilis*), during February-May and July between RM 42 and RM 0, and compare to previous studies,
- estimate predation rates by stomach content sampling (e.g., TID/MID 1992) during juvenile Chinook salmon outmigration (February-May) between RM 42 and RM 0 and compare to previous studies,
- document predator movement and distribution between RM 42 and RM 0 during juvenile Chinook salmon outmigration (February-May) and July,
- estimate juvenile Chinook salmon mortality in multiple river segments to identify potential mortality hot-spots such as individual run-pools and SRPs between RM 42 and RM 0 that may result in higher predation mortality on outmigrating juvenile Chinook salmon.

### **5.1 Study Area**

The study area includes the Tuolumne River from the La Grange Dam (RM 52) downstream to the confluence with the San Joaquin River (RM 0). Study sites for predator abundance and predation rate sampling will be selected using a stratified random sampling design to select random replicate study sites for major habitat types. The lower Tuolumne River is composed of two general habitat strata. The upper section (RM 52-RM 25) consists of alternating riffle and run-pool habitats (with 7 deep and/or wide pools, termed “special run-pools”) while the lower section (RM 25- RM 0) lacks riffles and can be described as uniformly run-pool (TID/MID 1992, Stillwater Sciences and McBain & Trush 2006). These strata will be further divided into four study reaches extending from Turlock Lake State Recreation Area to Hickman Bridge (RM 42-RM 31.6), Hickman Bridge to Charles Road (RM 24), Charles Road to Legion Park (RM 16), and Legion Park to the confluence with the San Joaquin River (RM 0).

### **5.2 General Concepts and Procedures**

The following general concepts apply to the study:

- Personal safety is an important consideration of each fieldwork team. The Districts and their consultants will perform the study in a safe manner; areas considered unsafe in the judgment of field teams will not be surveyed.



- The Districts will make a good faith effort to obtain permission in advance of performance of the study to access private property where needed. Field crews may make minor modifications in the field to adjust to and to accommodate actual field conditions and unforeseeable events. Any modifications made will be documented and reported in the draft study reports.

### 5.3 Study Methods

Predators will be captured in the lower Tuolumne River in multiple habitat types using a variety of methods to determine the relative abundance of each predator species in each type of habitat.

#### 5.3.1 Predator Abundance

Step 1 – Study Design and Permitting. The Predator Abundance study task is designed to collect data on relative predator abundance in specific habitat types using the most feasible and effective methods available. Between TLSRA (RM 42) and the confluence with the San Joaquin River (RM 0) two habitat types will be electrofished monthly during February-May and during July: (1) “special run pools” or “SRPs”) and (2) runs and run-pools. Riffles will not be sampled for three reasons. First, predator abundances in riffle units will likely be low relative to run-pools and special run-pools, and, second, adequately and safely sampling riffle units (at all flows during the study period) using boat-mounted electrofishing units will not be possible. Lastly, both areas and shoreline lengths of riffles make up a relatively small proportion of the total area or shoreline length of the Lower Tuolumne River. Because riffles will not be included, areas and shoreline lengths of riffles will not be used to scale density estimates to abundance estimates (see Step 3). During 2012, sampling was conducted downstream of RM 38.4 during the summer when Chinook salmon are absent from the river and *O. mykiss* are restricted to cooler upstream locations as a means of protecting Chinook salmon and listed Central Valley steelhead from potential harm during sampling. Questions have been raised as to whether summer predator abundance and distribution is representative of conditions during spring. Multiple sampling events during the juvenile Chinook salmon outmigration period and during the summer will document how predator distribution and abundance may change during the juvenile Chinook salmon outmigration period and seasonally from spring to summer to determine if predator abundance and distribution is affected by flow, water temperature, and prey availability, and to determine if estimates collected during summer are representative of distribution and abundance during salmon outmigration.

Primary and alternate sampling locations have been randomly selected in each of the four study reaches extending from Turlock Lake State Recreation Area to Hickman Bridge (RM 42-RM 31.6), Hickman Bridge to Charles Road (RM 24), Charles Road to Legion Park (RM 16), and Legion Park to the confluence with the San Joaquin River (RM 0). The two upper reaches consist of alternating riffle and run-pool habitats (with 7 deep and/or wide pools, termed “special run-pools”) while the lower two reaches lack riffles and can be described as uniformly run-pool

(TID/MID 1992, Stillwater Sciences and McBain & Trush 2006). Within each of the two upper reaches three run-pools and 3 special run-pools have been selected, and within each of the two lower reaches three run-pool segments have been selected. Since the lower reaches are essentially a single run-pool, they were broken into ½ mile segments from which sampling locations were randomly selected. A total of 18 units (e.g., twelve RPs and six SRPs) have been randomly selected from all the units available from RM 0 to RM 42 (Table 1). Alternate sites have also been randomly selected and may be sampled if any of the primary sites are found not to be accessible by boat.

Fyke traps will be used in addition to electrofishing to specifically target striped bass and Sacramento pikeminnow which are known to move over large distances, and are more likely to avoid capture by electrofishing than largemouth bass and smallmouth bass. Fyke traps have proven successful in capturing striped bass on the Sacramento River (Dubois et al 2012) and in the San Joaquin River during 2013 (FISHBIO unpublished data). Fyke traps will be used in relatively deep, higher velocity areas where striped bass and Sacramento pikeminnow would be expected. Approximately four traps will be operated near the downstream boundary of each study reach (i.e., near the mouth of the river, near Legion Park, near Charles Rd., and near Hickman Bridge). Traps will be operated concurrent to electrofishing sampling periods, and the specific number of days operated per abundance sampling event will ultimately be dependent upon observed capture rates.

**Table 1. Sampling locations randomly selected for predator abundance and predation rate sampling.**

Reach	Habitat Type	Unit #	RM	Length (ft)	Area (ft <sup>2</sup> )	Sample	2012 Sampling
TLSRA-Hickman	RP	RP37	43.3	727	80,153	Alternate	
TLSRA-Hickman	SRP	SRP4	43.3	2,176	463,076	Alternate	

TLSRA-Hickman	RP	RP39	42.3	1,007	79,813	Alternate	
TLSRA-Hickman	RP	RP46	40.3	691	66,129	Alternate	
TLSRA-Hickman	SRP	SRP11	39	585	210,165	Primary	
TLSRA-Hickman	RP	RP50A	38.8	507	51,252	Alternate	
TLSRA-Hickman	RP	RP51	37.9	3,194	342,101	Alternate	
TLSRA-Hickman	RP	RP54B	37	504	48,075	Alternate	Abundance
TLSRA-Hickman	RP	RP56	35.9	237	14,362	Primary	
TLSRA-Hickman	RP	RP58	35.6	621	72,544	Primary	
TLSRA-Hickman	SRP	SRP5 SS1	35.1	1,583	431,989	Primary	
TLSRA-Hickman	SRP	SRP5	34.7	1,401	341,972	Primary	
TLSRA-Hickman	RP	RP59	34.4	877	114,348	Alternate	
TLSRA-Hickman	RP	RP62A	34.1	1,286	164,609	Alternate	
TLSRA-Hickman	RP	RP62B	33.9	145	9,447	Alternate	
TLSRA-Hickman	RP	RP63A	33.6	237	39,242	Primary	
Hickman- Charles	RP	RP65	33.1	716	58,400	Alternate	
Hickman- Charles	RP	RP66	33	1,145	109,508	Primary	
Hickman- Charles	RP	RP66C	32.5	131	5,579	Alternate	
Hickman- Charles	RP	RP66D	32.4	710	54,487	Primary	
Hickman- Charles	SRP	SRP6	32.2	2,873	561,443	Alternate	Pred. Rate
Hickman- Charles	RP	RP67B	31.6	1,429	154,272	Alternate	
Hickman- Charles	RP	RP67C	31.3	276	29,915	Alternate	
Hickman- Charles	SRP	SRP7	30.6	5,900	1,103,099	Primary	Pred. Rate
Hickman- Charles	SRP	SRP7 SS1	29.5	2,646	658,144	Primary	Abundance
Hickman- Charles	RP	RP68A	29.4	333	43,764	Primary	Pred. Rate
Hickman- Charles	SRP	SRP8 SS1	29.1	2,615	808,423	Alternate	Pred. Rate
Hickman- Charles	SRP	SRP8	27.7	6,191	1,553,103	Alternate	
Hickman- Charles	SRP	SRP10	26.9	1,228	415,059	Primary	Abundance/ Pred.
Hickman- Charles	RP	RP70	26.7	665	97,988	Alternate	
Hickman- Charles	RP	RP	26.5	1,568	129,751	Alternate	
Hickman- Charles	RP	RP	26.2	1,411	126,257	Alternate	
Charles Rd - Legion	RP	RP	25.2	3,065	276,001	Alternate	Abundance
Charles Rd - Legion	RP	RP	25	1,280	137,441	Primary	
Charles Rd - Legion	RP	RP	21.5	NA	NA	Primary	
Charles Rd - Legion	RP	RP	21	NA	NA	Alternate	
Charles Rd - Legion	RP	RP	20.5	NA	NA	Primary	
Charles Rd - Legion	RP	RP	20	NA	NA	Alternate	
Charles Rd - Legion	RP	RP	19.5	NA	NA	Alternate	Abundance
Charles Rd - Legion	RP	RP	19	NA	NA	Alternate	
Charles Rd - Legion	RP	RP	18.5	NA	NA	Alternate	
Charles Rd- Legion	RP	RP	17.5	NA	NA	Alternate	Abundance
Legion-Confluence	RP	RP	15	NA	NA	Alternate	
Legion-Confluence	RP	RP	14.5	NA	NA	Alternate	
Legion-Confluence	RP	RP	12.5	NA	NA	Primary	
Legion-Confluence	RP	RP	9.5	NA	NA	Primary	
Legion-Confluence	RP	RP	9	NA	NA	Alternate	
Legion-Confluence	RP	RP	7.5	NA	NA	Alternate	
Legion-Confluence	RP	RP	4	NA	NA	Alternate	
Legion-Confluence	RP	RP	3.5	NA	NA	Alternate	Abundance
Legion-Confluence	RP	RP	2	NA	NA	Alternate	
Legion-Confluence	RP	RP	0	NA	NA	Primary	

We propose to conduct sampling in a fashion that will allow the use of a robust mark-recapture design. In a robust mark-recapture design, primary and secondary sampling events occur at different time intervals, in which the population can be considered as “closed” or “open” (Pollock 1982). Williams et al. (2002) notes that by combining open- and closed-population models, several advantages are gained that would not be possible with either approach used independently. A considerable advantage is that monthly estimates of abundance can be estimated for the first primary period (e.g., February) and the last primary period (e.g., July)

using the robust capture-recapture design, something that is not possible with the Jolly-Seber design. Finally, since the secondary events (days) under a robust design are conducted close together on a temporal scale (only a day or two apart), the probability of emigration of marked fish from a pool is likely to be smaller compared to events separated by a month. The greater sampling effort associated with the robust design (e.g., sampling multiple days during secondary events), typically results in more precise abundance estimates than those derived from a single pass Jolly-Seber.

Consider as an example, an initial primary sampling event will be conducted in February at sampling unit #1. The primary sampling event will consist of two or more secondary sampling events conducted in a relatively short time period (e.g., only days apart). During this short time period, the population can be considered essentially “closed”, that is, there will be minimal deaths, recruitment, immigration or emigration into or out of that particular unit. However, between primary sampling events (February to March), the population can be considered “open”, with relatively higher rates of death, recruitment, immigration and emigration compared with the secondary event. The robust design allows estimation of period-specific abundance estimates during all months (February through May and July).

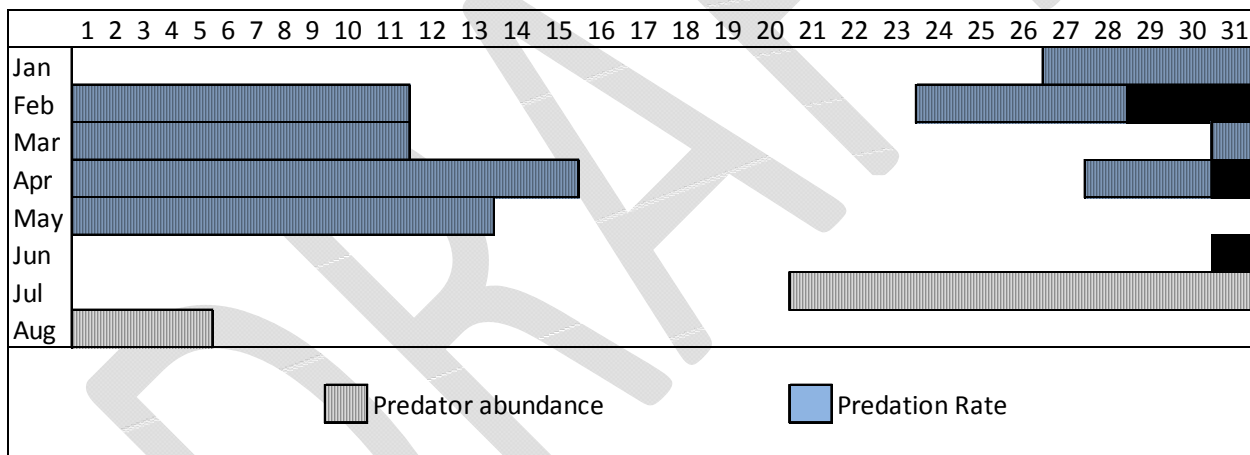
Because completion of the study as described in this study plan is contingent upon permit approval by CDFW and/or NMFS, the feasibility of the study as well as the accuracy, precision and comparability of the resulting abundance estimates will depend upon the methods and level of effort that is allowed. Permit inquiries and requests will be made well in advance of the proposed study task to allow permit processing and approval. If permits are not granted, the Districts will make a good faith effort to modify study designs, if possible, to comply with permit requirements and proceed with the study.

Step 2 – Data Collection. Electrofishing will take place in pre-selected habitat units (by stratified random selection) mapped onto high-resolution aerial photographs within a GIS. Delineation of habitat units will take place in the field during the Study Design and Permitting Process (Step 1) prior to initiating the sampling. Locations surveyed in each habitat unit will be recorded in the field using Global Positioning System (GPS) receivers to provide the locations of all areas sampled. GPS data will be collected in a manner that meets or exceeds the federal government’s “National Map Accuracy Standards” for published maps and stored in Environmental Science Research Institute (ESRI) Shapefile format.

Predators will be captured in two general habitat types described in Step 1 above (i.e., pools/SRPs, and runs and run-pools). Boat electrofishing will be conducted at night when catch per unit effort is typically highest (Paragamian 1989). Electrofishing will be performed in accordance with the *Guidelines for Electro fishing Waters Containing Salmonids Listed Under the Endangered Species Act* (NMFS 2000) and will be used to target territorial species such as largemouth and smallmouth bass that do not range far from their home territory. Predators captured using electrofishing will be identified to species, measured (fork and total length in

mm) and weighed (grams), uniquely marked (i.e., PIT tagged and floy tagged), and if permitted by CDFW, scales and otoliths will be collected from largemouth and smallmouth bass (up to 100 per species) to determine age structure. Scales may be collected during all sampling events, but otoliths will only be collected during the final sampling event in July. Fish sampled for otoliths will be euthanized. Fish not sampled for otoliths will be released near the location of capture after all electrofishing passes have been completed.

Each of the selected units will be sampled a minimum of two nights per survey period between February to May and July, as required for the estimation of abundance under a robust capture-recapture design, with each unit sampled one night and then be revisited two nights later. Each sampling event will consist of at least one electrofishing pass through the unit. Sampling events will proceed from downstream to upstream in order to minimize effects to listed salmonids and potential biases associated with short-term tagging related effects that usually result more downstream movement than upstream movement. A tentative schedule of survey periods for estimating predator abundance is shown in Figure 1.



**Figure 1. Tentative timing of predator abundance and predation rate sampling events during 2014.**

Fyke traps will be used in addition to electrofishing to specifically target striped bass and Sacramento pikeminnow which are known to move over large distances, and are more likely to avoid capture by electrofishing than largemouth bass and smallmouth bass. Fyke traps have proven successful in capturing striped bass on the Sacramento River (Dubois et al 2012) and in the San Joaquin River during 2013 (FISHBIO unpublished data). Fyke traps will be used in relatively deep, higher velocity areas where striped bass and Sacramento pikeminnow would be expected. Approximately four traps will be operated near the downstream boundary of each study reach (i.e., near the mouth of the river, near Legion Park, near Charles Rd., and near Hickman Bridge). Traps will be operated concurrent to electrofishing sampling periods, and the specific number of days operated per abundance sampling event will ultimately be dependent upon observed capture rates.

Use of fyke traps may also provide incidental recaptures of tagged largemouth bass and smallmouth bass. While traps have also been used to capture juvenile largemouth bass (Hayford 1948), the utility of fyke traps in capturing adult largemouth bass is unknown. All untagged predators captured and handled in the fyke traps will be PIT tagged and Floy tagged, and up to 25 striped bass and 25 Sacramento pikeminnow will also be acoustically tagged.

Step 3 – Analysis. Capture-recapture (i.e., mark-recapture) methods are widely used for estimating animal abundances in fisheries (e.g., Seber 1982; Williams et al. 2002). Population models used for estimating abundance are broadly defined as either “closed” or “open” and have various assumptions associated with them. Closed models assume a static population during the study period free of births, deaths, emigration, or immigration. Open models allow for changes in abundance caused by births, deaths, and movements into and out of the sample area. Open models used to estimate abundance, among other things, are more complex, and require larger numbers of marked individuals as well as higher capture probabilities (Pine et al. 2012). Attributes of both the closed and open models may be combined into a model referred to as the “robust” design” (see Step 1), which allows for temporary emigration (Pollock 1982). The robust design functions by linking discrete, closed population studies to estimate population abundance with an open-population model to estimate survival.

Data collected in Step 2 will be used to estimate absolute abundance of each predator species at each site and for each habitat type during each primary event. Data analysis (e.g., estimating abundance and survival) will be conducted using MARK (White and Burnham 1999) or other software packages (R and “RMark” package; Laake 2013) using methods described in Williams et al. (2002). This particular reference is currently considered the standard reference for mark-recapture models. Assumptions of the closed population portion of the robust design (the secondary period samples) are that (1) the population is closed to gains and losses during the period; (2) marks or tags are not lost, missed, or incorrectly recorded; (3) capture probability over the secondary periods varies according to specified model; and (4) the fate of each fish is independent with respect to capture probability (Williams et al. 2002; p. 531). Assumptions associated with the open portion of the robust design are: (1) marks or tags are not lost, missed, or incorrectly recorded; (2) conditional probabilities of capture and survival during each primary period is the same for each marked fish; and (3) fates of fish (in terms of survival and capture probabilities) are independent.

Additional auxiliary information may also be included in the robust design to improve precision of abundance estimates (Kendall et al. 2013). Information about marked predators collected from acoustic telemetry arrays (see Predator Movement Tracking below), anglers, instream PIT tag antennas, fyke traps, instream cameras, and/or other surveys can also be used to improve abundance estimates. Fyke traps may also serve as an additional tagging location in addition to electrofishing surveys.

Sampling gear, fish size, and stream habitat have all been shown to influence capture probabilities of stream fishes (Anderson 1995; Peterson et al. 2004). The electrofishing power density, generally regarded as the best measure of electrofishing effectiveness (Reynolds 1996), will be estimated for each channel unit based on generator peak voltage and water conductivity (Dauwalter and Fisher 2007). If sufficient numbers of predators are captured representing different size classes, abundance estimates will be separated into year classes. Confidence intervals (95%) will be computed using parametric bootstrapping. We will examine the influence of covariates such as fish size, sampling procedures, and stream habitat variables on the individual capture probabilities for smallmouth bass and largemouth bass. All available predators deemed to be in good condition at capture (>150 mm in fork length) will be tagged and used in the capture-recapture study.

From the localized abundance estimates, two population densities can be computed for each site sampled: (1) a linear density based on the bank length of the site sampled and (2) an areal density based on the total area of the site sampled (including any pelagic areas not sampled). Overall abundance estimates by habitat type will be estimated by expansion of the sampled portions of the Tuolumne River to unsampled portions using a multistage method using GIS (Toepfer et al. 2000). Specifically, estimates from multiple sample sites will be averaged for each habitat type within each of two reach strata (i.e., TLSRA to Charles Road and Charles Road to the confluence with the San Joaquin). When estimates are averaged over four samples within a strata, there is typically a two-fold improvement in the relative precision associated with the resulting abundance estimates. If there is no longitudinal trend in fish abundance, or no longitudinal trend is detected, we recommend that mean population estimates for each habitat type be applied to the unsampled units of each habitat type. In cases where an abundance function is created, habitat data generated by the GIS can be input into the predictive model. Densities predicted for each habitat unit are then combined with the area of each unit in the GIS to calculate the predicted abundance of fish within each unit. The GIS can be used to calculate a fish abundance estimate for the entire stream, or the data can be exported to a statistical software package to calculate abundance and a confidence interval. Expansion of the localized abundance estimates from sampled areas to unsampled areas is necessary because only temporary emigration from sampled units is expected and marked fish are not expected to distribute riverwide. Acoustic tracking and recaptures of marked predators will provide important information to address the extent to which predators move.

Density and abundance estimates will be compared with the results from prior studies, including the 2012 predation study estimates derived from depletion methods. It should be noted that in the event that electrofishing permits cannot be obtained in Step 1 above, relicensing participants will be consulted to determine appropriate methodologies to estimate abundance in slow-water habitats from gill netting, fyke trapping, direct snorkel observations, and/or other methods. A discussion of the comparability of the resulting estimates from differing observational/sampling methods will be included as necessary as well as a discussion of inter-annual variability

documented in previous restoration project monitoring (e.g., McBain & Trush and Stillwater Sciences 2006, Appendix A for SRP 9 monitoring conducted in 1998, 1999, and 2003).

In the event that the robust capture-recapture design does not allow estimation of abundances for primary events (e.g., months) for any reason (primarily low capture probabilities) or does not provide satisfactory confidence intervals, we propose to use sequential Bayesian mark-recapture analysis for closed populations (Nelson et al. 2013 & 2004, Gazey and Staley 1986). The sequential Bayesian analysis is more robust to small sample sizes and to low recapture probabilities than standard capture-recapture models (described above). Briefly, a distribution of population size is obtained directly by calculating the probability of observing the data at all feasible population sizes. The final result describes both the estimate and the uncertainty around the estimate and a probability can be calculated to test whether the estimated population size is greater than a hypothesized number of individuals.

Step 4 – Prepare Report. The Districts will prepare a study task report that includes the following sections: (1) Study Goals, (2) Methods and Analysis, (3) Results, (4) Discussion, and (5) Conclusions. The report will contain relevant summary data, tables and graphs as well as GIS-based maps of sampled habitats. At the request of Relicensing Participants a separate discussion of available predator control methods will be included in the report.

### **5.3.2 Predation Rate**

Step 1 – Study Design and Permitting. The study task is designed to collect data on predation rate by largemouth bass, smallmouth bass, striped bass, and Sacramento pikeminnow within Special Run Pools and pools/run-pools between Turlock Lake State Recreation Area (RM 42) and the confluence of the Tuolumne River with the San Joaquin River (RM 0) during the Chinook salmon rearing and outmigration period (February-May). All predatory fish sampled during the predator abundance estimation component of this study will be sampled to estimate predation rate by habitat type.

Successful completion of this study is contingent upon permit approval by CDFW and NMFS. Permit inquiries and requests will be made well in advance of the proposed study task to allow permit review, modification, and processing. If permits are not granted, the Districts will make a good faith effort to modify study designs, if possible, to comply with permit requirements and proceed with the study.

Step 2 – Data Collection. Stomach samples from all predatory fish >150 mm that are captured and handled during the predator abundance estimation component of this study will be collected to estimate predation rate by habitat type during the juvenile salmon outmigration period (February-May). Stomach lavage or, if necessary, removal of the stomach, will be used to recover stomach contents from all predators >150 mm TL. Although 180 mm total length has



been previously identified as the lower size limit for likely salmon predators (TID/MID 1992), using a lower size limit of 150 mm will serve as a validation of these results. Stomach contents will be preserved in 70% ethanol, marked with predator species, predator tag ID, predator total length (mm) and weight (g), capture location, and date/time, and transported to the laboratory for examination. If a stomach sample is collected during the second pass of a sampling period from an individual that had already been sampled during the initial pass of the sampling period (i.e., recaptured after sampling two nights prior), the sample will not be used for estimation of predation rates given potential bias from recent handling. Depending on the number collected, a stratified (by length category), random sub-sample of the stomach samples may be analyzed.

Water temperature data will be obtained from continuously recording thermographs deployed at each study site, whereas turbidity will be recorded at the time of sampling at each study site. Salmon catch data from the ongoing rotary screw trap and seine surveys will be used to provide an index of the size of the potential prey population (i.e., outmigrant salmon) during the study period.

Step 3 – Analysis. In the laboratory, all identifiable prey items found in predator stomachs will be classified (i.e., fish, insect, crustacean, etc.) and enumerated. Fish found in predator stomachs will be identified to species when possible, and intact fish will be measured. The number of Chinook salmon consumed will be used together with water temperature data and published information on gastric evacuation rate to calculate a predation rate (e.g., number of salmon consumed per day) in two steps. First, a predation ratio (by species) will be calculated by dividing the total number of juvenile salmon in the stomachs of predators by the total number of predators captured within a particular habitat type or study reach. The second step in calculating the daily predation rate is to adjust this predation ratio with the gastric evacuation rate for the prey items using simple exponential models for each species (e.g., Eggers 1977, Elliott and Persson, 1978) with application of parameter adjustments for temperature and fish size or other available methods.

The resulting predation rate estimates will be used to identify differences in predation rates among predator species, predator size, habitat types, and environmental conditions at the time of sampling (e.g., temperature, turbidity, flow). An assessment of predation effects upon reach-scale or riverwide Chinook salmon production will be made by expansion of predation rate estimates using methods described in Rieman et. al. (1991). Estimated consumption rates of juvenile Chinook salmon will be compared between survey periods to evaluate predation prior, during, and after the spring pulse flow period (April 15-May 15); between each of the four survey reaches; and habitat types. Comparison of the results of the current study with results of prior Tuolumne River studies (e.g., TID/MID 1992, TID/MID 2013) will provide a basis to evaluate the magnitude of current vs. prior predation levels on juvenile salmonid populations in the lower Tuolumne River.

Step 4 – Prepare Report. The Districts will prepare a study report that includes the following sections: (1) Study Goals, (2) Methods and Analysis, (3) Results, (4) Discussion, and (5) Conclusions. The report will contain relevant summary data, tables and graphs as well as GIS-based maps.

### **5.3.3 Predator Movement Tracking**

Step 1 – Study Design and Permitting. The study is designed to collect data on predator movement in response to flow and water temperatures occurring during the juvenile salmon migration season. The study will document movements of acoustically tagged predators relative to tagging locations and a network of hydrophones.

Because completion of the study as described in this Proposal is contingent upon permit approval by CDFW, permit inquiries and requests will be made well in advance of the proposed studies to allow permit processing and approval. In the event permits are not granted, the Districts will make a good faith effort to modify study designs, if possible, to comply with permit conditions and proceed with the study.

Step 2 – Data Collection. Up to 25 piscivore-sized predators ( $> 175$  mm TL) for each of the four target species (i.e., largemouth bass, smallmouth bass, striped bass, and Sacramento pikeminnow) captured during predator abundance and predation rate surveys will be tagged externally using HTI Lg transmitters (4.5 g) with an expected battery life  $>6$  months. Acoustic tagged predators will be held for up to 4 hours and monitored to ensure proper recovery and tag operation before being released in the same habitat unit where they were captured.

A network of fixed receivers will be deployed and used to document movement patterns of acoustic tagged predators following release. Tentative locations of fixed receivers to track both predator movements and to identify potential juvenile Chinook salmon mortality hot-spots (see section 5.3.4) are identified in Table 2 and in Figures 2-5.

Water temperature during sampling will be recorded with continuous recording thermographs maintained at or near each site. Thermographs will be removed when sampling is completed and returned to the laboratory for data download and analysis.

**Table 2. Tentative locations of acoustic receivers during 2014.**

Reach	Location	River Mile	Array Type
TLSRA-Hickman	TLSRA	42	Dual
TLSRA-Hickman	SRP 11 - u/s	36.8	Single
TLSRA-Hickman	SRP 11 - d/s		Single
TLSRA-Hickman	George Reed run-pool u/s	35	Single
TLSRA-Hickman	George Reed run-pool d/s		Single
TLSRA-Hickman	SRP 5 - u/s	33	Single
TLSRA-Hickman	SRP 5 - d/s		Single
Hickman-Charles Rd	SRP 6 - u/s	30.5	Dual
Hickman-Charles Rd	SRP 6 - d/s		Single
Hickman-Charles Rd	RP 67 - d/s	30	Single
Hickman-Charles Rd	SRP 7 - u/s	29	Single
Hickman-Charles Rd	SRP 7 - d/s	28	Single
Hickman-Charles Rd	SRP 8 - d/s	27	Single
Hickman-Charles Rd	SRP 10 - u/s	26	Single
Hickman-Charles Rd	SRP 10 - d/s	25.5	Single
Charles Rd - Legion	Santa Fe u/s	23	Dual
Charles Rd - Legion	Santa Fe d/s	22	Single
Charles Rd - Legion	Mitchell Rd u/s	20	Single
Charles Rd - Legion	Mitchell Rd d/s	19	Single
Legion - Confluence	Legion Park u/s	17	Single
Legion - Confluence	Legion Park d/s	15	Single
Legion - Confluence	Riverdale	12	Single
Legion - Confluence	Grayson	5	Single
Legion - Confluence	Confluence	0	Dual

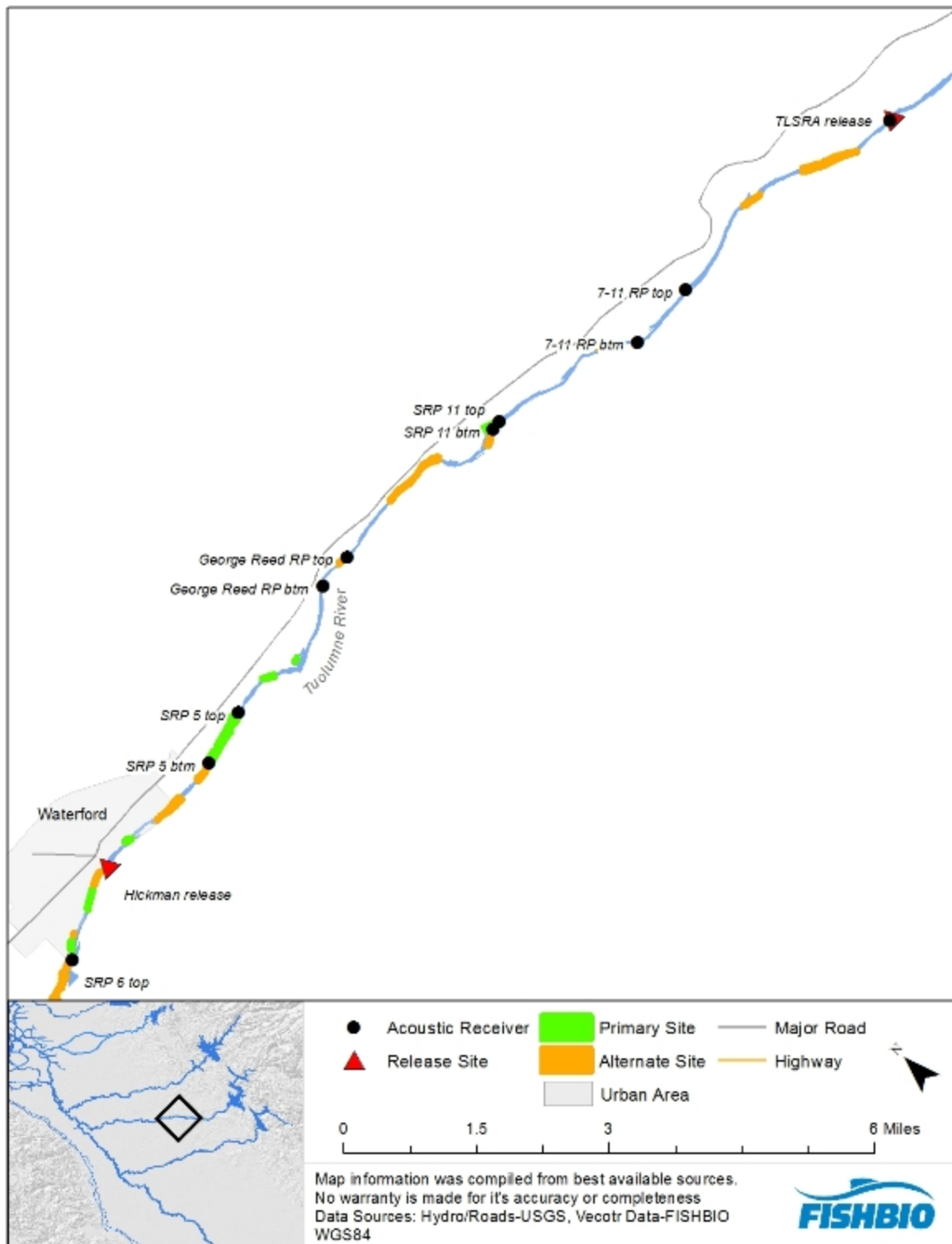


Figure 2. Sampling locations between Turlock Lake State Recreation Area and Hickman Bridge.

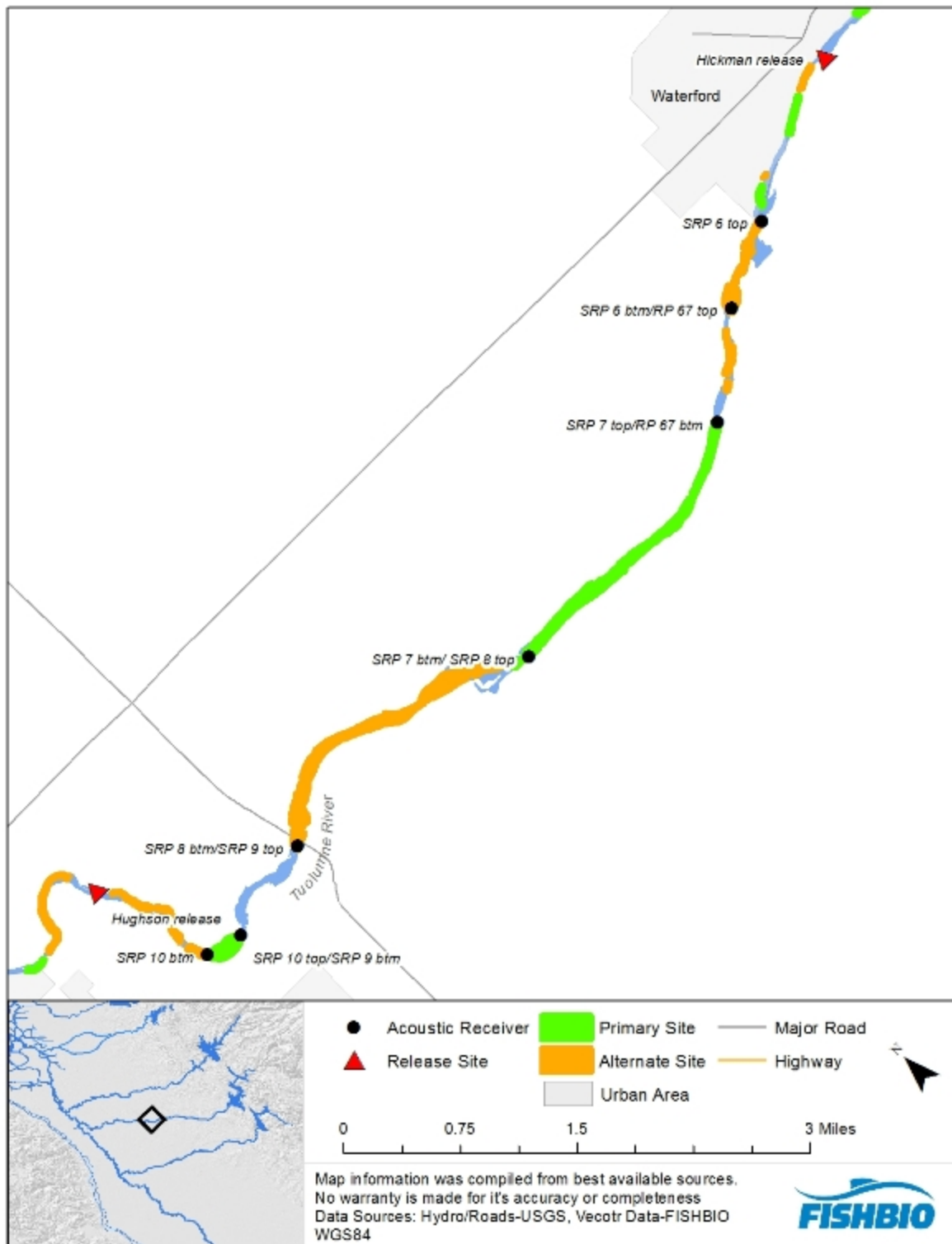


Figure 3. Sampling locations between Hickman Bridge and Charles Road.

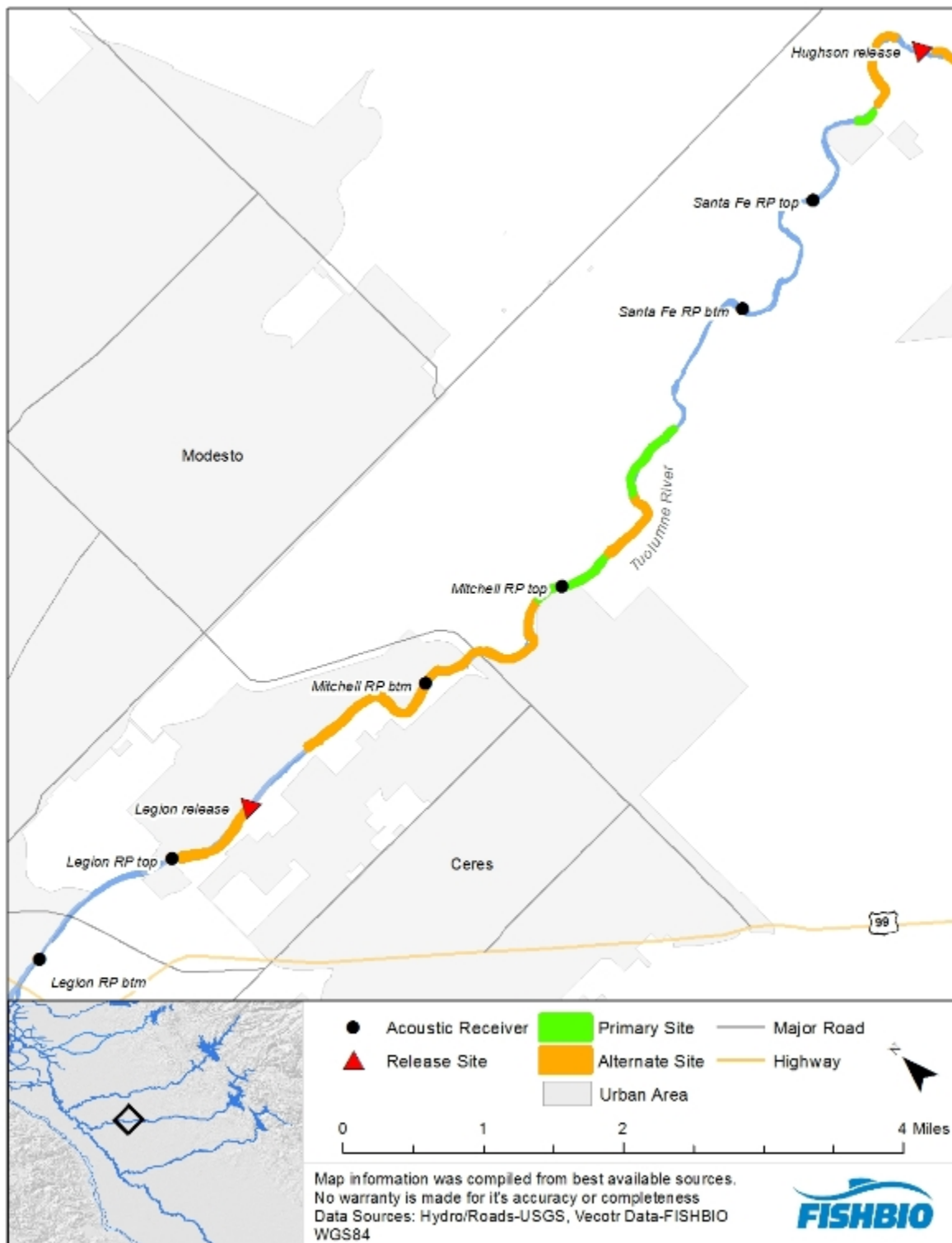


Figure 4. Sampling locations between Charles Road and Legion Park.

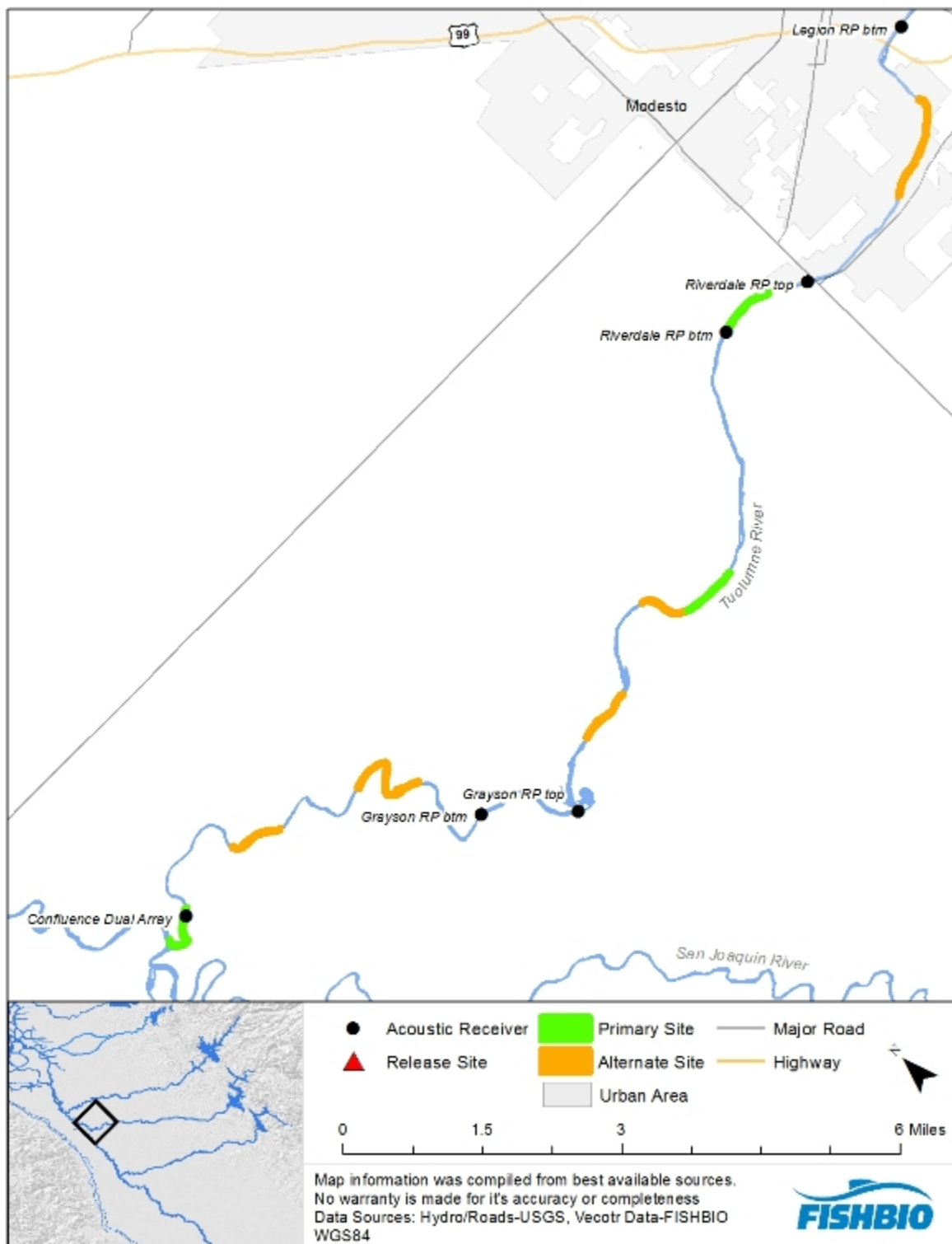


Figure 5. Sampling locations between Legion Park and the confluence with the San Joaquin River.

Step 3 – Analysis. To relate predator movements in response to river flow, water temperature, sampling activities, and season, and to inform predator abundance estimation, movement patterns of predators will be assessed and comparisons made between varying flow levels, water temperatures, sampling activities, and season. River flow data from the U.S. Geological Survey stream gage near La Grange (upstream of the study area) will be used to calculate minimum, maximum, and mean daily flow for the study period. Predator tracking results will also be compared with sampling and tracking data from prior Tuolumne River studies (McBain & Trush and Stillwater Sciences 1999, 2006; Stillwater Sciences and McBain & Trush 2006; TID/MID 2013).

Step 4 – Prepare Report. The Districts will prepare a study report that includes the following sections: (1) Study Goals, (2) Methods and Analysis, (3) Results, (4) Discussion, and (5) Conclusions. The report will contain relevant summary data, tables and graphs as well as GIS-based maps.



### 5.3.4 Identify Mortality Hot-spots

Step 1 – Study Design and Permitting. An intensive network of fixed receivers combined with releases of acoustically tagged salmon smolts at four locations during at least two events will allow for estimation of Chinook salmon mortality from RM 42 to RM 0, and on a reach, sub-reach scale within defined segments of the 42 mile study area under at least two flow conditions.

Step 2 – Data Collection. HTI Lm (0.65 g) acoustic tags will be surgically implanted in approximately 600 Chinook salmon smolts obtained from the Merced River Hatchery to be released during two release events occurring between April 15 and May 15. Tag weight to body weight ratios will not exceed 5%. Specific timing of releases will be identified during development of the 2014 spring pulse flow schedule and in coordination with relicensing participants.

Each of the two release events will consist of approximately 75 acoustic tagged salmon smolts released near the upper end of four study reaches: 1) Turlock Lake State Recreation Area, 2) Hickman Bridge, 3) Charles Rd., and 4) Legion Park. Tagging and release procedures will be similar to the 2012 study (TID/MID 2013), and salmon will be detected using the expanded network of acoustic receivers previously described for tracking predator movement (Figure 2). Dual receiver arrays will be placed at the first site downstream of each release location and at the confluence to calculate detection probabilities.

A tag life study will be conducted in the laboratory to determine the lifespan of the specific tag lots used for the study. A stratified (by tag lot) random sample of 30 tags (5% of tags to be released) will be selected for the tag life study.

Step 3 – Analysis. Relative losses of acoustically tagged Chinook salmon smolts will be compared between habitat types (i.e., SRPs and pools/run-pools) and between reaches. The intensive network of fixed receivers will allow for estimation of juvenile Chinook salmon mortality from RM 42 to RM 0, and on a reach, sub-reach scale within defined segments of the 42 mile study area. Juvenile Chinook salmon mortality rates will be estimating using complete capture histories for all individuals (Burnham et al 1987; Skalski et al 1998) and adjustment for tag failure will be made if warranted (Townsend et al 2006). Acoustic telemetry studies conducted in the San Joaquin River and Delta have identified that mortality estimates can be biased when predators containing consumed tags are detected and predator filters may be used if similar observations are made in the Tuolumne River (Buchanan et al 2013).

Step 4 – Prepare Report. The Districts will prepare a study task report that includes the following sections: (1) Study Goals, (2) Methods and Analysis, (3) Results, (4) Discussion, and (5) Conclusions. The report will contain relevant summary data, tables and graphs as well as GIS-based maps of sampled habitats.

## **6.0 Schedule**

The Districts anticipate the schedule to complete the study proposal as follows:

- Study Design and Permitting ..... July 2013 – January 2014
- Provide Interim Study Updates.....January – July 2014
- Field Data Collection (Predator Abundance) ..... January – July 2014
- Field Data Collection (Predation Rate) ..... January – July 2014
- Field Data Collection (Estimate Juvenile Chinook Mortality).....April - May 2014
- Field Data Collection (Predator Movement Tracking) ..... January – July 2014
- Data Entry Processing, and QA/QC ..... February –September 2014
- Data Analysis.....September 2014 – January 2015
- Report Preparation ..... December 2014- March 2015
- Report Issuance ..... March 2015

## **7.0 Consistency of Methodology with Generally Accepted Scientific Practices**

Sampling methods proposed for the Predation study tasks are generally accepted and commonly used methods for scientific sampling as noted in sections above for electrofishing (e.g., Reynolds 1996; NMFS 2000) and for estimating abundance using mark-recapture (e.g., Seber 1982; Williams et al. 2002).

## **8.0 Deliverables**

The Districts will prepare a report, which will document the methodology and results of the study tasks.

## **9.0 Level of Effort and Cost**

The cost to complete this study is somewhat dependent upon the expectation that approximately 30 acoustic receivers and hydrophones will be available to the study on loan from the USFWS. A final cost estimate will be provided in the final draft study plan.

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## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Friday, August 09, 2013 2:30 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Draft Floodplain Hydraulic Assessment for the Lower Tuolumne River Study Plan for Review and Comments  
**Attachments:** W-AR-21\_Lower\_Tuolumne\_Floodplain\_Inundation\_Study\_Plan\_RP REVIEW DRAFT\_130809.pdf

Please find attached a draft study plan for the ***Floodplain Hydraulic Assessment for the Lower Tuolumne River***. The Districts were directed by FERC in its May 21, 2013 Determination on Study Modifications and New Studies to prepare a study plan for conducting a hydraulic analysis of floodplain inundation and frequency from RM 52.2 to 21.5. This draft study plan describes the scope of work, methods, and schedule for conducting the study. The draft study plan is being issued for a 30-day review and comment period. Comments are due on or before Monday, September 9. We look forward to your comments. Please send them to my attention at [rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com). Thank you.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)



**TURLOCK IRRIGATION DISTRICT & MODESTO IRRIGATION DISTRICT  
DON PEDRO PROJECT  
FERC NO. 2299**

**Review Draft**  
**Study Plan W&AR-21**  
**Lower Tuolumne Floodplain Hydraulic Assessment**  
August 2013

## **1.0      Project Nexus**

The continued operation and maintenance (O&M) of the Don Pedro Project (Project) may contribute to cumulative effects on habitat availability and production of in-river life stages of Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and *O. mykiss* in the lower Tuolumne River. FERC's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Project (Determination) required the Turlock and Modesto irrigation districts (collectively, the Districts) to undertake a study of floodplain inundation flows on the lower Tuolumne River from River Mile (RM) 52.2 to RM 21.5. This study describes the methods and scope of study proposed by the Districts to complete the floodplain hydraulic assessment. The assessment will result in the estimation of the areal coverage, depths and velocities of water upon the floodplain of the lower Tuolumne River for a range of flows from 1,000 to 9,000 cfs. The information developed by this study will be used to prepare an addendum to the Districts Pulse Flow Study Report (Stillwater Sciences 2012) filed with FERC as part of the Instream Flow (IFIM) Studies required by Ordering Paragraph (D) of FERC's May 12, 2010 Order.

The Pulse Flow Study component of the FERC-approved October, 2009 IFIM Study Plan examined potential responses of salmonid and predator species to spatial variations in inundation area, velocities, and depths in relation to the pulse flows specified in the Order within both in-channel areas as well as temporarily inundated portions of the Tuolumne River floodplain. W&AR-21 will expand the range of flows investigated as well as the area covered in the 2012 Pulse Flow Study report.

## **2.0      Resource Agency Management Goals**

The Districts believe that four agencies have resource management goals related to lower Tuolumne River salmonids and/or their habitat: (1) U.S. Department of Interior (USDOI), Fish and Wildlife Service (USFWS); (2) U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); (3) California Department of Fish and Wildlife (CDFW); and (4) California State Water Resources Control Board, Division of Water Rights (SWRCB).

A goal of the USFWS (2001) Anadromous Fish Restoration Program, as stated in Section 3406(b)(1) of the Central Valley Project Improvement Act, is to double the long-term production

of anadromous fish in California's Central Valley rivers and streams. Objectives in meeting this long-term goal include: (1) improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity, and timing, and improved physical habitat; (2) improve survival rates by reducing or eliminating entrainment of juveniles at diversions; (3) improve the opportunity for adult fish to reach spawning habitats in a timely manner; (4) collect fish population, health, and habitat data to facilitate evaluation of restoration actions; (5) integrate habitat restoration efforts with harvest and hatchery management; and (6) involve partners in the implementation and evaluation of restoration actions.

NMFS has developed Resource Management Goals and Objectives for species listed under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq.) and the Endangered Species Act (ESA) (16 U.S.C. §1531 et seq.), as well as anadromous species that are not currently listed but may require listing in the future. NMFS' (2009) Public *Draft* Recovery Plan for Sacramento River Winter-run Chinook salmon, Central Valley Spring-run Chinook salmon, and Central Valley steelhead (Draft Recovery Plan) outlines the framework for the recovery of ESA-listed species and populations in California's Central Valley. For the Tuolumne River, the relevant goals are to enhance the Essential Fish Habitat downstream of the Don Pedro Project and achieve a viable population of Central Valley fall/late fall-run Chinook salmon.

CDFW's mission is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFW's resource management goals, as summarized in restoration planning documents such as "Restoring Central Valley Streams: A Plan for Action" (Reynolds et al. 1993), are to restore and protect California's aquatic ecosystems that support fish and wildlife, and to protect threatened and endangered species under California Fish and Game Code (Sections 6920–6924).

SWRCB has responsibility under the federal Clean Water Act (33 U.S.C. §11251–1357) to preserve and maintain the chemical, physical and biological integrity of the State's waters and to protect water quality and the beneficial uses of stream reaches consistent with Section 401 of the federal Clean Water Act, the Regional Water Quality Control Board Basin Plans, State Water Board regulations, the California Environmental Quality Act, and any other applicable state law.

### **3.0        Study Goals**

In its May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Project, FERC staff recommended that the Districts develop a study plan to conduct and incorporate into the existing license IFIM study (Stillwater Sciences 2012, 2013) a hydraulic analysis of the amount of floodplain inundated between RM 52.2 and 21.5 of the Tuolumne River at flows between approximately 1,000 cfs and 9,000 cfs. This information will expand the flow range evaluated in the 2012 Pulse Flow Study and update analyses of the USFWS (2008) assessment of floodplain inundation. USFWS (2008) noted that its evaluation of off-channel habitat was limited to a small number of flows corresponding to digitized aerial imagery previously developed by the Districts (TID/MID 1997, Report 96-14). USFWS recommended further analysis was necessary to assess off-channel habitat availability. FERC staff

recommended that the study also evaluate the frequency and period of inundation over a range of Project operations representing baseline conditions and alternative operating scenarios.

## **4.0            Existing Information and Need for Additional Information**

FERC's May 21, 2013 Determination noted that the Districts' in-channel IFIM report submitted on April 26, 2013 did not consider floodplain inundation. Although floodplain inundation was previously evaluated in the 2012 Pulse Flow Study report, FERC directed the Districts to obtain additional data and hydraulic analyses of floodplain inundation frequency and duration to assist in the identification of potential Project effects to off-channel salmonid rearing areas. This study will update 2-dimensional (2D) modeling of overbank habitats conducted as part of the 2012 Pulse Flow Study to provide more accurate representation of hydraulic conditions in floodplain areas along the lower Tuolumne River corridor. In addition, this study will examine the seasonal timing and duration of suitable overbank rearing habitat. It is envisioned that an addendum to the Districts' previously submitted IFIM study reports (Stillwater Sciences 2012, 2013) will be completed using the results of this W&AR-21 investigation.

Geospatial sources used for model development will come from the most recent data sources including (1) LiDAR data flown in March, 2012, at an approximate streamflow of 300 cfs, (2) riparian vegetation coverage shapefiles developed in conjunction with the *Lower Tuolumne River Riparian Information and Synthesis Study* (W&AR-19), (3) channel and floodplain cross sections developed as part of the *Lower Tuolumne Temperature Model* (W&AR-16:), and (4) the final GIS mapping layers used in the USFWS (2008) report or, if the USFWS files are not available, the original TID/MID (1997) GIS files used in the USFWS (2008) study as supplemented by any newer information collected by the Districts since that time.

## **5.0            Study Methods**

### **5.1            Study Area**

The study area includes the specific reaches in the lower Tuolumne River between RM 52.2 and River Mile 21.5, consistent with the USFWS (2008) study area and in accordance with FERC's May 21, 2013 Determination.

### **5.2            Study Methods**

Hydraulic modeling will be developed and executed using TUFLOW hydraulic modeling software (BMT Group Ltd 2013). TUFLOW uses both one-dimensional (1D) and two-dimensional (2D) modeling to simulate the interaction between flow within the main channel and within the inundated floodplain. This is an essential capability to represent in a reasonable manner the dynamics of overbank flows and their interaction with flows in the main channel.

The study will consist of six steps:

## Step 1 – Model Input Development

The TUFLOW 1D model is used to model flows in the main river channel. Geo-referenced channel geometry will be developed from previously developed cross-sections used in the Lower Tuolumne Temperature Model (WA&R-16) study. Additional in-channel cross sections may be needed for this study to adequately represent the river hydraulics if interpolated cross-sections are determined to be insufficient to achieve model convergence or a solution to water surface elevations.

Flow occurring outside the main channel in the overbank inundation area will be modeled using TUFLOW's 2D calculations capability. The TUFLOW 2D model performs calculations based on a grid system. A digital elevation model (DEM) will be created from the 2012 LiDAR. Alterations to the surface may be necessary to properly represent or model the river. Within GIS, three-dimensional break lines will be created to delineate the left and right bank of the main channel, as well as any levees or embankments, including bridge crossings or lateral embankments of off-channel ponds.

Both the TUFLOW 1D and 2D models require Manning's roughness coefficients. For overbank areas, an existing aquatic plant survey GIS file with full coverage of the reach shall be used. Manning's roughness coefficients will be assigned from established ranges by vegetation density and type.

As part of this step, the Districts will conduct a consultation meeting with relicensing participants to describe and review the suite of data to be used in developing the TUFLOW model and describing the physical configuration of the channel and floodplain.

## Step 2 – Hydraulic Model Development

The TUFLOW 1D hydraulic model will be constructed, run, and undergo quality assurance procedures. Once the 1D model is operational, the TUFLOW 2D model will be developed and quality-checked. Then the combined 1D/2D model will be compiled, run, and undergo quality assurance procedures. The model will be developed under the following basis and considerations:

- Bridges will not be modeled as study flows shall not reach bridge chord elevations and any increase in inundation due to the bridge piers is considered negligible.
- Input hydrograph for each run is set as a constant flow value for the entire reach.
- The upstream boundary condition shall be modeled as normal flow entering at RM 52.2.
- The downstream boundary condition will be modeled as normal flow if it is determined that there is not a backwater affect from the San Joaquin River at RM 21.5 under the flows considered. If a backwater affect is determined, the model will extend to where normal flow is considered to occur. The hydraulic model of the San Joaquin River currently under development by the California Department of Water Resources (DWR) for the Central Valley Floodplain Evaluation and Delineation (CVFED) program will be checked to establish the extent of backwater effects for flows likely to occur in combination with the flows being considered under this study. Backwater effects are not anticipated.

### Step 3 – Calibrate/Validate 2D Model

After confirmation of flow conditions occurring at the time of air photo collection used in the inundation mapping (TID/MID 1997) for the USFWS (2008) study, the TUFLOW model calibration/validation shall be undertaken by comparing the water surface inundation surfaces for select sub-reaches at nominal flows of 300 cfs, 1,100 cfs, 3,100 cfs, 5,300 cfs, and 8,400 cfs. Calibration will be completed by adjusting manning's roughness coefficients, grid cell size, and geometry within the TUFLOW 1D and 2D models.

Calibration/validation sub-reaches shall be located where minimal changes in the channel geometry are considered to have occurred between the original aerial photograph dates in the 1990s (TID/MID 1997, Report 96-14), and the 2012 air photos and accompanying LiDAR surface.

The grid size used within the TUFLOW 2D model will be selected to be small enough to adequately calibrate the model using the steps above while not being so small that model run-time becomes excessive.

As part of Step 3, once the model is calibrated and validated, Districts will meet with relicensing participants to share the resulting model, describe the process used, and seek review and comment on the calibrated model.

### Step 4 – Inundation Mapping

Overbank inundation will be modeled to estimate the inundation extent at 500 cfs intervals between 1,000 cfs and 9,000 cfs, resulting in a total of approximately 20 model runs when including the calibration runs at 1,100 cfs, 3,100 cfs, 5,300 cfs, and 8,400 cfs. TUFLOW directly outputs GIS shapefiles of the inundation area for evaluation and calculation of area.

### Step 5 – Inundation Frequency and Period Under Baseline Conditions and Alternative Operating Scenarios

Inundation frequency, period and duration shall be evaluated at range of flows. Area-duration-frequency (ADF) curves and inundation area versus annual frequency plots will be created for the baseline (WY 1971-2009) conditions. Future analyses will compare the frequency analysis results of the baseline conditions to those of alternative operations scenarios. It is expected that these alternative scenarios would be consistent with scenarios that are also evaluated in the *Tuolumne River Operations Model* (W&AR-2). The schedule for assessing inundation frequency and duration under alternative scenarios is not included in the schedule below, or in the cost estimate, as these proposed operations would likely involve additional consultation with relicensing participants.

### Step 6 – Prepare Report

A report will be prepared that includes the following: (1) Study goals; (2) Study methods; (3) Results; (4) Conclusions; and (5) Description of variances from the study plan, if any. A draft

report will be provided to relicensing participants for review and comment. The final report, model and resulting GIS files will be provided to relicensing participants upon study completion.

The information developed through the conduct of this study will be used to prepare an addendum to the Districts' March 2013 Pulse Flow Study component of the existing license IFIM studies. The results of this study may also be used to update the juvenile salmonid population models being developed under W&AR-6 and W&AR-10.

## **6.0            Schedule**

The Districts anticipate the schedule to complete the study as follows:

Step 1 - Model Input Development and RP Consultation .....	September-December 2013
Step 2 - Model Hydraulic Development .....	December 2013-January 2014
Step 3 – Model Calibration/Validation and RP Consultation .....	January-February 2014
Step 4 - Map Inundation Extents .....	March 2014
Step 5 – Evaluate Inundation Frequency, Period, Duration .....	April-May 2014
Step 6 – Report Preparation .....	May-June 2014

A draft report will be issued to relicensing participants for review and comment by the end of June 2014. The final report will be filed with FERC by the end of September 2014. Draft addendum to the Pulse Flow Study would be completed by December 2014.

## **7.0            Consistency of Methodology with Generally Accepted Scientific Practices**

The TUFLOW model is widely used for the floodplain modeling, and is accepted by the California Department of Water Resources and other governmental agencies involved with floodplain investigations.

## **8.0            Deliverables**

Products from this study will be the above mentioned report, model and GIS files.

## **9.0            Level of Effort and Cost**

The estimated cost to complete this study is \$110,000, not including the cost of modeling alternative scenarios.

## **10.0          References**

BMT Group Ltd. 2013. TUFLOW software. Available online at: <<http://www.tuflow.com>>.

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Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead. Available online at: <<http://swr.nmfs.noaa.gov/recovery/centralvalleyplan.htm>>.

Reynolds, F. L., Mills, T. J., Benthin, R., and A. Low. 1993. Restoring Central Valley streams: a plan for action. Inland Fisheries Div., Calif. Dept. of Fish and Game. Sacramento CA. 184 p.

Stillwater Sciences. 2012. Lower Tuolumne River Instream Flow Studies: Pulse Flow Study Report. Final. Prepared by Stillwater Sciences, Berkeley, California for Turlock Irrigation District and Modesto Irrigation District, California. June.

\_\_\_\_\_. 2013. Lower Tuolumne River Instream Flow Study. Prepared by Stillwater Sciences, Davis, California for Turlock and Irrigation District and Modesto Irrigation District, California. February. April.

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\_\_\_\_\_. 2005. 2005 Ten Year Summary Report pursuant to Paragraph (G) of the 1996 FERC Order issued July 31, 1996. Report to Federal Energy Regulatory Commission for FERC Project No. 2299-024.

U.S. Department of Interior, Fish and Wildlife Service (USFWS). 2001. Final restoration plan for the Anadromous Fish Restoration Program. A Plan to increase Natural Production of Anadromous Fish in the Central Valley of California. Report of the Anadromous Fish Restoration Program Core Group, Central Valley Project Improvement Act to the Secretary of the Interior. Stockton, CA.

\_\_\_\_\_. 2008. Flow-overbank inundation relationship for potential fall-run Chinook salmon and steelhead/rainbow trout juvenile outmigration habitat in the Tuolumne River. U.S. Fish and Wildlife Service, Sacramento, CA.



## Staples, Rose

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**From:** Staples, Rose  
**Sent:** Monday, August 12, 2013 6:57 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brennenman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

**Subject:** Volunteers Needed-Don Pedro Lower Tuolumne River Lowest Boatable Flow Study

### Reminder Notice

Please reply to Nancy Craig (928- 273-5772 or [nancy.craig@hdrinc.com](mailto:nancy.craig@hdrinc.com)) if you are interested in participating in this study.

### **\*Upcoming Boater Survey Beginning August 17, 2013\***

### **Volunteers Needed!**

## **Lower Tuolumne River Lowest Boatable Flow Study**

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) continue to seek volunteers for the Lowest Boatable Flow Study on the Lower Tuolumne River. The primary goal of the study is to determine if the Don Pedro Hydroelectric Project's minimum flows result in boatable flows for non-motorized, recreational river boating in portions of the lower Tuolumne River where put-ins and take-outs are available. We are seeking participation from boaters in two types of non-motorized watercraft – (1) hardshell kayaks, inflatable kayaks, and canoes and; (2) drift boat/rafts.

The study is scheduled to begin on Saturday, August 17, 2013, and continue on subsequent Saturday's as needed to fulfill the study's primary goal\*.

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**From:** Staples, Rose  
**Sent:** Monday, September 16, 2013 6:21 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley, Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro 2014 Predation SP and LT Floodplain Hydraulic Analysis SP Filed with FERC Today

We have filed with FERC today on behalf of the Districts the 2014 Predation and the Lower Tuolumne Floodplain Hydraulic Analysis Study Plans. Copies of each of these study plans are available on the FERC e-library ([www.ferc.gov](http://www.ferc.gov)) and also on the Don Pedro Relicensing Website ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)), both under the ANNOUNCEMENT tab and attached to the calendar date of September 16.

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**From:** Staples, Rose  
**Sent:** Wednesday, October 30, 2013 5:35 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Cooke, Michael'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann'; 'Moise'; 'Devine, John'; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley, Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Reynolds, Garner'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Cc:** Scott Wilcox (Scott@stillwatersci.com); Russell Liebig (russ@stillwatersci.com)  
**Subject:** For Your Review-Available HSC for Don Pedro Assessment Pacific lamprey-Sacramento Splittail-Non Native Predatory Fish Habitat  
**Attachments:** Tuolumne\_Splittail-Lamprey-Bass\_HSC\_Transmittal\_TechMemo\_30OCT2013.pdf

The attached Technical Memorandum from Stillwater Sciences (summarizing the HSC available for Pacific lamprey, Sacramento splittail, and non-native predatory fish habitat assessment) is being provided to you today for a 30-day review. Please provide any comments by close of business on Friday, November 29, 2013. Thank you.



October 30, 2013

RE: Lower Tuolumne River Instream Flow Study — Pacific lamprey, Sacramento splittail, and non-native predatory fish habitat assessment: 1-D PHABSIM habitat suitability criteria review. Don Pedro Hydroelectric Project, FERC Project No. 2299

Dear Don Pedro Hydroelectric Project Relicensing Participants:

Per the Commission's 16 July 2009 Order (128 FERC ¶ 61,035), Turlock Irrigation District and Modesto Irrigation District ("Districts") conducted an instream flow study on the lower Tuolumne River. Initial chapters of the draft report for this study were included in the Initial Study Report (ISR) filed on 17 January 2013 for the relicensing of the Don Pedro Project, and a summary presentation on the study was provided at the ISR meeting on 30 January 2013. The results of this study were filed with the Commission on 26 April 2013.

Subsequent to the original Study Plan approval, the Commission, in their 22 December 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, expanded the scope of the Lower Tuolumne Instream Flow Study to include Pacific lamprey and Sacramento splittail, and in their May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project, further expanded the scope to assess habitat for non-native predatory fish, including smallmouth bass, largemouth bass, and striped bass, using existing habitat suitability criteria (HSC) data, where available.

The attached Technical Memorandum summarizes the HSC available for the above species for inclusion into the Lower Tuolumne River Instream Flow Study model results. The proposed HSC are being distributed for 30-day Relicensing Participant review. Please provide any comments by COB on Friday, 29 November 2013.

Thank you for your participation and interest in this study,

MODESTO IRRIGATION DISTRICT

Greg Dias  
Project Manager

TURLOCK IRRIGATION DISTRICT

Steve Boyd  
Assistant General Manager

## DRAFT TECHNICAL MEMORANDUM

DATE: October 30, 2013

TO: Steve Boyd, Turlock Irrigation District and Greg Dias, Modesto Irrigation District

FROM: Scott Wilcox and Wayne Swaney, Stillwater Sciences

SUBJECT: Lower Tuolumne River Instream Flow Study – Pacific lamprey, Sacramento splittail, and non-native predatory fish habitat assessment: 1-D PHABSIM habitat suitability criteria review

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### 1 BACKGROUND

The *Lower Tuolumne River Instream Flow Studies – Final Study Plan* (Stillwater Sciences 2009a) was filed with the Federal Energy Regulatory Commission (Commission) on October 14, 2009. The Study Plan was approved, pursuant to Ordering paragraphs (A) through (E) of the Commission's May 12, 2010 order. In order to examine the broad flow ranges identified in the Commission's July 16, 2009 Order, the Study Plan separated the study into two separate investigations: (1) A conventional 1-D PHABSIM model ("Instream flow Study"), which examines in-channel habitat conditions at flows from approximately 100–1,000 cfs, and (2) a 2-D hydraulic model of overbank areas, as well as adjacent in-channel locations, for flows of 1,000–5,000 cfs, developed as part of the Pulse Flow Study. The *Lower Tuolumne River Instream Flow Study–Final Report* was filed with the Commission on April 26, 2013 (Stillwater Sciences 2013). The *Pulse Flow Study Report* was submitted to the Commission on June 18, 2012 (Stillwater Sciences 2012).

Subsequent to the original Study Plan approval, the Commission, in their December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project relicensing studies, required the scope of the Lower Tuolumne Instream Flow Study be expanded to include Pacific lamprey (*Entosphenus tridentatus*) and Sacramento splittail (*Pogonichthys macrolepidotus*), if existing habitat suitability criteria (HSC) were available. Within their April 8, 2013 comments on the *Draft Instream Flow Study Report*, the USFWS provided references to existing criteria, developed for the Lower Merced River. More recently, in the Commission's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project, the Commission required the scope of the Lower Tuolumne Instream Flow Study be expanded to assess habitat for non-native predatory fish, including smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), and striped bass (*Morone saxatilis*) using existing habitat suitability criteria data, where available. The Districts have compiled existing suitability criteria for the above species and, in a letter filed with the Commission on October 4, 2013, outlined a review and filing schedule with Relicensing Participants and the Commission.

This Technical Memorandum summarizes the suitability criteria available for Pacific lamprey, Sacramento splittail, smallmouth bass, largemouth bass, and striped bass for inclusion into the Lower Tuolumne River Instream Flow Study model results.

## 2 METHODS

### 2.1 Habitat Suitability Criteria Availability

Use of the PHABSIM model requires application of HSC to the results of the hydraulic model in order to generate an index of habitat suitability (weighted usable area, or WUA) versus flow. Pursuant to the Commission-approved Study Plan, HSC screening criteria included the following, although no single criterion would qualify or disqualify a curve from further consideration.

- Minimum of 150 observations
- Clear identification of fish size classes
- Depth and velocity HSC
- Category II or III data (Bovee 1986)
- Comparable stream size and morphology (e.g., hydrology, stream width and depth, gradient, geomorphology, etc.)
- Source data from the lower Tuolumne River (or other Central Valley streams)
- Habitat availability data collected
- Data collected at high enough flow that depths and velocities are not biased by flow availability
- Availability of presence/absence data

The target species and life stages include:

- Pacific lamprey: spawning and ammocoete
- Sacramento splittail: juvenile and spawning
- Smallmouth bass: adult
- Largemouth bass: adult
- Striped bass: adult

Unfortunately, the available HSC for Pacific lamprey, Sacramento splittail, smallmouth bass, largemouth bass, and striped bass are very limited. Available HSC for Pacific lamprey and Sacramento splittail, referenced by the USFWS, were developed for the Merced Hydroelectric Project relicensing (Merced ID 2011 and 2013) (Table 1). The Merced Category I (binary consensus curves) data were based on species habitat descriptions from literature, and not from site-specific surveys. Pacific lamprey HSC were based on habitat preference descriptions of Pacific lamprey and Kern brook lamprey (*Lampetra hubbsi*) from Close et al. (2002), Gard (2009), and Gunckel et al. (2009) (Figures 1–6). The splittail HSC were derived from habitat descriptions from Feyrer et al. (2005), Moyle et al. (2004, 2007), Sommer et al. (2002, 2008), and Young and Cech (1996) (Figures 7–11).

Available HSC for smallmouth bass (Edwards et al. 1983), largemouth bass (Stuber et al. 1982), and striped bass (Crance 1984) include limited Category I (binary consensus curves) data based on species habitat descriptions from literature and professional judgment (Table 1). These HSC

were recently used in the overbank habitat assessment, reported in the *Lower Tuolumne River Instream Flow Studies: Pulse Flow Study Report* (Stillwater Sciences 2012), and the HSC for smallmouth bass (Edwards et al. 1983) and largemouth bass (Stuber et al. 1982) were previously used in the 2-D modeling for the special run-pool (SRP) 9 channel reconstruction project on the Lower Tuolumne River at river mile 25.9–25.7 (McBain & Trush and Stillwater Sciences 2006). However, because depth HSC for largemouth bass is not described in Stuber et al. (1982), the prior studies on the Lower Tuolumne River substituted smallmouth bass depth HSC from Edwards et al. (1983) for largemouth bass (Figures 12–15).

Similarly, striped bass depth HSC is described in Crance et al. (1984); however, no velocity HSC were provided. Striped bass are reported to tolerate a wide range of velocities, from 0.0 to 16.4 feet per second (fps), with an optimum range between 0.0 and 3.28 fps (Hassler 1988). For this study, velocity HSC for striped bass were developed using these reported ranges by assigning an index value of 1.0 to velocities within the optimal range (0.0–3.28 fps) and an index value of 0.0 to all velocities beyond the tolerance range (>16.4 fps); intermediate values between the upper optimal range and the upper tolerance range were defined by a straight line between the two points (Figures 16–17).

**Table 1.** Habitat suitability criteria summary for target species and life stages.

Species	Life stage	Depth	Velocity	Substrate	Cover	Source
Pacific lamprey	Ammocoete	Yes	Yes	Yes	No	Merced ID 2011
Pacific lamprey	Spawning	Yes	Yes	Yes	No	Merced ID 2011
Sacramento splittail	Juvenile	Yes	Yes	No	No	Merced ID 2013
Sacramento splittail	Spawning	Yes	Yes	Yes	Yes	Merced ID 2013
Smallmouth bass	Adult	Yes	Yes	Yes	No	Edwards et al. 1983
Largemouth bass	Adult	No <sup>1</sup>	Yes	No	No	Stuber et al. 1982 (velocity) Edwards et al. 1983 (depth from smallmouth bass)
Striped bass	Adult	Yes	Yes	No	No	Crance 1984 (depth) Hassler 1988 (velocity)

<sup>1</sup> Largemouth bass HSC for depth was not available in the literature; however, smallmouth bass HSC for depth were substituted for largemouth bass in prior lower Tuolumne River studies (McBain & Trush and Stillwater Sciences 2006, Stillwater Sciences 2012).

## 2.2 Species Occurrences in the Tuolumne River

As part of HSC development for the lower Tuolumne River instream flow study, site-specific HSC validation surveys were conducted in the lower Tuolumne River from just below La Grange Dam (RM 52) downstream to Waterford (RM 31). Neither Pacific lamprey nor Sacramento splittail were observed during those surveys, which were conducted across a range of seasons (winter, spring, and summer) and a range of flow conditions (100 cfs, 350 cfs, and 2,000 cfs). However, Pacific lamprey have been observed during snorkel surveys conducted between La Grange Dam (RM 51.8) and Waterford (RM 31) (Stillwater Sciences 2009b, 2010), and Sacramento splittail have been reported to spawn in the lower 6.8 miles of the Tuolumne River



during wet years (Moyle et al. 1995). Smallmouth bass, largemouth bass, and striped bass are commonly observed in the lower Tuolumne River (Stillwater Sciences 2009b, 2011; FISHBIO 2012a, 2012b); however, bass were not encountered at the HSC study sites.

### 2.3 Habitat Suitability Criteria Selection

The lamprey and splittail depth, velocity, and substrate HSC developed for Merced ID were usable for the Lower Tuolumne PHABSIM model. However, the cover criteria used by Merced ID for splittail spawning was based on a coding system that was incompatible with the cover data collected for the lower Tuolumne River. Therefore, cover criteria were not applied for this species/life stage. All bass HSC were usable for the Lower Tuolumne PHABSIM model.

Selected HSC for Pacific lamprey, Sacramento splittail, smallmouth bass, largemouth bass, and striped bass are shown below in Figures 1–17 and listed in Tables 2–8.

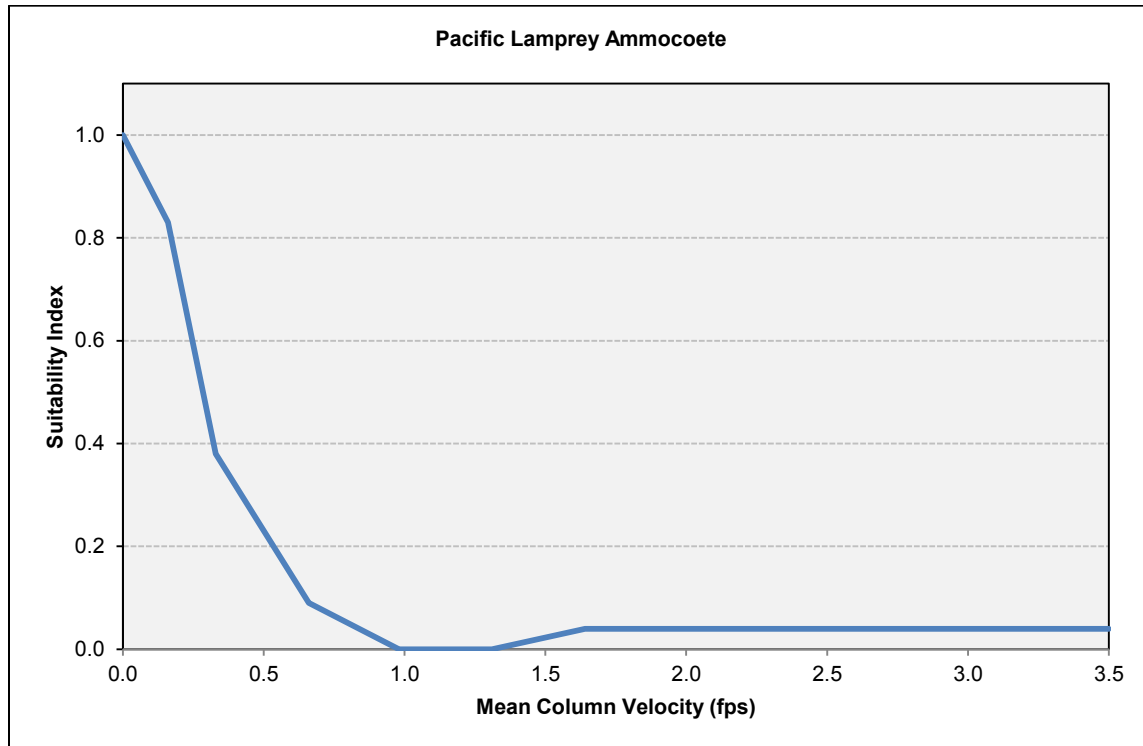


Figure 1. Pacific lamprey ammocoete velocity suitability criteria for the lower Tuolumne River.

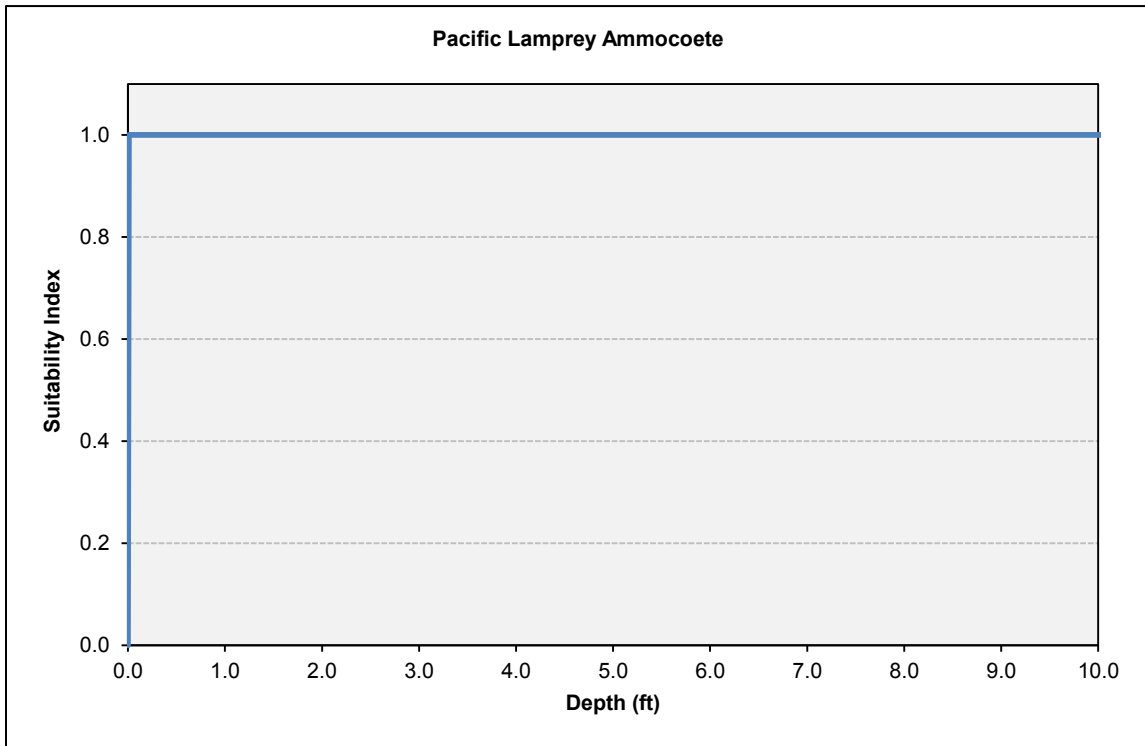


Figure 2. Pacific lamprey ammocoete depth suitability criteria for the lower Tuolumne River.

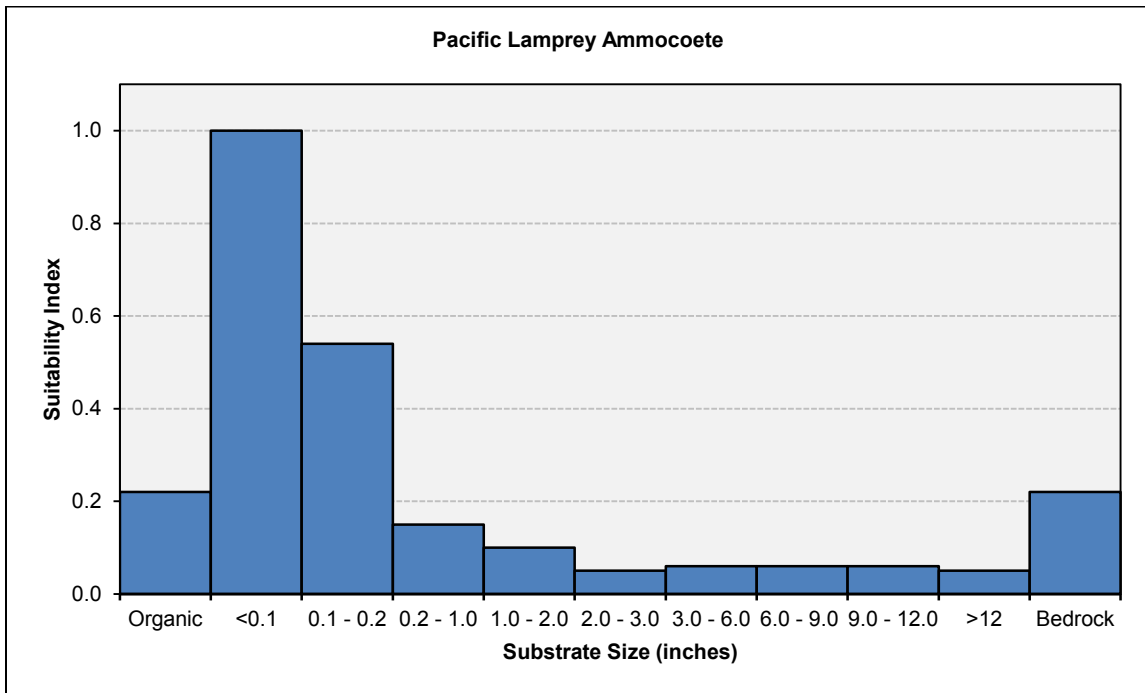
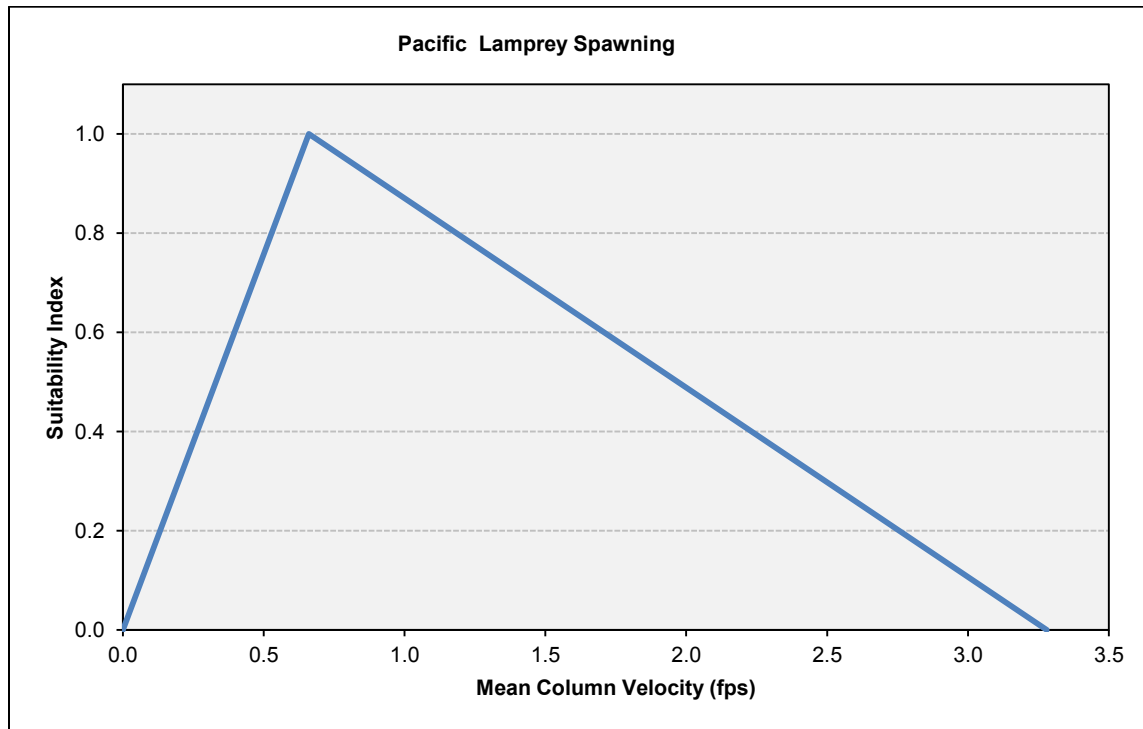
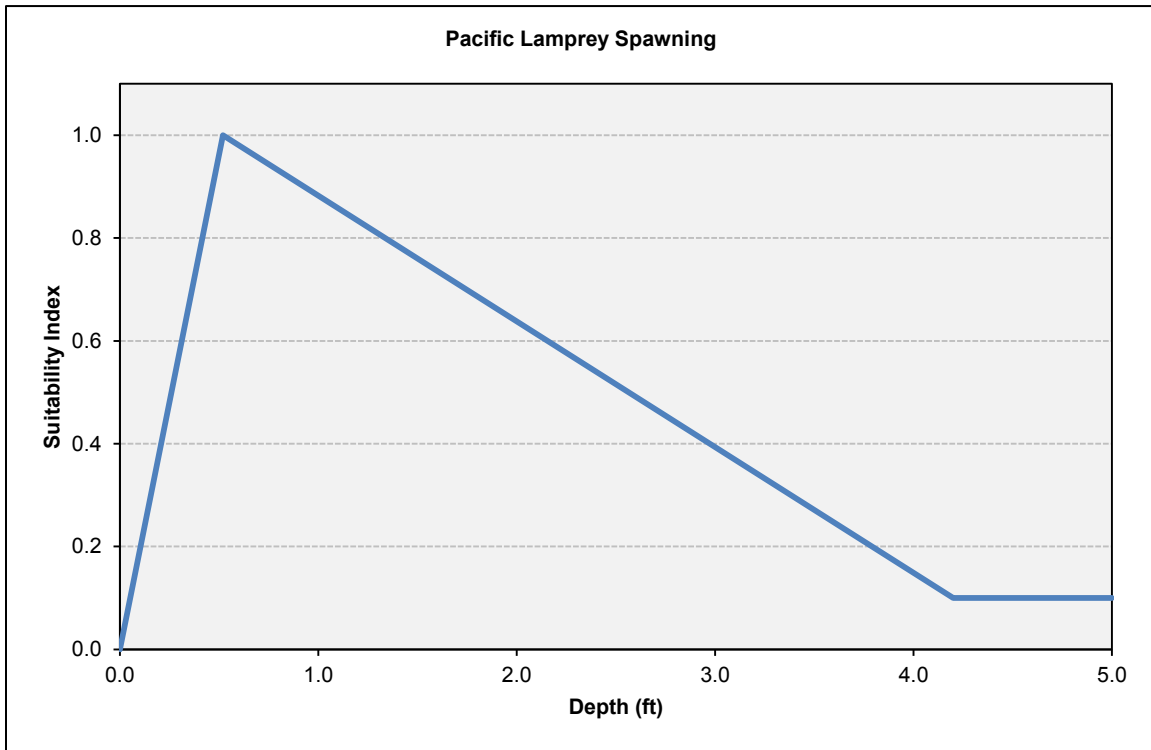


Figure 3. Pacific lamprey ammocoete dominant substrate suitability criteria for the lower Tuolumne River.

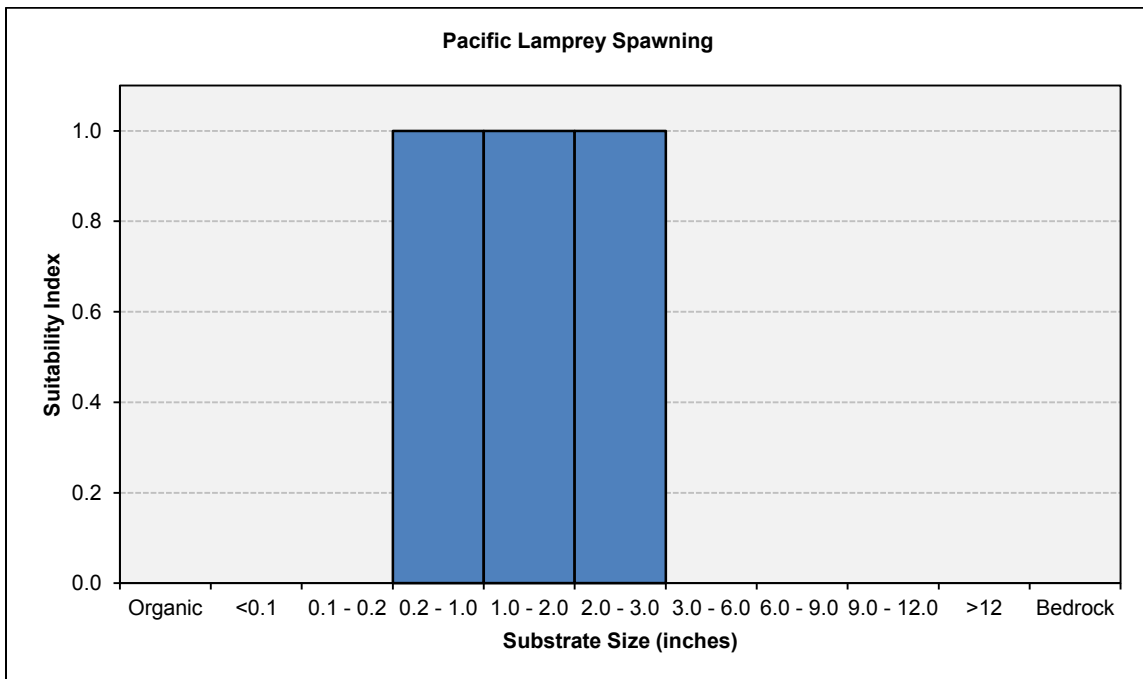
**Table 2.** Pacific lamprey ammocoete suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	1.00	0.00	0.00	Organic	N/A	0.22
0.16	0.83	0.01	1.00	Silt	0-0.1	1.00
0.33	0.38	--	--	Sand	0.1-0.2	0.54
0.66	0.09	--	--	Small gravel	0.2-1	0.15
0.98	0.00	--	--	Gravel	1-2	0.10
1.31	0.00	--	--	Large gravel	2-3	0.05
1.64	0.04	--	--	Small cobble	3-6	0.06
--	--	--	--	cobble	6-9	0.06
--	--	--	--	Large cobble	9-12	0.06
--	--	--	--	Boulder	>12	0.05
--	--	--	--	Bedrock	N/A	0.22

<sup>1</sup> Merced ID 2011**Figure 4.** Pacific lamprey spawning velocity suitability criteria for the lower Tuolumne River.



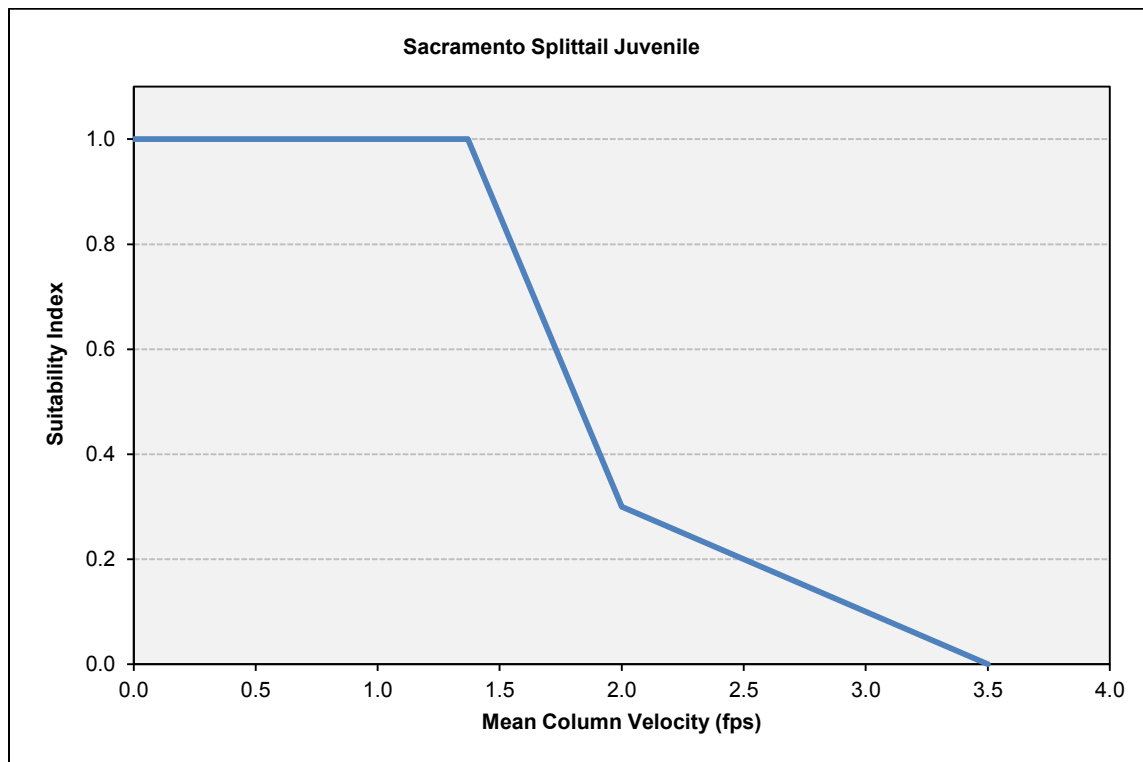
**Figure 5.** Pacific lamprey spawning depth suitability criteria for the lower Tuolumne River.



**Figure 6.** Pacific lamprey spawning dominant substrate suitability criteria for the lower Tuolumne River.

**Table 3.** Pacific lamprey spawning suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	0.00	0.00	0.00	Organic	N/A	0.00
0.66	1.00	0.52	1.00	Silt	<0.1	0.00
3.28	0.00	4.20	0.10	Sand	0.1–0.2	0.00
--	--	--	--	Small gravel	0.2–1	1.00
--	--	--	--	Gravel	1–2	1.00
--	--	--	--	Large gravel	2–3	1.00
--	--	--	--	Small cobble	3–6	0.00
--	--	--	--	cobble	6–9	0.00
--	--	--	--	Large cobble	9–12	0.00
--	--	--	--	Boulder	>12	0.00
--	--	--	--	Bedrock	N/A	0.00

<sup>1</sup> Merced ID 2011**Figure 7.** Sacramento splittail juvenile velocity suitability criteria for the lower Tuolumne River.

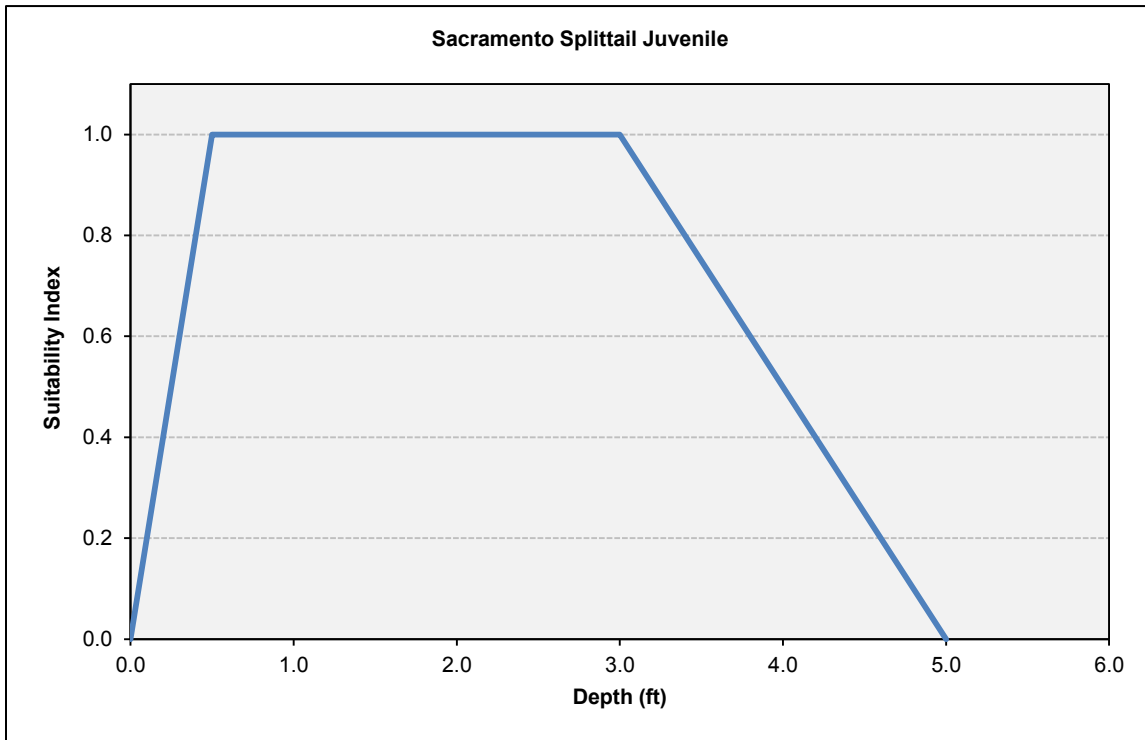
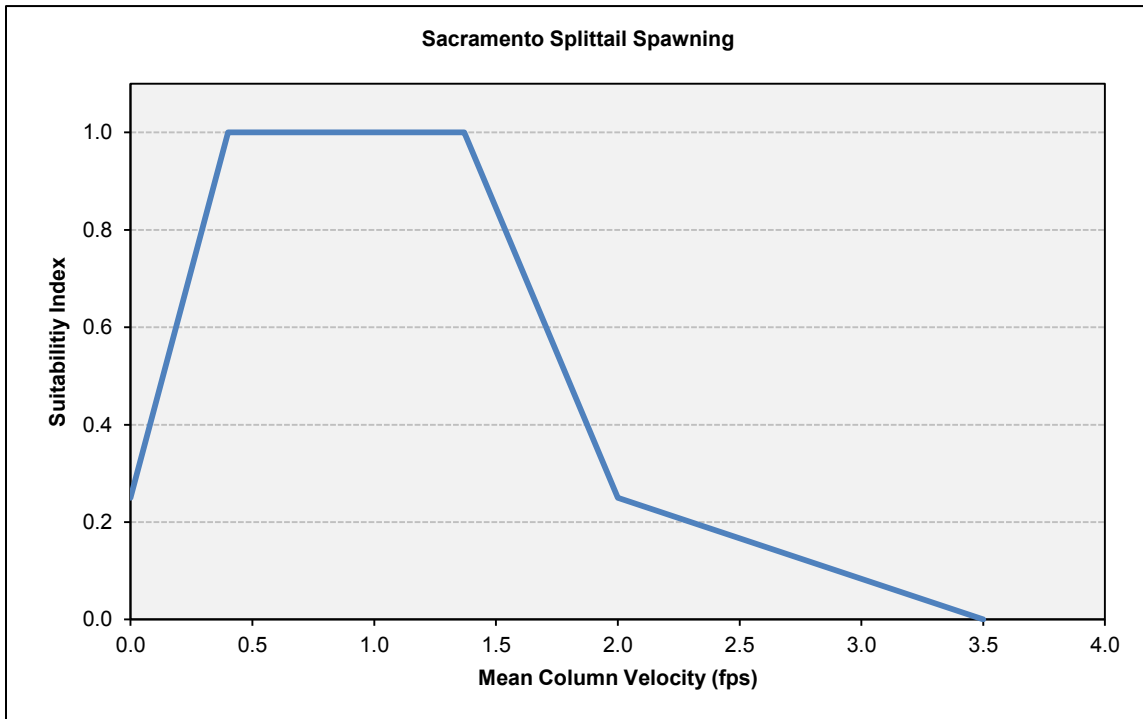


Figure 8. Sacramento splittail juvenile depth suitability criteria for the lower Tuolumne River.

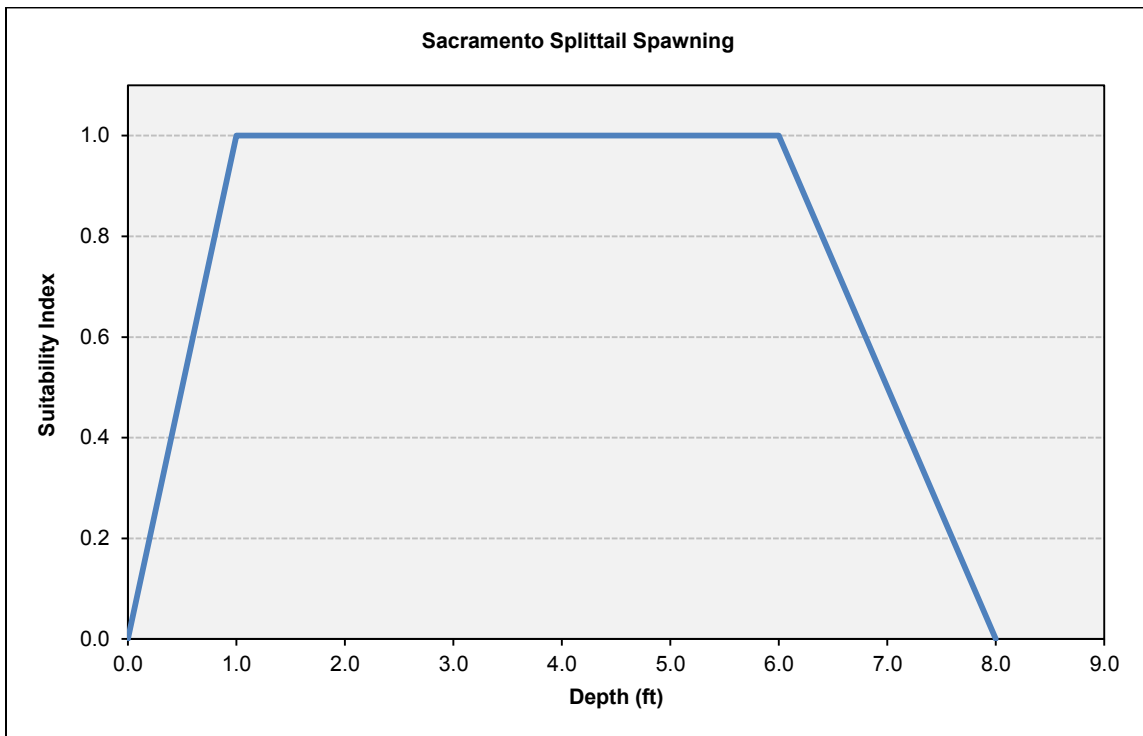
Table 4. Sacramento splittail juvenile suitability criteria.

Velocity		Depth	
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>
0.00	1.00	0.00	0.00
0.40	1.00	0.50	1.00
1.37	1.00	1.30	1.00
2.00	0.30	3.00	1.00
3.50	0.00	5.00	0.00

<sup>1</sup> Merced ID 2013

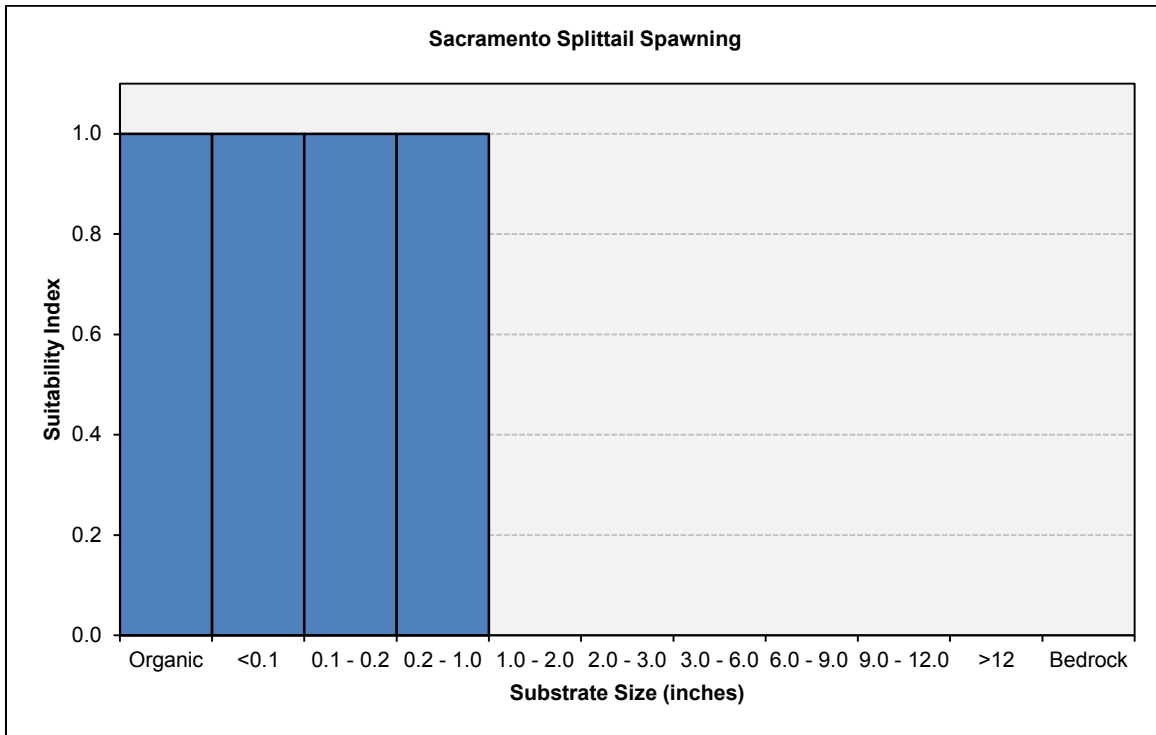


**Figure 9.** Sacramento splittail spawning velocity suitability criteria for the lower Tuolumne River.



**Figure 10.** Sacramento splittail spawning depth suitability criteria for the lower Tuolumne River.





**Figure 11.** Sacramento splittail spawning dominant substrate suitability criteria for the lower Tuolumne River.

**Table 5.** Sacramento splittail spawning suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	0.25	0.00	0.00	Organic	N/A	1.00
0.40	1.00	1.00	1.00	Silt	<0.1	1.00
1.37	1.00	6.00	1.00	Sand	0.1–0.2	1.00
2.00	0.25	8.00	0.00	Small gravel	0.2–1	1.00
3.50	0.00	--	--	Gravel	1–2	0.00
--	--	--	--	Large gravel	2–3	0.00
--	--	--	--	Small cobble	3–6	0.00
--	--	--	--	Cobble	6–9	0.00
--	--	--	--	Large cobble	9–12	0.00
--	--	--	--	Boulder	>12	0.00
--	--	--	--	Bedrock	N/A	0.00

<sup>1</sup>Merced ID 2013

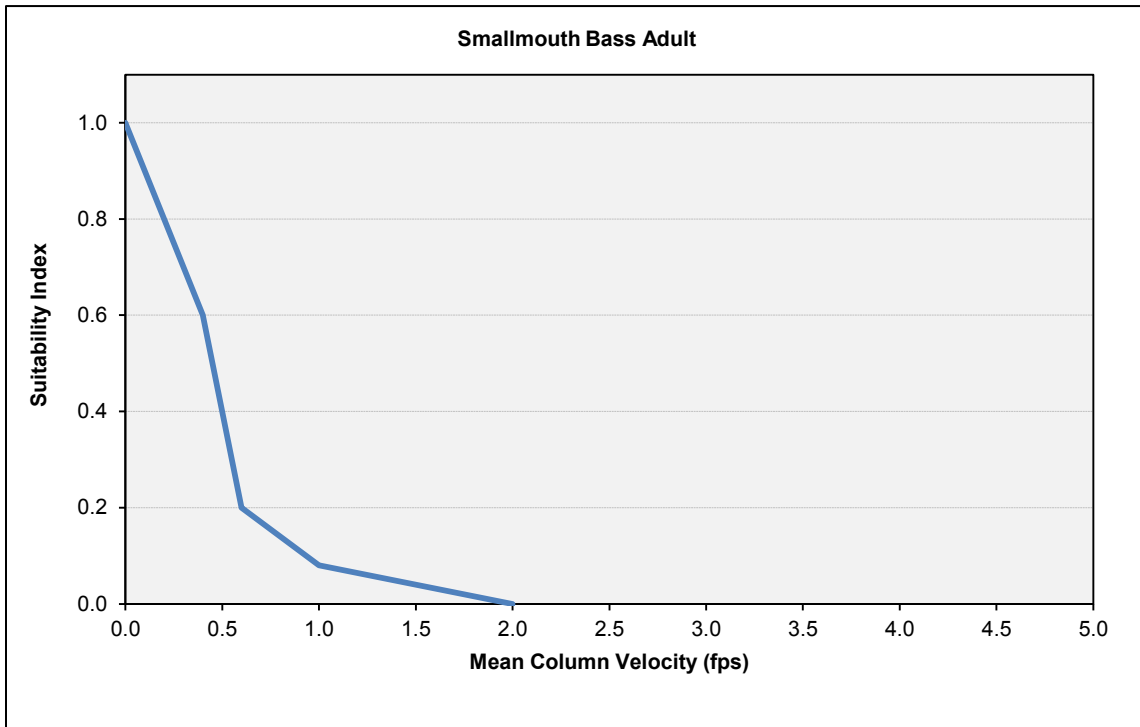


Figure 12. Smallmouth bass adult velocity suitability criteria for the lower Tuolumne River.

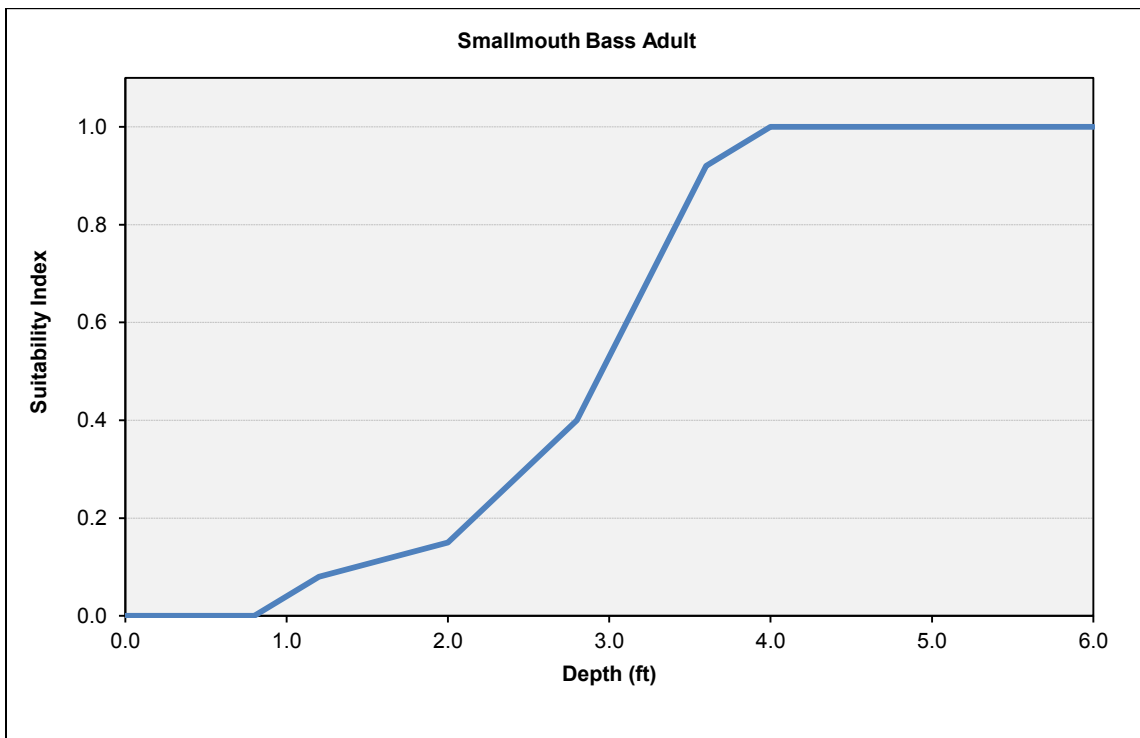
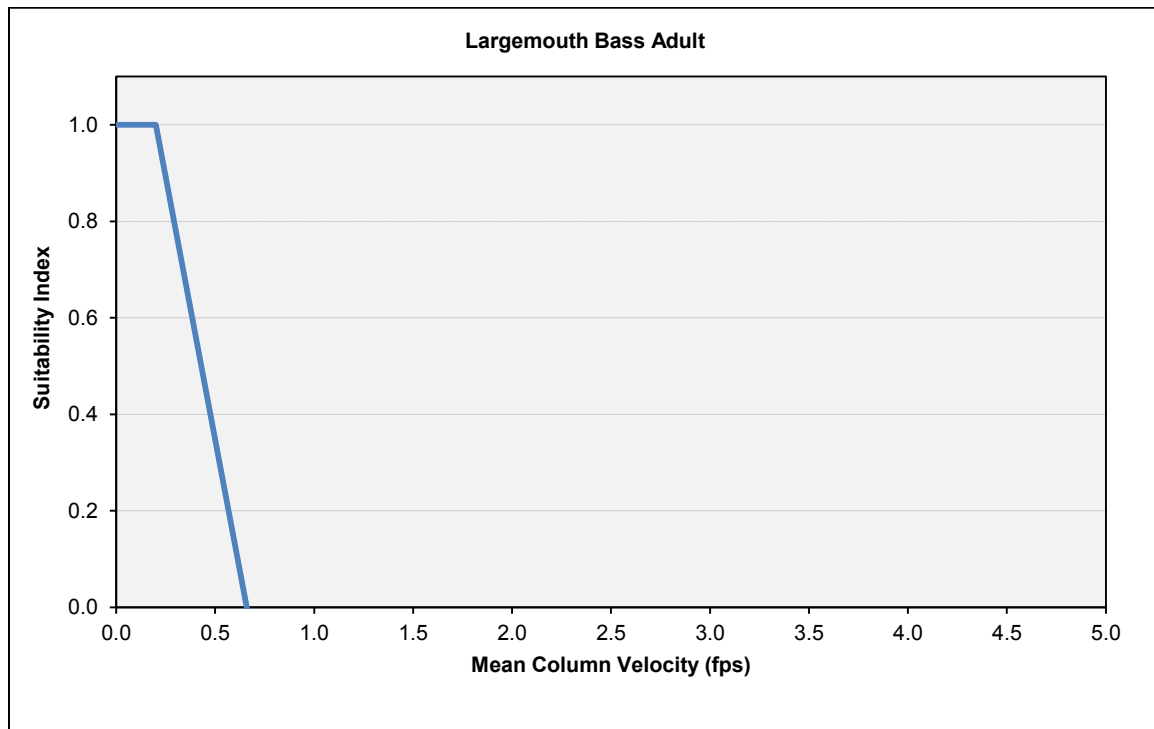
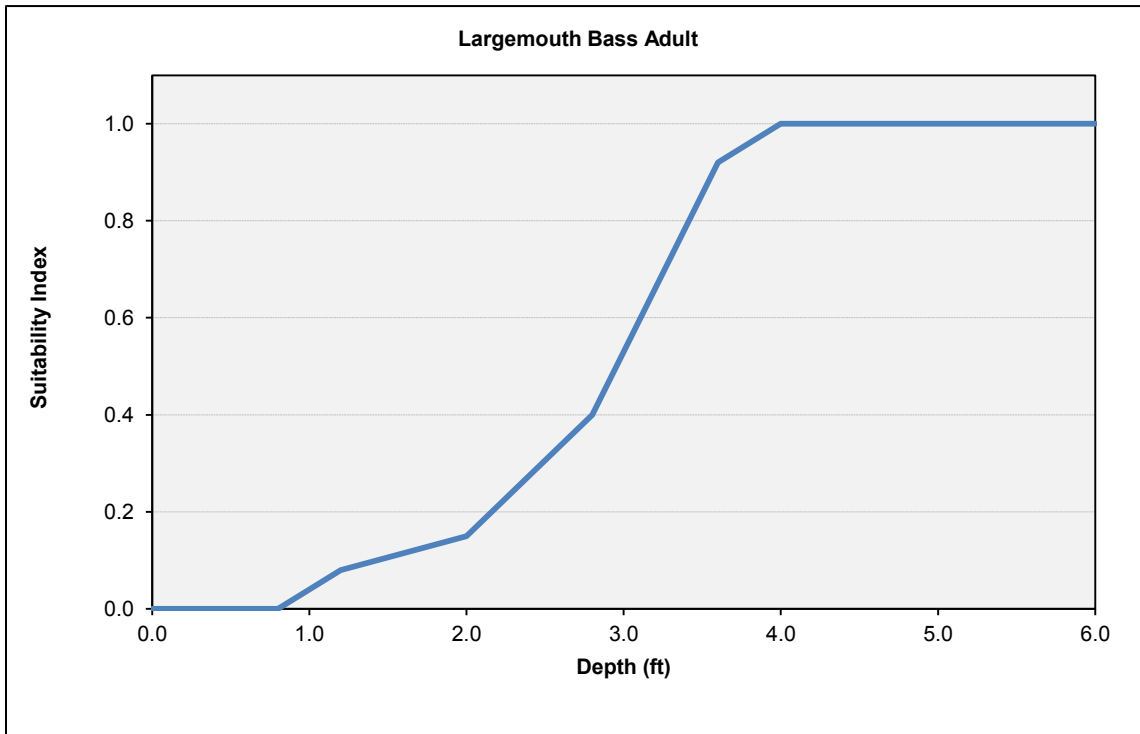


Figure 13. Smallmouth bass adult depth suitability criteria for the lower Tuolumne River.

**Table 6.** Smallmouth bass adult suitability criteria.

Velocity		Depth	
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>
0.00	1.00	0.00	0.00
0.40	0.60	0.80	0.00
0.60	0.20	1.20	0.08
1.00	0.08	2.00	0.15
2.00	0.00	2.80	0.40
--	--	3.60	0.92
--	--	4.00	1.00

<sup>1</sup> Edwards et al. 1983**Figure 14.** Largemouth bass adult velocity suitability criteria for the lower Tuolumne River.



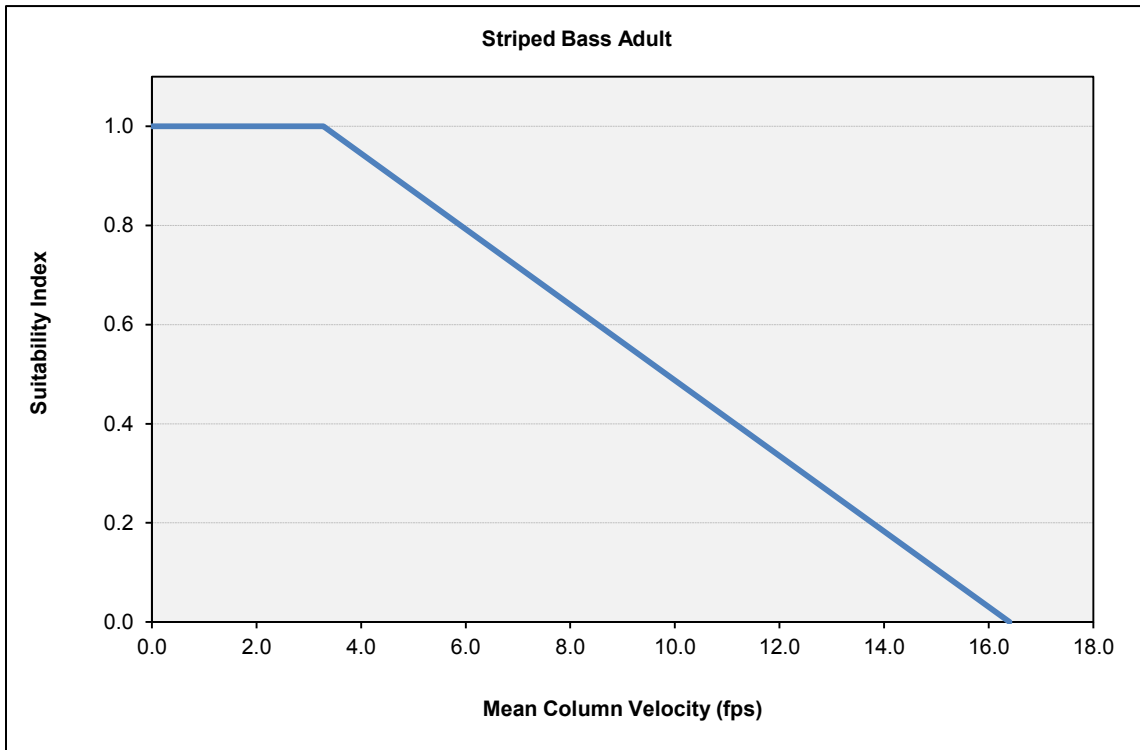
**Figure 15.** Largemouth bass adult depth suitability criteria for the lower Tuolumne River.

**Table 7.** Largemouth bass adult suitability criteria.

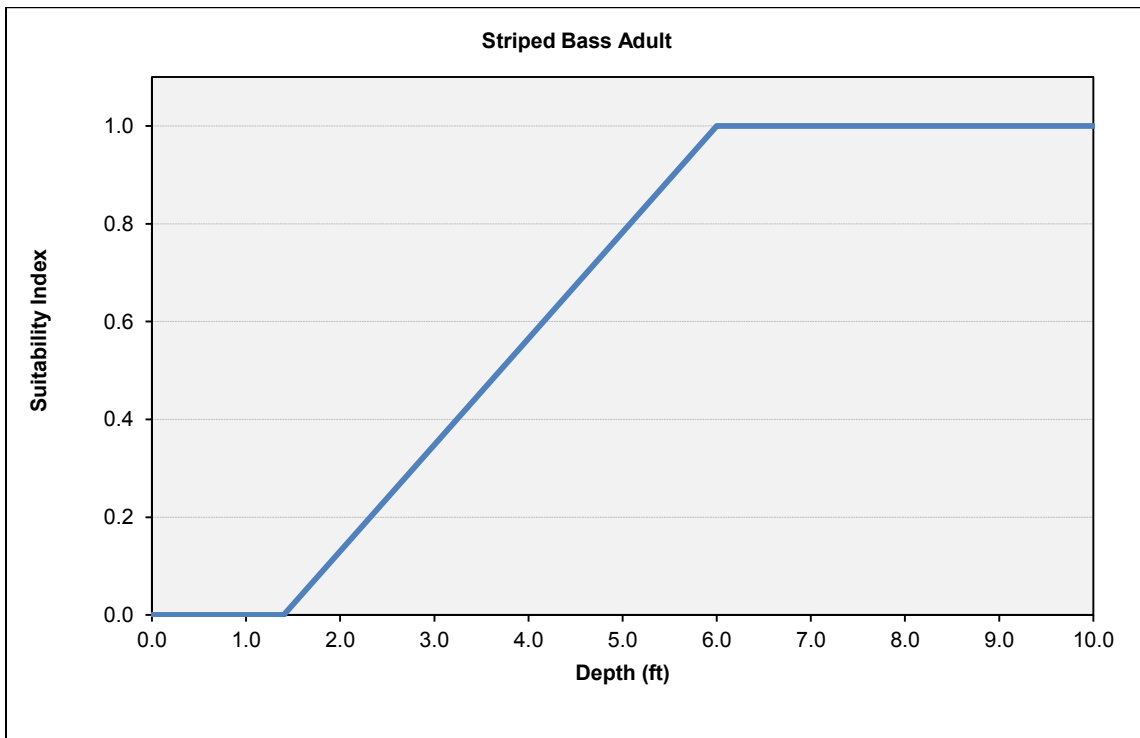
Velocity <sup>1</sup>		Depth <sup>2</sup>	
(fps)	Index	(ft)	Index
0.00	1.00	0.00	0.00
0.20	1.00	0.80	0.00
0.66	0.00	1.20	0.08
--	--	2.00	0.15
--	--	2.80	0.40
--	--	3.60	0.92
		4.00	1.00

<sup>1</sup> Stuber et al. 1982

<sup>2</sup> HSC for smallmouth bass (Edwards et al. 1983), as used in previous lower Tuolumne studies (McBain and Trush and Stillwater Sciences 2006; Stillwater Sciences 2012)



**Figure 16.** Striped bass adult velocity suitability criteria for the lower Tuolumne River.



**Figure 17.** Striped bass adult depth suitability criteria for the lower Tuolumne River.

**Table 8.** Striped bass adult suitability criteria.

Velocity		Depth	
(fps)	Index <sup>1</sup>	(ft)	Index <sup>2</sup>
0.00	1.00	0.0	0.00
3.00	1.00	1.4	0.00
3.28	1.00	6.0	1.00
16.40	0.00	--	--

<sup>1</sup> Developed using existing literature sources from Hassler (1988)<sup>2</sup> Crance et al. (1984)

## 2.4 Habitat Time Series

A Habitat Time Series (HTS) analysis will be conducted to assess how habitat values for each species and life stage vary over time, under different water year type scenarios. Water year types selected for analysis are the five San Joaquin Basin 60-20-20 Index types: Critical, Dry, Below Normal, Above Normal, and Wet, as represented by Water Years 2008-2012 (the most recent years of these index types) and presented in Table 9.

**Table 9.** San Joaquin Basin 60-20-20 Index, corresponding water year types, and representative water years used for habitat time series analysis in the lower Tuolumne River instream flow study.

San Joaquin Basin 60-20-20 Index <sup>1</sup>	Water Year Type	Representative Water Year
2.06	Critical	2008
2.18	Dry	2012
2.73	Below Normal	2009
3.55	Above Normal	2010
5.59	Wet	2011

<sup>1</sup> DWR Bulletin 132 calculated index

Daily flow values for the lower Tuolumne River were obtained from the USGS gaging station at La Grange (No. 11289560) and were compiled for all Water Year types. No downstream adjustments for accretion or depletion are required in the IFIM assessment reach (RM 51.7 to RM 29.0).<sup>1</sup> The associated WUA values will be assigned based on the daily flows using a lookup table of WUA values from the PHABSIM results, interpolated to 5 cfs intervals.

The periodicity of Pacific lamprey and Sacramento splittail was adapted from the Merced River hydroelectric relicensing project due to its close proximity to the lower Tuolumne River (Merced ID 2011, 2013) (Table 10); the Sacramento splittail spawning periodicity was modified to indicate the spawning period for the lower Tuolumne River (Moyle et al. 2004). Smallmouth bass, largemouth bass, and striped bass have been documented in the lower Tuolumne River during each season of the year (FISHBIO 2012a, 2012b; Stillwater Sciences 2009b, 2011).

<sup>1</sup> The reach represented in the IFIM assessment includes RM 51.7 to RM 29.0. Accretion/depletion studies performed by the Districts suggest that flow changes along the study reach (which is upstream of Dry Creek and does not contain major tributaries) are relatively small compared to the scale of most HTS flows and the associated WUA reporting increments, and therefore the HTS results are not adjusted for these changes.

Periodicity for adult bass species includes all months of the year, since the species are resident (Table 10).

**Table 10.** Species/life stage periodicity for the lower Tuolumne River.

Species	Life stage	Fall			Winter			Spring			Summer		
		O	N	D	J	F	M	A	M	J	J	A	S
Pacific lamprey	Ammocoete												
	Spawning												
Sacramento splittail	Juvenile												
	Spawning												
Smallmouth bass	Adult												
Largemouth bass	Adult												
Striped bass	Adult												

### 3 DISCUSSION

#### 3.1 Next Steps

This report complies with requirements of the Commission's December 22, 2011 Study Plan Determination for the Don Pedro Project relicensing studies and the Commission's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project, which collectively expanded the flow-habitat assessments to be undertaken to include lamprey, splittail, and three bass species. Following the HSC review, any subsequent modifications to the HSC will be completed and provided in the Districts' Updated Study Report (USR), scheduled to be issued on December 6, 2013. The Districts will submit the results of the five species assessments as separately bound supplements to the prior filings and as part of the Districts' upcoming license application for the relicensing the Project, in accordance with the following schedules.

Habitat assessments (e.g., WUA versus flow relationships) using the final HSC for Pacific lamprey and Sacramento splittail will be completed by the Districts and submitted to relicensing participants for a 30-day review and comment period by January 16, 2014. The final report will be provided in the Districts' Final License Application to be filed with FERC by April 30, 2014.

Habitat assessments for non-native predatory fish, including smallmouth bass, largemouth bass, and striped bass will be completed by the Districts and submitted to relicensing participants in conjunction with the Districts' 2014 Predation Study. The Districts will submit both studies to relicensing participants for a 30-day review and comment period in December 2014 or January 2015. The final report will be provided as an Additional Information filing to FERC to supplement the Final License Application.

The one remaining component of the *Lower Tuolumne River Instream Flow Studies* 1-D PHABSIM investigation includes an effective habitat analysis to be completed following the completion of the *Lower Tuolumne River Temperature Model* (relicensing study W&AR-16). The river temperature model report will be submitted to relicensing participants for review and

comment as part of the Districts' USR. The effective habitat analysis evaluation is expected to be complete within six months (including a 30-day resource agency review period) following the completion of relicensing participants' review and comment on W&AR-16. Therefore, the effective weighted usable area assessment would be completed and filed with FERC by August 2014.

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**From:** Allison Boucher <aboutche [REDACTED]>  
**Sent:** Tuesday, November 05, 2013 8:07 PM  
**To:** Staples, Rose; 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Blake, Martin'; 'Bond, Jack'; Borovansky, Jenna; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Cooke, Michael'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denear'; 'Derwin, Maryann Moise'; Devine, John; 'Donaldson, Milford Wayne'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Art'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Marshall, Mike'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Reynolds, Garner'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Cc:** 'Scott Wilcox'; 'Russell Liebig'  
**Subject:** RE: For Your Review-Available HSC for Don Pedro Assessment Pacific lamprey-Sacramento Splittail-Non Native Predatory Fish Habitat

Don't we need temperature requirements for these fish? Isn't temperature part of the habitat?

Allison Boucher

Tuolumne River Conservancy, Inc.

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**From:** Staples, Rose [<mailto:Rose.Staples@hdrinc.com>]

**Sent:** Wednesday, October 30, 2013 2:37 PM

**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack;

Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley; Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rotherth, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzell, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

**Cc:** Scott Wilcox ([Scott@stillwatersci.com](mailto:Scott@stillwatersci.com)); Russell Liebig ([russ@stillwatersci.com](mailto:russ@stillwatersci.com))

**Subject:** For Your Review-Available HSC for Don Pedro Assessment Pacific lamprey-Sacramento Splittail-Non Native Predatory Fish Habitat

The attached Technical Memorandum from Stillwater Sciences (summarizing the HSC available for Pacific lamprey, Sacramento splittail, and non-native predatory fish habitat assessment) is being provided to you today for a 30-day review. Please provide any comments by close of business on Friday, November 29, 2013. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Staples, Rose  
**Sent:** Tuesday, November 05, 2013 8:08 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Donaldson, Milford Wayne; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Art; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Marshall, Mike; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzels, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Project Relicensing Draft License Application

The Don Pedro Project Relicensing ***DRAFT License Application*** ("DLA") is due to be filed with FERC later this month. Once filed, this document will be available for viewing / downloading from FERC's E-Library and it will also be uploaded into the DOCUMENT section of the Don Pedro Relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com).

However, if you would prefer receiving a CD copy of the DLA, please send me an email with your current mailing address, and we will forward you the CD once the DLA has been filed with FERC. Thank you.

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**From:** Staples, Rose  
**Sent:** Friday, November 15, 2013 9:44 AM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Project Relicensing USR Filing and USR Meeting Date

For your information, please note that the Don Pedro Updated Study Report (USR) will be filed with FERC on December 10, 2013—and the USR Meeting will be held on Thursday, December 19, 2013 from 9:00 a.m. to 4:00 p.m. at the MID Offices in Modesto. A more detailed agenda will be forthcoming.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Staples, Rose  
**Sent:** Friday, November 15, 2013 6:46 PM  
**To:** Staples, Rose; Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter@Waterboards; Barrera, Linda@Wildlife; Blake, Martin; Bond, Jack; Borovansky, Jenna; abouche [REDACTED]; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy [REDACTED]; mcooke@turlock.ca.us; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; steve.edmondson@noaa.gov; Eicher, James; Fargo, James@FERC; Fernandes, Jesse; Ferranti, Annee@Wildlife; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim@Wildlife; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert@Wildlife; Hume, Noah; zachary\_jackson@fws.gov; Jauregui, Julia; deltakeep [REDACTED]; Jensen, Laura; Johannis, Mary; Johnson, Brian; christy.a.jones@usace.army.mil; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; maperanch@aol.com; Madden, Dan; Marko, Paul; Martin, Michael; ramon\_martin@fws.gov; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen@Wildlife; Murray, Shana; O'Brien, Jennifer@Wildlife; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; rbpool@protroll.com; Porter, Ruth; Powell, Melissa; Puccini, Stephen@Wildlife; Raeder, Jessie; tramirez@sfwater.org; Rea, Maria@NOAA; Reed, Ronda@noaa; Reynolds, Garner; Richardson, Daniel; Kevin.A.Richardson@usace.army.mil; jridenour@modestogov.com; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan@Parks; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; rstork@friendsoftheriver.org; Stratton, Susan@Parks; Taylor, Mary Jane@Wildlife; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; chris.vierra@ci.ceres.ca.us; Villalobos, Amber@Waterboards; richard.wantuck@noaa.gov; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff@Waterboards; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David@NOAA; scott@stillwatersci.com; Williamson, Harry; Willy, Alison; Wilson, Bryan; Winchell, Frank; Wooster, John; Michelle\_Workman@fws.gov; rmyoshiyama@ucdavis.edu; Zipser, Wayne  
**Subject:** Don Pedro Project USR Meeting Date Change

As Annie Manji has alerted us to the December 19-20 dates of the already scheduled Merced Hydroelectric Project meetings, we have therefore changed the Don Pedro Project Updated Study Report (USR) Meeting to Wednesday, December 18, 2013 from 9:00 a.m. to 4:00 p.m. at the MID Offices in Modesto.

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**From:** Staples, Rose  
**Sent:** Monday, November 25, 2013 11:39 AM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzels, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Districts File Today Don Pedro USR Schedule Extension Request

Please be aware that the Districts have filed this morning a Request for Extension with FERC to reschedule the December 18, 2013 Updated Study Report meeting for the Don Pedro Project to Thursday, January 16, 2014. The USR document will be filed with FERC and available to relicensing participants on January 6, 2014. The USR Meeting Summary will be filed by the Districts with FERC by January 24, 2014, and relicensing participants will have until March 3, 2014 to file any comments, requests for study modifications, or requests for new studies. FERC's schedule for resolving any disagreements over the meeting summary or study requests would shift from April 20 to April 24, 2014. A copy of this Request for Schedule Extension will be uploaded shortly to the Don Pedro relicensing website ([www.donpedro-relicensing](http://www.donpedro-relicensing)) as an ANNOUNCEMENT.

The request to reschedule the USR meeting is being made because there are a number of relicensing meetings on other California projects scheduled for the week of December 16<sup>th</sup>. The Districts are anticipating that FERC will grant the extension because of the overall minor delay in the ILP as a whole. The USR meeting will still be



held in Modesto at MID's offices from 9 am to 4 pm. A detailed agenda will be provided once the Districts hear from FERC on the request. In the meantime, please mark the date on your calendar. Thank you.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Staples, Rose  
**Sent:** Tuesday, November 26, 2013 2:41 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

**Subject:** Don Pedro DLA has been filed with FERC

The Don Pedro Draft License Application (DLA) has been filed with FERC day; and is already available on FERC's E-Library at [www.ferc.gov](http://www.ferc.gov). Copies of the DLA documents (32 in all) have been uploaded to the Don Pedro relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com), attached to today's date in the meeting CALENDAR. I will also be uploading copies to the DOCUMENTS tab a little later today. And, as noted in my previous email of November 5<sup>th</sup>, a CD copy of the DLA is available upon request by contacting me at [rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) with your mailing address. If you have any difficulties accessing and/or downloading any of these files, please do let me know. Thank you.

From: Staples, Rose  
Sent: Tuesday, December 03, 2013 1:48 PM  
To: 'Julie Rentner'  
Subject: RE: Don Pedro Relicensing

Thank you for your query. I have forwarded your contact information to the staff who is handling the distribution of the Don Pedro Project relicensing newsletter, so that you get added to the mailing list for the next issue. And I am also forwarding this email to the Districts' relicensing team, regarding your interest in integration. Thank you.

ROSE STAPLES  
CAP-OM  
HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
rose.staples@hdrinc.com | hdrinc.com

From: Julie Rentner [mailto:jrentner@riverpartners.org]  
Sent: Wednesday, November 27, 2013 4:17 PM  
To: Staples, Rose  
Subject: Don Pedro Relicensing

Hello Ms Staples,

I noticed in the recent newsletter on Don Pedro Relicensing that the team reports performing a study regarding the relationships between flow and habitat in the lower Tuolumne.

My NGO is a landowner in the Lower Tuolumne River (RM 0-3) and we are actively planning and permitting floodplain habitat restoration on our property. We are interested in hearing from your study team to ensure our plans are consistent and complimentary with (as well as integrated into) the studies being conducted. Please contact me directly to discuss integration.

Also, I'd like to be added to the mailing list for the newsletter.  
Thanks!

Happy Thanksgiving!

Julie Rentner  
Director of Special Projects  
River Partners  
912 11th Street, Suite LL2  
Modesto Ca 95354  
(209) 639-2012  
Fax: (209) 521-7327  
jrentner@riverpartners.org  
www.riverpartners.org

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**From:** Staples, Rose  
**Sent:** Thursday, December 05, 2013 5:51 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro Relicensing Newsletter Vol 3 Issue 2 Uploaded to Relicensing Website

A copy of the newest Don Pedro Relicensing Newsletter (Volume 3-Issue 2, December 2013) has been uploaded to the Relicensing website ([www.donpedro-relicensing.com](http://www.donpedro-relicensing.com)) under the COMMUNICATIONS tab. Please scroll down to the bottom of the page to see the Newsletter Section.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

Volume 3 | Issue 2



December 2013

# Don Pedro



*A newsletter about the relicensing of the Don Pedro Project*

## Draft License Application filed with FERC

November 26 marked a major milestone in the relicensing of the Don Pedro Project. That is when the Modesto Irrigation District and Turlock Irrigation District filed their Draft License Application (DLA) with the Federal Energy Regulatory Commission (FERC).

The purpose of the DLA is to provide an opportunity for public review and comment on the application prior to filing of the Final License Application (FLA), to be filed by April 30, 2014.

The relicensing process chosen by the Districts, FERC's Integrated Licensing Process (ILP), requires that the applicant for a new license file a Draft License Application with FERC and interested parties no later than 150 days prior to the date of filing the final license application.

The DLA is a compilation of the information and studies accumulated since the start of the relicensing process and includes proposals for future plans for operating the Don Pedro Project in the next license term. However, because some relicensing studies remain in progress, there are a limited number of firm proposals for future operations contained in the draft. Relicensing participants have 90 days to comment on the DLA. The plans proposed in the DLA include development of a Bald Eagle Management Plan,

### The Relicensing Process

The joint MID-TID relicensing of the Don Pedro Project formally began in 2011. Below are some of the major stages of the process.

1. Districts filed PAD and Notice of Intent in February 2011.
2. FERC conducts scoping in May 2011.
3. Interested parties discuss issues and develop study requests.
4. Districts file Proposed Study Plan (PSP) in July 2011 and undertake a series of meetings with relicensing participants to discuss study plans.
5. FERC issues Study Plan Determination in Dec. 2011.
6. Studies begin in 2012.
7. Initial Study Report issued for review and comment in Jan 2013.
- 8. Districts file Draft License Application with FERC on Nov. 26, 2013.**
9. Districts file Final License Application with FERC by April 30, 2014.
10. FERC issues new license with new terms and conditions in 2016.

Historic Properties Management Plan and a Vegetation Management Plan.

The Districts are continuing with the development of the FLA, which will include detailed proposals for future Project operations.

### Important dates

**Nov. 26, 2013**  
*Draft License Application filed with FERC*

**Dec. 10, 2013**  
*Updated Study Report filed with FERC*

**Jan. 16, 2013**  
*Updated Study Report Meeting at MID, 9 a.m.*

**by April 30, 2014**  
*Final License Application to be filed with FERC*



### What's inside

- Updated Study Report meeting set for Jan. 16
- Study statuses
- Additional study notes
- Flow proposal update



## Effort for river flows progresses

The State Water Resources Control Board is looking for water to benefit fish, as well as to control salinity in the south Delta – and it's targeting three tributaries of the San Joaquin River.

Citing a preferred alternative of 35 percent unimpaired flow from each of the Merced, Stanislaus and Tuolumne rivers from February to June annually, the Substitute Environmental Document (SED) is part of Phase 1 of the Board's update to its Bay-Delta Water Quality Control Plan.

MID, TID and many others opposed the flow proposal at a March 2013 public hearing in Sacramento, citing potential harm to water and power customers and the region's economy, as well as implications on groundwater and domestic water supply.

State Board staff is modifying the SED and expects to have a revised document released for comment around February 2014.



A Chinook salmon smolt is removed from the stomach of a striped bass. A 2014 Predation Study (W&AR-07) will be conducted to learn more about fish predators of salmon and predation hot spots.

## 2014 study to further focus on predation

The Districts will undertake a second, extensive effort to study predation of salmon smolts and juveniles in the lower Tuolumne River in 2014. This will be done in compliance with FERC's May 21, 2013 Study Plan Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project.

Extensive field work on Water & Aquatic Resources (W&AR)-07 will be conducted from January to July and a report will be filed by March 2015. The Districts' 2014 predation study proposal was approved by FERC with few modifications. The 2014 study is dependent upon approval of the necessary permits from the California Department of Fish and Wildlife and the National Marine Fisheries Service.

The 2014 study comes on the heels of the 2012 predation study. The 2014 study will provide data to further understanding of predation effects on rearing and outmigrating juvenile Chinook salmon and *O. mykiss* in the lower Tuolumne River.

Data obtained from the 2014 study will supplement existing information to estimate relative abundance of predator fish species (such as bass) using in-channel habitats, estimate predation rates by stomach content sampling, document predator movement, and identify hot-spots that potentially result in higher predation mortality on outmigrating juvenile Chinook salmon on the Tuolumne River from River Mile 42 to the confluence with the San Joaquin River.

### STUDY NOTES

#### **O. mykiss Workshop No. 2**

The Districts hosted a second public workshop on Nov. 5 regarding the modeling effort as part of the W&AR-10 study. The purpose of the workshop was to update relicensing participants on study progress, review a model that evaluates all life stages of *O. mykiss* in the lower Tuolumne River, and solicit input regarding the study.

#### **Lowest Boatable Flow Study**

In accordance FERC's May 21, 2013 Determination, the Districts conducted an additional volunteer boater study in 2013 as part of the Lower Tuolumne River Lowest Boatable Flow Study (Recreational Resources - 03).

A previous river boating study was conducted in Spring 2012 with flows ranging from 171 cubic-feet per second (cfs) to 256 cfs. The 2012 study concluded that 100 cfs is boatable and lower flows would not provide enjoyable boating in inflatable kayaks or any other craft.

During the second iteration of the study requested by FERC's May 21, 2013 Determination, flows of approximately 200 cfs, 175 cfs, 150 cfs, and 125 cfs were employed in August and September 2013. A revised study report presenting results of the 2012 and 2013 volunteer boater effort is to be filed with the Updated Study Report.

# Status of Relicensing Studies

Study No.	Study Name	Status
Cultural Resources (CR)-01	Historic Properties Study	Field work complete; Report in progress
CR-02	Native American Traditional Cultural Properties Study	Field work complete; Report in progress
Recreational Resources (RR)-01	Recreation Facility and Public Accessibility Assessment	Complete
RR-02	Whitewater Boating Take Out Improvement Feasibility	Complete
RR-03	Lower Tuolumne River Boatable Flow Study	Complete
RR-04	Visual Quality Study	Complete
Terrestrial Resources (TR)-01	Special-Status Plants	Complete
TR-02	ESA- and CESA-Listed Plants Study	Complete
TR-03	Wetland Habitats Associated with Don Pedro Reservoir	Complete
TR-04	Noxious Weed Survey	Complete
TR-05	ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle (VELB)	Complete
TR-06	Special-Status Amphibians and Aquatic Reptiles	Complete
TR-07	ESA-Listed Amphibians - California Red-Legged Frog (CRLF)	Complete
TR-08	ESA-List Amphibians - California Tiger Salamander (CTS)	Complete
TR-09	Special-Status Bats	Complete
TR-10	Bald Eagle Study	Complete
Water & Aquatic Resources (W&AR)-01	Water Quality Assessment	Complete
W&AR-02	Project Operations/Water Balance Model	In progress
W&AR-03	Reservoir Temperature Model	In progress
W&AR-04	Spawning Gravel Study	In progress
W&AR-05	Salmonid Populations Information Integration	Complete
W&AR-06	Tuolumne River Chinook Salmon Population Model	Report in progress
W&AR-07	2012 Predation Study	Complete
W&AR-07	2014 Predation Study	Field work planning in progress
W&AR-08	Salmonid Redd Mapping	Complete
W&AR-10	Oncorhynchus mykiss Population Study	Report in progress
W&AR-11	Chinook Salmon Otolith Study	Study in progress
W&AR-12	Oncorhynchus mykiss Habitat Assessment	Complete
W&AR-13	Fish Assemblage and Population Study	Complete
W&AR-14	Temperature Criteria Assessment	Report in progress
W&AR-15	Socioeconomics Study	Complete
W&AR-16	Lower Tuolumne River Temperature Model	Complete
W&AR-17	Don Pedro Reservoir Fish Population Study	Complete
W&AR-18	Sturgeon	Complete
W&AR-19	Riparian Information Synthesis	Complete
W&AR-20	O. mykiss scale & age	Complete
—	Lower Tuolumne Instream Flow (IFIM)	Complete; supplemental analysis in progress
W&AR-21	Floodplain Hydraulic Assessment	Study in progress



Work conducted on a range of relicensing studies, such as the terrestrial study above, will be discussed at a Jan. 16 meeting held at Modesto Irrigation District.

## Jan. 16 meeting to focus on Study Report

As part of FERC's Integrated Licensing Process (ILP), the Districts as co-applicants will file an Updated Study Report (USR) with FERC on Dec. 10.

The USR is a compilation of all the studies completed in the second year of studies as part of relicensing. The USR includes a second year of bald eagle studies, a study of salmon and steelhead/rainbow trout (*O. mykiss*) spawning redds, the development of a computer model of *O. mykiss* populations

in the lower Tuolumne River, the completion of the Operations Model, and two water temperature models.

Additionally, the USR updates several other relicensing studies, such as studies of boating flows in the lower Tuolumne River, with new information.

Following the filing, a public meeting will be held to review the USR on Jan. 16 at MID beginning at 9 a.m. Study work will be summarized and questions will be answered.

### Updated Study Report Meeting

**When:** January 16, 2013 | 9 a.m. to 4 p.m.

**Where:** MID Multipurpose Room, 1231 11th St., Modesto, CA

**What:** Work on studies will be summarized and questions about studies will be answered.



333 E. Canal Drive  
PO Box 949  
Turlock, CA 95381  
209.883.8300





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**From:** Staples, Rose  
**Sent:** Thursday, December 19, 2013 10:29 AM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzels, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

**Subject:** Reminder for your 2014 Calendar: Don Pedro USR Meeting January 16 at MID Offices

Reminder for your 2014 calendar that the Don Pedro Project **Updated Study Report (USR) meeting** is scheduled for Thursday, January 16, 2014 at the MID Offices in Modesto. Detailed agenda to be released by January 7, 2014. Thank you.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Staples, Rose  
**Sent:** Monday, January 06, 2014 6:33 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro USR Meeting Filed Today

The Districts have filed the UPDATED STUDY REPORT today with FERC; and it can be downloaded from FERC's E-Library at [www.ferc.gov](http://www.ferc.gov). I am also in the process of uploading the individual files making up the UPDATED STUDY REPORT to the Don Pedro Relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com). The first file in the report (with the Transmittal Letter) also contains the agenda for the January 16, 2014 UPDATED STUDY REPORT MEETING scheduled to be held at the MID Offices in Modesto. If you have any problems accessing the files, please do let me know. Thank you.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742

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**From:** Staples, Rose  
**Sent:** Tuesday, January 07, 2014 6:19 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Beeco, Adam'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Cooke, Michael'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills, John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Reynolds, Garner'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Revised Schedule for Jan 16 Don Pedro USR Meeting  
**Attachments:** USR Meeting AGENDA\_140107.doc

Please find attached a **newly-revised AGENDA for the USR Meeting** scheduled for **Thursday, January 16<sup>th</sup>** at the MID Offices in Modesto. **Times for some of the individual Study Report discussions have changed from the original agenda filed with FERC yesterday as part of the Updated Study Report.** If you have any questions about the new schedule, please let me know. Thank you!

## Updated Study Report Meeting Agenda

Thursday, January 16, 8:30 am – 4:30 pm – MID Offices, Modesto

(Times are approximate and subject to change\*)

Call-In Number 866-994-6437 / Conference Code 5424697994

Time*	Topic	
8:30	<b>SIGN-IN</b>	
9:00	Agenda Review, Purpose of Meeting	
9:15	W&AR-15	Socioeconomics Study
9:45	W&AR-02	Tuolumne River Operations Model – Version 3.0 Update
10:00	CR-01	Progress Report and Schedule for Historic Properties Study
	CR-02	Progress Report and Schedule for Native American Traditional Cultural Properties Study
10:30	<b>BREAK</b>	
10:45	TR-10	Bald Eagle Study
11:00	RR-01	Recreation Facility Condition, Public Accessibility, and Recreation Use Assessment Study
11:15	RR-02	Whitewater Boating Take Out Improvement Feasibility Study
11:30	RR-03	Lower Tuolumne River Lowest Boatable Flow Study
Noon	<b>LUNCH BREAK (Lunch is on your own)</b>	
1:00	W&AR-03	Reservoir Temperature Model
	W&AR-16	Lower Tuolumne River Temperature Model
1:30	W&AR-04	Spawning Gravel in the Lower Tuolumne River Study
2:00	W&AR-06	Tuolumne River Chinook Salmon Population Model
	W&AR-10	<i>Oncorhynchus mykiss</i> Population Study
2:30	W&AR-07	Predation Study (2012 Report and 2014 Study)
3:00	W&AR-08	Salmonid Redd Mapping Study
3:15	W&AR-11	Chinook Salmon Otolith Study
3:30	W&AR-12	<i>Oncorhynchus mykiss</i> Habitat Assessment
3:45	IFIM	HSC Curves and Analysis for Splittail and Lamprey
4:00	Additional Information	NMFS Data Request (NMFS-1, Elements 3 and 6) Description of La Grange Facilities and Potentially Affected Environment of Anadromous Fish in the Vicinity of the La Grange Dam  Districts' Response to NMFS-4, Element 1 through 6 Effects of Don Pedro Project and Related Facilities on Hydrology for Anadromous Fish: Magnitude, Timing, Duration, and Rate of Change
4:15	Closing Summary and Relicensing Schedule	
4:30	<b>ADJOURNMENT</b>	

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**From:** Staples, Rose  
**Sent:** Thursday, January 09, 2014 10:29 AM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills, John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzels, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro FLA Distribution List

As the time for the filing of the Don Pedro Project Final License Application (FLA) draws near, I need to refresh my list of MAILING ADDRESSES for all relicensing participants. This list will be published in the FLA, and will also be used to distribute CD copies of the Final License Application. By return email, could you please provide me with this information? Thank you. P.S.: And if there are other people in your offices and/or organizations who should be receiving a CD copy, please also advise their mailing addresses.

**ROSE STAPLES**  
CAP-OM

**HDR Engineering, Inc.**  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

## Walker, Colleen

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**From:** Staples, Rose  
**Sent:** Thursday, January 16, 2014 10:24 AM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Beeco, Adam'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Cooke, Michael'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Reynolds, Garner'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shiple, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'White, David K'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro Draft Technical Memorandum Pacific lamprey Sacramento splittail for Review Comment  
**Attachments:** Tuolumne\_Splittail-Lamprey\_InstreamFlow\_DraftTM\_16Jan2014.pdf

Attached is the Don Pedro Project DRAFT TECHNICAL MEMORANDUM on the **Pacific lamprey and Sacramento splittail 1-D PHABSIM Habitat Assessment** for your review and comments. Comments are due by Wednesday, February 26, 2014. A copy of the draft document is also being uploaded to the relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com) under the ANNOUNCEMENTS Tab. Thank you.

## DRAFT TECHNICAL MEMORANDUM

DATE: January 16, 2014

TO: Steve Boyd, Turlock Irrigation District and Greg Dias, Modesto Irrigation District

FROM: Wayne Swaney, Russ Liebig, and Scott Wilcox, Stillwater Sciences

SUBJECT: Lower Tuolumne River Instream Flow Study – Pacific lamprey and Sacramento splittail 1-D PHABSIM habitat assessment

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This Technical Memo has been updated with additional information that was developed since the document was last distributed for comment to relicensing participants on October 30, 2013. No comments were received from relicensing participants. Any new text provided in the Technical Memo is shaded. Any changed or new figures have shaded captions and any changed or new tables have shaded table titles. Suitability criteria for bass species have been removed from this Technical Memo, and will subsequently be reported separately.

### 1 BACKGROUND

The *Lower Tuolumne River Instream Flow Studies – Final Study Plan* (Stillwater Sciences 2009a) was filed with the Federal Energy Regulatory Commission (Commission) on October 14, 2009. The Study Plan was approved, pursuant to Ordering paragraphs (A) through (E) of the Commission's May 12, 2010 order. In order to examine the broad flow ranges identified in the Commission's July 16, 2009 Order, the Study Plan separated the study into two separate investigations: (1) A conventional 1-D PHABSIM model ("Instream flow Study"), which examines in-channel habitat conditions at flows from approximately 100–1,000 cfs, and (2) a 2-D hydraulic model of overbank areas, as well as adjacent in-channel locations, for flows of 1,000–5,000 cfs, developed as part of the Pulse Flow Study. The *Lower Tuolumne River Instream Flow Study–Final Report* was filed with the Commission on April 26, 2013 (Stillwater Sciences 2013). The *Pulse Flow Study Report* was submitted to the Commission on June 18, 2012 (Stillwater Sciences 2012).

Subsequent to the original Study Plan approval, the Commission, in their December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project relicensing studies, required the scope of the Lower Tuolumne Instream Flow Study be expanded to include Pacific lamprey (*Entosphenus tridentatus*) and Sacramento splittail (*Pogonichthys macrolepidotus*), if existing habitat suitability criteria (HSC) were available. Within their April 8, 2013 comments on the *Draft Instream Flow Study Report*, the USFWS provided references to existing criteria, developed for the Lower Merced River. More recently, in the Commission's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project, the Commission required the scope of the Lower Tuolumne Instream Flow Study be expanded to assess habitat for non-native predatory fish, including smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), and striped bass (*Morone saxatilis*) using existing habitat suitability criteria data, where available. The Districts compiled



existing suitability criteria for the above species and distributed the draft criteria for relicensing participant review on October 30, 2013. No comments were received on the proposed HSC for splittail and lamprey. However, in their November 21, 2013 letter to the Districts, the USFWS requested that the scope of the bass analyses be expanded to include temperature criteria and early life stages (e.g., spawning/incubation, juvenile) of striped bass, largemouth bass, and smallmouth bass.

This Technical Memorandum includes the final suitability criteria and habitat assessment for Pacific lamprey and Sacramento splittail. The additional bass HSC are being included in the Districts' Updated Study Report being filed with FERC in January, 2014, and the habitat assessment for bass is scheduled for completion in conjunction with the District's Predation Study, scheduled for circa December 2014.<sup>1</sup>

## 2 METHODS

### 2.1 Habitat Suitability Criteria Availability

Use of the PHABSIM model requires application of HSC to the results of the hydraulic model in order to generate an index of habitat suitability (weighted usable area, or WUA) versus flow. Pursuant to the Commission-approved Study Plan, HSC screening criteria included the following, although no single criterion would qualify or disqualify a curve from further consideration.

- Minimum of 150 observations
- Clear identification of fish size classes
- Depth and velocity HSC
- Category II or III data (Bovee 1986)
- Comparable stream size and morphology (e.g., hydrology, stream width and depth, gradient, geomorphology, etc.)
- Source data from the lower Tuolumne River (or other Central Valley streams)
- Habitat availability data collected
- Data collected at high enough flow that depths and velocities are not biased by flow availability
- Availability of presence/absence data

The target species and life stages include:

- Pacific lamprey: spawning and ammocoete
- Sacramento splittail: juvenile and spawning

Unfortunately, the available HSC for Pacific lamprey and Sacramento splittail are very limited. Available HSC for Pacific lamprey and Sacramento splittail, referenced by the USFWS, were developed for the Merced Hydroelectric Project relicensing (Merced ID 2011 and 2013) (Table 1). The Merced Category I (binary consensus curves) data were based on species habitat descriptions from literature, and not from site-specific surveys. Pacific lamprey HSC were based on habitat preference descriptions of Pacific lamprey and Kern brook lamprey (*Lampetra hubbsi*) from Close et al. (2002), Gard (2009), and Gunckel et al. (2009) (Figures 1–6). The splittail HSC

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<sup>1</sup> Pursuant to the *Additional Fish Species Flow/Habitat Assessments Schedule Update*, filed with FERC on October 4, 2013.

were derived from habitat descriptions from Feyrer et al. (2005), Moyle et al. (2004, 2007), Sommer et al. (2002, 2008), and Young and Cech (1996) (Figures 7–11).

**Table 1.** Habitat suitability criteria summary for target species and life stages.

Species	Life stage	Depth	Velocity	Substrate	Cover	Source
Pacific lamprey	Ammocoete	Yes	Yes	Yes	No	Merced ID 2011
Pacific lamprey	Spawning	Yes	Yes	Yes	No	Merced ID 2011
Sacramento splittail	Juvenile	Yes	Yes	No	No	Merced ID 2013
Sacramento splittail	Spawning	Yes	Yes	Yes	Yes	Merced ID 2013

## 2.2 Species Occurrences in the Tuolumne River

As part of salmonid HSC development for the lower Tuolumne River instream flow study, site-specific HSC validation surveys were conducted in the lower Tuolumne River from just below La Grange Dam (RM 52) downstream to Waterford (RM 31). Neither Pacific lamprey nor Sacramento splittail were observed during those surveys, which were conducted across a range of seasons (winter, spring, and summer) and a range of flow conditions (100 cfs, 350 cfs, and 2,000 cfs) (Stillwater Sciences 2013). However, Pacific lamprey have been observed during snorkel surveys conducted between La Grange Dam (RM 52) and Waterford (RM 31) (Stillwater Sciences 2009b, 2010), and Sacramento splittail have been reported to spawn in the lower 6.8 miles of the Tuolumne River during wet years (Moyle et al. 1995).

## 2.3 Effective Habitat

An “effective” WUA (eWUA) analysis will be conducted after current water temperature model data review has been completed. The Don Pedro Relicensing temperature model is being included in the Districts’ Updated Study Report to be filed with FERC in January, 2014, and the eWUA assessment is scheduled to be completed and filed with FERC by August 2014 (including a 30-day resource agency review period). The eWUA analysis relates to summertime water temperature suitability for *O. mykiss*, and integrates both micro- and macro-habitat considerations. The results from the current water temperature model (in development) over a range of flows will be combined with the summer WUA results so that areas (“macrohabitats”) with unsuitable water temperatures are excluded from the total WUA sum. In other words, if a given reach has 100,000 square feet of suitable habitat (i.e., WUA) based on hydraulic microhabitat conditions at flow ‘X’, but 30 percent of the reach at flow ‘X’ is above a critical temperature threshold for the species and life stage of interest, the eWUA would be 70,000 square feet. This type of analysis was previously conducted at a coarser level by Stillwater Sciences (2003), using a combination of the 1992 IFIM evaluation for the lower Tuolumne River (USFWS 1995) and the earlier SNTMP model results (TID/MID 1992).

## 2.4 Habitat Suitability Criteria Selection

The lamprey and splittail depth, velocity, and substrate HSC developed for Merced ID were applicable for the Lower Tuolumne PHABSIM model. However, the cover criteria used by Merced ID for splittail spawning was based on a coding system that was incompatible with the cover data collected for the lower Tuolumne River. Therefore, cover criteria were not applied for this species/life stage. Selected HSC for Pacific lamprey and Sacramento splittail are shown below in Figures 1–11 and listed in Tables 2–7.

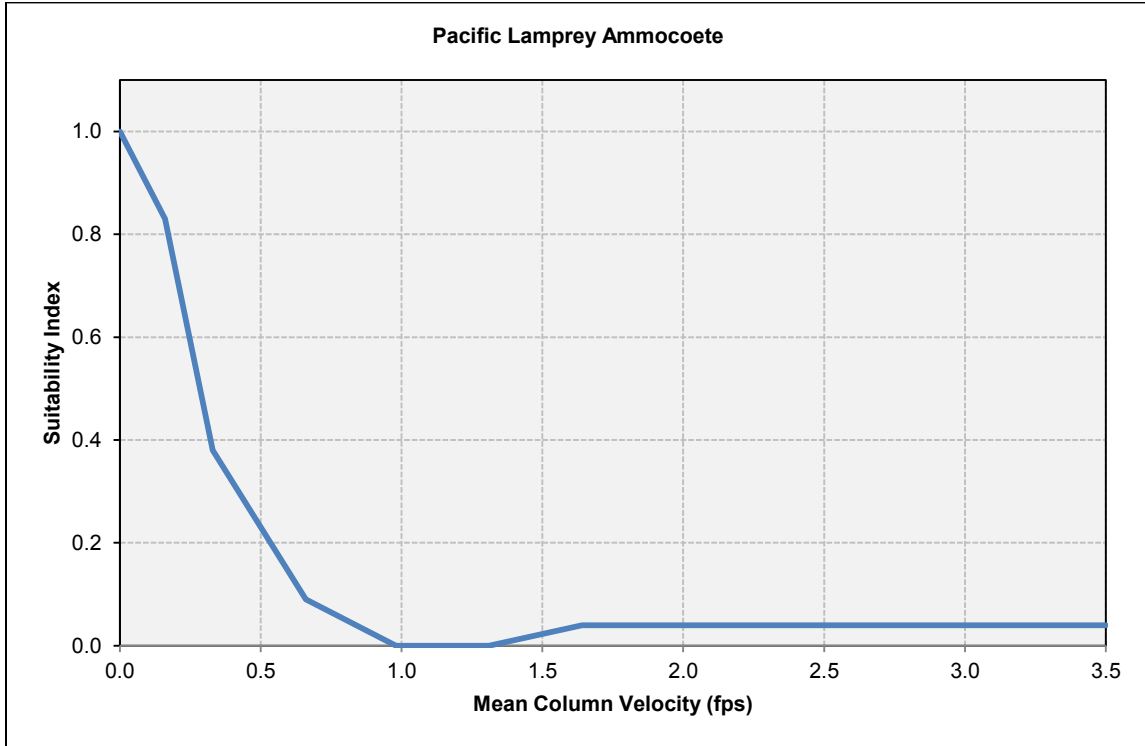


Figure 1. Pacific lamprey ammocoete velocity suitability criteria for the lower Tuolumne River.

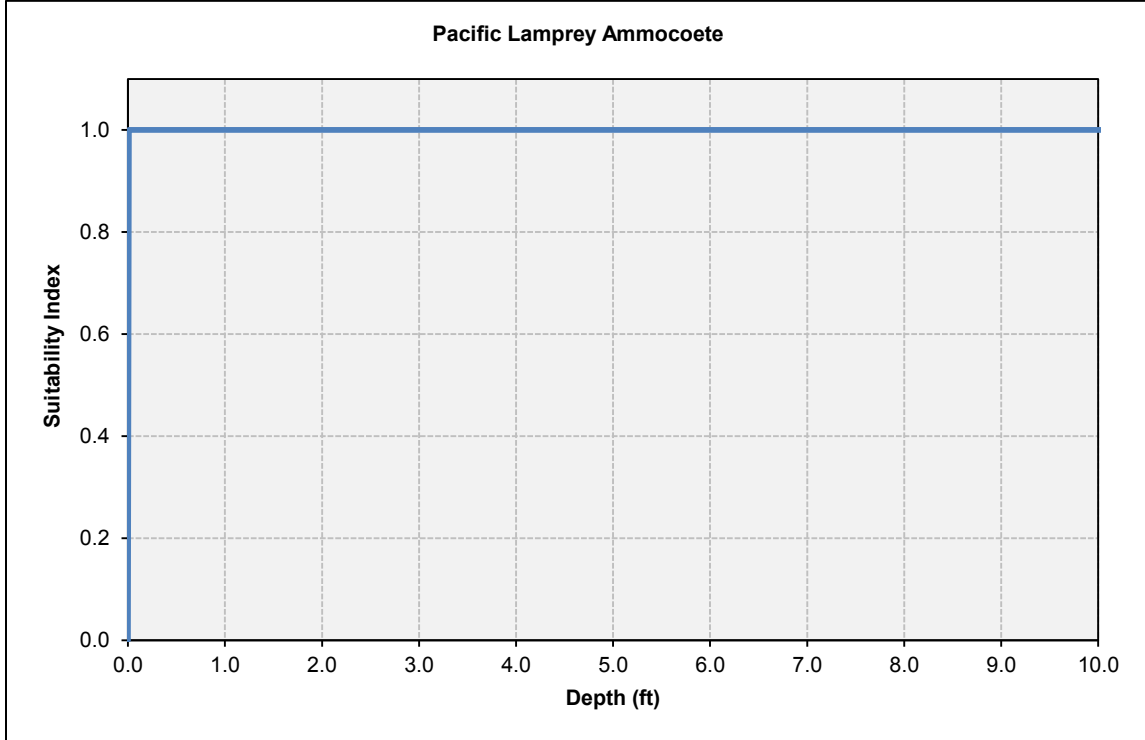


Figure 2. Pacific lamprey ammocoete depth suitability criteria for the lower Tuolumne River.

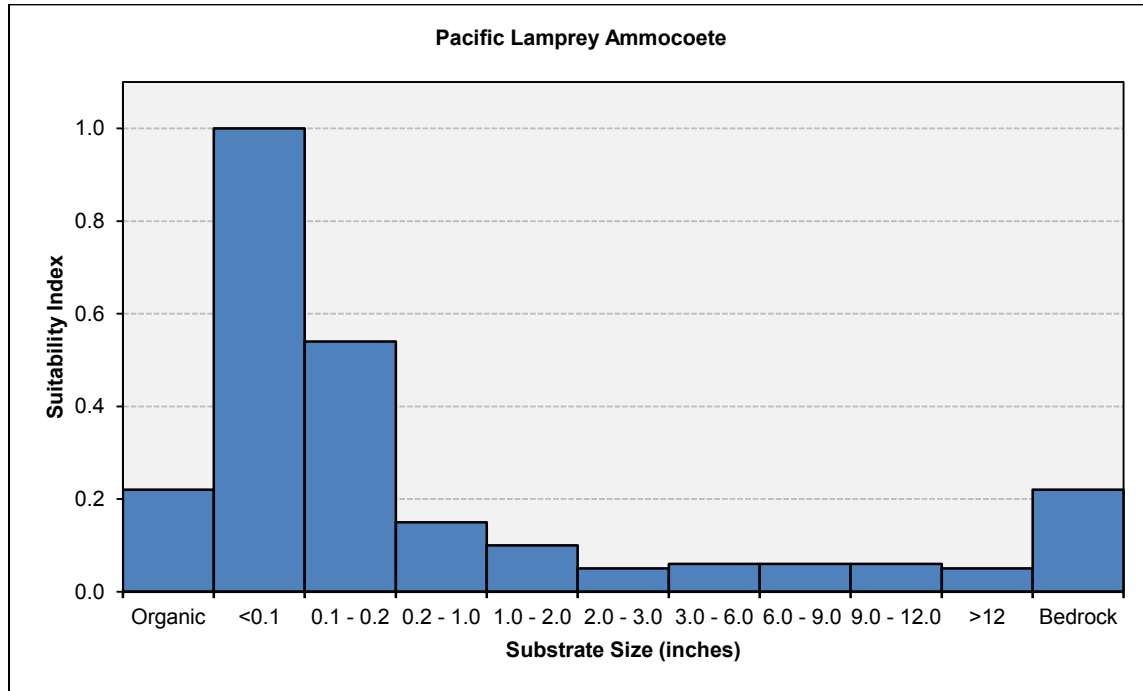


Figure 3. Pacific lamprey ammocoete dominant substrate suitability criteria for the lower Tuolumne River.

Table 2. Pacific lamprey ammocoete suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	1.00	0.00	0.00	Organic	N/A	0.22
0.16	0.83	0.01	1.00	Silt	0-0.1	1.00
0.33	0.38	--	--	Sand	0.1-0.2	0.54
0.66	0.09	--	--	Small gravel	0.2-1	0.15
0.98	0.00	--	--	Gravel	1-2	0.10
1.31	0.00	--	--	Large gravel	2-3	0.05
1.64	0.04	--	--	Small cobble	3-6	0.06
--	--	--	--	cobble	6-9	0.06
--	--	--	--	Large cobble	9-12	0.06
--	--	--	--	Boulder	>12	0.05
--	--	--	--	Bedrock	N/A	0.22

<sup>1</sup>Merced ID 2011

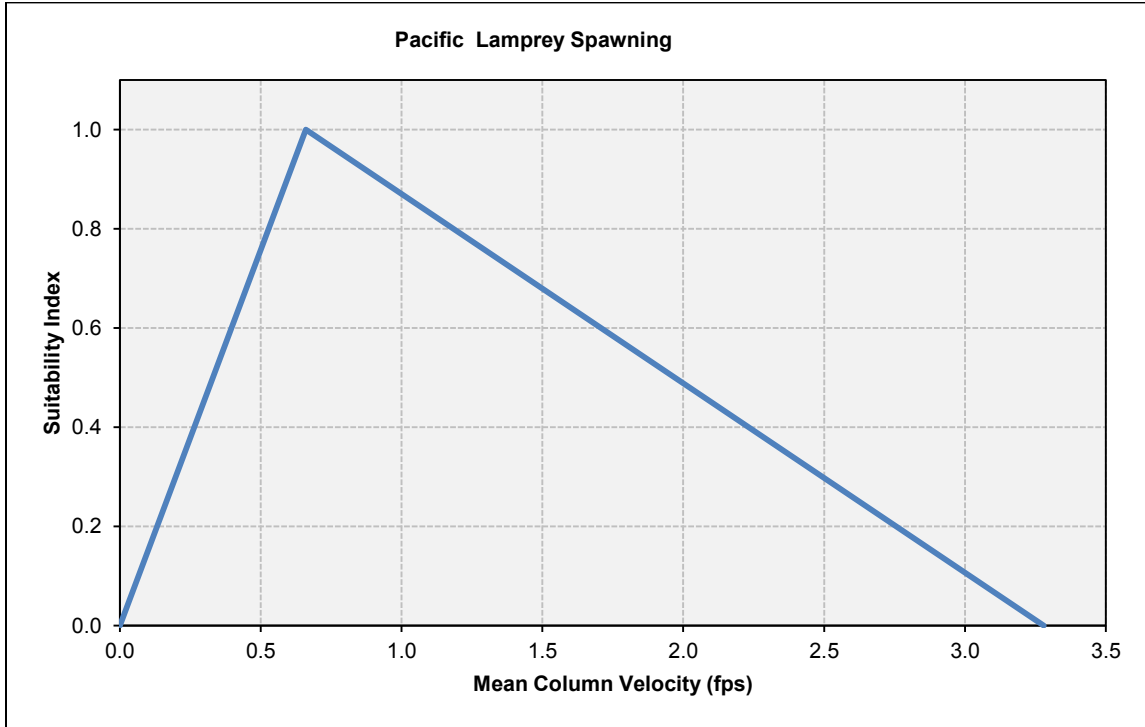


Figure 4. Pacific lamprey spawning velocity suitability criteria for the lower Tuolumne River.

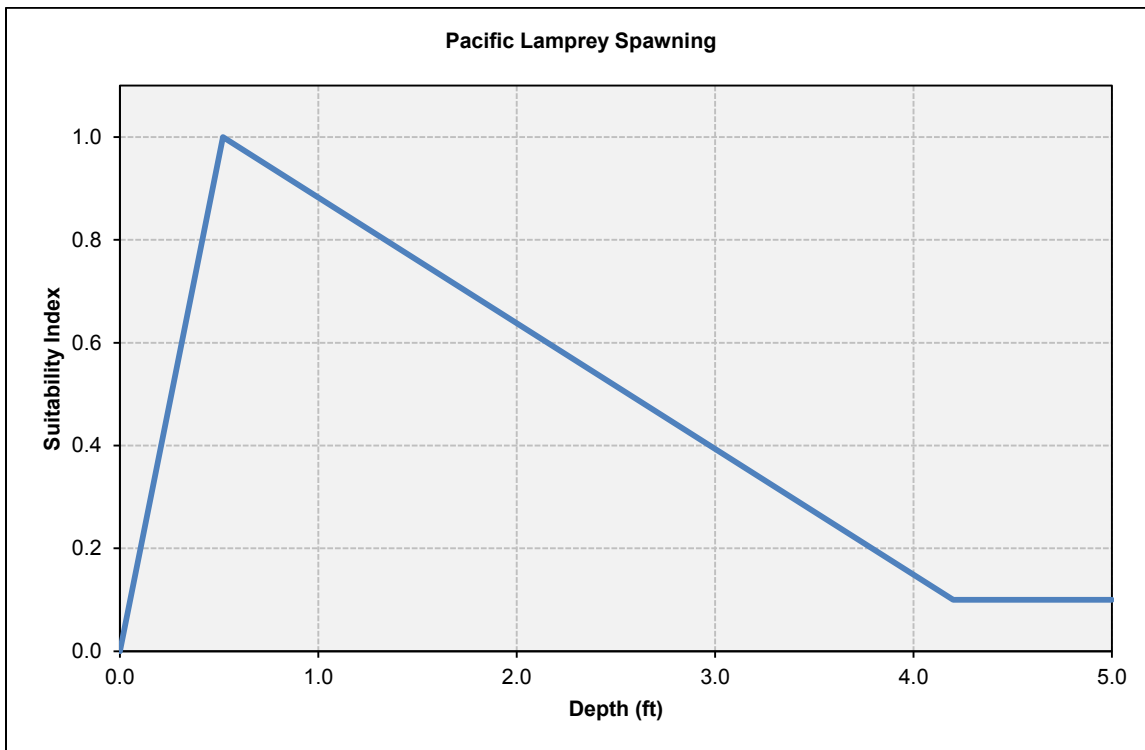
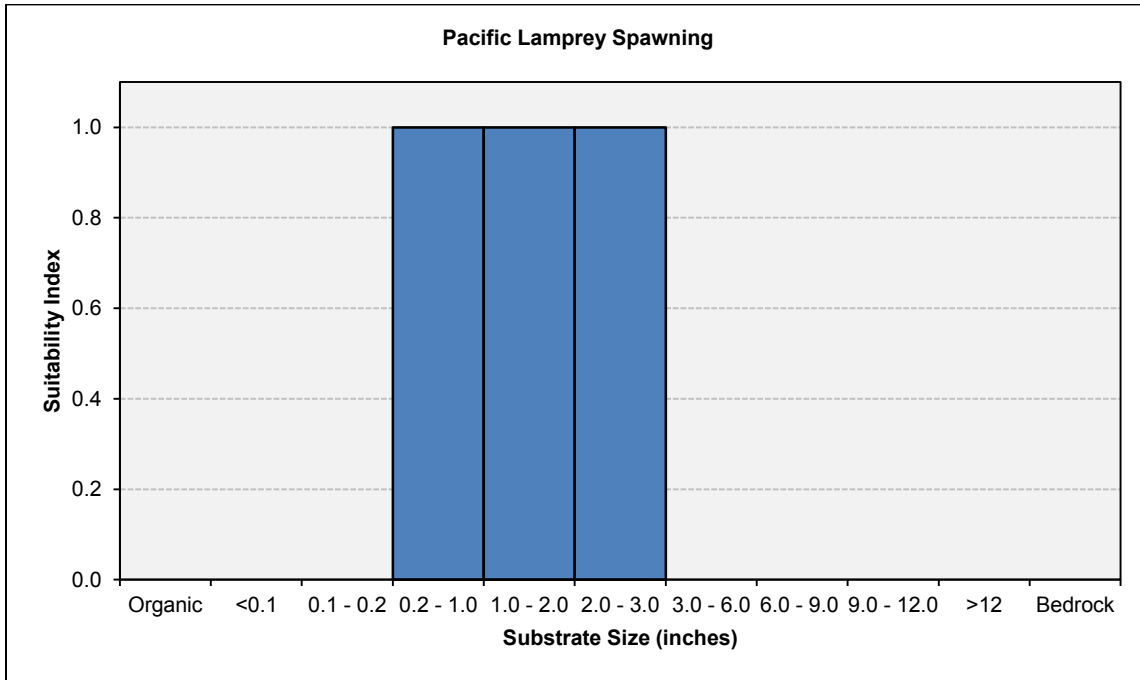


Figure 5. Pacific lamprey spawning depth suitability criteria for the lower Tuolumne River.

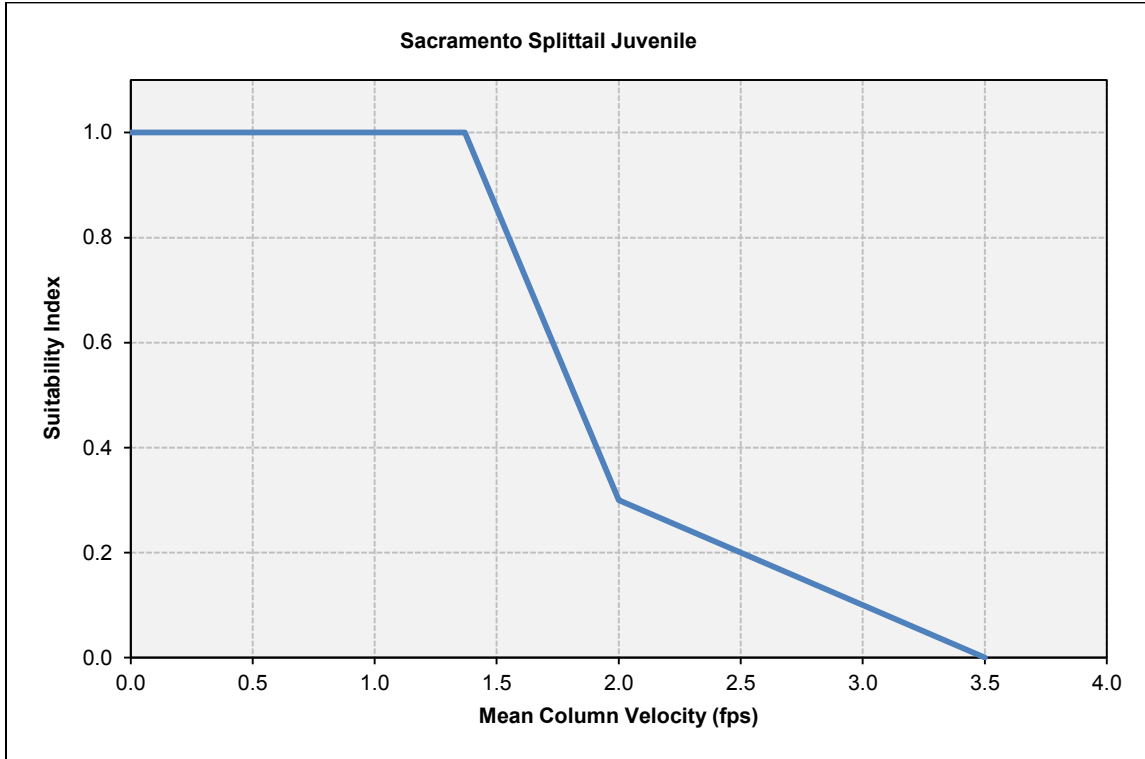


**Figure 6.** Pacific lamprey spawning dominant substrate suitability criteria for the lower Tuolumne River.

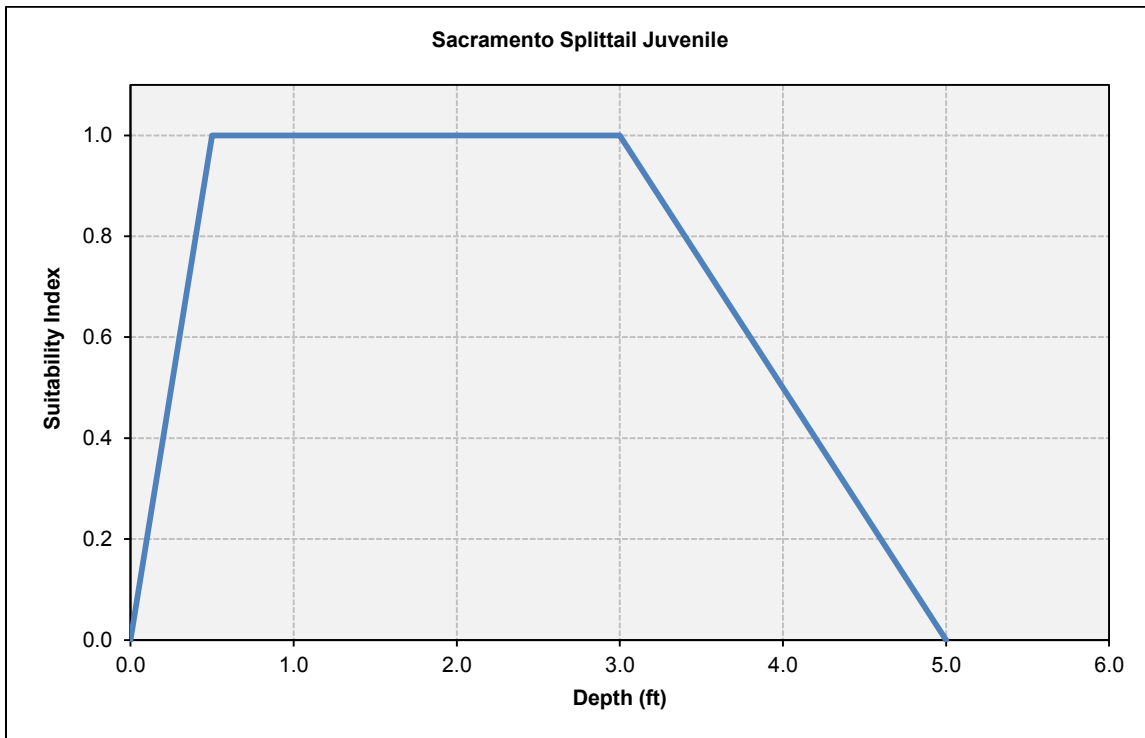
**Table 3.** Pacific lamprey spawning suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	0.00	0.00	0.00	Organic	N/A	0.00
0.66	1.00	0.52	1.00	Silt	<0.1	0.00
3.28	0.00	4.20	0.10	Sand	0.1–0.2	0.00
--	--	--	--	Small gravel	0.2–1	1.00
--	--	--	--	Gravel	1–2	1.00
--	--	--	--	Large gravel	2–3	1.00
--	--	--	--	Small cobble	3–6	0.00
--	--	--	--	cobble	6–9	0.00
--	--	--	--	Large cobble	9–12	0.00
--	--	--	--	Boulder	>12	0.00
--	--	--	--	Bedrock	N/A	0.00

<sup>1</sup> Merced ID 2011



**Figure 7.** Sacramento splittail juvenile velocity suitability criteria for the lower Tuolumne River.

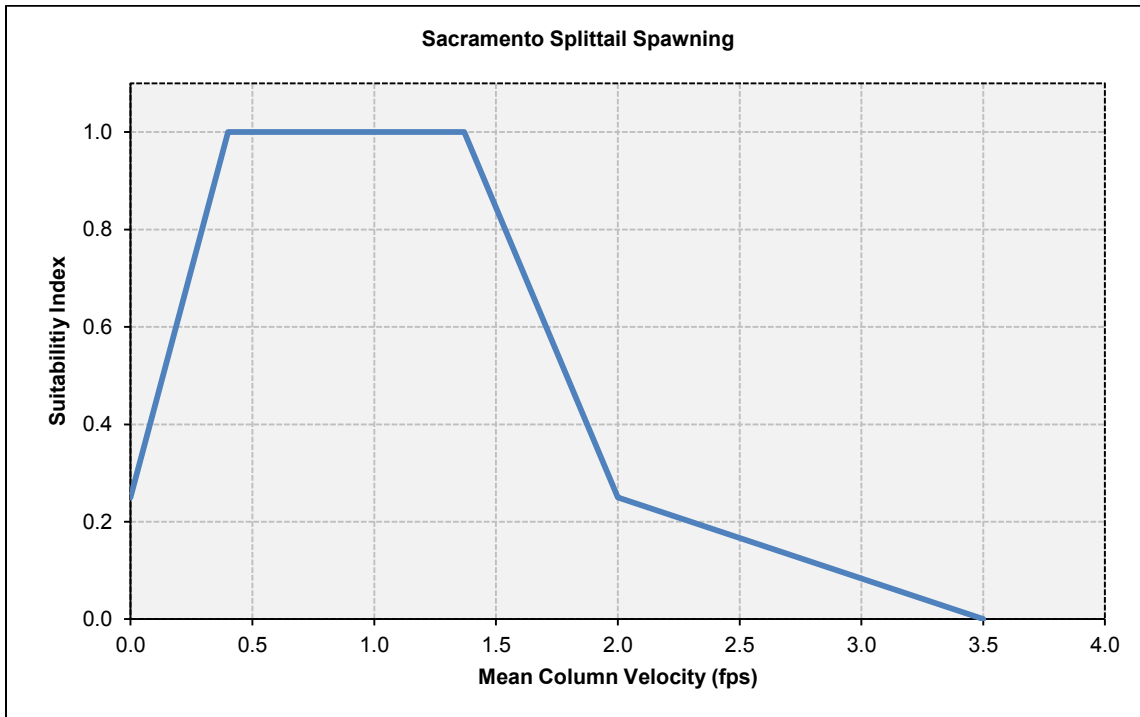


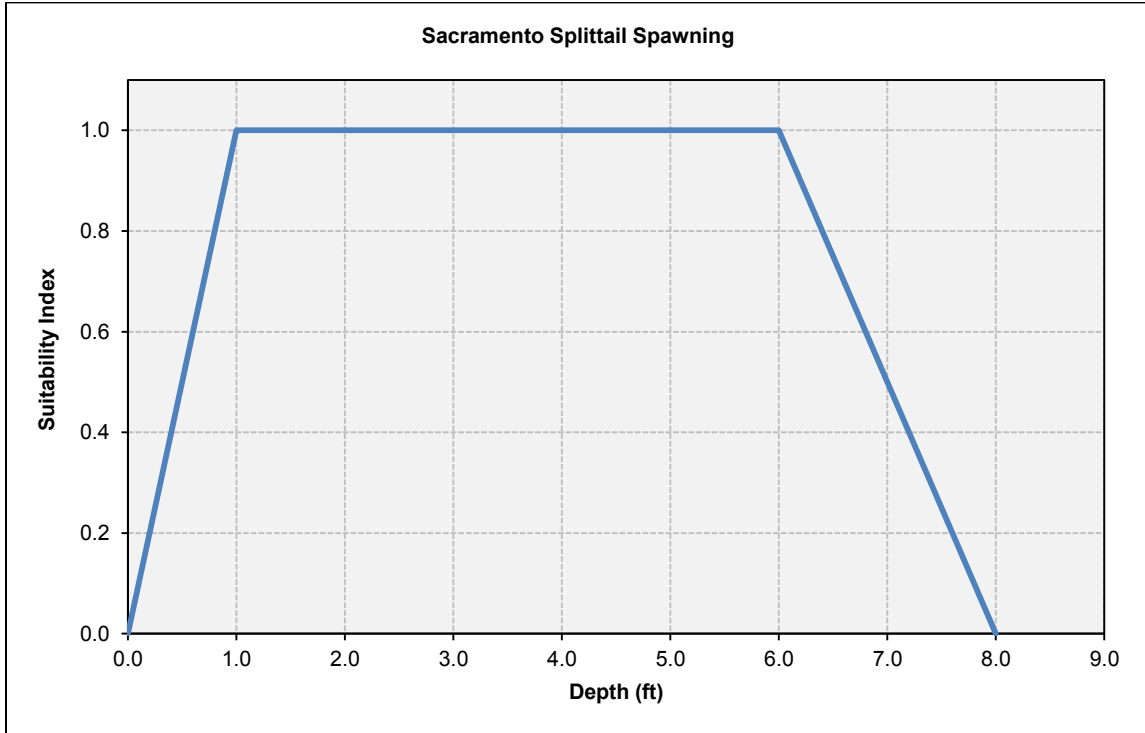
**Figure 8.** Sacramento splittail juvenile depth suitability criteria for the lower Tuolumne River.



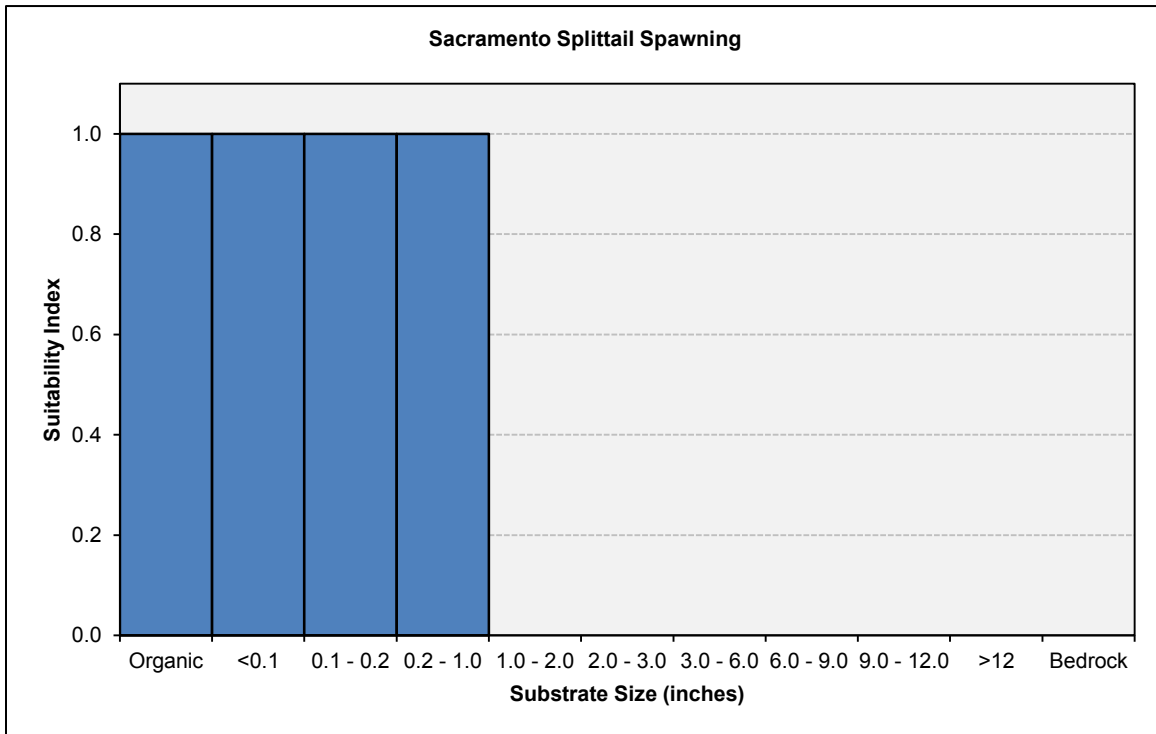
**Table 4.** Sacramento splittail juvenile suitability criteria.

Velocity		Depth	
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>
0.00	1.00	0.00	0.00
0.40	1.00	0.50	1.00
1.37	1.00	1.30	1.00
2.00	0.30	3.00	1.00
3.50	0.00	5.00	0.00

<sup>1</sup>Merced ID 2013**Figure 9.** Sacramento splittail spawning velocity suitability criteria for the lower Tuolumne River.



**Figure 10.** Sacramento splittail spawning depth suitability criteria for the lower Tuolumne River.



**Figure 11.** Sacramento splittail spawning dominant substrate suitability criteria for the lower Tuolumne River.

**Table 5.** Sacramento splittail spawning suitability criteria.

Velocity		Depth		Substrate		
(fps)	Index <sup>1</sup>	(ft)	Index <sup>1</sup>	Type	Size (inches)	Index <sup>1</sup>
0.00	0.25	0.00	0.00	Organic	N/A	1.00
0.40	1.00	1.00	1.00	Silt	<0.1	1.00
1.37	1.00	6.00	1.00	Sand	0.1–0.2	1.00
2.00	0.25	8.00	0.00	Small gravel	0.2–1	1.00
3.50	0.00	--	--	Gravel	1–2	0.00
--	--	--	--	Large gravel	2–3	0.00
--	--	--	--	Small cobble	3–6	0.00
--	--	--	--	Cobble	6–9	0.00
--	--	--	--	Large cobble	9–12	0.00
--	--	--	--	Boulder	>12	0.00
--	--	--	--	Bedrock	N/A	0.00

<sup>1</sup> Merced ID 2013

## 2.5 Habitat Time Series

A Habitat Time Series (HTS) analysis was conducted to assess how habitat values for each species and life stage vary over time, under different water year type scenarios. Water year types selected for analysis are the five San Joaquin Basin 60-20-20 Index types: Critical, Dry, Below Normal, Above Normal, and Wet, as represented by Water Years 2008-2012 (the most recent years of these index types) and presented in Table 6.

**Table 6.** San Joaquin Basin 60-20-20 Index, corresponding water year types, and representative water years used for habitat time series analysis in the lower Tuolumne River instream flow study.

San Joaquin Basin 60-20-20 Index <sup>1</sup>	Water Year Type	Representative Water Year
2.06	Critical	2008
2.18	Dry	2012
2.73	Below Normal	2009
3.55	Above Normal	2010
5.59	Wet	2011

<sup>1</sup> DWR Bulletin 132 calculated index

Daily flow values for the lower Tuolumne River were obtained from the USGS gaging station at La Grange Dam (No. 11289560) and were compiled for all Water Year types. No downstream adjustments for accretion or depletion are required in the PHABSIM assessment reach (RM 51.7 to RM 29.0).<sup>2</sup> The associated WUA values were assigned based on the daily flows using a lookup table of WUA values from the PHABSIM results, interpolated to 5 cfs intervals.

<sup>2</sup> The reach represented in the PHABSIM assessment includes RM 51.7 to RM 29.0. Accretion/depletion studies performed by the Districts suggest that flow changes along the study reach (which is upstream of Dry Creek and does not contain major tributaries) are relatively small compared to the scale of most HTS flows and the associated WUA reporting increments, and therefore the HTS results are not adjusted for these changes.

The periodicity of Pacific lamprey and Sacramento splittail was adapted from the Merced River hydroelectric relicensing project due to its close proximity to the lower Tuolumne River (Merced ID 2011, 2013) (Table 7); the Sacramento splittail spawning periodicity was modified to indicate the spawning period for the lower Tuolumne River (Moyle et al. 2004).

**Table 7.** Species/life stage periodicity for the lower Tuolumne River.

Species	Life stage	Fall			Winter			Spring			Summer		
		O	N	D	J	F	M	A	M	J	J	A	S
Pacific lamprey	Ammocoete												
	Spawning												
Sacramento splittail	Juvenile												
	Spawning												

### 3 RESULTS

#### 3.1 Weighted Usable Area

Results of the PHABSIM analysis of WUA versus flow relationships for each species and life stage are presented in Figures 12–15 and Tables 8–9. In order to facilitate comparison and analysis, the results are presented and discussed based on a normalized y-axis scale representing “percent of maximum” WUA (Figures 12 and 14).

Results for Pacific lamprey ammocoetes show that their potential habitat is maximized at low flows, with peak WUA values ( $\geq 95\%$  of maximum) at flows less than approximately 150 cfs, followed by a slight decline, but still relatively high WUA values ( $\geq 80\%$  of maximum) near 450 cfs and then remaining stable over the remaining range of simulated flows (Figures 12 and 13). Results for Pacific lamprey spawning show peak WUA values at approximately 75–150 cfs, with a steady decline, but still relatively high WUA values up to near 250 cfs, followed by a more gradual decline over the remaining range of simulated flows (Figures 12 and 13).

Results for Sacramento splittail juveniles show peak WUA values at approximately 50–175 cfs, with relatively high WUA values below 300 cfs (Figures 14 and 15). Results for Sacramento splittail spawning show high WUA values at about 300–400 cfs, with relatively small increases in WUA values over the remaining simulation range (Figures 14 and 15).

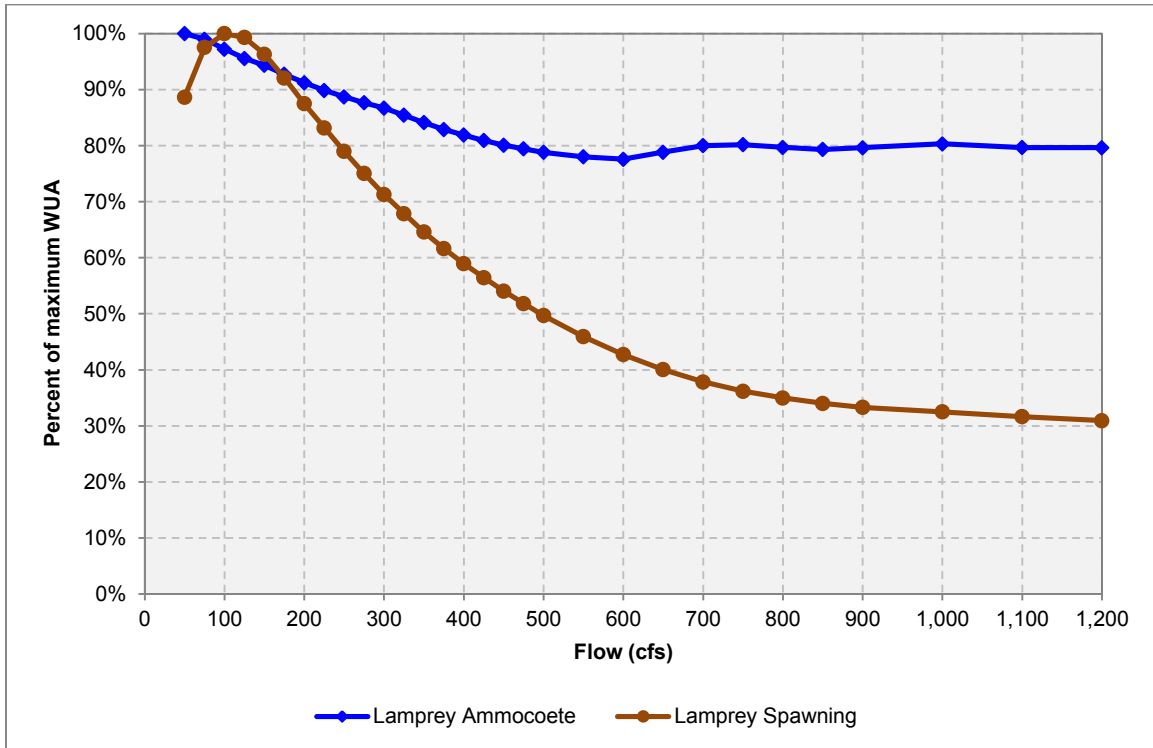


Figure 12. Pacific lamprey WUA results (percent of maximum) for the lower Tuolumne River.

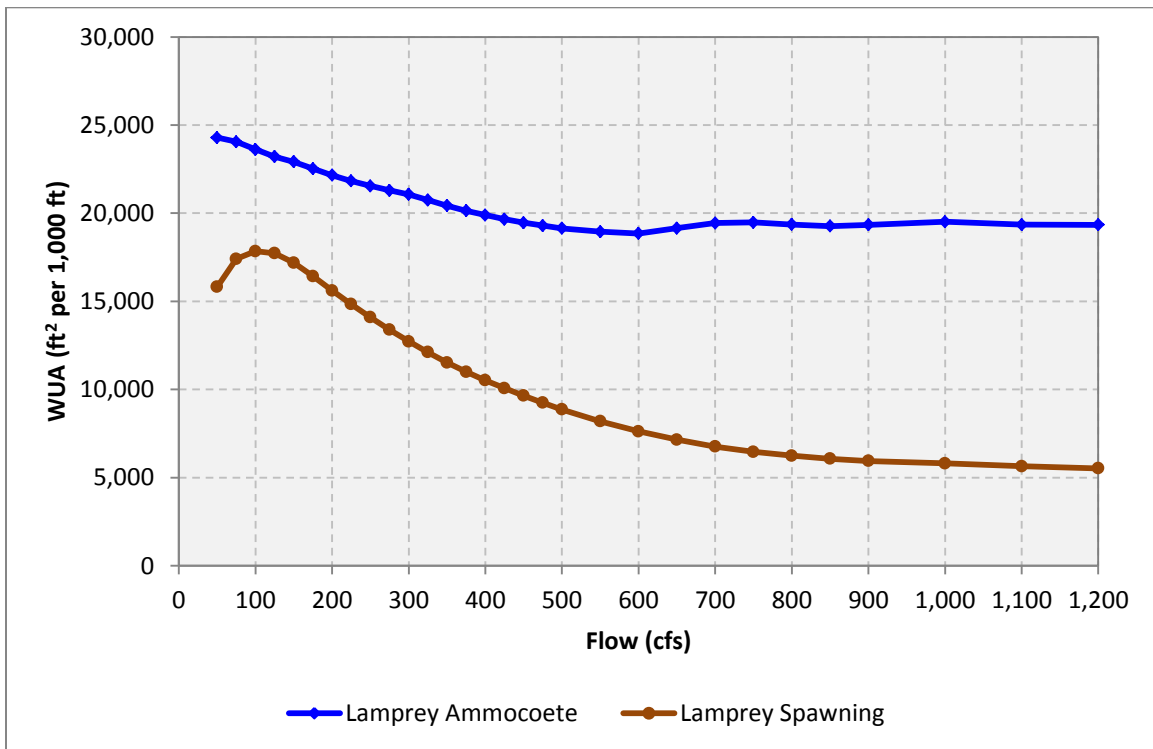


Figure 13. Pacific lamprey WUA results for the lower Tuolumne River.

**Table 8.** Pacific lamprey WUA results for the lower Tuolumne River.

<b>Simulated discharge (cfs)</b>	<b>Pacific lamprey ammocoete (ft<sup>2</sup> per 1,000 ft)</b>	<b>Pacific lamprey spawning (ft<sup>2</sup> per 1,000 ft)</b>
50	24288.57	15818.00
75	24047.28	17404.11
100	23614.99	17842.49
125	23210.65	17720.25
150	22913.44	17186.22
175	22529.14	16429.56
200	22157.69	15611.94
225	21826.53	14841.16
250	21547.09	14095.15
275	21294.25	13388.09
300	21064.09	12725.28
325	20748.99	12111.84
350	20431.54	11525.86
375	20135.56	10999.58
400	19894.20	10517.03
425	19659.51	10075.10
450	19453.41	9646.10
475	19296.72	9248.33
500	19141.19	8867.14
550	18946.11	8196.07
600	18846.54	7623.26
650	19147.85	7148.60
700	19435.35	6755.09
750	19474.64	6457.57
800	19355.70	6244.06
850	19267.14	6072.78
900	19343.99	5945.62
1000	19508.92	5803.41
1100	19351.98	5646.98
1200	19342.67	5522.68

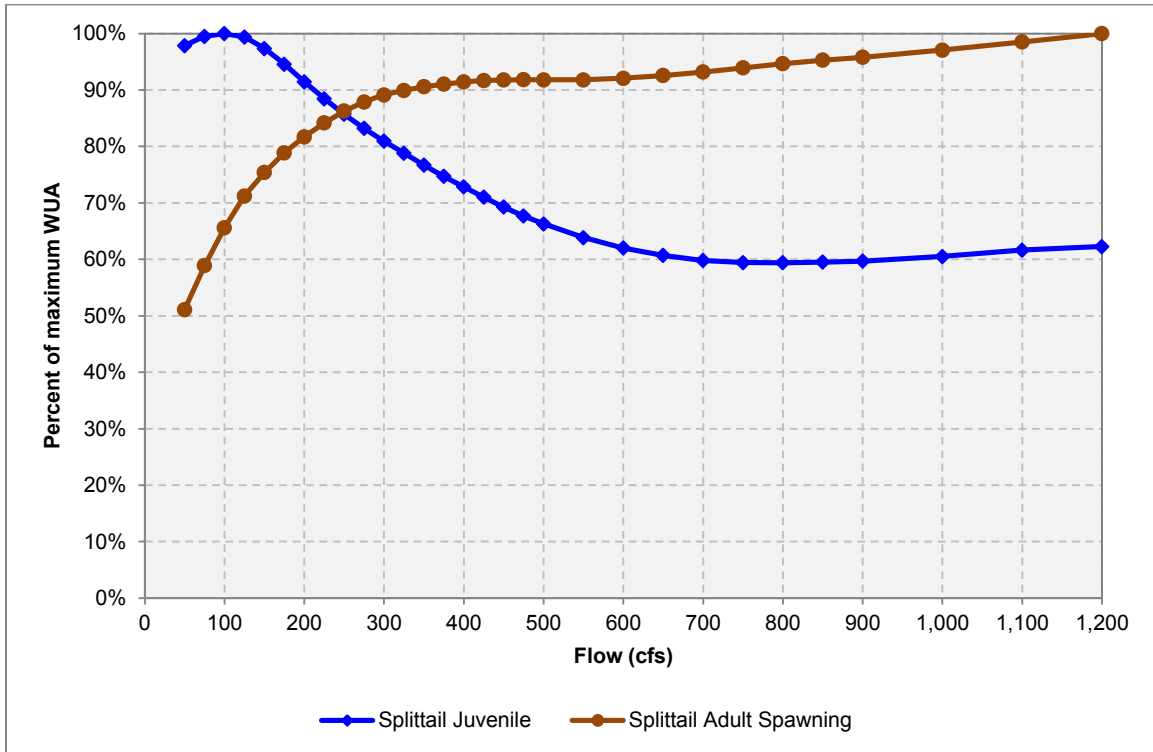


Figure 14. Sacramento splittail WUA results (percent of maximum) for the lower Tuolumne River.

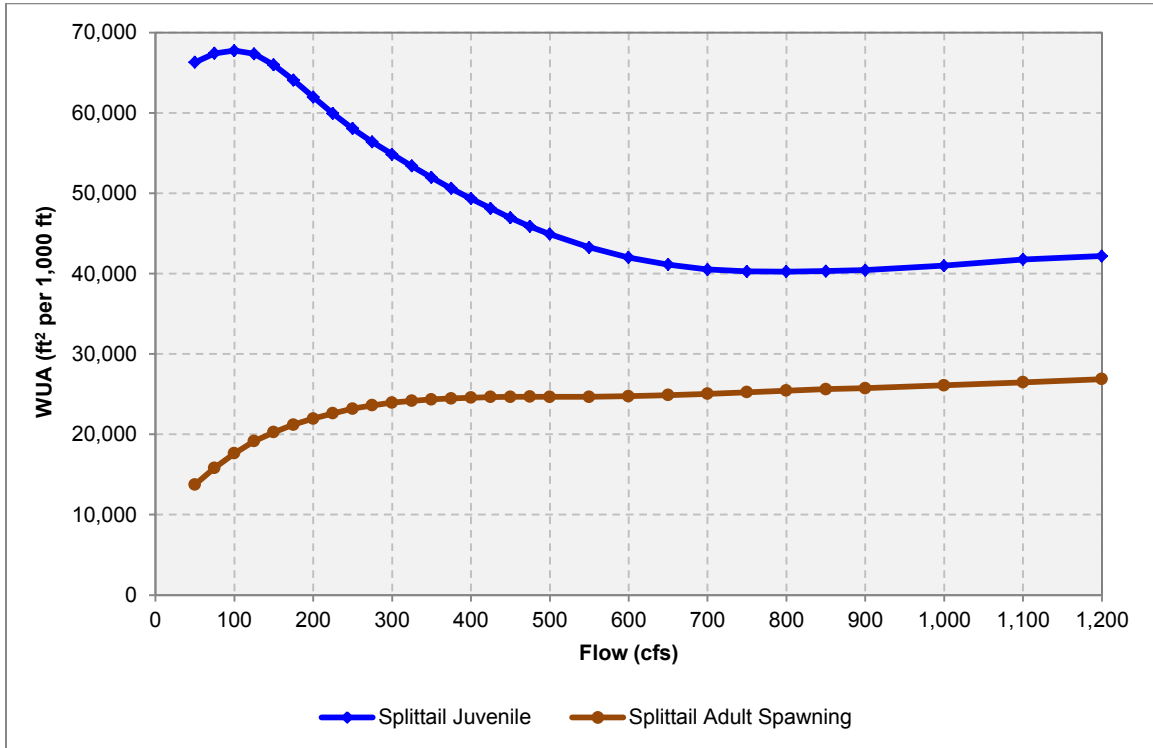


Figure 15. Sacramento splittail WUA results for the lower Tuolumne River.



**Table 9.** Sacramento splittail WUA results for the lower Tuolumne River.

Simulated discharge (cfs)	Sacramento splittail spawning (ft <sup>2</sup> per 1,000 ft)	Sacramento splittail juvenile (ft <sup>2</sup> per 1,000 ft)
50	13730.95	66296.36
75	15830.43	67407.02
100	17629.23	67745.97
125	19141.98	67343.51
150	20259.21	65966.16
175	21198.40	64075.29
200	21959.39	61966.49
225	22619.46	59919.42
250	23187.14	58058.00
275	23615.71	56379.65
300	23953.35	54844.25
325	24168.83	53399.74
350	24343.61	51967.60
375	24460.33	50607.40
400	24569.94	49339.50
425	24640.72	48118.83
450	24660.87	46937.17
475	24674.46	45858.11
500	24668.73	44906.92
550	24670.27	43254.15
600	24743.66	42006.93
650	24875.21	41122.02
700	25040.35	40507.25
750	25242.78	40266.80
800	25434.96	40244.34
850	25609.38	40315.27
900	25744.88	40437.44
1000	26087.91	40987.27
1100	26474.78	41768.93
1200	26871.41	42183.33

### 3.2 Habitat Time Series

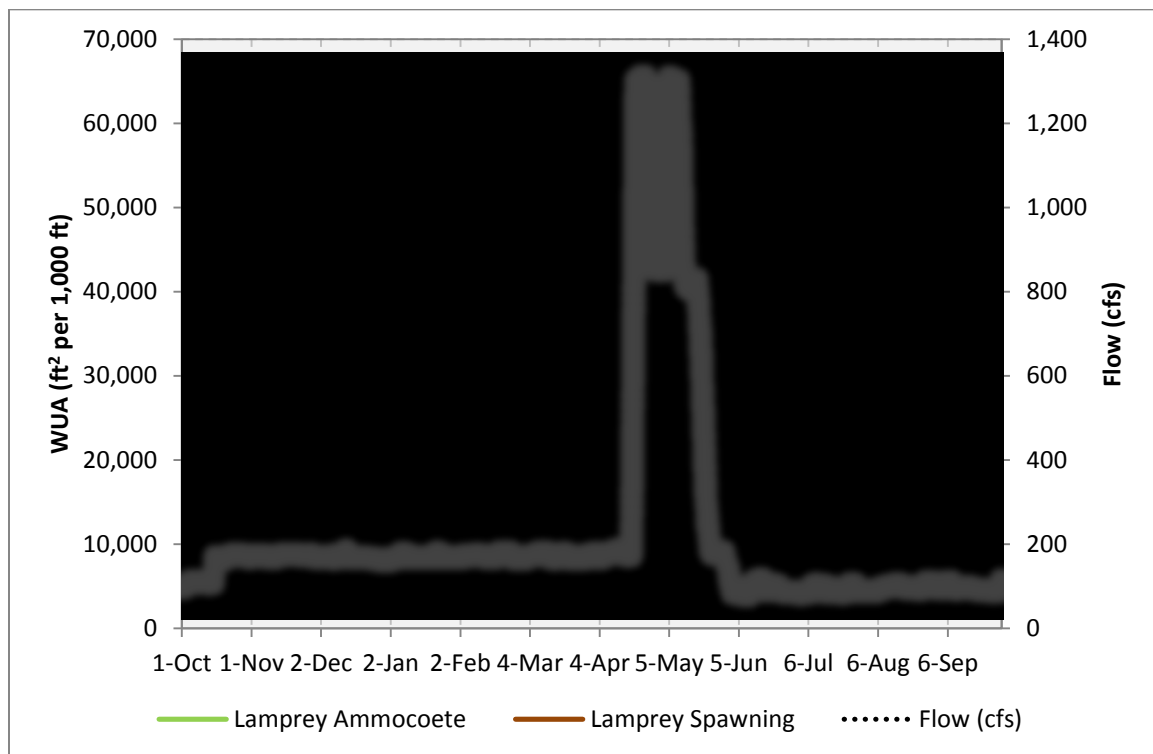
Habitat Time Series (HTS) results for each of five water year types (using the San Joaquin River 60-20-20 Index) and four species and life stage combinations are presented in Figures 16–25. The time periods used in the habitat time series analysis are when individual life stages are most typically observed, or could theoretically be present, within the study reach based on the periodicity shown in Table 7.

Consistent with the HTS analysis of Chinook salmon and *O. mykiss* (Stillwater Sciences 2013), WUA values were maintained at the 1,200 cfs level for flows over the WUA extrapolation limit of 1,200 cfs. This approach assumes that in-channel WUA will not get significantly higher (or will get higher, then descend again) or lower (or go lower and rise again or level off) than where it was at 1,200 cfs. This is a more conservative approach, but it does have the drawback that all flows above 1,200 cfs will return the same WUA value (e.g. “flatline”) and a depiction of potential variability at higher flows is lost. Figures 26 and 27 present HTS results across all water

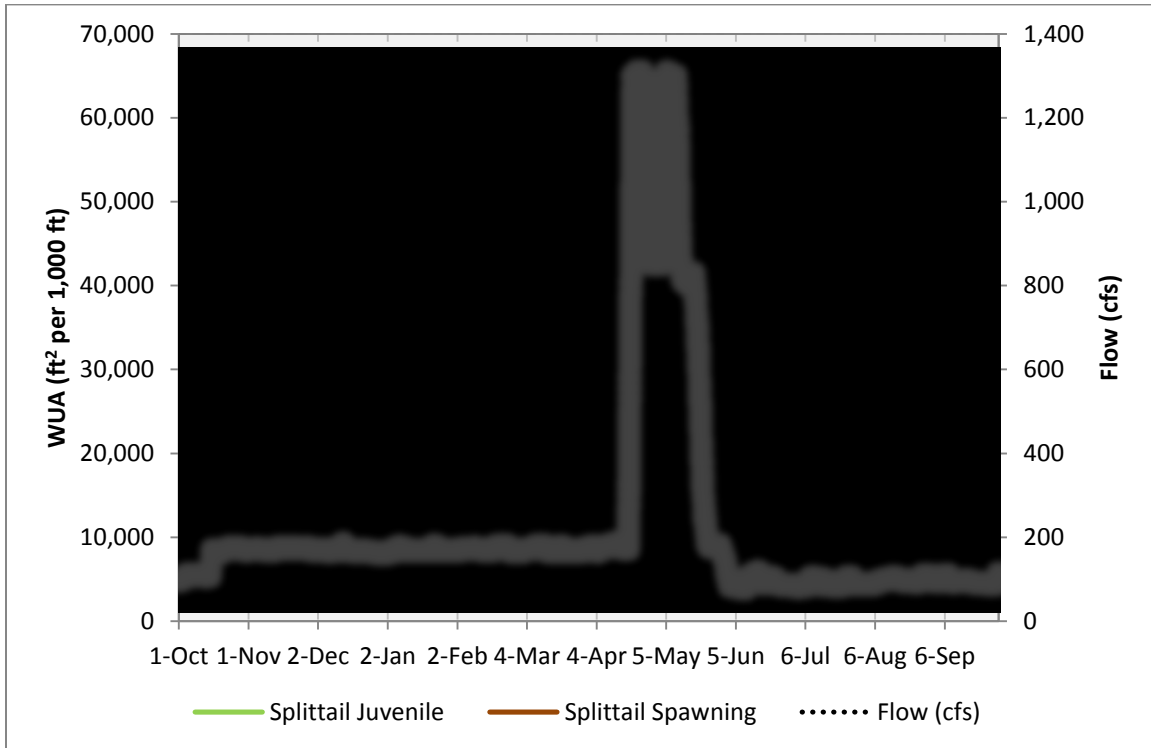
year types for Pacific lamprey and Sacramento splittail, respectively, and facilitate comparisons of patterns between water year types.

Under Critical, Dry, and Below Normal year scenarios, Pacific lamprey ammocoete WUA remains relatively stable. Pacific lamprey spawning WUA fluctuates with flow until flow nears 1,200 cfs, where WUA is minimized. Sacramento splittail juvenile WUA is maximized during periods of low flow and quickly drops when flow increases. In contrast, Sacramento splittail spawning WUA is minimized at lower flows and increases as flows increase above 1,000 cfs.

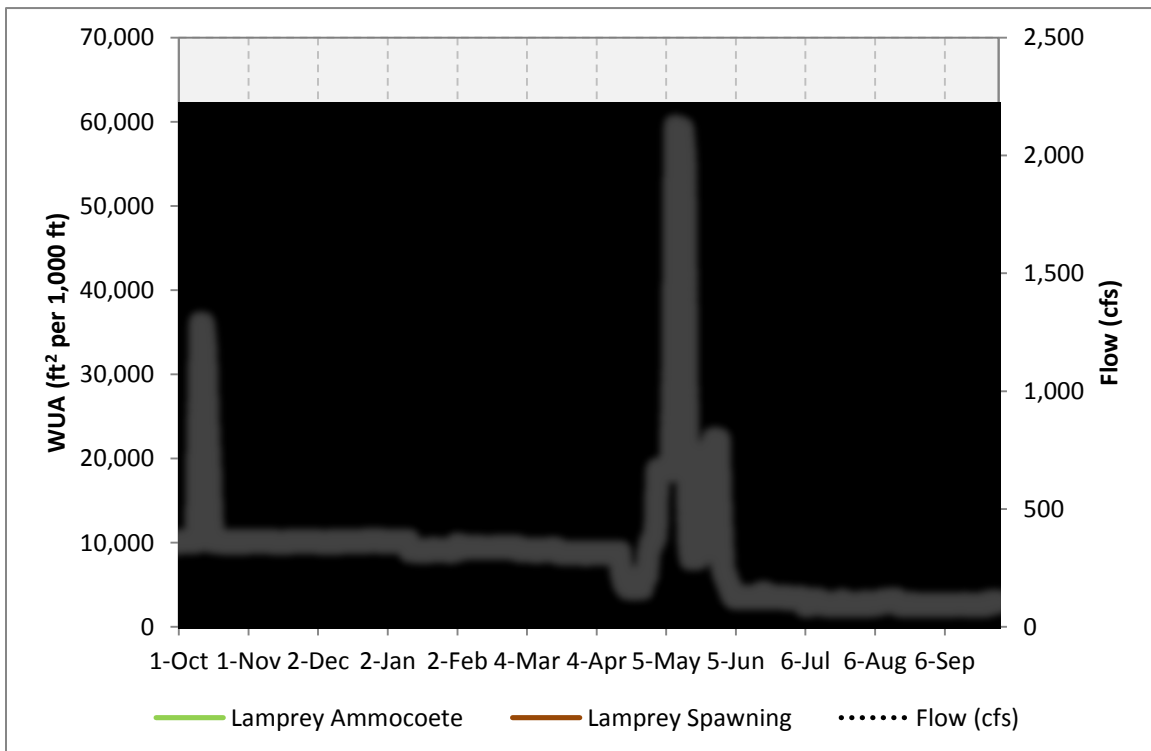
Under Above Normal and Wet year scenarios, Pacific lamprey ammocoete WUA remains relatively stable. Pacific lamprey spawning WUA decreases with increased flow, until flow nears 1,200 cfs where WUA is minimized. Sacramento splittail juvenile WUA are minimized when flow increases above approximately 600 cfs. Sacramento splittail spawning WUA is maximized as flow increases up to 1,200 cfs.



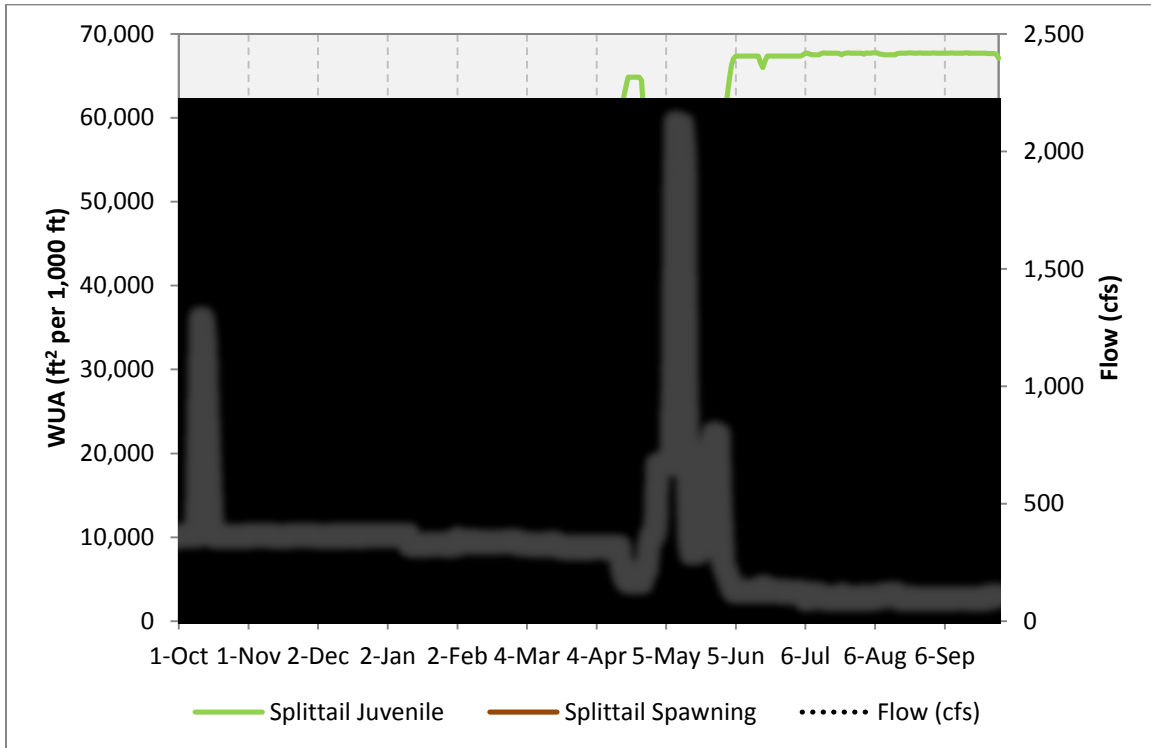
**Figure 16.** Habitat Time Series results for lower Tuolumne River Pacific lamprey in a Critical water year (2008).



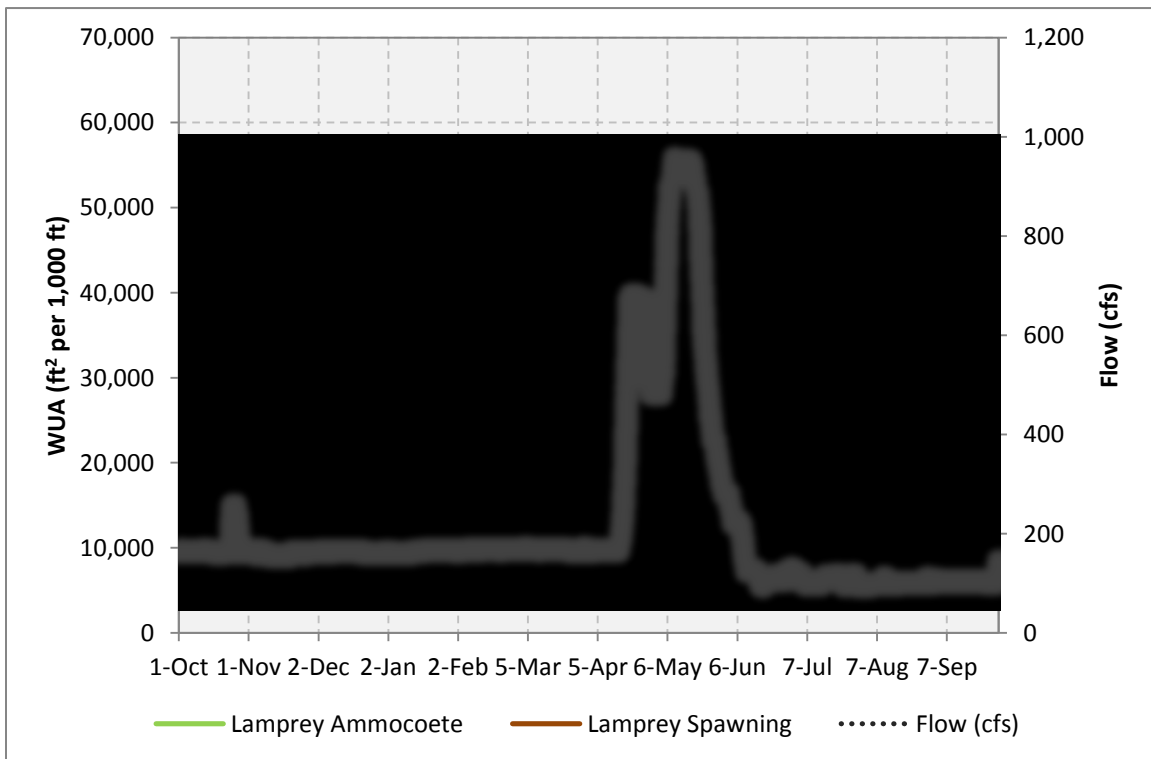
**Figure 17.** Habitat Time Series results for lower Tuolumne River Sacramento splittail in a Critical water year (2008).



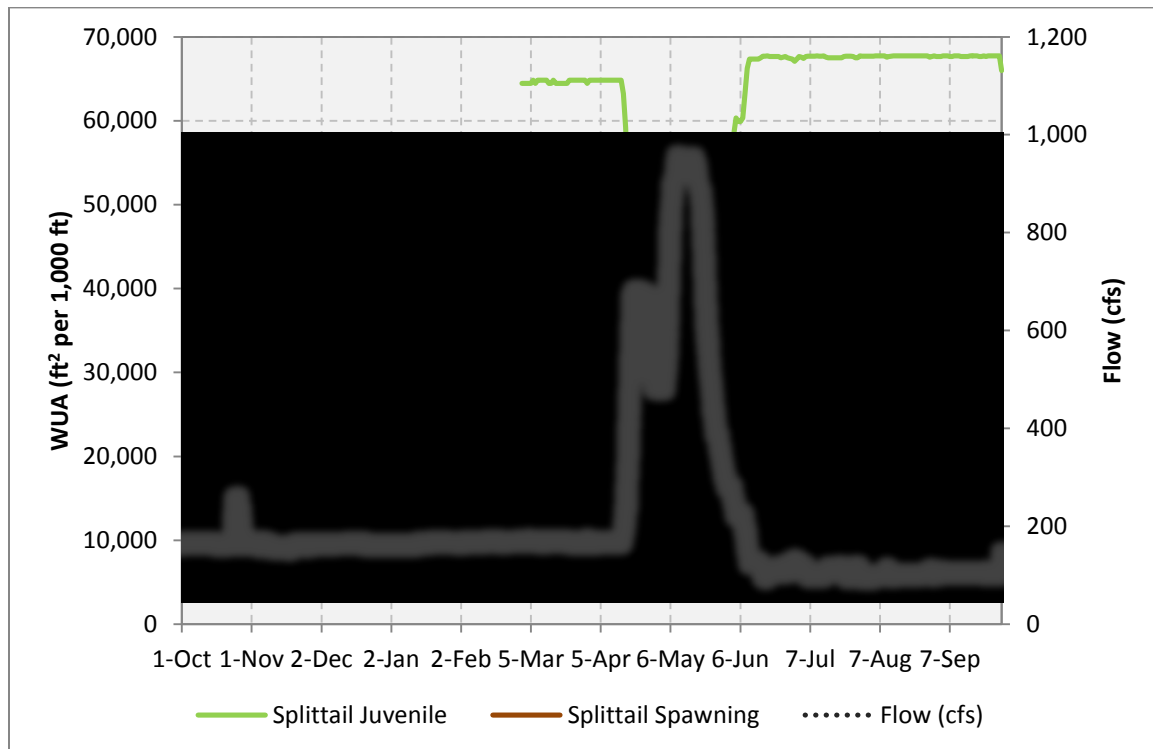
**Figure 18.** Habitat Time Series results for lower Tuolumne River Pacific lamprey in a Dry water year (2012).



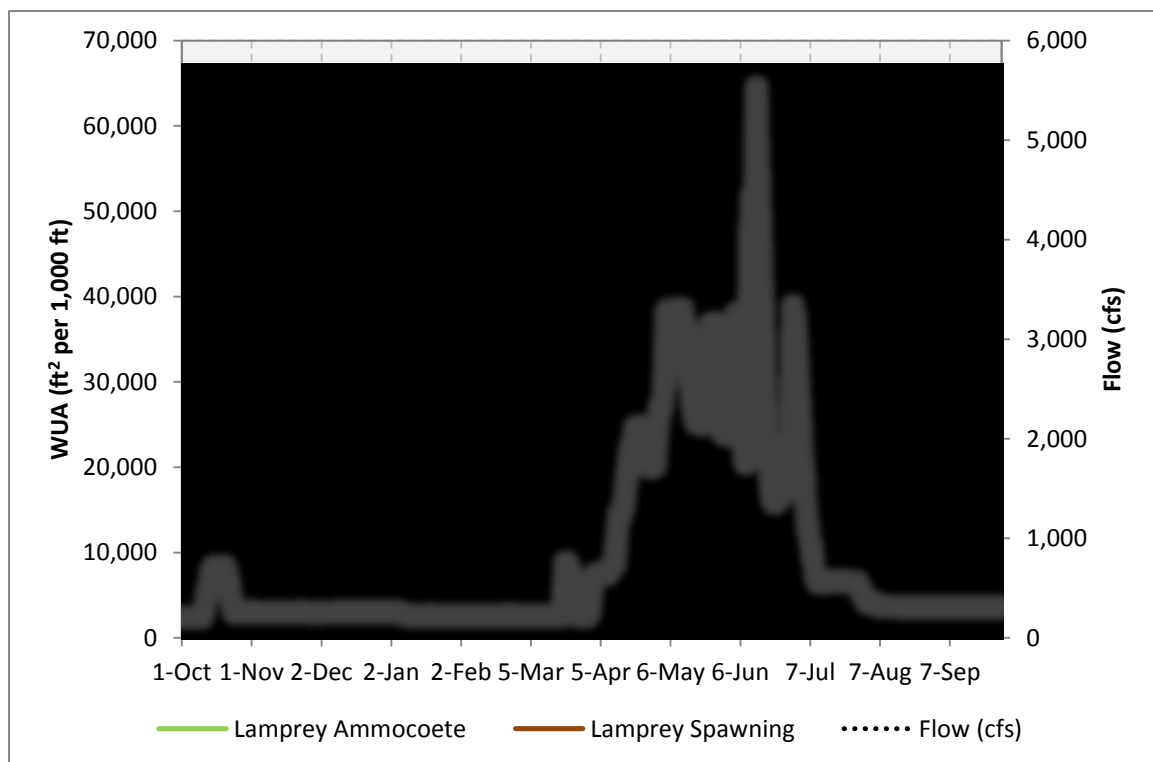
**Figure 19.** Habitat Time Series results for lower Tuolumne River Sacramento splittail in a Dry water year (2012).



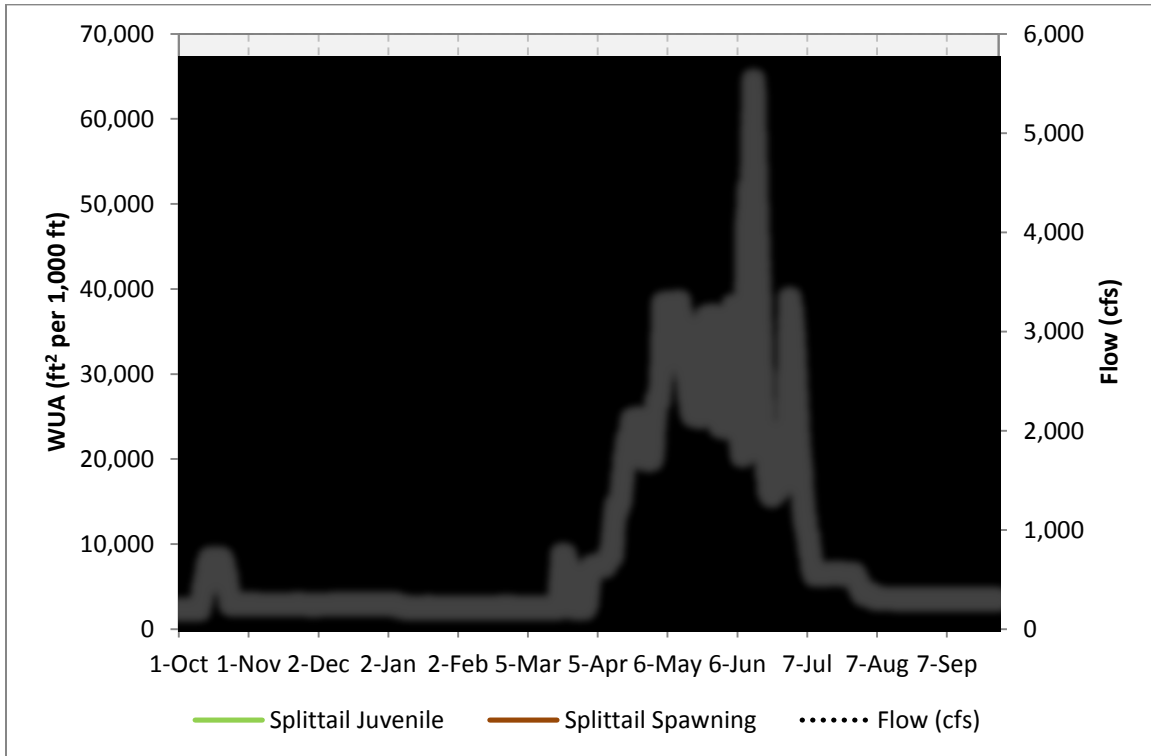
**Figure 20.** Habitat Time Series results for lower Tuolumne River Pacific lamprey in a Below Normal water year (2009).



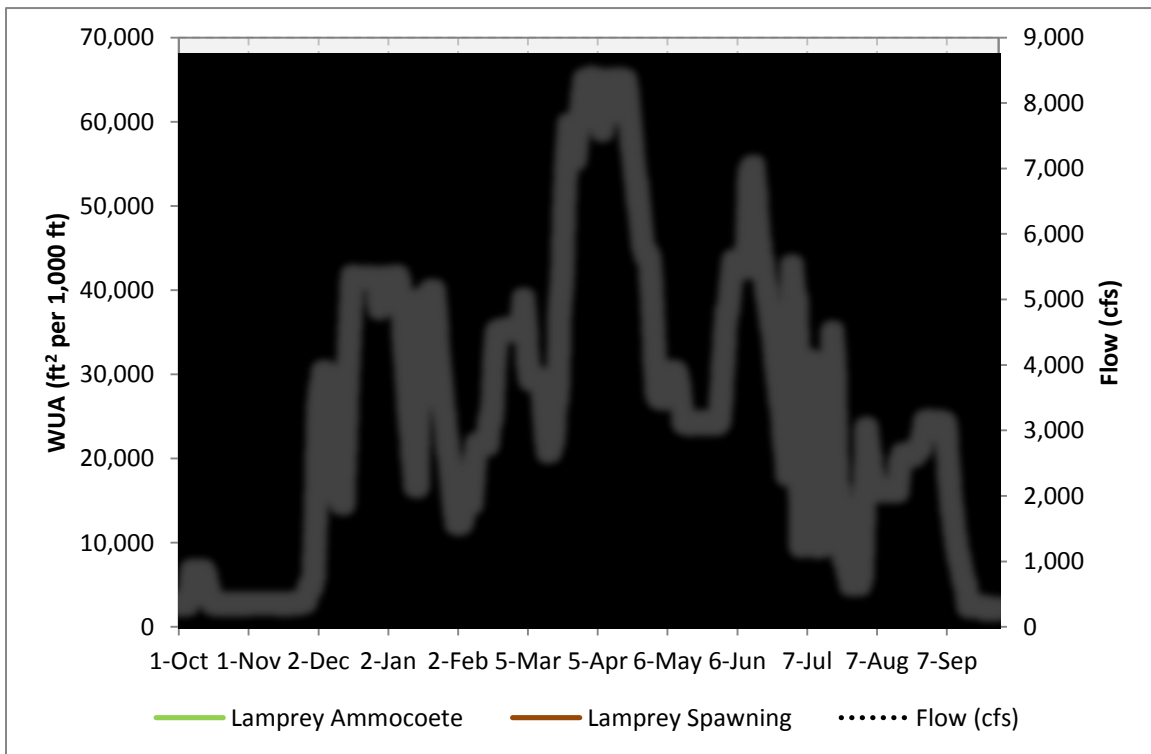
**Figure 21.** Habitat Time Series results for lower Tuolumne River Sacramento splittail in a Below Normal water year (2009).



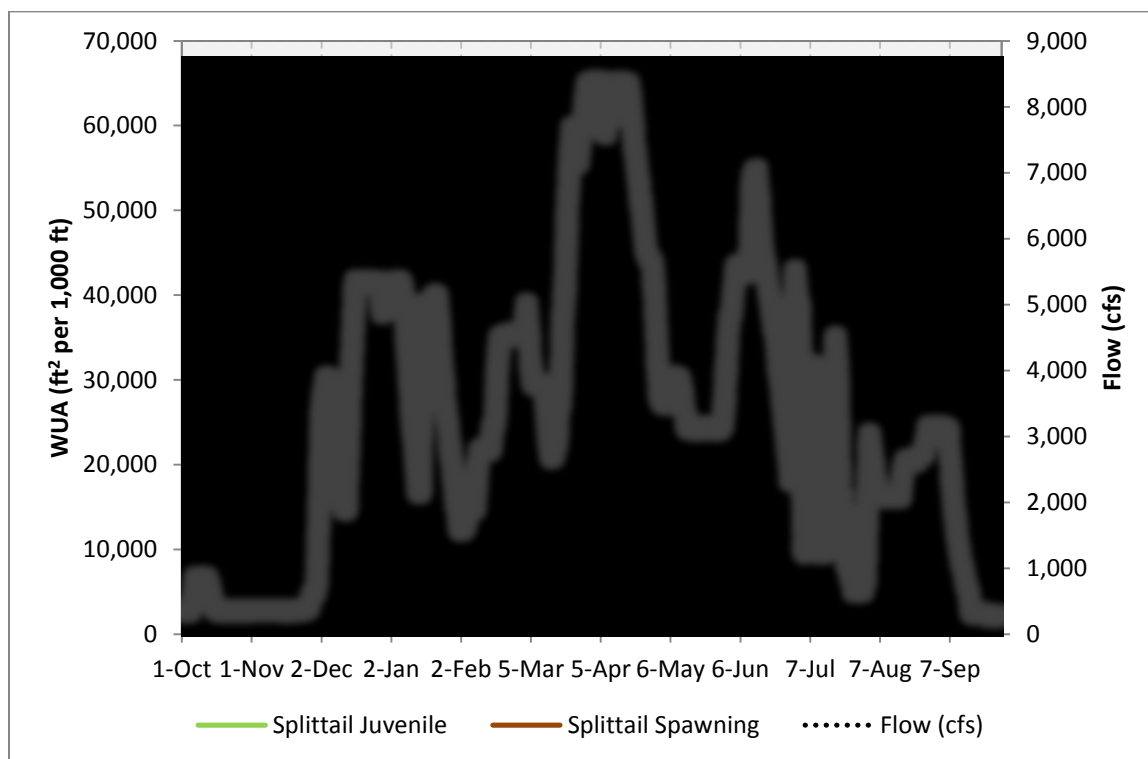
**Figure 22.** Habitat Time Series results for lower Tuolumne River Pacific lamprey in an Above Normal water year (2010).



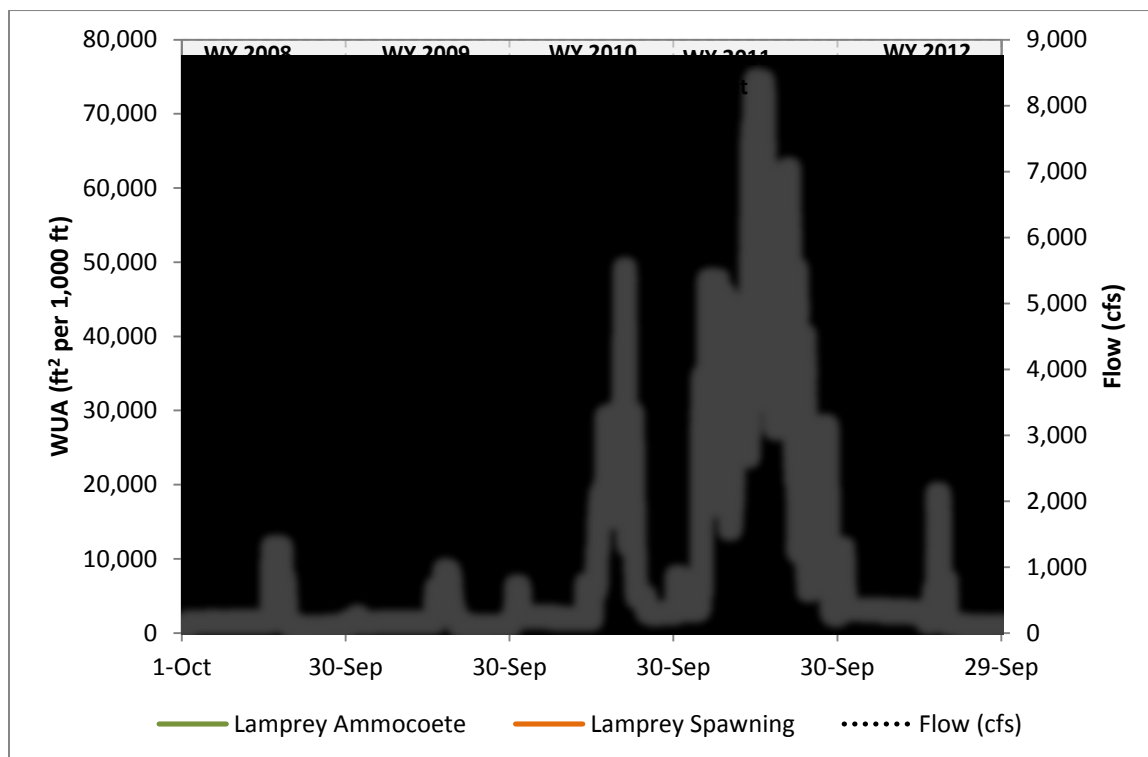
**Figure 23.** Habitat Time Series results for lower Tuolumne River Sacramento splittail in an Above Normal water year (2010).



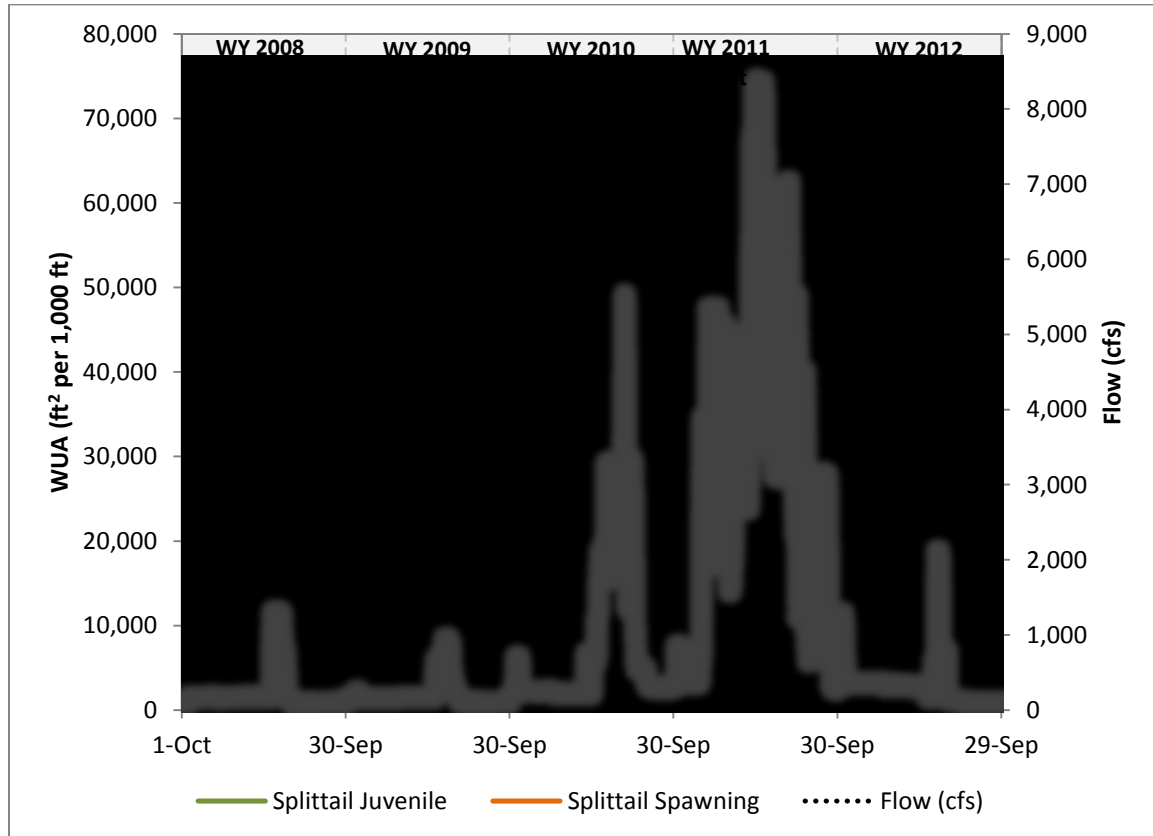
**Figure 24.** Habitat Time Series results for lower Tuolumne River Pacific lamprey in a Wet water year (2011).



**Figure 25.** Habitat Time Series results for lower Tuolumne River Sacramento splittail in a Wet water year (2011).



**Figure 26.** Habitat Time Series results for lower Tuolumne River Pacific lamprey across all water year types.



**Figure 27.** Habitat Time Series results for lower Tuolumne River Sacramento splittail across all water year types.

## 4 DISCUSSION

### 4.1 Pacific Lamprey in the Lower Tuolumne River

Pacific lamprey are present in the study reach between La Grange Dam (RM 52) and below Waterford (RM 29). Lamprey ammocoetes are present year-round and typically prefer slow backwater or edgewater habitat, which is available in the study reach across all of the modeled flows. Subsequently, habitat availability (as measured by WUA) for ammocoetes is consistent across a range of flows. In contrast, lamprey spawning may be limited by higher flows in the late winter and spring, as habitat availability decreases with increases in flow. As a result, lamprey spawning habitat declines during flood control or other high flow releases in the spring.

### 4.2 Sacramento Splittail in the Lower Tuolumne River

Sacramento splittail have not been observed in the study reach between La Grange Dam (RM 52) and below Waterford (RM 29). Splittail inhabit low gradient valley-floor estuaries and streams, and can tolerate a broad range of salinities and temperatures. They have been observed in the lower Tuolumne River as far up as the City of Modesto during wet years, and have been reported to spawn in the lower 6.8 miles of the river (Moyle et al. 1995). Adults are expected to gradually move into the lower Tuolumne in the winter and spring but may migrate more rapidly during flood periods. Adult splittail will forage and opportunistically spawn in flooded areas, after which the young-of-year/juveniles migrate downstream into the estuary by summer (Moyle 2002).



The section of the Tuolumne River where splittail have been observed is within the slow-moving, low-gradient, sand-bedded reach. Water temperatures in this reach are generally influenced by ambient air temperatures, as opposed to releases from Don Pedro Dam. The instream flow study reach (RM 29–52) is within the higher-gradient, gravel-bedded reach further upstream, and generally contains cooler stream temperatures.

The WUA results were extrapolated to the study reach only (RM 29–52). As a result, shallow depths and low velocities preferred by juvenile splittail are maximized at lower flows in this higher gradient reach. However, the WUA results are not directly applicable to the portion of the river (RM 0.0–6.8) where the species is known to occur.

### 4.3 Next Steps

This draft report complies with requirements of the Commission's December 22, 2011 Study Plan Determination for the Don Pedro Project relicensing studies, which expanded the flow-habitat assessments to be undertaken to include lamprey and splittail. Following a 30-day review and comment period on the results, the final report will be provided in the Districts' Final License Application to be filed with FERC by April 30, 2014.

A remaining component of the *Lower Tuolumne River Instream Flow Studies* 1-D PHABSIM investigation includes an effective habitat analysis, to be completed following the completion of the *Lower Tuolumne River Temperature Model* (relicensing study W&AR-16). The river temperature model report was submitted to relicensing participants for review and comment as part of the Districts' USR. The effective habitat analysis evaluation is expected to be completed (including a 30-day resource agency review period) following the relicensing participants' review and comment on W&AR-16 and will be filed with FERC by August 2014.

Habitat assessments for non-native predatory fish, including smallmouth bass, largemouth bass, and striped bass will be completed by the Districts and submitted to relicensing participants in conjunction with the Districts' 2014 Predation Study. The Districts will submit both studies to relicensing participants for a 30-day review and comment period in December 2014 or January 2015. The final report will be submitted to FERC to supplement the Final License Application.

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Sommer, T. R., L. Conrad, G. O’Leary, F. Feyrer, and W.C. Harrell. 2002. Spawning and Rearing of splittail in a Model Floodplain. Transactions of the American Fisheries Society 131: 966–974.

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Young, P. S., and J. J. Cech Jr. 1996. Environmental tolerances and requirements of splittail. Transactions of the American Fisheries Society 125: 664–678.

## Walker, Colleen

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**From:** Staples, Rose  
**Sent:** Thursday, January 16, 2014 9:43 AM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner, Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzels, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; White, David K; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Don Pedro USR Meeting Presentations Available on Relicensing Website

Copies of the PowerPoint presentations being used at today's Don Pedro Updated Study Report (USR) meeting in Modesto at the MID Offices have been uploaded to the Don Pedro Project Relicensing Website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com). Click on the CALENDAR tab and then click on the USR meeting announcement for January 16<sup>th</sup>. You will find the copies attached to that announcement. If you have any problems locating and/or accessing the files, please let me know. Thank you.

ROSE STAPLES  
CAP-OM

HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

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**From:** Staples, Rose  
**Sent:** Tuesday, January 28, 2014 2:36 PM  
**To:** Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Costa, Jan; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Hurley, Michael; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Martin, Ramon; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Paul, Duane; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Timberliner; Ulibarri, Nicola; Ulm, Richard; Vasquez, Sandy; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzell, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne  
**Subject:** Upcoming February 2014 Don Pedro Training Sessions

In response to requests made at the January 16, 2014, Updated Study Report (USR) meeting, the Districts are proposing to hold **training sessions** on use of the Reservoir Temperature Model and the two fish population models. The Districts are also proposing to conduct a Workshop/meeting on the Floodplain Hydraulic Assessment (W&AR-21) model development.

Also, related to the La Grange licensing, please be aware that the PAD is to be issued and filed this Wednesday, January 29, 2014, to initiate that licensing process. We would like to hold a meeting with parties interested in the La Grange licensing to discuss possible use of the Traditional Licensing Process (TLP) instead of the ILP.

All of these meeting dates are provided below and all meetings are to be held in HDR's Sacramento office. The Districts have tried to schedule these meetings so they occur on a timely basis and to limit conflicts. We recognize that there is a Yuba Forum meeting on Thursday, February 13 (also at HDR's office), and this may present a conflict for a few people. The Districts are hopeful that any affected party might be able to arrange to join either the Don Pedro morning or afternoon session on the 13<sup>th</sup> as your interests allow.

- **Thursday, Feb 13, 2014 - 9 am to Noon: Reservoir Temperature Model Training**, as requested at the January 16, 2014, USR Meeting. Please bring your computer. We'll load the model on each computer and navigate its use. There will also be instructions for accessing the dedicated Citrix server located in HDR, but due to the same limitations discovered during the last training session of trying to connect individual, non-HDR computers through the HDR – Sacramento server and then on to the Citrix server, we suggest each individual attempt access to Citrix through your own systems some time before the meeting, then let us know if you are having any difficulty.
- **Thursday, Feb 13, 2014 - 1:30 pm to 4:30 pm: Floodplain Hydraulic Assessment Workshop**. The Districts have established the topography/bathymetry for a multi-mile pilot reach for the TUFLOW model and would like to share the resulting terrain model with relicensing participants. Therefore, the primary purpose of the meeting will be to share the model geometry and consult on the demarcation of the in-stream portion of the model (I-D flow portion of TUFLOW) and the overbank portion of the model (the 2-D flow portion) prior to the start of any modeling.
- **Monday, Feb 24, 2014 - 9 am to Noon: Fish Population Models training**. Stillwater's GUI is complete and the meeting will provide an opportunity for training in its use. Please bring your own computer and we will load the model and GUI.
- **Monday, Feb 24, 2014 - 1:30 pm to 3:30 pm: La Grange Licensing**. The Districts would like to discuss possible use of the TLP instead of the ILP for the La Grange licensing. The Districts believe this would be less burdensome on all parties, especially over the next 12 months; and given that it is likely that most, but certainly not all, of the necessary studies have been conducted as part of the Don Pedro relicensing, use of the TLP may be a better use of everyone's limited resources.

Please respond to me at [rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) by Friday, January 31, 2014, as to which meetings you anticipate attending. Thank you.

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**From:** Staples, Rose  
**Sent:** Tuesday, January 28, 2014 8:33 PM  
**To:** 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; 'Beeco, Adam'; 'Blake, Martin'; 'Bond, Jack'; 'Borovansky, Jenna'; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; 'Cooke, Michael'; 'Costa, Jan'; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; 'Devine, John'; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; 'Fernandes, Jesse'; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; 'Hurley, Michael'; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; 'Loy, Carin'; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Martin, Michael'; 'Martin, Ramon'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; 'Mills John'; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Paul, Duane'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; 'Reynolds, Garner'; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; 'Simsiman, Theresa'; 'Slay, Ron'; 'Smith, Jim'; 'Staples, Rose'; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Ulm, Richard'; 'Vasquez, Sandy'; 'Verkuil, Colette'; 'Vierra, Chris'; 'Villalobos, Amber'; 'Wantuck, Richard'; 'Welch, Steve'; 'Wenger, Jack'; 'Wesselman, Eric'; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'  
**Subject:** Don Pedro USR Meeting Summary Filed With FERC Jan 27

The Districts have filed with FERC the Don Pedro Project Relicensing *USR Meeting Summary*, from the USR meeting held on January 16<sup>th</sup>. A copy of the document can be viewed / downloaded from FERC's E-Library at [www.ferc.gov](http://www.ferc.gov) – and a copy has also been uploaded to the Don Pedro Relicensing website at [www.donpedro-relicensing.com](http://www.donpedro-relicensing.com), under the CALENDAR tab as an attachment to the January 27 calendar date. If you have any problems accessing and/or downloading the document, please let me know. Thank you.

From: Staples, Rose

Sent: Tuesday, February 11, 2014 12:23 PM

To: Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Hurley, Michael; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley, Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Ward, Walt; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

Subject: Upcoming Don Pedro Model Training Sessions

Attachments: Computer Requirements for Feb 24 Training\_140211.docx

This is a reminder of upcoming model trainings (Feb 13 and 24) for the Don Pedro relicensing (to be held at the HDR Office in Sacramento). If you have not already RSVP'd, please do so to [Rose.Staples@hdrinc.com](mailto:Rose.Staples@hdrinc.com) to ensure we have the appropriate computer equipment available for you.

\* Thursday, Feb 13, 2014 - 9 am to Noon: Reservoir Temperature Model Training. Please attempt to log-on to the HDR Citrix server from your own system prior to the meeting with the password you previously set up (if you



attended the prior MIKE3 model training). Let us know if you have any difficulties using the log-in procedures so we can address those. If you do not have credentials for log-in, we will provide you with new credentials at the meeting and will be reviewing the entire log-in process. However, you will not need to log-in to the Citrix server for the training session, nor will you need to bring your own computer to the workshop. HDR will have computers available pre-loaded with the MIKE3 model available for use during the training. If you do prefer to bring your own computer to the training, please contact [jesse.fernandes@hdrinc](mailto:jesse.fernandes@hdrinc) as soon as possible today for instructions for downloading the MIKE3 software from DHI.

\* Thursday, Feb 13, 2014 - 1:30 pm to 4:30 pm: Floodplain Hydraulic Assessment Workshop. No software is required. The Districts have established the topography/bathymetry for a multi-mile pilot reach for the TUFLOW model and would like to share the resulting terrain model with relicensing participants. Therefore, the primary purpose of the meeting will be to share the model geometry and consult on the demarcation of the in-stream portion of the model (I-D flow portion of TUFLOW) and the overbank portion of the model (the 2-D flow portion) prior to the start of any modeling.

\* Monday, Feb 24, 2014 - 9 am to Noon: Fish Population Models training. The instructions for downloading the software required for this training are attached to this email. Stillwater's GUI is complete and the meeting will provide an opportunity for training in its use. Please bring your own computer and we will load the model and GUI.

\* Monday, Feb 24, 2014 - 1:30 pm to 3:30 pm: La Grange Licensing. No software or computer required. The Districts would like to discuss possible use of the TLP instead of the ILP for the La Grange licensing. The Districts believe this would be less burdensome on all parties, especially over the next 12 months; and given that it is likely that most, but certainly not all, of the necessary studies have been conducted as part of the Don Pedro relicensing, use of the TLP may be a better use of everyone's limited resources.

ROSE STAPLES  
CAP-OM  
HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

FINAL Population Model Training Computer Requirements  
February 2014

Individuals planning to attend the Population Model Training on Monday, February 24 are encouraged to bring their personal computers to the training session. To run the population models, each computer must have (a) **a current web browser** and (b) **R**, which is a language and environment for statistical computing and graphics. Once R is installed, the “shiny” package must be installed.

- A. A current web browser.** To run the population models, your computer must have a current version of a web browser. We recommend that your computer have a current version of Google Chrome (version 14.0 or higher), Mozilla Firefox (version 26.0 or higher), or Internet Explorer (version 10.0 or higher).
- B. R.** To run the population models, your computer must have R. R may be downloaded for free from the internet. If your computer has Microsoft Windows, please follow the steps below. If your computer has Linux or (Mac) OS X, please follow Steps 1 through Step 3, at which point you will choose the link that is appropriate for your operating system.

1. Go to [www.r-project.org](http://www.r-project.org).
2. In the left scrollbar, click on **CRAN**.
3. Under CRAN Mirrors, scroll down to USA and click on the link for the University of California, Berkeley, CA (<http://cran.cnr.Berkeley.edu>).
4. Under Download and Install R, there are three download links to choose from. Please choose the link applicable to your computer. Steps 5 through 11 assume you choose to download R for Windows.
5. Click on **Download R for Windows**.
6. Click on **base**.
7. Click on **Download R 3.0.2 for Windows**.
8. A box will appear asking if you want to run or save the file. Choose Save.
9. Save the file to your computer.
10. Once R is saved to your computer, R must be run to complete the installation.  
Completing the setup for R likely requires administrative privileges.
11. Complete the R Setup.
12. Last, you will need to install the package “Shiny”
  1. Open R.
  2. Type `install.packages("shiny")`
  3. A box will appear asking if you would like to use a personal library instead. Click **Yes**.
  4. A box will appear asking if you would like to create a personal library to install packages into. Click **Yes**.
  5. A box containing a list of CRAN mirrors will appear. Click **USA (CA 2)**.
  6. Once the package is finished downloading, R will be ready to use.

If you have any questions or problems downloading R, please contact Jesse Fernandes at [jesse.fernandes@hdrinc.com](mailto:jesse.fernandes@hdrinc.com).

From: Staples, Rose

Sent: Tuesday, February 25, 2014 2:40 PM

To: Alves, Jim; Amerine, Bill; Asay, Lynette; Barnes, James; Barnes, Peter; Barrera, Linda; Beeco, Adam; Blake, Martin; Bond, Jack; Borovansky, Jenna; Boucher, Allison; Bowes, Stephen; Bowman, Art; Brenneman, Beth; Buckley, John; Buckley, Mark; Burke, Steve; Burt, Charles; Byrd, Tim; Cadagan, Jerry; Carlin, Michael; Charles, Cindy; Cooke, Michael; Cowan, Jeffrey; Cox, Stanley Rob; Cranston, Peggy; Cremeen, Rebecca; Damin Nicole; Day, Kevin; Day, P; Denean; Derwin, Maryann Moise; Devine, John; Dowd, Maggie; Drake, Emerson; Drekmeier, Peter; Edmondson, Steve; Eicher, James; Fargo, James; Fernandes, Jesse; Ferranti, Annee; Ferrari, Chandra; Findley, Timothy; Fleming, Mike; Fuller, Reba; Furman, Donn W; Ganteinbein, Julie; Giglio, Deborah; Gorman, Elaine; Grader, Zeke; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Heyne, Tim; Holley, Thomas; Holm, Lisa; Horn, Jeff; Horn, Timi; Hudelson, Bill; Hughes, Noah; Hughes, Robert; Hume, Noah; Hurley, Michael; Jackson, Zac; Jauregui, Julia; Jennings, William; Jensen, Laura; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley; Justin; Keating, Janice; Kempton, Kathryn; Kinney, Teresa; Koepele, Patrick; Kordella, Lesley; Le, Bao; Levin, Ellen; Linkard, David; Loy, Carin; Lwenya, Roselynn; Lyons, Bill; Madden, Dan; Manji, Annie; Marko, Paul; Martin, Michael; Mathiesen, Lloyd; McDaniel, Dan; McDevitt, Ray; McDonnell, Marty; Mein Janis; Mills John; Morningstar Pope, Rhonda; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Pavich, Steve; Pool, Richard; Porter, Ruth; Powell, Melissa; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs T; Robbins, Royal; Romano, David O; Roos-Collins, Richard; Rosekrans, Spreck; Roseman, Jesse; Rothert, Steve; Sandkulla, Nicole; Saunders, Jenan; Schutte, Allison; Sears, William; Shakal, Sarah; Shipley, Robert; Shumway, Vern; Shutes, Chris; Sill, Todd; Simsiman, Theresa; Slay, Ron; Smith, Jim; Staples, Rose; Stapley, Garth; Steindorf, Dave; Steiner, Dan; Stender, John; Stone, Vicki; Stork, Ron; Stratton, Susan; Taylor, Mary Jane; Terpstra, Thomas; TeVelde, George; Thompson, Larry; Tmberliner; Ulibarri, Nicola; Verkuil, Colette; Vierra, Chris; Villalobos, Amber; Wantuck, Richard; Ward, Walt; Welch, Steve; Wenger, Jack; Wesselman, Eric; Wetzel, Jeff; Wheeler, Dan; Wheeler, Dave; Wheeler, Douglas; Wilcox, Scott; Williamson, Harry; Willy, Allison; Wilson, Bryan; Winchell, Frank; Wooster, John; Workman, Michelle; Yoshiyama, Ron; Zipser, Wayne

Subject: CCSF Meeting March 24 2014 in San Francisco - Regarding Assessment of Socioeconomic Effects of Water Shortages on Its Regional Water System

CCSF is holding a meeting on Monday, March 24th for FERC Don Pedro Project Relicensing Participants to review the methodology and results of CCSF's assessment of the socioeconomic effects of water shortages on its regional water system. The meeting will be held from 10:30 a.m. to Noon at the San Francisco Public Utilities Commission headquarters in San Francisco at 525 Golden Gate Avenue, 2nd floor, O'Shaughnessy Conference Room. Would suggest you arrive a few minutes early (10:15 a.m.) for sign-in procedures.

For those not able to participate in person, the meeting will also be broadcast via web (details will be provided closer to the meeting date).

The draft report will be available to Relicensing Participants at least 10 days prior to the meeting.

ROSE STAPLES

CAP-OM

HDR Engineering, Inc.

Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103

207.239.3857 | f: 207.775.1742

[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

From: Staples, Rose

Sent: Tuesday, March 04, 2014 11:52 AM

To: 'Alves, Jim'; 'Amerine, Bill'; 'Asay, Lynette'; 'Barnes, James'; 'Barnes, Peter'; 'Barrera, Linda'; Beeco, Adam; 'Blake, Martin'; 'Bond, Jack'; Borovansky, Jenna; 'Boucher, Allison'; 'Bowes, Stephen'; 'Bowman, Art'; 'Brenneman, Beth'; 'Buckley, John'; 'Buckley, Mark'; 'Burke, Steve'; 'Burt, Charles'; 'Byrd, Tim'; 'Cadagan, Jerry'; 'Carlin, Michael'; 'Charles, Cindy'; Cooke, Michael; 'Cowan, Jeffrey'; 'Cox, Stanley Rob'; 'Cranston, Peggy'; 'Cremeen, Rebecca'; 'Damin Nicole'; 'Day, Kevin'; 'Day, P'; 'Denean'; 'Derwin, Maryann Moise'; Devine, John; 'Dowd, Maggie'; 'Drake, Emerson'; 'Drekmeier, Peter'; 'Edmondson, Steve'; 'Eicher, James'; 'Fargo, James'; Fernandes, Jesse; 'Ferranti, Annee'; 'Ferrari, Chandra'; 'Findley, Timothy'; 'Fleming, Mike'; 'Fuller, Reba'; 'Furman, Donn W'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; 'Gutierrez, Monica'; 'Hackamack, Robert'; 'Hastreiter, James'; 'Hatch, Jenny'; 'Hayden, Ann'; 'Hellam, Anita'; 'Heyne, Tim'; 'Holley, Thomas'; 'Holm, Lisa'; 'Horn, Jeff'; 'Horn, Timi'; 'Hudelson, Bill'; 'Hughes, Noah'; 'Hughes, Robert'; 'Hume, Noah'; Hurley, Michael; 'Jackson, Zac'; 'Jauregui, Julia'; 'Jennings, William'; 'Jensen, Laura'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Kordella, Lesley'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; Loy, Carin; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Manji, Annie'; 'Marko, Paul'; 'Martin, Michael'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDevitt, Ray'; 'McDonnell, Marty'; 'Mein Janis'; Mills John; 'Morningstar Pope, Rhonda'; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Porter, Ruth'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Ridenour, Jim'; 'Riggs T'; 'Robbins, Royal'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole'; 'Saunders, Jenan'; 'Schutte, Allison'; 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; 'Shumway, Vern'; 'Shutes, Chris'; 'Sill, Todd'; Simsiman, Theresa; 'Slay, Ron'; 'Smith, Jim'; Staples, Rose; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; 'Stratton, Susan'; 'Taylor, Mary Jane'; 'Terpstra, Thomas'; 'TeVelde, George'; 'Thompson, Larry'; 'Tmberliner'; 'Ulibarri, Nicola'; 'Verkuil, Colette'; 'Vierra, Chris'; Villalobos, Amber; 'Wantuck, Richard'; Ward, Walt; 'Welch, Steve'; 'Wenger, Jack'; Wesselman, Eric; 'Wetzel, Jeff'; 'Wheeler, Dan'; 'Wheeler, Dave'; 'Wheeler, Douglas'; 'Wilcox, Scott'; 'Williamson, Harry'; 'Willy, Allison'; 'Wilson, Bryan'; 'Winchell, Frank'; 'Wooster, John'; 'Workman, Michelle'; 'Yoshiyama, Ron'; 'Zipser, Wayne'

Subject: Don Pedro W-AR-21 Floodplain Hydraulic Assessment Workshop Notes Ready for 30-Day Review-Comment

Attachments: 2014-02-13 W-AR21 MtgNotes\_Draft\_140304.pdf

Attached for your review and comment are the DRAFT meeting notes from the February 13, 2014 Don Pedro Relicensing W&AR-21 Floodplain Hydraulic Assessment Workshop No. 1 Meeting. As Attachment A to the notes, the PowerPoint slides used at the meeting, is over 10

MB, I have uploaded the slides (as well as a copy of the draft meeting notes) to the [www.donpedro-relicensing](http://www.donpedro-relicensing) website, under both ANNOUNCEMENT and CALENDAR tabs. If you have any difficulties accessing and/or downloading the files, please let me know.

Comments are due by Thursday, April 3, 2014. Thank you.

ROSE STAPLES  
CAP-OM  
HDR Engineering, Inc.  
Executive Assistant, Hydropower Services

970 Baxter Boulevard, Suite 301 | Portland, ME 04103  
207.239.3857 | f: 207.775.1742  
[rose.staples@hdrinc.com](mailto:rose.staples@hdrinc.com) | [hdrinc.com](http://hdrinc.com)

**Don Pedro Project Relicensing (FERC No. 2299)**  
**W&AR-21 Floodplain Hydraulic Analysis Study**  
**Workshop No. 1**  
**HDR Office in Sacramento**  
**Draft Meeting Notes**

**Thursday, February 13, 2014**  
**1:30 PM to 4:30 PM**

**Attendees**

Nolan Adams	HDR, Inc.
Peter Barnes	State Water Resources Conservation Board
Jenna Borovansky	HDR, Inc.
Allison Boucher	Tuolumne River Conservancy
Dave Boucher	Tuolumne River Conservancy
Steve Boyd	Turlock Irrigation District
Anna Brathwaite (by phone)	Modesto Irrigation District
Jesse Fernandes (by phone)	HDR, Inc.
Noah Hume	Stillwater Sciences
Matt Moses	San Francisco Public Utilities Commission
Bill Paris (by phone)	Modesto Irrigation District
Pani Ramalingam	HDR, Inc.
Bill Sears (by phone)	City and County of San Francisco
Rob Sherrick	HDR, Inc.
Maia Singer	Stillwater Sciences
Ron Yoshiyama	City and County of San Francisco

On February 13, 2014, the Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) conducted Workshop No. 1 for the Don Pedro Hydroelectric Project Floodplain Hydraulic Analysis Study (W&AR-21). This document summarizes items discussed in the Workshop. It is not intended to be a transcript of the meeting. Attachment A provides the slides presented during the Workshop.

Following introductions, Jenna Borovansky of HDR, Inc. (HDR), consultant to the Districts, provided background on the study process to date. She noted that, in accordance with the study schedule, this is a Workshop for the W&AR-21 modeling effort and will follow the Consultation Workshop protocols. In January 2013, the Districts received comments on the ISR, including a request for additional information. The Districts agreed to conduct a floodplain study. She added that the study plan was developed during the spring and summer of 2013. Ms. Borovansky said that the W&AR-21 study goals build on past information and that the purpose of this Workshop is to present the 2D hydraulic and habitat modeling approach, and provide a first cut at describing the demarcation between in-river and overbank habitat.

Noah Hume of Stillwater Sciences, consultant to the Districts, reviewed previous floodplain studies on the lower Tuolumne River. Mr. Hume noted that the 2012 2D Pulse Flow Study focused on in-channel predictions of habitat availability. He then presented the W&AR-21 study objectives.

Pani Ramalingam of HDR reviewed the existing topographic data. He noted that there are no breaks in the 2011 LiDAR data, but that there are some breaks in the floodplain ponds. He said that the study team is currently working to fill these few data gaps. Mr. Ramalingam then presented the calibration data.

During the remainder of the Workshop, Mr. Hume and Mr. Ramalingam alternated as presenter. They explained the advantages of using the model TUFLOW for this study, noting that TUFLOW has been used in numerous river hydraulic modeling studies in Europe and Australia and in multiple studies by the U.S. Army Corps of Engineers and California Department of Water Resources. Mr. Hume and Mr. Ramalingam said that TUFLOW is advantageous because the study will model low to moderate flows in the Tuolumne River, rather than high flows, and will attempt to link hydraulic conditions to fish habitat availability, which requires a hydraulic model that realistically represents a flow path from main channel to the 2D floodplain flows and that has a flexible grid size. They also noted that TUFLOW allows changes to be made to local topography and also has a good 1D in-channel modeling component, an attribute that distinguishes TUFLOW from most other 2D models.

Mr. Hume and Mr. Ramalingam said that the computational efficiency of TUFLOW decreases with smaller grid size. TUFLOW was run for a Pilot Reach (RM 40-52) to determine water surface elevation (WSEL) sensitivity to grid size and the results indicate that there is no benefit to running the model at a grid size lower than 30 ft<sup>2</sup>. Mr. Hume and Mr. Ramalingam said that the results for Riffle 4A/4B indicate that the smaller the grid size, the higher the estimated area of suitable rearing habitat. This is particularly evident for fry. Balancing this with the decreasing computational efficiency as grid size gets smaller, the sensitivity analysis indicates that 30 ft<sup>2</sup> also represents an appropriate grid size for habitat predictions. Mr. Hume and Mr. Ramalingam said the grid size in particular areas can be reduced, if needed.

Allison Boucher of the Tuolumne River Conservancy asked if the model distinguishes between inundated areas that have active flow/velocity and areas that do not have flow/velocity. As an example, she said that when Legion Park floods, there is no flow. The water just sits on the grass and does not appear to create good habitat. Mr. Hume replied that the model considers both velocity and depth. Based on the habitat suitability criteria (HSC), areas with no flow would not be considered suitable habitat by the model.

Mr. Hume and Mr. Ramalingam said that the existing IFIM Study (2012) is a 1D study and covers in-channel habitat at flows up to 1,200 cfs. They also said that the TUFLOW 1D-2D domain boundary is set in locations that will maximize the quantity of potential 2D habitat to be analyzed. Mr. Ramalingam provided example images of the 1D-2D domain boundary location within the Pilot Reach.

Mr. Ramalingam presented the TUFLOW modeling plan and Mr. Hume presented the conceptual steps in the habitat analysis, whereby TUFLOW provides cell-specific velocity and depth predictions. He added that the velocity and depth predictions are modeled using the habitat suitability criteria (HSC) developed in the 2012 IFIM study and combined with discharge recurrence probabilities to generate area-duration-frequency curves. Ms. Boucher asked if the results include consideration of suitable habitat in different sections of the river (i.e., reach-by-reach). Mr. Hume affirmed that the model has that capability.

Mr. Hume and Mr. Ramalingam said the study team will distribute electronic links to an updated map book of the lower Tuolumne River, which will show the proposed location of the TUFLOW 1D-2D domain boundary. They requested that relicensing participants provide feedback on the model domain



delineation approach. They noted that a follow-up conference call to discuss feedback could be scheduled, if desired.

Ms. Boucher asked if the W&AR-21 study report will provide information on the four different fish life stages (i.e., fry and juvenile salmon; fry and juvenile *O. mykiss*). These species require different habitat types and the modeling approach would need to consider these differences. Mr. Hume replied that life history timing for each species is specific. For example, fry and juveniles for each species use the habitats at slightly different times in the year. He said this is an inherent screening tool in the model.

Ms. Boucher said that landowners may like to know what is happening on their property and asked if it would be possible to provide this information. Ms. Borovansky replied that it may be possible to provide this information with respect to habitat, but reiterated that the purpose of the study is not to predict when or which properties will flood.

Ms. Boucher asked how the model predicts the velocity for a particular floodplain location. Mr. Ramalingam replied that TUFLOW models velocity on a cell-by-cell basis.

Ms. Boucher asked how the model deals with velocity in off-channel areas like flooded roads and bends. She noted that there is a property downstream of new La Grange Bridge where she had observed large eddies during high flows. Mr. Ramalingam replied by showing the model results at 3,000 cfs. He noted that the velocity and depth vectors shift with each time step and that flow eddies are represented.

Ms. Boucher asked how roughness is associated with different vegetation types, such as willow. Mr. Ramalingam and Nolan Adams of HDR replied that the study team is working on this and at this time uses the best available information, such as from survey data and aerial imagery, to make distinctions between vegetation types.

Ms. Boucher asked what the study output is and if the model could be run under different scenarios. Mr. Hume replied that the study report will include plots and tabulations of inundated area. He noted that the model will be available for relicensing participants (RPs) to use to run different scenarios. RPs may also use the study report output to extrapolate results at a range of flows or request that the Districts run the model for a specific scenario.

Mr. Ramalingam showed how a recently restored floodplain surface might respond to flows of 8,400 cfs based on TUFLOW predictions. Dave Boucher of the Tuolumne River Conservancy and Ms. Boucher noted that the predicted flow re-routing appears to mimic what actually occurs in the area they are familiar with, which provided positive feedback on the calibration. They said that the TUFLOW model appears to be a reliable tool that would really help the decision-making process in relicensing.

## **Attachments**

Attachment 1: W&AR-21 Workshop No. 1 Slides

# **ATTACHMENT 1**

## **W&AR-21 Workshop No. 1 Slides**