# LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

# FINAL LICENSE APPLICATION

# ATTACHMENT D CONSULTATION RECORD

# APPENDIX A CONSULTATION RECORD DOCUMENTS

Sent: Wednesday, January 29, 2014 6:56 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; Welch, Steve; Wenger, Jack; 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, Wavne

Subject: La Grange PAD filed with FERC Today

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The Districts have filed with FERC today their Pre-Application Document (PAD) to commence the licensing proceedings for an original license for the La Grange Project. A copy of the PAD can be viewed / downloaded from the licensing website at <u>www.lagrange-licensing.com</u> – please click on the DOCUMENTS tab. The PAD will also be available on FERC's E-Library once a docket number has been established. If you have any difficulties accessing either the website or the document, please let me know.

And, as previously announced yesterday, the Districts will be holding a meeting on Monday, February 24, 2014, at the HDR Offices in Sacramento (2379 Gateway Oaks Drive, Suite 200) from 1:30 p.m. to 3:30 p.m. to discuss the possible use of the Traditional Licensing Process instead of the Integrated Licensing Process for the La Grange licensing. If you plan to attend this meeting, please advise me at <u>rose.staples@hdrinc.com</u>. Thank you.

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

Sent: Monday, February 24, 2014 11:45 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: Confirming La Grange Licensing Participants Meeting Today

As previously announced, the Districts have scheduled a meeting for interested La Grange licensing participants at the HDR Offices in Sacramento (2379 Gateway Oaks Drive, Suite 200) today, February 24, 2014 from 1:30 p.m. to 3:30 p.m. The purpose of the meeting will be to discuss the possible use of FERC's Traditional Licensing Process (TLP) instead of the Integrated Licensing Process (ILP). If you are unable to participate in person, a call-in number is being provided: 866-994-6437 / Conference Code 5424697994. The licensing website is <u>www.lagrange-licensing.com</u>.

ROSE STAPLES CAP-OM

#### HDR Engineering, Inc.

Executive Assistant, Hydropower Services

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Sent: Wednesday, February 26, 2014 2:37 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, Llovd': 'McDaniel, Dan': 'McDevitt, Rav': 'McDonnell, Martv': '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:** Districts E-Filing of Request for Extension For Licensing Participants to File Comments on Proposed Use of TLP

The Districts have filed with FERC today the attached letter, requesting a three-week extension of time (from February 28, 2014 to March 21, 2014) for La Grange Licensing Participants to file comments with FERC on the proposed use of the TLP. A copy of the letter is also being posted today in the Documents folder on the La Grange website (at <u>www.LaGrange-licensing.com</u>) and should be available soon on FERC's E-Library at <u>www.ferc.gov</u>. 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





February 25, 2014 E-Filing

La Grange FERC Project No. 14581

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

Subject:La Grange, FERC Project No. 14581Request for Extension of Time for Licensing Participants to File Comments on Request<br/>to Use the Traditional Licensing Process for the La Grange Licensing

Dear Secretary Bose:

On January 29, 2014, Turlock Irrigation District ("TID") and Modesto Irrigation District ("MID") (collectively, the "Districts"), co-owners of the La Grange Project (LGP), filed a Pre-Application Document (PAD) with the Commission. In the PAD, the Districts requested that FERC approve use of the Traditional Licensing Process (TLP) to license the LGP instead of the default Integrated Licensing Process (ILP). The due date for interested participants to comment on the Districts' request to use the TLP is this Friday, February 28, 2014.

On February 24, 2014, the Districts hosted a meeting with interested participants to discuss the possible use of the TLP instead of the ILP to license the LGP (Attachment A contains the LGP licensing schedule under both the ILP and the TLP). Representatives from the National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, State Water Resources Control Board, California Sportfishing Protection Alliance, Tuolumne River Trust, City and County of San Francisco, and Friends of the River attended the meeting. Many of the meeting attendees are also participating in the Don Pedro Project relicensing process, which has two impending filing due dates (comments on the Updated Study Report are due on February 26, 2014 and comments on the Draft License Application are due on March 3, 2014).

Due to the workload associated with these two Don Pedro Project due dates, the meeting attendees requested a three-week extension to the February 28, 2014 deadline for comments on the LGP TLP request. The Districts agree this would be beneficial for all parties and would not disrupt the overall schedule of either a TLP or ILP proceeding. By this letter, the Districts herewith request a three-week extension to the February 28, 2014 due date for comments on the Districts' request to use the TLP. If a three-week extension is granted, the new due date for comments would be March 21, 2014.

Thank you for your consideration in this matter.

Sincerely,

Steven Boyd Turlock Irrigation District P.O. Box 949 Turlock, CA 95381 (209) 883-8364 seboyd@tid.org

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

Enclosure: Attachment A – LGP Licensing Schedule Under Both ILP and TLP cc: La Grange Licensing Participants Email Group

# ATTACHMENT A

LGP Licensing Schedule Under Both the ILP and the TLP

Integrated Licensing Process		Traditional Licensing Process	
File PAD	1/29/2014	File PAD and Request to Use TLP	1/29/2014
Initial Tribal Consultation Meeting (if necessary)	2/28/2014	Submit request to use TLP to interested participants in licensing process	1/29/2014
FERC Notices NOI/PAD and Issues Scoping Document 1 (SD1)	3/30/2014	Publish notice of PAD filing in daily newspaper	1/29/2014
FERC Request to Initiate Informal Section 7 ESA Consultation		Comments on request to use the TLP due	2/28/2014
Public Scoping Meeting and Site Visit	4/29/2014	FERC Issues Notice of Commencement of Proceeding and decision on use of TLP	
File Comments on PAD, SD1, and submit Study Requests	5/29/2014	FERC Request to Initiate Informal Consultation under Section 7 of the ESA and Section 106 of the NHPA	3/30/2014
FERC Issues Scoping Document 2 (SD2) (if necessary)	7/13/2014	Notify FERC, Public of Joint Meeting Details	4/14/2014
File Proposed Study Plan (PSP) Document	7/13/2014	Joint Meeting and Site Visit	5/28/2014 and 5/29/2014
Initial Study Plan Meeting	8/12/2014	File Comments on NOI/PAD, and submit Study Requests	7/28/2014
File Comments on Proposed Study Plans	10/11/2014	Develop Draft Study Plans for Review and Comment by Licensing Participants	August – September 2014
File Revised Study Plan (RSP) Document	11/10/2014	Distribute Draft Study Plans for Review and Comment	September 2014
File Comments on Revised Study Plan	11/25/2014	Comments filed on Draft Study Plans	November 2014
FERC Issues Study Plan Determination	12/10/2014	Study Plan Negotiation Meeting (if needed)	December 2014
File Notice to Pursue Dispute Resolution Process	12/30/2014	Final Study Plans Distributed if revisions to Draft Study Plans are needed.	January 2015
Convene Dispute Resolution Panel	1/19/2015	Conduct one season of Field Studies and finalize Study Reports to distribute as part of Draft License Application	March 2015 – October 2015
File comments on Notice of Dispute	1/24/2015	Develop and distribute Draft License Application for review and comment	December 2015
Deliver to FERC Director findings on Dispute <sup>2</sup>	2/18/2015	File Comments on Draft License Application	March 2016
Written determination regarding Dispute	3/10/2015	Hold Joint Substantive Disagreement Meeting (if needed)	April 2016
Conduct Field Studies	May – October 2015	Deadline to File Final License Application	06/19/2016
File Initial Study Report (ISR)	12/12/2015		
Initial Study Report Meeting	12/27/2015		

# LGP Licensing Schedule Under Both the ILP and the TLP

Integrated Licens	ing Process	<b>Traditional Licensing Process</b>
File Meeting Summary	1/11/2016	
File Disagreements/Disputes/ Modifications to Study; propose new studies (if necessary)	2/11/2016	
File Responses to comments	03/11/2016	
Dispute Resolution (if necessary)	04/10/2016	
Conduct Second Season Field Studies	n/a	
File Draft License Application (DLA)	01/21/2016	
Updated Study Report Meeting	n/a	
File Updated Study Report Meeting Summary	n/a	
File Meeting Summary Disputes	n/a	
Comments on Draft License Application, Additional Information Requests (AIRs) (if necessary)	04/20/2016	
File Responses to Disputes (if necessary)	n/a	
Dispute Resolution (if necessary)	n/a	
Final License pplication (FLA) Filed	06/19/16	

Sent: Friday, February 28, 2014 5:42 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, Llovd': 'McDaniel, Dan': 'McDevitt, Rav': 'McDonnell, Martv': '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: Comments on Proposed Use of TLP for La Grange Licensing Now Due March 21, 2014

# FERC has granted the extension from February 28, 2014 to March 21, 2014 for Licensing Participants to comment on the proposed use of the TLP with the La Grange licensing.

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

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Sent: Friday, May 23, 2014 4:52 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; Groves, Catherine J; Gutierrez, Monica; Hackamack, Robert; Hastreiter, James; Hatch, Jenny; Hayden, Ann; Hellam, Anita; Hevne, 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; Johannis, Mary; Johnson, Brian; Jones, Christy; Jsansley; 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; MorningstarPope, Rhonda; Moses, Matt; Motola, Mary; Murphey, Gretchen; Murray, Shana; O'Brien, Jennifer; Orvis, Tom; Ott, Bob; Ott, Chris; Pavich, Pool, Richard; Powell, Melissa; Steve; Puccini, Stephen; Raeder, Jessie; Ramirez, Tim; Rea, Maria; Reed, Rhonda; Reynolds, Garner; Richardson, Daniel; Richardson, Kevin; Ridenour, Jim; Riggs, T; Romano, David; Roos-Collins 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: FERC issues La Grange SD1 and Site Visit-Scoping Meetings Info

FERC has issued its Scoping Document 1 (SD1) and the Commencement of Pre-Filing Process and Scoping for La Grange. Copies of these documents have been uploaded to the DOCUMENTS library on the La Grange licensing website at <u>www.lagrange-licensing.com</u>. If you have any difficulties accessing and/or downloading the documents, please let me know. Thank you.

ROSE STAPLES CAP-OM HDR Engineering, Inc.

Executive Assistant, Hydropower Services

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# From: Staples, RoseSent: Friday, May 23, 2014 6:20 PMSubject: FERC Scoping Meetings and Site Review for La Grange - Date-Times-Locations

I understand that sometimes the link for the <u>www.lagrange-licensing.com</u> website takes you to a notice that the website is under construction, while other times it goes straight to the La Grange website okay (it did it once today for me too!). Therefore, please find below the information extracted from FERC's notice today regarding the dates, times, and locations of the scoping meetings and the start of the site review.

#### **Daytime Scoping Meeting**

Date and Time:	June 18, 2014 at 10:00 a.m.
Location:	CSU-Stanislaus, University Student Union-Events Center
	801 W. Monte Vista, Turlock, CA 95382

#### **Evening Scoping Meeting**

Date and Time:	June 18, 2012 at 7:00 p.m.
Location:	Double Tree Hotel - Modesto, Ballroom 3
	1150 Ninth Street, Modesto, CA 95354

#### **Environmental Site Review**

Date and Time:	June 19, 2014 at 10:00 a.m.
Location:	Meet at the La Grange Rodeo Grounds, 4999 State Hwy. 132, La
	Grange, CA, 95329

Please notify Jim Hastreiter at 503-552-2760 or james.hastreiter@ferc.gov by June 2, 2014, if you plan to attend the site visit.

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Sent: Monday, June 16, 2014 12:49 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'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; Groves, Catherine J; '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'; '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'; Moses, Matt; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Riggs T'; '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: CSU-Stanislaus Map

And I have just been provided with a CSU-Stanislaus campus map. I have added arrows leading from Parking Lot No. 8 and from the Student Union-Events Center (labeled 25A)!

Jim Hastreiter with FERC advises that the folks at CSU-Stanislaus have told him that people attending the FERC daytime scoping meeting for La Grange, on Wednesday, June 18<sup>th</sup> at 10:00 a.m., can park for free in Parking Lot No. 8.

#### Daytime Scoping Meeting

Date and Time: Wednesday, June 18, 2014, 10:00 a.m. (PST) Location: CSU-Stanislaus, University Student Union-Events Center, 801 W. Monte Vista, Turlock, California 95382

> ROSE STAPLES CAP-OM

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From: Staples, RoseSent: Friday, September 05, 2014 5:21 PMSubject: Districts E-File Today La Grange Proposed Study Plan; FERC issues SD2

The Districts have e-filed with FERC today their Proposed Study Plan document (PSP) for the La Grange Hydroelectric Project. A copy of the document is available on both FERC's E-Library (Docket P-14581-000) and in the DOCUMENTS folder on the Districts' licensing website at <u>www.lagrange-licensing.com</u>. If you have any difficulties locating and/or accessing the document, please do contact me at <u>rose.staples@hdrinc.com</u>. The Districts are planning to hold their Proposed Study Plan meeting on Monday, October 6 from 10 a.m. to 4 p.m. at the MID Offices in Modesto. Further information will be posted on the licensing website's CALENDAR.

FERC also issued today their Scoping Document 2, a copy of which is also available on FERC's E-Library and also in the DOCUMENTS folder on the licensing website.

#### Rose Staples, CAP-OM

Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com BCC 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'; 'Fleming, Mike'; 'Fuller, Reba'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; Groves, Catherine J; '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'; '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'; 'McDonnell, Marty'; 'Mein Janis'; Mills John; 'Morningstar Pope, Rhonda'; Moses, Matt; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Riggs T'; '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'

From: Staples, RoseSent: Tuesday, September 23, 2014 6:21 PMSubject: AGENDA for La Grange Proposed Study Plan Meeting Oct 6 in Modesto

The Districts will be holding the Proposed Study Plan (PSP) meeting for the La Grange Hydroelectric Project on October 6, 2014, from 10:00 am to 4:00 pm at the Modesto Irrigation District office (1231 11<sup>th</sup> Street, Modesto).

The purpose of the meeting is for licensing participants to discuss their proposed study plans and for meeting attendees to review the study plans proposed by the Districts. A meeting agenda is attached to this email and will also be uploaded to the licensing website at <u>www.lagrange-licensing.com</u>. Please note that although the agenda includes specific areas of discussion, the agenda is not intended to limit study request-related discussion.

#### Rose Staples, CAP-OM

Executive Assistant

#### HDR

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# La Grange Hydroelectric Project Study Plan Meeting Monday, October 6, 10:00 am – 4:00 pm MID Offices, 1231 11<sup>th</sup> Street, Modesto, CA

(Times are approximate and subject to change)

TIME	торіс
9:30 am to 10:00 am	SIGN-IN
10:00 am to 10:15 am	Introductions, review agenda and purpose of the meeting
10:15 am to 12:00 pm	<ul> <li>Discussion of water and aquatic resources study requests</li> <li>Upstream and downstream fish passage studies requested by licensing participants <ul> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Confirmation of target species (Criteria 6)</li> <li>Estimate of run size (Criteria 6)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> </ul> </li> <li>Discussion of the Districts' Fall-Run Chinook Salmon Migration Barrier Draft Study Plan</li> <li>Upstream habitat studies requested by licensing participants</li> <li>Discussion of availability of existing information (Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> </ul>
12:00 pm to 1:15 pm	Discussion of the Districts response to upstream habitat study requests
1:15 pm to 2:00 pm	<ul> <li>Discussion of the Recreational Access and Facilities Feasibility study request         <ul> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> </ul> </li> <li>Discussion of the Districts' Recreation Access and Safety Assessment Draft Study Plan</li> </ul>
2:00 pm to 2:15 pm	Discussion of the Districts' Cultural Resources Draft Study Plan
2:15 pm to 3:45 pm	<ul> <li>Discussion of remaining study requests</li> <li>Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project, Draft Redd Dewatering Study, and Tailrace Habitat Assessment</li> <li>Effects of Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout Oncorhynchus mykiss in the Tuolumne River</li> <li>Effects of Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River</li> <li>Draft Juvenile Salmonid Floodplain Rearing Study</li> <li>Draft Genetics of Chinook Salmon in the Upper Tuolumne River</li> </ul>
3:45 pm to 4:00 pm	Closing summary and action items
4:00 pm	ADJOURNMENT

BCC 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'; 'Fleming, Mike'; 'Fuller, Reba'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; Groves, Catherine J; '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'; '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'; 'McDonnell, Marty'; 'Mein Janis'; Mills John; 'Morningstar Pope, Rhonda'; Moses, Matt; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Riggs T'; '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'

From: Staples, RoseSent: Friday, September 26, 2014 4:26 PMSubject: La Grange PSP Meeting - In-Person Participation

Annie Manji has inquired if there will be a call-in number available for the October 6<sup>th</sup> La Grange Proposed Study Plan Meeting at the MID Offices in Modesto. I have confirmed that this meeting will be for in-person participation only.

# La Grange Hydroelectric Project Study Plan Meeting Monday, October 6, 10:00 am – 4:00 pm MID Offices, 1231 11<sup>th</sup> Street, Modesto, CA

(Times are approximate and subject to change)

TIME	TOPIC	
9:30 am to 10:00 am	SIGN-IN	
10:00 am to 10:15 am	Introductions, review agenda and purpose of the meeting	
10:15 am to 12:00 pm	<ul> <li>Discussion of water and aquatic resources study requests</li> <li>Upstream and downstream fish passage studies requested by licensing participants</li> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Confirmation of target species (Criteria 6)</li> <li>Estimate of run size (Criteria 6)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> <li>Discussion of the Districts' Fall-Run Chinook Salmon Migration Barrier Draft Study Plan</li> <li>Upstream habitat studies requested by licensing participants</li> <li>Discussion of availability of existing information (Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> </ul>	
12:00 pm to 1:15 pm	LUNCH BREAK (Lunch is on your own)	
1:15 pm to 2:00 pm	<ul> <li>Discussion of the Recreational Access and Facilities Feasibility study request</li> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Discussion of the Districts' Recreation Access and Safety Assessment Draft Study Plan</li> </ul>	
2:00 pm to 2:15 pm	Discussion of the Districts' Cultural Resources Draft Study Plan	
2:15 pm to 3:45 pm	<ul> <li>Discussion of remaining study requests</li> <li>Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project, Draft Redd Dewatering Study, and Tailrace Habitat Assessment</li> <li>Effects of Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout Oncorhynchus mykiss in the Tuolumne River</li> <li>Effects of Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River</li> <li>Draft Juvenile Salmonid Floodplain Rearing Study</li> <li>Draft Juvenile Chinook Salmon Survival Study</li> <li>Draft Genetics of Chinook Salmon in the Upper Tuolumne River</li> </ul>	
3:45 pm to 4:00 pm	Closing summary and action items	
4:00 pm	ADJOURNMENT	

Thank you.

Rose Staples, CAP-OM Executive Assistant HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com BCC 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'; 'Carr, Adrianne'; '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'; 'Fleming, Mike'; 'Fuller, Reba'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; Groves, Catherine J; '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'; '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'; 'McDonnell, Marty'; 'Mein Janis'; Mills John; 'Morningstar Pope, Rhonda'; Moses, Matt; 'Motola, Mary'; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Riggs T'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck': 'Roseman, Jesse': 'Rothert, Steve': 'Sandkulla, Nicole': 'Saunders, Jenan': 'Schutte, Allison': 'Sears, William'; 'Shakal, Sarah'; 'Shipley, Robert'; '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'

From: Staples, Rose Sent: Monday, November 17, 2014 5:15 PM Subject: La Grange Study Plan Status Update

On Monday, October 6, 2014, the Turlock and Modesto Irrigation districts ("TID" and "MID"; collectively, the "Districts") held a study plan meeting for the La Grange Hydroelectric Project at the MID office in Modesto, California. The purpose of the meeting was to discuss with licensing participants the Districts' Proposed Study Plan (PSP) in order to attempt to resolve any outstanding issues on studies to be included in the Districts' Revised Study Plan (RSP).

Based on discussions at the study plan meeting, the Districts are adopting several significant changes to the Proposed Study Plan related to the study of fish passage at the La Grange Project. This Updated Study Plan (USP) will include undertaking certain studies in parallel instead of in sequence and includes expanded information gathering efforts to respond to licensing participants' requests. The primary areas that will be addressed in the Updated Study Plan are:

- Fish passage facilities assessment (concept-level fish passage alternatives assessment combined with the fish barrier assessment)
- Upper Tuolumne River conditions assessment (fish migration barrier study; water temperature monitoring and modeling; upstream habitat characterization)
- Habitat and fish stranding assessment (development of datasets specific to flow conduits requested by NMFS; topographic, depth and habitat data in the vicinity of the La Grange Project;

fish presence and stranding observations in the tailrace, mainstem below La Grange Diversion Dam, and TID's sluicegate channel)

In accordance with 18 CFR § 5.12, comments on the Districts' proposed studies must be filed with FERC by December 4, 2014. The Districts plan to issue an Updated Study Plan by November 24, 2014, prior to the comment deadline, to allow licensing participants the opportunity to comment on the most current version of the study plan.

If you have any questions, please do not hesitate to contact me (<u>rose.staples@hdrinc.com</u>), John Devine (<u>john.devine@hdrinc.com</u>), or Jenna Borovansky (<u>jenna.borovasky@hdrinc.com</u>).

Rose Staples, CAP-OM

Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com BCC 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'; 'Carr, Adrianne'; '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'; 'Fleming, Mike'; 'Fuller, Reba'; 'Ganteinbein, Julie'; 'Giglio, Deborah'; 'Gorman, Elaine'; 'Grader, Zeke'; Groves, Catherine J; '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'; 'Johannis, Mary'; 'Johnson, Brian'; 'Jones, Christy'; 'Jsansley'; 'Justin'; 'Keating, Janice'; 'Kempton, Kathryn'; 'Kinney, Teresa'; 'Koepele, Patrick'; 'Le, Bao'; 'Levin, Ellen'; 'Linkard, David'; Loy, Carin; 'Lwenya, Roselynn'; 'Lyons, Bill'; 'Madden, Dan'; 'Marko, Paul'; 'Martin, Michael'; 'Mathiesen, Lloyd'; 'McDaniel, Dan'; 'McDonnell, Marty'; 'Mein Janis'; Mills John; 'Morningstar Pope, Rhonda'; Moses, Matt; 'Murphey, Gretchen'; 'Murray, Shana'; 'O'Brien, Jennifer'; 'Orvis, Tom'; 'Ott, Bob'; 'Ott, Chris'; 'Pavich, Steve'; 'Pool, Richard'; 'Powell, Melissa'; 'Puccini, Stephen'; 'Raeder, Jessie'; 'Ramirez, Tim'; 'Rea, Maria'; 'Reed, Rhonda'; Reynolds, Garner; 'Richardson, Daniel'; 'Richardson, Kevin'; 'Riggs T'; 'Romano, David O'; 'Roos-Collins, Richard'; 'Rosekrans, Spreck'; 'Roseman, Jesse'; 'Rothert, Steve'; 'Sandkulla, Nicole': 'Saunders, Jenan': 'Schutte, Allison': 'Sears, William': 'Shakal, Sarah': 'Shelton, John': 'Shipley, Robert'; 'Shutes, Chris'; 'Sill, Todd'; Simsiman, Theresa; 'Slay, Ron'; 'Smith, Jim'; Staples, Rose; 'Stapley, Garth'; 'Steindorf, Dave'; 'Steiner, Dan'; 'Stender, John'; 'Stone, Vicki'; 'Stork, Ron'; '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'

From: Staples, RoseSent: Friday, November 21, 2014 3:40 PMSubject: La Grange Updated Fish Passage Assessment Study Plan and Oct 6 Meeting Notes Filed with FERC Today

The Districts have filed with FERC today the Updated Fish Passage Assessment Study Plan and the Meeting Notes from the October 6, 2014 La Grange Study Plan Meeting. A copy of this filing has been uploaded to the DOCUMENTS section of the La Grange licensing website <u>www.lagrange-licensing.com</u>. The filing will also be available soon on FERC's E-Library for P-14581 at <u>www.FERC.gov</u>. If you have any difficulty locating and/or accessing this document, please contact me at <u>rose.staples@hdrinc.com</u>. Thank you.

Rose Staples, CAP-OM

Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com





November 21, 2014

## Filed via Electronic Submittal (E-File)

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

### Subject: La Grange Hydroelectric Project, FERC Project No. 14581 Submittal of Updated Fish Passage Assessment Study Plan and Meeting Notes from October 6 Study Plan Meeting

Dear Secretary Bose:

On September 5, 2014, Turlock Irrigation District ("TID") and Modesto Irrigation District ("MID") (collectively, the "Districts"), co-owners of the La Grange Diversion Dam on the Tuolumne River, filed their Proposed Study Plan ("PSP") in accordance with Federal Energy Regulatory Commission ("FERC") regulations governing the Integrated Licensing Process ("ILP") as provided in 18 CFR § 5.11. On October 6, 2014, the Districts held a study plan meeting at MID's offices in Modesto, California. The purpose of the meeting was to discuss the Districts' PSP document and Licensing Participants' (LPs) study requests. The Districts' Meeting Notes from the study plan meeting are included with this filing.

Based on discussions with LPs at the study plan meeting, the Districts have significantly expanded their original Fall-Run Chinook Salmon Migration Barrier Study Plan. As described in the attached updated study plan, the Districts propose to collaborate with LPs to undertake certain fish passage and upper river habitat suitability studies, in addition to the original Migration Barrier study, within the two-year ILP study period (2015/2016). This updated study plan, which is intended to replace the previously submitted Fall-Run Chinook Salmon Migration Barrier Study Plan, is now entitled the Fish Passage Assessment Study Plan, and includes:

- a concept-level fish passage alternatives assessment, to be conducted in parallel with the fish barrier assessment originally proposed in the PSP,
- an Upper Tuolumne River habitat suitability assessment, and
- a habitat and fish stranding assessment below La Grange Diversion Dam.

By this letter, the Districts are issuing the updated Fish Passage Assessment Study Plan as an addendum to the Districts' PSP replacing in its entirety the original Fall-Run Chinook Salmon Migration Barrier Study Plan. The Districts request LPs review and comment by the December 4,

Ms Kimberly D Bose Page 2 November 21, 2014 P-14581 Updated Fish Passage Assessment Study Plan / October 6, 2014 Study Plan Meeting Notes

2014 deadline for PSP comments. The Districts note that, with the exception of the attached updated study plan, the other components of the PSP remain unchanged. The Districts welcome comments on the proposed Recreation Safety Assessment and Cultural Resources draft study plans as submitted with the PSP. Both the PSP document and updated Fish Passage Assessment Study Plan are available on the La Grange Project's licensing website at <u>http://www.lagrange-licensing.com</u>.

If you have any questions about this filing, please contact the undersigned at the addresses or telephone numbers listed below.

Sincerely,

Bou

Steve Boyd Turlock Irrigation District P.O. Box 949 Turlock, CA 95381 (209) 883-8364 seboyd@tid.org

by Dio

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

cc:

Licensing Participants E-Mail List

Attachments:

La Grange Hydroelectric Project October 6, 2014 Study Plan Meeting Notes La Grange Hydroelectric Updated Project Fish Passage Assessment Study Plan

## La Grange Hydroelectric Project Licensing (FERC No. 14581) Proposed Study Plan Meeting Modesto Irrigation District 1231 11<sup>th</sup> Street, Modesto, California

## Monday, October 6, 2014 10:00 AM to 4:00 PM

On October 6, 2014, Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts), licensing participants (LPs), and Federal Energy Regulatory Commission (FERC) staff held the Proposed Study Plan (PSP) Meeting for the licensing of the La Grange Hydroelectric Project (Project). The purpose of the PSP Meeting is to discuss studies requested by LPs, studies proposed by the Districts, and studies not adopted in the PSP by the Districts. This document summarizes discussion during the meeting. It is not intended to represent a transcript of the meeting. Attachment A provides a list of meeting attendees and Attachment B provides the agenda and PowerPoint slides presented during the meeting.

Jenna Borovansky (representing HDR, consultant to the Districts) welcomed meeting attendees to the PSP Meeting. Individuals around the meeting room introduced themselves and Ms. Borovansky reviewed the safety protocols for the room.

Ms. Borovansky began the slide presentation. She summarized the status of the Project within the Integrated Licensing Process (ILP) schedule, the meeting agenda, and the location of the La Grange Diversion Dam (LGDD) and Project facilities. Ms. Borovansky then reviewed the seven ILP study criteria and the purpose of the meeting. She stated that the Districts received a total of 16 study requests. One study request was related to recreation resources. The other 15 study requests were related to water and aquatic resources, and several of these were very similar in the information being sought. LPs had significant interest in upstream and downstream passage studies, not solely at LGDD, but at both LGDD and Don Pedro Dam (DPD). DPD, the Districts' project located upstream of LGDD, is being relicensed in a separate proceeding. The DPD Final License Application was filed with FERC in April 2014. The Districts' did not adopt the LPs' requests for upstream and downstream passage studies, but instead proposed a Fall-Run Chinook Salmon Migration Barrier Study (Chinook Barrier Study).

John Devine of HDR (representing the Districts) indicated that the Districts received requests from the National Marine Fisheries Service (NMFS), the U. S. Fish and Wildlife Service (USFWS), and the Conservation Groups (CG) to study upstream and downstream passage of anadromous fish at both LGDD and DPD. He stated that the CG study request included detailed steps to be completed in its assessment. The NMFS and USFWS study requests were similar to the CG study request, but did not include as much detail as the CG request.

Mr. Devine then reviewed the rationale behind the Districts' proposal to complete the Fall-Run Chinook Salmon Migration Barrier Study. He explained that while LGDD does not have a fishway and would therefore appear to be a barrier to anadromous fish passage, to the Districts' knowledge, there is no data that actually demonstrates that migrating anadromous fish become stranded at LGDD or the tailrace, nor was any such data provided in any of the LPs' study requests. Mr. Devine said the Districts therefore do not know if, or to what extent, the LGDD is an actual barrier to fish migration. The purpose of migration is to locate suitable spawning habitat. Previous studies have shown there is considerable spawning and rearing habitat below LGDD which would have to be bypassed by migrating fish before they reach LGDD. Mr. Devine also explained that available data indicates that pre-spawn mortality levels are very low. Although the LGDD may appear to be a barrier to upstream migration, the Districts do not have any data on the number or species of fish that reach the LGDD. It is also unknown if fish that migrate to the LGDD or powerhouse simply head back downstream to suitable spawning habitat.

Mr. Devine said that the Districts propose to gather basic information over a two-year period on the number of fish that reach the LGDD, the species of those fish, and if those fish become stranded at the dam (indicated by pre-spawn mortality). He noted that NMFS' own anadromous fish passage guidance states that the size of the fish run is one of the primary pieces of biological information needed before a fish passage facility can be planned. Mr. Devine said that the Districts believe that no sensible fish passage design can even begin to proceed without basic fish migration information. He noted that the Districts proposed a two-year study to ensure the data represents more than just a single year data point. Mr. Devine reiterated that it is important to first identify what fish make it to the powerhouse or dam and become stranded and do not head back downstream. The otolith study being undertaken by the Districts with the support of CDFW indicates that in most years, a majority of the migrating anadromous fish on the Tuolumne River are strays that would not exhibit fidelity to previous spawning areas. Without knowing the size of the run or the species, the Districts would not know where to start with planning fish passage design parameters. Mr. Devine stated that the fish passage studies proposed by the licensing participants were very costly, and that the study proposed by the Districts was a necessary first step in a well-planned fish passage feasibility study.

John Buckley (representing the Central Sierra Environmental Resource Center) stated that the first bullet of the slide being presented ["Whether the LGDD constitutes an actual barrier to upstream anadromous fish migration is unknown at this time."] was self-evident, and that the question to be answered is not if the dam is an actual barrier, but if there are any fish actually trying to get past the dam. Mr. Devine replied that it is not disputed that the dam is a barrier in the river, but it is unknown what species reach the dam, in what numbers, and at what time, and that information was necessary to complete a basic design for fish passage facilities.

Larry Thompson (representing NMFS) stated that in some other fish passage projects, even when the species was nearly absent or was totally absent, the fish passage evaluation had gone forward. He stated that it in the future, NMFS may contemplate a propagation program, in conjunction with the fish passage facility, so that if there are very few Central Valley steelhead today, NMFS may bolster that population in some way in the future. Mr. Thompson said that in the San Joaquin River Restoration Program, spring-run Chinook salmon were reintroduced below Friant Dam. A propagation facility was built below the base of the dam. Fish were brought in from other sources because the species was believed to be extirpated in the river, and the propagation program went forward. Mr. Thompson said he believed that Mr. Devine had acknowledged that it is fact that the dam acts an anadromous fish barrier, and that this is not unknown at this time. He added that NMFS' proposed fish passage study would produce data to inform the fish passage plan. Regarding the numbers of fish to pass and what species those fish are, Mr. Thompson stated that NMFS uses minimum population viability criteria that could serve as the low number of fish to plan for and that historical escapement data could serve as the high number of fish to plan for. Mr. Thompson added that the fish passage plan could be flexible over time, and start with an experimental pilot project. NMFS was open to multiple options, and that trap and haul was just one option.

Mr. Devine stated that it is not a fact that LGDD serves as a barrier to fish migration. He said there are two parts to whether a barrier exists. The first part is if there is as physical barrier in the river. The second is, if a physical barrier exists, does the barrier actually prevent fish migration, meaning does the barrier prevent spawning or inhibit the life cycle of a fish. He said that if a fish passage facility were to be built, and there weren't any fish to pass, or there were relatively few fish arriving at the fish passage facility, then the fish passage facility would amount to a very significant financial investment with very little purpose. Mr. Devine said it is the opinion of the Districts that a fish passage facility should be a measure to mitigate for fish being unable to spawn. He said that the Districts believe there is a very small pre-spawn mortality in the Tuolumne River. The Don Pedro Relicensing Salmonid Population Information Integration and Synthesis Study (W&AR-05) studied the suitable spawning habitat on the Tuolumne River. He noted that the study, which was completed using a workshop consultation process, estimated pre-spawn mortality in the Lower Tuolumne River to be 1% to 2%. The purpose for passing fish upstream would be to increase juvenile production of the population. Of those that may reach the LGDD or the powerhouse, it was unknown how many fish simply move back downstream to spawn.

Cecil Russell (representing the Modesto Chamber of Commerce) said that he was unsure if collecting additional information on salmon spawning would help to increase the ability of fish to spawn. Mr. Russell stated he did not understand the reasoning behind the need to pass fish at LGDD. He said that the LGDD would have been a barrier to fish migration since it was built, and that whatever the effects the dam, they have been occurring for a long period of time. Mr. Russell added that the dam was not all of a sudden preventing spawning, and that there were times in the past when many fish returned to the river.

Mr. Thompson estimated that the LGDD cuts off 100 miles of upstream habitat, including the mainstem and tributaries. He said that Mr. Russell was correct that the dam had been in place for over 100 years, and that the baseline being looked at for the Project considered all those years of restricting upward and downward fish migration. Mr. Thompson said the LGDD certainly resulted in lost production. For a number of years, NMFS had seen a long-term decline in returning fish. It is common sense that a lot of habitat has been lost. Below LGDD, the water is very valuable for multiple uses. Water is diverted, resulting in a streamflow much less than the streamflow prior to LGDD construction. Flow, temperature, large wood debris, and gravel conditions have all changed and those changes have affected salmon populations. It is logical that if fish migrated upstream of the dam into the cold water, where the river is forested and the gravel provides better spawning habitat, better fish production would occur and those fish would then migrate downstream. Mr. Thompson said that NMFS would like to improve the conditions of the lower Tuolumne River as well.

Mr. Russell asked if it was true that bass are the biggest reason for declining fish population. Mr. Devine replied that the Districts completed a predation study for the Don Pedro relicensing that indicates predation has a substantial impact to young salmon, and that the Districts hoped to complete another predation study of the lower Tuolumne River (LTR) in 2015.

Peter Drekmeier (representing the Tuolumne River Trust) said that it is known that salmon spawn in the La Grange tailrace. Mr. Devine asked what information Mr. Drekmeier's statement was based on. Gretchen Murphy (representing the California Department of Fish and Wildlife) replied that she had observed fish spawning in the A1 riffle. Mr. Devine replied that the A1 riffle, as defined by the Districts, is located just around the corner from the tailrace. Ms. Murphy replied that CDFW considers the end of the tailrace as part of riffle A1.

Mr. Drekmeier said that it is known that the primary limiting factor to salmon spawning and rearing is a lack of habitat left in the LTR. He said that based on other things people had said during the meeting, opening up the upper Tuolumne River to anadromous fish would be beneficial. Referring to Mr. Drekmeier's statement about habitat in the LTR, Mr. Devine stated that information beyond unsupported generalities was necessary. He noted that results from studies completed for the Don Pedro relicensing showed that there is significant spawning habitat in the LTR. The studies estimate that over 40,000 fall-run Chinook salmon can be supported by existing habitat. Those numbers had been developed through workshop consultation and had been available to the public for over a year. Mr. Devine added that the studies also show there is enough existing habitat to support 800,000 spawning *O.mykiss* and that the statement that there is no spawning habitat below LGDD is simply untrue.

Mr. Devine said that regarding temperature, depending on the time of the year, the water above Don Pedro Reservoir does not meet EPA (2003) criteria for over-summering salmonids. That assessment is in the Don Pedro Final License Application (FLA). Mr. Devine said that at this stage in the discussions there must be data to support the generalizations being made in the meeting. He reiterated that the Districts are concerned that many studies had been requested, yet no data had been offered that fish actually reach the LGDD and are prevented from spawning.

Mr. Thompson replied that it was circular reasoning to say that the Districts will not do a study because there is not any data on whether LGDD is a barrier. He said the studies being requested by NMFS intend to get that information. He said NMFS agrees there is no data. NMFS took a lot of time to prepare its study requests, and that providing data in the study requests is not required by the regulations. Mr. Thompson said that it is common sense that the LGDD is a barrier to upstream fish passage migration and that there does not need to be specific evidence to show that is the case. Instead, data is needed to show how the LGDD project effects on migration can be ameliorated.

Mr. Devine said that based on Mr. Thompson's comments, theoretically, the Districts could go forward and build a fish passage facility at great cost, and no fish would show up. He said the Districts needed the basic information of what fish show up and when they show up. To state that the Districts are not proposing to do anything is not correct. The Districts' study plan states that basic information is needed first. Instead of first asking the Districts to spend millions of dollars on upstream and downstream fish passage studies, it makes sense to first get the basic

information on how many fish are arriving at LGDD and not returning to available spawning habitat downstream.

Mr. Buckley said that the wording in the Districts' meeting materials and proposed study plans matters. He said that based on the Districts' wording, it appeared that the Districts were jumping to conclusions on what the outcome of their proposed study will be. While the slide being presented asks if the dam is an actual barrier, the real question is if the dam stops a significant number of fish from spawning upstream. If only a small percentage of fish reach the dam, and they return downstream to spawn, that does not mean that the fish would not have spawned upstream if given the chance. If only a small percentage of fish reach the dam, it would be prejudgment to assume that if fish spawn successfully downstream, they would not have chosen to instead spawn upstream.

Jim Hastreiter (representing the Federal Energy Regulatory Commission) said that ultimately, the FERC National Environmental Policy Act (NEPA) document would evaluate two general alternatives for fish passage. The first alternative would not include fish passage and the second alternative would include fish passage. FERC will have to do that evaluation. Therefore, at some point FERC will need at least a feasibility study of fish passage. Mr. Hastreiter said he was unsure what the best timing for such a feasibility study would be, but that timing for such a study was what was being discussed at this meeting. Mr. Hastreiter said that FERC would need information on the cost of fish passage. A feasibility study typically has two components. The first component is engineering, and is based on such factors as the size of the dam, characteristics of the reservoir, and Project operations. The second component would look at the feasibility of fish passage, which is governed by fish behavior. Mr. Hastreiter noted that fish behavior was what was being discussed presently in this meeting. He said that FERC will need both types of information to complete its NEPA analysis.

Referring to Mr. Hastreiter's comments, Mr. Devine said that he did not disagree with Mr. Hastreiter, but that he wished to also offer an alternate view. He said that a fish passage facility is essentially a protection, mitigation, and enhancement (PM&E) measure. A PM&E measure is undertaken to mitigate an impact. First, an impact must be defined. Mr. Devine questioned what impact would be mitigated by fish passage. Mr. Devine said that he agreed with Mr. Hastreiter that a sequence is necessary. He said that NMFS' study request suggests a sequence in which the Districts first complete a two-year multi-million dollar study to assess both fish passage and the carrying capacity of the upper river. This is one way to look at the sequence. However, Mr. Devine questioned whether this sequence met the ILP study criteria for project nexus, and why the Districts should have to spend a million plus dollars to understand the carrying capacity of a stretch of river that is not affected by the Project. Mr. Devine said that a logical start to the sequence would be to determine how many fish are trying to pass the dam. If there are very few fish arriving at the dam, Mr. Devine asked what impact would be mitigated by fish passage. NMFS suggested that impacts to future fish should be mitigated. The Districts suggest that the monitoring proposed in the Fall-Run Chinook Salmon Migration Barrier Study Plan could be extended beyond two years if that time is not adequate to get sufficient data. Mr. Devine added that at this time, there is no reliable schedule or funding to restore spring-run Chinook salmon to the Tuolumne River. In addition, there are very low numbers of steelhead on the river. The Districts' proposed study would look at how many fish are migrating to the dam. The Districts contend this is a logical sequence.

Mr. Hastreiter said that he did not think the Districts' study plan laid out a complete sequence including when the fish passage study would be completed. He requested that the Districts lay out the sequence they have in mind.

Chris Shutes (representing the California Sportfishing Protection Alliance, or CSPA, which is a member of the CG) said that it seemed that the sequence laid out by the Districts was basically laid out to not have any other steps. He said that it appeared that no entity was suggesting that fall-run Chinook salmon be passed above the dam. The CG was not proposing this. Mr. Shutes said that the steelhead population numbers were a type of chicken and egg situation because most historical habitat for steelhead had been lost. Habitat loss is a project effect. This issue is not about habitat effects upstream. No further study is needed to show that the dam prevents access. Mr. Shutes said that the construction of LGDD has made the upriver habitat unavailable, and now the Districts are arguing that because there are so few, it's not necessary to move them to more suitable habitat upstream. He added that his understanding of recovering endangered species is that the interest is in recovering those species with very few individuals. Whether or not there is suitable habitat below the dam, for resident and anadromous steelhead, it does not seem to be working well. Mr. Shutes said that he thought the threshold set up by the Districts would land at a preordained answer. Although there is plenty of habitat downstream, for whatever reason the habitat is not being used successfully.

Mr. Russell said that if the fish population numbers being referred to are less than the population over 100 years ago, perhaps the reason for the smaller population was the introduction of predator fish. He asked if predation would be part of this study. Mr. Shutes replied that predation would not be a part of this study plan because predation data already exists. Mr. Shutes added that the goal of moving fish upstream was to get the fish to safe habitat.

Mr. Russell questioned whether a greater fish population meant only that more fish would be eaten by predators. Mr. Shutes replied that the more fish there are, the more likely it is that the fish will make it past those predators. Mr. Shutes said he was skeptical of the predation argument and that a separate study of juvenile rearing was necessary. Mr. Drekmeier added that the Districts are currently planning to undertake a predation study on that topic.

Mr. Shutes stated that spring-run Chinook fish exist phenotypically. These fish spawn earlier than fall-run Chinook salmon. The juveniles migrate downstream when the predators are less likely to be active. For example, there are very few striped bass in the stream at that time. The outmigration success for those juveniles would be greater than the success of fall-run Chinook juveniles.

Larry Byrd (representing himself) asked if the Districts had completed their most recent proposed predation study. Mr. Devine replied that the Districts were hopeful to complete the study in 2015.

Dr. Luke Miller (representing himself) said that there would be no water in the river, and thus no spawning habitat, if there were not dams because this had been a very dry year. Dr. Miller asked the meeting attendees to raise their hands if they lived in the Districts' service areas or would be helping to pay for the proposed fish passage studies, even though it was unknown how many fish were in the river. He stated that the river is much different now than it was when LGDD was constructed.

Mr. Shutes said that the Districts had spent over \$50 million dollars on the Don Pedro Hydroelectric Project relicensing. In contrast, he thought a million dollar study on fish passage was not inappropriate. Art Godwin (representing TID) clarified that the \$50 million dollar figure was an estimate that also included the costs of future PM&E measures associated with Don Pedro, as well as the cost of the relicensing process.

Alison Willy (representing USFWS) said that discussion of costs was inappropriate at this point in the meeting, and asked if this topic could be tabled until later in the agenda. Ms. Willy said that regarding the biology surrounding the fish passage study requests, steelhead and spring-run Chinook salmon were both upper watershed species. Most of the time, the conditions downstream were not appropriate to sustain these fish. These fish were upriver species that are prevented by the dam from going upstream.

Stacy Henderson (representing Thomas H. Terpstra Attorney at Law) stated that she was attending the meeting on behalf of her clients who are small and local family farmers. Their goal was to ensure that studies are only conducted when necessary. Ms. Henderson said that the Districts should not be forced to pay for studies that were inappropriate at this time. It was reasonable to complete the Districts' study first, and then review the results of that study to determine what else may need to be done. The idea that because \$50 million had been spent so far, it was reasonable to spend an additional \$1 million on studies was troubling.

Ms. Willy said it was helpful that many studies had already been done for the Tuolumne River. There were certainly cost savings since many studies had already been completed. Ms. Willy said that FERC would make the decision on whether a study cost was too expensive and was reasonable. Ms. Willy said that the job of the attendees was to determine what questions needed to be answered, and then provide that to FERC.

Mr. Thompson said that he agreed with much of what was being said. He reiterated that under the regulations and NEPA, FERC needed to evaluate fish passage. Although money had been spent on the Don Pedro relicensing, a fish passage study had not been completed and the information that FERC needed for the NEPA analysis did not exist. Mr. Thompson said that bad decisions cost money as well as good decisions and that NMFS, along with everyone else, wanted to make informed decisions. NMFS had not made any decisions on whether fish should be passed over the dam or not. He said that NMFS had guidance and ideas they wanted to explore, but no decisions had been made.

Mr. Hastreiter said that there were three ways that fish passage could be incorporated into the license for LGDD. The first way was if the Districts proposed fish passage, and FERC accepted that as a license condition. The second way was if FERC required fish passage in the license.

The third way was if NMFS required fish passage under its Federal Power Act Section 18 prescriptions. Mr. Hastreiter said that ultimately, NMFS had the final say on whether fish passage would be required.

Mr. Devine said that the Districts were not unwilling to study fish passage, but contend that a sequence of studies was appropriate. Mr. Devine clarified that contrary to Mr. Shutes' earlier statement, NMFS was proposing that passage of fall-run Chinook salmon be part of the study. Mr. Devine said that NMFS' fall-run Chinook salmon management goals below the project could be met under existing conditions. Regarding spring-run Chinook salmon, there was no timetable for spring-run Chinook salmon to be in the watershed. NMFS may reserve its prescription authority for use in the future when a formal and funded effort for reintroduction of spring-run Chinook salmon was a reality. The same could be said for steelhead. Mr. Devine said that if no fish were actually arriving at the dam, then no fish would be passed. Just building fish passage would not make fish arrive at the dam. Other efforts in the watershed, and outside the watershed, were necessary to improve these fish populations. Spending the money now on something that may not occur for 20 or 30 years did not seem appropriate.

Mr. Devine stated that FERC had seven study plan criteria. Costs and level of effort were among the required criteria. Regarding Criteria 3 [If the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study], Dr. Miller asked in whose public interest were these study requests. Mr. Hastreiter replied that the public was interested in fish and that all were welcome to express their concerns to FERC.

Mr. Devine reviewed the Fall-Run Chinook Salmon Migration Barrier Study and study methods presentation slides.

Mr. Buckley reiterated that the wording used in the Districts' proposals was important. The wording in the presentation prejudged the effects and significance. The important question to answer was whether there was a barrier for fish moving upstream. Making a judgment based on fish spawning successfully downstream after hitting the dam was inappropriate. Mr. Devine replied that the Districts were not trying to prejudge the study outcome. There are a number of stray fish that come into the Tuolumne River. The Districts' fall-run Chinook salmon otolith testing study for the Don Pedro project, a draft study report for which was currently under review by CDFW, found that on average 57% of fish in the Tuolumne River were strays. Chinook in the Tuolumne River may not have fidelity to prior spawning areas and may just be moving through the watershed. If the fish turn around at the dam and do not have pre-spawn mortality, then the fish are contributing to juvenile production. The reason for fish passage would be to increase juvenile production. The Districts' proposed study was trying to get at whether passing fish upstream would increase juvenile production.

Mr. Devine clarified that the otolith testing had been completed for fall-run Chinook salmon only and that spring-run Chinook salmon otolith had not been available from CDFW.

Mr. Devine clarified that a "stray" is a fish that is not native to the Tuolumne River. The Districts' study was finding that the majority of fall-run Chinook in the Tuolumne River were

coming from the Merced River Fish Hatchery, the Mokelumne River Fish Hatchery, and/or the Coleman National Fish Hatchery.

Mr. Byrd asked how the two-year study proposed by the Districts would be conducted. Andrea Fuller (representing FISHBIO) responded that the study would use a similar approach to weir data collection already occurring on the river. A weir would be established on two channels in the study reach and would count how many fish passed upstream and downstream of the weir. The weir would count fish 24 hours a day and would collect precise information to the minute, as well as pictures.

Mr. Byrd said that the salmon biologists needed to know what is actually going on in the Tuolumne River. Mr. Byrd said he owns land bordering approximately seven miles of the river and is on the river everyday. Mr. Byrd said that carp and suckers are important predators in the river. Carp and suckers follow migrating fish as they travel above Basso Bridge. This reach has the main spawning beds and the carp and suckers eat the salmon eggs before they hatch. Mr. Byrd invited meeting attendees to come with him to see this take place. Mr. Byrd also said that the fish that reached the spawning reach were in poor condition when they arrived and were in no condition to continue upstream.

Mr. Devine resumed presentation of the Fall-Run Chinook Salmon Migration Barrier Study Plan.

Ms. Fuller confirmed that the weir would have video monitoring.

Mr. Thompson said that for a different project, NMFS contracted with Montgomery Watson Harza (MWH) to perform conceptual engineering for fish passage on the Yuba River. For conceptual engineering, run size information was not needed. NMFS worked on collecting the run information while the conceptual engineering was being completed. Mr. Thompson said he was worried that the study proposed by the Districts would result in a decision one way or the other regarding fish passage, because the Districts may not get a run while the study is being conducted, and that the decision would not consider future propagation by NMFS. Mr. Thompson cited a project in Washington where a fish passage facility was completed to pass sockeye. In the beginning, only a few sockeye were passed. Now, hundreds of thousands of fish were being passed. The ultimate size of the run was unknown when the facility was completed, but they were able to use adaptive management to make it work. Mr. Thompson said he did not disagree that the information identified by the Districts regarding run size was important, only that he disagreed that this information could not be collected concurrently with the feasibility study. John Wooster (representing NMFS) added that NMFS proposed that the study sequence also start with a study of upstream habitat.

Mr. Genzoli (representing himself) stated that the Districts' approach to the study sequence seemed logical.

Mr. Devine stated that there was currently no funded restoration program on the Tuolumne River for spring-run Chinook salmon. He questioned why the Districts should study these fish when they do not exist. Mr. Devine then asked why the Districts could not wait on fish passage until there was a funded plan or an existing run that consists of more than a few strays. He added that in the example cited by Mr. Thompson, sockeye were already present in the river. In contrast, there is no evidence of spring-run Chinook salmon in the Tuolumne River reaching the LGDD. Why would the Districts build a potential \$50 million dollar fishway to pass only 5 or 10 fish? Mr. Thompson responded that the population sizes now were not the sizes that should be used to design fish passage.

Mr. Buckley said that the question at hand was not whether fish passage facilities should be built. The question instead was what information was needed by FERC to make a decision. Mr. Buckley said it appeared that the Districts were entrenched in their thinking that a conceptual analysis of fish passage was inappropriate. For individuals who have already made up their minds, no study results would make a difference. A study now could provide basic information and costs.

Mr. Devine said that well done fish passage studies would cost many millions of dollars and the Districts were being asked to spend many millions of dollars to study something where the study requestors put forward no evidence of a need. The Districts are suggesting that there should be more certainty about the probability that fish passage would be useful.

Steve Edmondson (representing NMFS) said that there was extensive information that rim dams impact fish populations. Part of the rationale for NMFS requesting an upstream habitat study was to establish the need for fish passage. Regarding fish passage on the Yuba River, NMFS wanted to find out the potential production. NMFS wanted to first establish the need for fish passage, and then study feasibility. The studies on the Yuba River cost \$150,000, not millions of dollars. Mr. Shutes added that it was a generalization to say that the studies would cost millions of dollars. If a fish passage facility was then deemed appropriate, no one was suggesting that the Districts shoulder the entire cost.

Bill Ketscher (representing himself) said that the big question to be answered was whether suitable habitat existed on the lower Tuolumne River. If there was not suitable habitat, then the focus should turn to the availability of suitable habitat upstream. The fact that there were tremendous fish runs before the Don Pedro Dam was built shows there was enough habitat to support significant fish runs. There are many factors that affect habitat. The requests to study upstream habitat are asking the Districts to spend a lot of money when there may be adequate spawning habitat already existing downstream.

Mr. Devine asked for clarification on NMFS' proposed study sequence. He asked if NMFS' study requests were the entirety of the sequence, or if there would be additional steps in the sequence. Mr. Wooster replied that there were no additional steps. He added that NMFS' upper habitat study request and fish passage study request would provide enough information about whether fish passage should be built.

Mr. Devine said that considering whether to spend millions of dollars on a fish passage facility would require more than a reconnaissance-level study. He noted that NMFS' own construction cost estimates resulting from the study requested by NMFS would have a range of minus 50% to plus 100%. Mr. Devine added that the MWH study cited by Mr. Thompson did not include many of the components that would be needed for the La Grange Project. Mr. Thompson

responded that the study he cited included such components as an instream fish collector and a screened intake and said he disagreed that the scope of that report was not applicable to the La Grange Project. Mr. Thompson said he would provide the report. He also said the report was available on e-Library under Project 2246.

Mr. Devine asked for clarification on whether NMFS would make a decision about fish passage after the two years of study which only involved a reconnaissance-level study. Mr. Thompson replied that NMFS would consider FERC's NEPA evaluation. He added that the studies requested by NMFS would provide information to inform both FERC's NEPA analysis and NMFS' own decision-making process.

Mr. Buckley said it was frustrating to hear cost numbers being cited as gospel. There may be a range of options at different costs that would achieve the same goal. Some options may cost \$50 to \$60 million, while other options may cost just a fraction of that. He asked if the goal of the meeting was to judge the need for a feasibility study or if the goal was to determine the need for estimating the number of fish reaching the dam. Mr. Buckley said that just because fish spawn below the dam does not mean there would not be significant improvement if the fish could get upstream. What needed to be determined at the meeting was whether the question of fish passage could be answered with just the number of fish or whether a feasibility study was needed.

Mr. Shutes said that he believed the appropriate level of study was an evaluation of upstream fish habitat as well as a reconnaissance-level feasibility study. He said the results of the study would dictate which options to follow. Fish passage prescription by NMFS was one option. Mr. Shutes said he believed that if NMFS prescribed fish passage, that it would take many years for many fish to get upstream. By that time, there could be more strays in the Tuolumne River. At that point, it would be very speculative what the next steps would be. Regarding funding for fish passage, Mr. Shutes said that interested parties may look for funding to help with the costs. CSPA may not have funds to donate, but they could help look for funding. If the Districts take a collaborative approach, there would be many considerations to look at.

Mr. Shutes said the first thing to be done now was to conduct the studies requested by NMFS and the CG and that it was important not to presume the outcomes. If the Districts did not do the studies now, the licensing process may be delayed or the necessary information to help understand whether fish passage would be beneficial might not be available. One million dollars was a lot of money, but in the scheme of things and in the context of this licensing process, it was not an excessive amount. Mr. Shutes added that existing information must of course be considered, and that would help save both time and money.

Alison Willy (representing USFWS) said she personally supported NMFS' two-prong approach. Ms. Willy said that, speaking on behalf of the USFWS, there were historically both *O.mykiss* and Chinook upstream of Don Pedro. The USFWS was interested in both upstream and downstream barriers to migration. There were ways to study fish moving downstream that would be inexpensive add-ons to the studies already proposed. Mr. Devine resumed the slide presentation and began a discussion of the requests for the study of available habitat upstream of Don Pedro Reservoir. There were three requests for upstream habitat studies to determine habitat suitability for anadromous fish. Mr. Devine indicated that considerable information on the suitability of upstream habitat already exists. Much of this information was collected by the Districts or CCSF and was summarized in the Don Pedro FLA.

Mr. Devine said that the Districts believed NMFS was also already conducting an upstream habitat study. He said the Districts had asked to participate in a field visit but were told that the maximum number of people had already been invited to go. Mr. Devine asked NMFS to confirm that it had received funding for upriver studies. Mr. Wooster confirmed this. Mr. Devine asked if NMFS would provide the Districts the scope and schedule for the study. Mr. Wooster replied that the scope of the study did not include fish passage feasibility studies. The funded study is to focus on evaluating habitat suitability using remote sensing and LiDAR technologies. The study data would complement data to be collected through NMFS' study requests. Mr. Wooster said that the majority of money appropriated to the study would be spent flying LiDAR and collecting hyperspectral data. Mr. Wooster said that NMFS would be very willing to share the data with the Districts. Regarding schedule, Mr. Wooster said that the LiDAR and hyperspectral image data was collected over the summer. Data analysis should take about five months and that data would be available next spring. Mr. Devine asked if a trip report was developed from the recent field visit. Mr. Wooster said the trip report would be provided in the final report scheduled to be completed in the fall of 2015.

Mr. Devine said that NMFS' upstream habitat study seemed to address many of the questions asked by the CG in their study requests. Mr. Devine asked if it would make sense for NMFS to complete the first level of habitat assessment before moving on to the next stage of study. Mr. Wooster replied that that would not make sense because NMFS did not have the funding to complete several components of the study, including field data collection. Mr. Wooster added that the LiDAR data collected by NMFS would be useful complementary data.

Mr. Devine asked if the NMFS study had a study plan. Mr. Wooster replied that there was not a study plan in the sense of how a study plan was defined in the FERC licensing process. However, there was a plan document. Mr. Wooster said he would provide a copy of the study plan to the Districts.

Mr. Godwin asked if work for the NMFS study was being performed by a contractor or was being performed by NMFS staff. Mr. Wooster replied that the work was being directed by the NMFS Science Center and that a vendor was used to complete the remote sensing work.

Mr. Devine asked how much money was authorized for the study. Mr. Wooster questioned the relevancy of this question, and then replied he was unsure of the exact amount, but that the authorization was on the order of about \$100,000. He said 75% to 80% of the money was going towards remote sensing.

Referring to the float trip completed by NMFS over the summer, Mr. Devine asked about the purpose and outcome of the trip. Mr. Wooster said the trip had several purposes. On the trip, members of the Science Center collected information on substrate grain sizes at discrete
locations. Also on the trip, members of the study team tried out depth collection methods and field tested an echo sounder. Mr. Wooster said the trip was essentially a reconnaissance visit. He said that a trip report would include the data collected on grain sizes, the trial and error results from testing the depth finders, and the results of whether the hyperspectral data was accurate. Mr. Wooster said there was not yet a trip report with this information but that this information would be included in the final report due out next fall. Mr. Wooster added that during the float trip, NMFS also deployed several water temperature loggers. Mr. Wooster said the number of loggers deployed was about one quarter or one third of the number of water temperature loggers requested in NMFS' study request. Mr. Wooster said that NMFS would be more than willing to work with the Districts on incorporating NMFS' water temperature loggers into the study plan. Mr. Wooster said he would provide the locations of the NMFS temperature loggers.

Mr. Devine resumed the slide presentation. He said the Districts did not believe that the upstream study requests met ILP Criteria 5 or ILP Criteria 7. Many components of the study requests asked for data about CCSF's Hetch Hetchy operations. Mr. Devine said the Districts disagreed that there was a project nexus to Hetch Hetchy operations.

Mr. Wooster said that only a very small portion of NMFS' upstream habitat study request related to CCSF operations. Mr. Wooster asked if NMFS removed the component in the study plan relating to CCSF, would the Districts' response to the study request be different.

Mr. Devine asked if the water temperature modeling component of NMFS' study request was referring to the model created under the Don Pedro relicensing. He said the model looked at unimpaired flows and temperatures and the results are contained in an appendix to the Don Pedro FLA. Mr. Wooster replied that the model in the FLA may cover some of NMFS' model request. Mr. Wooster said NMFS would look into it and get back to Mr. Devine.

Mr. Thompson, referring to the project nexus of habitat upstream of Don Pedro Reservoir to the La Grange Project, said that upstream habitat would be relevant to the license if fish passage were required. If fish passage were required under NMFS' Section 18 prescription authority, it would be important to be informed by the condition of the upstream habitat, including habitat immediately below CCSF facilities. Mr. Devine responded that it was apparent that information about upstream habitat was of interest to NMFS in their consideration of fish passage. Mr. Devine added that if NMFS required fish passage under Section 18 prescription authority, the quality of upstream habitat would be a fundamental question related to NMFS' management of the resource. Mr. Devine said the Districts do not think they are responsible for collecting information for NMFS to use in its fishery management decisions.

Mr. Thompson explained that Section 18 was a part of the Federal Power Act. He said that fish passage would first be evaluated in FERC's NEPA analysis. If NMFS were to add a preliminary prescription, the prescription would be evaluated in the first draft of the NEPA analysis. Mr. Thompson said that NMFS would consider what was in the NEPA analysis, and then would decide either to file a final prescription or to withdraw the prescription. Mr. Thompson said that Mr. Devine's statement that upstream habitat information should be NMFS' responsibility to collect was incorrect because upstream habitat would pertain to the license. Mr. Devine

responded that the Districts believed it was NMFS' responsibility to get the upstream information NMFS' needs to support its prescription. He said the study request constituted fundamental biological research, and that the La Grange Project had no effect on the suitability of habitat upstream of Don Pedro Reservoir.

Mr. Wooster said he disagreed with Mr. Devine. He said the LGDD blocks marine-derived nutrients from getting upstream. Mr. Devine responded that Wheaton Dam was built in the 1870s. At that time, it was reported that Wheaton Dam had blocked upstream access for anadromous fish. Mr. Thompson replied that Yoshiyama et al. (1996) did not agree with Mr. Devine's assertion. Mr. Thompson said that this paper provided historical accounts of the rivers throughout the Central Valley and stated that Wheaton Dam *may* have totally blocked fish passage. Mr. Thompson added that Wheaton Dam no longer existed and was not of interest here. LGDD was the jurisdictional dam.

Mr. Devine said that NMFS stated in its study plan that information was needed about upstream habitat to determine where fish potentially trucked from LGDD should be placed. The Districts contend this is a fishery resource management issue and has no connection to the La Grange hydro project. Mr. Wooster replied that if the fish could swim upstream now, it could be observed where the fish congregate. But because the fish are blocked, where to place the fish must be evaluated. Mr. Thompson added that NMFS was spending money to find out where fish could be placed. Mr. Devine said he believed the number of options where fish could be placed was limited to possibly only two or three locations. Mr. Thompson said that CCSF facilities may also be an option, but that was unknown.

Referring back to Mr. Wooster's question that if the NMFS study request was modified to take out the element relating to CCSF, would that impact the Districts' acceptance of the study request, Mr. Devine said that other elements of the study plan were problematic. The large wood debris (LWD) element, which related to flow, as well as the element relating to the sediment budget, were only relevant to CCSF systems and the unimpaired watershed. Mr. Devine said he did not see how these were effects of the LGDD and he questioned the nexus to LGDD. Mr. Shutes said that the Districts were not affecting the habitat, but they were affecting access to the habitat.

Mr. Devine asked why a PHABSIM analysis for the upriver habitat was unnecessary. Mr. Shutes said it appeared that NMFS thought the information was good enough without it. In response, Mr. Devine asked how fry rearing could be studied without PHABSIM. He said that an IFIM had been necessary to study such issues downstream on the LTR. Ms. Willy replied that PHAMSIM was unnecessary because the upstream river reach was different from the downstream reach. For example, the upstream reach was shallower. The data could be collected with LIDAR. She also said that on a certain level, the upstream data collection would be less expensive than the downstream data collection because researchers would not have to get into the river. Mr. Devine said that study of fry rearing in the upper reach would be particularly tricky due to the steepness of the upper reach and the peaking flows coming from CCSF.

Mr. Wooster asked, in regards to CCSF's upstream habitat data and river ecosystem program, if any CCSF meeting attendee would give a summary of data that has been collected between Don

Pedro Reservoir and Early Intake Dam. Bill Sears (representing the San Francisco Public Utilities Commission) replied that the work performed by McBain & Trush was a high-level look at hydrology. CCSF had temperature data at select locations, likely including some of the same locations where NMFS was currently collecting data. Mr. Wooster asked if CCSF had temperature data downstream of the South Fork. Mr. Sears replied that CCSF had some temperature data for this reach and that HDR could provide the data. Ms. Borovansky said that the information had been provided previously, via cd, during the Don Pedro relicensing and that HDR would confirm available data and provide it to NMFS.

Mr. Devine asked if NMFS had reviewed the CG's upstream study request cost estimate. Mr. Devine said the CG's cost estimate was in the range of one million dollars. Mr. Wooster said he had not and that NMFS' study request was in the range of \$200,000 to \$300,000.

Mr. Devine said the Districts thought the upstream habitat study as proposed by the CG's study plan could cost up to \$2 million. Mr. Devine asked how the cost estimate was calculated. Mr. Shutes said the estimate was based on a similar level of effort at another project, but that it was difficult to make an estimate without knowing all the existing data. Mr. Shutes said that collecting data since the Rim Fire and getting recent temperature data with different water years would be appropriate. He said that the goal was not to spend money, but to produce useable and useful information.

Mr. Shutes said one of the elements of the CG's study plan involved asking CCSF to identify the feasibility of adjusting city operations. He said he would like the city to consider this request as an opportunity.

Mr. Devine said the discussion's emphasis on CCSF operations showed that the Districts did not affect those flows and that the study requests did not meet the project nexus criteria. Mr. Shutes responded that he agreed that changes to CCSF's operations would only come voluntarily from CCSF. He said he did not agree that understanding baseline information was not part of the project nexus.

Meeting broke for lunch at 12:40 pm and resumed at 2:00 pm.

Ms. Borovansky resumed the slide presentation. She reviewed the Districts' proposed Recreation Access and Safety Assessment, including the study plan goals and objectives.

Mr. Hastreiter asked a question on behalf of FERC Recreation Planner Adam Beeko, who was not in attendance. Mr. Hastreiter asked why the proposed study only evaluated up to 300 feet in elevation, which was four feet above the spillway. Mr. Devine confirmed that the LGDD spillway crest was 296.4 feet. Mr. Hastreiter asked if the study area would extend to Don Pedro Dam. Mr. Devine confirmed that was true.

Ms. Borovansky resumed the slide presentation. She reviewed the study methods.

On behalf of Adam Beeko, Mr. Hastreiter asked why the Districts were not proposing to evaluate potential enhancements if sites were identified that would be safe. He asked when the Districts

were proposing to evaluate those enhancements. Ms. Borovansky responded that if uses were identified as feasible and safe, the Districts would identify enhancements. She said that was the next logical step. Mr. Hastreiter said that Mr. Beeko was wondering why that was not included in the study plan.

Lee Delano (representing himself) asked if aesthetics were included in the Recreation Access and Safety Assessment. He said there was a scenic view available at Picnic Hill, which is located approximately 500 feet downstream of LGDD on the MID side of the river (river right). Mr. Shutes asked about the level of detail the Districts would use when identifying recreation opportunities. Ms. Borovansky responded that the proposed methodology would evaluate a number of activities and the risks associated with those activities. Ms. Borovanksy confirmed the methodology would evaluate activities that occur on the shore.

Mr. Drekmeier asked if the study would evaluate a put-in facility downstream of LGDD. Ms. Borovansky replied that the study would first look at what activities were feasible and safe to occur.

Mr. Drekmeier asked how it was determined that the study area would extend to 200 feet downstream of the tailrace. He asked if that was a standard distance to use. Ms. Borovansky replied that that distance basically marked the extent of the project nexus. Mr. Devine added that the 200 feet would include the intersection of the tailrace and the main channel.

Mr. Drekmeier asked if bird watching would be included as a recreation resource in the study plan. Mr. Shutes said that he would like to see specific activities to be studied called out in the study plan. Ms. Borovansky replied that could be provided. Ms. Borovansky confirmed that the Canadian Dam Association risk assessment form referenced in the slide presentation was included in the study plan as an attachment. Mr. Shutes said that he would like to know which activities included in the CDA sheet did not apply to the Project. Ms. Borovansky requested that Mr. Shutes and others submit to the Districts which activities they believed were applicable to the Project. She said the Districts would present a revised list in the Revised Study Plan.

Mr. Bob Hackamack (representing himself) asked how high above the maximum pool the survey would go. He said that based on that height, rock climbing could be considered a recreation activity. Mr. Devine said that a Project Boundary had not yet been selected. The Project Boundary would include all the Project works needed for Project operation, and was dependent on the results on the studies.

Ms. Borovansky resumed the slide presentation. She completed the slides about the Recreation Feasibility and Safety Assessment and began the slides about the Cultural Resources Study.

Mr. Hackamack asked if the study would include the ditch that leads from the old Wheaton Dam. He said the ditch is located above the dam. Mr. Godwin said Mr. Hackamack was referring to the old mining ditch. Ms. Borovansky said the study would focus only on resources that may be potentially impacted by continued operations. Mr. Hackamack said he believed that was a mistake and that studying the ditch could be very interesting. Ms. Willy asked how it would be known if recreation activity had the potential to impact cultural resources if cultural resources were not being surveyed in the entire recreation study area. Ms. Borovansky and Mr. Devine clarified that if recreation facilities were proposed in an area that had not been surveyed for cultural resources, then cultural resources would then be surveyed. Mr. Hastreiter said that any cultural resources study needed for a proposed recreation area would be completed prior to license issuance.

Various meeting attendees discussed when there would be opportunities to submit comments prior to license issuance. Mr. Hastreiter noted that State Historic Preservation Officer (SHPO) approval would be necessary before FERC could order a license. Mr. Devine noted that consultation related to cultural resources was usually kept to a smaller list of people because of the potential for vandalism to identified cultural resources. Mr. Hastreiter said that Frank Winchell, FERC's cultural resources specialist assigned to the Project, may have questions regarding the extent of the Area of Potential Effects, and whether it should be extended to include the entire pool. Mr. Hastreiter said he would ask Mr. Winchell to call Ms. Borovansky if he had additional comments.

Ms. Borovansky resumed the slide presentation. She reviewed the Cultural Resources Study methods and schedule.

Mr. Hackamack said that although the recreation study area did not extend below 200 feet downstream of the tailrace, he wanted to note the existence of safety hazards in the lower Tuolumne River. He said that water hyacinth was also an issue in the river, and may impact the movement of salmon.

Ms. Borovansky resumed the slide presentation. She reviewed study requests from NMFS (Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project), USFWS (Draft Redd Dewatering Study), and SWRCB (Tailrace Habitat Assessment). Ms. Borovansky said it was not clear why existing information was not adequate to meet the needs of these study requests.

Mr. Wooster said that NMFS requested analysis on the potential for fish stranding, or entrainment. He said there were five flow conduits below LGDD. Mr. Wooster said that data from a USGS gage located downstream of the dam had no bearing on this request because it was unable to differentiate flows from the five conduits or provide rate of stage change immediately downstream of the dam. Mr. Wooster said that analysis of that gage data provided in the La Grange Pre-Application Document (La Grange PAD) was not the data that NMFS was requesting.

Mr. Devine responded that a similar request arose during the Don Pedro relicensing. He said that the data requested by Mr. Wooster was unavailable because it was simply not collected. Mr. Devine said there was no systematic collection of data of when the gates were open or closed. Mr. Devine said it may be possible to create some data by going back into operator records.

Mr. Hastreiter asked for which conduits the Districts had long-term data. Mr. Devine replied that the Districts had powerhouse flow data, and may also have data from the sluice gates in the TID canal. He said that records had been kept on flows through the powerhouse since 2007, but this would need to be confirmed with the Districts.

Mr. Hastreiter asked how long the Districts had been releasing 25 cfs at the MID gate. Mr. Devine replied that he did not know. Over the long-term, releases may not have been all the time. Recently, to the best of his knowledge, the gates had been releasing about 25 cfs around the clock. This estimate was based on the flows from the powerhouse and readings from the USGS gage. However, no long-term records were kept on the MID gate as far as he was aware.

Mr. Hastreiter asked if the mass balancing that NMFS suggested the Districts complete was possible. Mr. Devine said that the math would amount to guessing, as the Districts had explained during the Don Pedro relicensing.

Mr. Wooster asked if the Districts had provided information on flows from the sluice gates on the TID canal. He said the Districts had said that records had been kept only since the gates became automated. He added that NMFS had no information on the frequency that the gates were opened and closed.

Mr. Hastreiter noted that during the site visit the question came up of why the powerhouse was not generating. Mr. Devine replied that during the June 1 to September 30 period, required FERC flows range from 50 to 250 cfs. In the driest water years, required FERC flows are 50 cfs, although the Districts usually provide a bit more for a buffer, and during high air temperature periods, voluntarily provide up to 100 cfs. The small unit is reported by TID to sometimes exhibit stability problems at very low flows, circa 50 to 75 cfs. Mr. Wooster noted that during the FERC site visit, flows were at 90 cfs at the USGS gage. Mr. Devine noted that this would mean that the unit flow would have been about 65 cfs because about 25 cfs would be coming from the MID spillway. Mr. Wooster added that during the site visit, Mr. Devine had stated that the units would normally cycle back on in the afternoon. Mr. Devine replied that this was not exactly correct. The point being made was that if the flows were to increase later due to the Districts providing extra flow to the LTR due to high temperatures, then the small unit would probably come back in service. Mr. Hastreiter confirmed that was what Mr. Devine said during the site visit.

Mr. Thompson asked what was preventing the Districts from beginning to gather the flow data from the five outlets. Mr. Devine replied that the Districts did not understand that to be what NMFS had requested in its study request. Mr. Wooster said that the USGS gage data could not help determine upstream stage changes, therefore this additional data was necessary.

Mr. Hastreiter asked if NMFS' request was related to the transect information NMFS had also requested. Mr. Wooster clarified that NMFS had asked for elevation information about the bar between the main channel and tailrace. He confirmed that NMFS was not asking for topographic information, and not a hydraulic model.

Mr. Devine asked if fish movement data collected by the Chinook Barrier Study would meet NMFS' needs. Mr. Wooster replied that the information would be an added benefit, but would not be a replacement.

Mr. Hastreiter asked how NMFS would use the elevation data. Mr. Wooster replied that NMFS would use the elevation data for enhancement measures. He confirmed that the elevation data for the bar was needed not for stranding purposes, but for potential PM&E measures. Mr. Hastreiter asked if the elevation data was currently available. Mr. Devine replied that the data was not currently available. Mr. Devine said that the Districts would provide the topographic data and flow data.

Mr. Hastreiter asked if NMFS would describe the information they would like to use to determine if stranding was an issue. Mr. Thompson replied that the information was described in the study plan. Mr. Devine reiterated that the records needed to create a long-term flow duration curve were incomplete. Mr. Wooster asked if the operation rules provided in the La Grange PAD could be used to back calculate data. Mr. Devine replied that the rules were too informal for that purpose and were meant only to provide a sense of normal operation sequence. The Districts could apply the rules to the existing data, but Mr. Devine was doubtful it would get at what NMFS was requesting. Mr. Wooster responded that the rules may help show when fish have egress into the pool below the LGDD. He remarked that he had not seen any time series data for when the dam spills, or spill duration data. He asked if that data was available. Mr. Devine said the Districts could use existing information to back into those numbers. He said the Districts would provide that data as far back as was available. Mr. Wooster asked how far the generation records go back and Mr. Devine replied he was unsure.

Mr. Thompson said that regarding fish passage, NMFS would need to know the flows coming from the project at different times of the year. The information was needed not just for stranding and redd dewatering, but would be useful for fish passage siting and conceptual analysis. Mr. Devine asked if the fish counting weir data would suffice. Mr. Thompson replied that that information would be helpful, but that flow data was also needed.

Regarding the bar elevation data, Mr. Hastreiter asked if NMFS wanted a specific number of profiles. Mr. Wooster said that NMFS requested profiles spaced 10-foot across the bar. He added that the weir data was best for understanding fish movement, and was not as helpful for siting a fishway. Mr. Devine said that a lack of information on where the fish might congregate and a lack of information on their behavior around the project facilities could lead to poor fishway design.

Regarding NMFS' data request, Mr. Devine said the Districts may need more specific information from NMFS. Mr. Wooster said he welcomed further discussion.

Ms. Willy said that the USFWS study request expanded upon NMFS' study area by about a quarter of mile downstream. Mr. Devine asked if the river stage study completed for Don Pedro provided the information requested by USFWS. Ms. Willy replied that the existing information was not sufficient because stage change data was not available for the specific area cited by USFWS.

Mr. Hastreiter asked what the channel looks like where the tailrace enters the main channel, in regards to the potential for stranding. Mr. Devine replied that the range of stage change was very small, about one inch, and that was why the Districts believed stranding was not a particular issue. Mr. Willy said that the USFWS was interested to look at the margins, and to know if there was a change in the margins downstream of the confluence with the tailrace that could dewater redds. Mr. Hastreiter asked if that would require an extra transect. Ms. Willy replied that USFWS had requested surveys on the margins. She said this information would be collected via ground observations. Mr. Devine confirmed that this data collection would not require a ground survey with transects. Mr. Hastreiter asked if it would be easier to do a transect. He said something measurable was needed.

Mr. Hastreiter asked who wrote the USFWS study plan and if CDFW was already conducting this work. Ms. Murphy replied that CDFW reviewed the area noted by USFWS once a week. Mr. Hastreiter suggested that CDFW may be able to add to its observation checklist to include the data USFWS as requesting. Ms. Willy confirmed that the USFWS was only concerned when there was a change in flow that could dewater a redd. Unfortunately, this would not necessarily coincide with CDFW's weekly visit. Ms. Murphy said that this work would not be difficult to accomplish, and would only require some coordination.

Mr. Devine said that between October 16 and May 31, in every water year, the flow was at least 150 cfs. The flow was kept quite constant throughout that period. The USGS records show that only very infrequently was there a change in stage. The Districts' stage change analysis demonstrated the lack of an impact.

Mr. Wooster said that another trigger for redd dewatering, in addition to a change in flow, was if the TID canal intake had to close and all the water moved to MID's canal. Steve Boyd (representing TID) said that situation had never occurred. Mr. Wooster asked what caused the 2009 dewatering. Mr. Devine said it was his understanding that the plant was taken offline for maintenance at a poor time, and that mistake in operations had been corrected. Mr. Hastreiter confirmed that the 2009 dewatering was an operator issue and was not a part of normal operations. Mr. Devine said this incident is fully documented in the record.

Ms. Murphy asked if the main channel was surveyed as part of the redd mapping study conducted for Don Pedro. Mr. Devine said he did not know but would check. He also said that the Districts could incorporate that into the weir count. He said the Districts would know if there was an operational change, and could then evaluate if there was any redd dewatering. Ms. Willy said she would like to review the actual specifics of how these observations would take place. Mr. Devine said the Districts could coordinate with USFWS as well as CDFW. Mr. Hastreiter asked if the State Water Resources Control Board (SWRCB) was on board with this idea. Peter Barnes (representing SWRCB) said the SWRCB was concerned only with the tailrace and how operations of the powerhouse could affect flows in that area. Mr. Barnes added that SWRCB could set a minimum instream flow for the tailrace, if necessary.

Ms. Willy said that she like NMFS' study request because it would collect information that would be useful for future decision making. Mr. Thompson said that NMFS would respond in

writing to any portions of the Districts' plan that were objectionable. Mr. Hastreiter said that the Districts could perform any study they wanted, regardless of whether it was approved by FERC.

Ms. Borovansky resumed the slide presentation. She presented the reasons why the Districts did not accept NMFS' request for a study of *O.mykiss* genetics. She said the Districts rejected this study request because the information already exists and the information would not inform the license.

Mr. Thompson read a passage from page 4-3 of the PSP that stated there was no self-sustaining population of steelhead in the Tuolumne River. Mr. Thompson said there was no study prerequisite that there be a certain population size in a river prior to a study. In addition, Zimmerman et al., which was cited in the PSP, had a broad study scope and was meant only to determine if steelhead existed, and not to determine abundance. FERC had stated for the record that steelhead occur in the river. Mr. Thompson added that that the NMFS study request was not a research request and would provide important information for stock selection that may be necessary in the event of fish passage. In the Operating Criteria and Plan (OCAP), NMFS assessed the stock of the American River to determine if it was appropriate to pass at Folsom Dam. NMFS has proposed a similar study for the Tuolumne River.

Mr. Devine questioned how it would be determined where steelhead captured in the Tuolumne River originated from. Mr. Thompson said it would be necessary to take a tissue sample. The samples would help build a database, which would eventually show which offspring returned and which fish were strays. An alternative way to study origination would be to tag young fish and see which fish return. This data would be used for both fish passage and to measure the success of habitat improvements. NMFS could offer significant resources for this effort in the form of the NMFS Science Center. The Science Center has already built the expensive genetic testing procedures and algorithm. It would be very expensive for the Districts to build this work from scratch. Mr. Thompson added that working with the Science Center would be more cost efficient.

Mr. Thompson said that he did not agree with the Districts' characterization that Garza and Pierce's findings stated that most *O.mykiss* in the LTR are not native to the LTR. If steelhead in the LTR were found to be of hatchery origin, NMFS may decide not to pass those fish, but first the situation must be much better understood than it is currently.

Mr. Bryd asked if there was a visual difference between a rainbow trout and a steelhead. Mr. Thompson said you cannot tell the difference between the two by looking at the fish. The only way to tell is to kill the fish and examine the otolith.

Mr. Thompson said that salmon migrating upstream that pass the fish weir located near the mouth of the river could have tissue clipped for analysis. The same could be done for carcasses found in the river. I n response to Mr. Bryd's question if that process would be expensive, Mr. Thompson replied that it was becoming more inexpensive as the technology improved.

Mr. Devine asked if a tissue sample could indicate if an *O.mykiss* was a steelhead. Mr. Thompson replied that the tissue would not tell if the fish was a steelhead. However, the tissue could be used to build a family tree where fish from different generations could be linked to one another. Mr. Thompson added that it could not be ruled out that in the future that tissue could be used to determine if a fish was a steelhead.

Mr. Devine asked if NMFS wanted the Districts to collect tissue samples and send them to NMFS. Mr. Thompson replied that NMFS did not want this. He said the NMFS Science Center would first need to be contacted. Mr. Devine asked how long it would take to develop a database for the LTR. Mr. Thompson replied that a database had already been started, and the algorithm the database used had already been developed. In response to a question from Ms. Willy, Mr. Thompson affirmed that NMFS was interested in collecting both upstream and downstream genetics.

Mr. Godwin asked if anyone was currently collecting tissue clips. Ms. Murphy replied that tissue samples were collected from carcasses, depending on the condition of the carcass. Mr. Thompson said NMFS could partner with anglers to take fin clips and fish measurements. Mr. Godwin asked if that would be legal. Mr. Thompson replied he was unsure, but that a similar program had been developed on another river. He said that NMFS was open to the idea.

Ms. Borovansky resumed the slide presentation. She reviewed NMFS' request for a study on the loss of marine-derived nutrients.

Mr. Thompson said that this study was related to fish passage. He said the LGDD had blocked all fish passage, thus resulting in lost marine-derived nutrients. He said it was known from other projects that if fish were introduced above dams into their historical habitat, it was first beneficial to fertilize the river with fish carcasses or other fertilizer. Mr. Thompson added that he believed a study on this topic was currently underway on the Russian River. The potential license condition stemming from these study results would be to fertilize upstream if there was fish passage. Mr. Devine asked if it would first be appropriate to determine if there had been an impact from the loss of marine-derived nutrients.

Ms. Willy said that marine-derived nutrients are beneficial not just to instream species but to the whole ecosystem as well. Steve Edmondson (representing NMFS) said the state of Oregon had a program for years in which fish carcasses were placed above the dam to replace lost nutrients.

Mr. Thompson asked if there was a question about how this data would inform license conditions. Mr. Hastreiter replied that he did not know and that this would be discussed internally at FERC.

Mr. Thompson said this study would be mostly a desktop study and that he could not recall the estimated budget. Ms. Willy said that this topic was well-covered in the academic literature. Mr. Edmondson said he knew of paper where the effects of marine-derived nutrients were evident in tree rings. He said he would send the paper.

Ms. Borovansky resumed the presentation. She reviewed the USFWS's juvenile salmonid floodplain rearing study request.

Ms. Borovansky reviewed the components of the Districts' LTR Floodplain Hydraulic Study being completed for Don Pedro and asked if it met USFWS's needs. Ms. Willy said she would review the study to see if it was adequate. Mr. Devine offered for the Districts to have a conference call with the USFWS to discuss the study. Ms. Willy replied that that would be helpful and suggested a good time for a call would not be until early November.

Ms. Borovansky resumed the presentation. She reviewed the USFWS's juvenile chinook survival study request.

Ms. Borovansky said that information from the Don Pedro relicensing appeared to address the data requested by this study. Ms. Willy asked when the Don Pedro Chinook Salmon model was last updated. Mr. Devine and Ms. Borovansky replied that the model had last been updated in March 2014, and that this version was available in the Don Pedro FLA.

Mr. Devine asked if the rotary screw trap data collected for Don Pedro met the USFWS's request. Ms. Willy said that information was helpful, but that the USFWS was trying to determine how juvenile salmon moved through inundated floodplain. Mr. Devine replied that this would be measured in the Districts' Mark and Recapture Predation Study, if there were floodplain flows when the study was conducted. Ms. Willy asked if it was possible to conduct the study during a period of inundation flows. Mr. Devine answered that the study was opportunistic and would occur with whatever flows occurred. He added that predation would be estimated at a range of flows.

Ms. Borovansky resumed the presentation. She reviewed the USFWS's request for a study on Chinook salmon egg viability.

Ms. Borovansky said the Districts believed this study request was similar to a request made during the Don Pedro relicensing, and that the requested information already existed in the Tuolumne River Chinook Salmon Population Model. Ms. Willy said she would discuss whether the existing model was adequate with the USFWS Lodi office. Mr. Devine offered to have a conference call with USFWS to discuss what information currently existed. Ms. Willy agreed.

Mr. Thompson said that on page 4-8 of the PSP, the Districts stated that the USFWS and other agencies did not provide comments on the Tuolumne River Chinook Salmon Population Model, and as such, the Districts considered conclusions based on the model to be accepted by the USFWS as valid. Mr. Thompson said that NMFS did not consider not providing study comments to be an acceptance of study results.

Ms. Borovansky reviewed action items from the meeting [action items are listed below]. Mr. Hastreiter asked if there was an action item regarding transects for NMFS. Mr. Devine replied that the Districts would look into this and would get with Mr. Thompson about any questions.

Mr. Shutes asked about the schedule moving forward. Mr. Devine replied that the Districts would provide a schedule that may include another meeting or conference call.

Mr. Devine reviewed the next steps in the ILP process. Mr. Shutes said he believed another discussion would be helpful if the Districts were willing to propose substantive changes to the plan.

Meeting adjourned at 4:30 pm.

#### Action Items

- 1. Mr. Thompson said he would provide the MWH fish passage report. He also said the report was available on e-Library under Project 2246.
- 2. Mr. Wooster said he would provide a copy of the NMFS upstream habitat study plan and the scope of the study.
- 3. Mr. Wooster said he would provide the locations of the temperature loggers for the NMFS upstream study plan.
- 4. Mr. Wooster said NMFS would look into the unimpaired flow and temperature information provided in the Don Pedro FLA and get back to the Districts on the issue if upper river temperature modeling met NMFS' information request.
- 5. Mr. Shutes and others will provide to the Districts recreation activities which they believe are applicable to the Project area.
- 6. Ms. Borovansky said HDR would confirm the availability of temperature data for the reach below South Fork and provide this information to NMFS if the data is available.
- 7. Ms. Borovansky said the Districts would present a revised list of recreation activities relevant to La Grange in the Revised Study Plan.
- 8. Mr. Hastreiter said he would ask Mr. Winchell to call Ms. Borovansky if Mr. Winchell had additional comments on the cultural resources draft study plan.
- 9. Mr. Devine said that the Districts would provide data that are available for the various LGDD conduits.
- 10. Mr. Devine said the Districts would consider how to accommodate the USFWS interest in surveys following stage change occurrences below and near the end of the tailrace.
- 11. Mr. Devine said he would confirm if the area immediately downstream of LGDD had been surveyed for redds as part of the Don Pedro Salmonid Redd Mapping Study. (The area was inspected as part of that study; the substrates (large cobble; boulders; rock outcrops) do not provide suitable habitat).
- 12. Mr. Edmondson said he would send the paper he referenced about marine-derived nutrients.
- 13. Ms. Willy said she would review the Don Pedro Lower Tuolumne River Floodplain Hydraulic Assessment Study Plan and follow up with the Districts as necessary.
- 14. Ms. Willy said she would discuss with the USFWS Lodi office the Tuolumne River Chinook Salmon Population Model and follow up with the Districts as necessary.
- 15. The Districts will review NMFS' transect request and would follow up with Mr. Thompson as necessary.

#### ATTACHMENT A

Meeting Attendees

#### La Grange Hydroelectric Project Study Plan Meeting Monday, October 6, 2014 10:00 a.m. – 4:00 p.m.

#### Attendees

No.	Name	Organization
1	Theresa Simsiman	American
		Whitewater
2	Gretchen Murphey	CDFW
3	Ray Dias	Grower
4	Chris Shutes	CSPA
5	Jim Hastreiter	FERC
6	Bill Sears	SFPUC
7	Les Johnson	Farmer
8	Bob Hackamack	Self
9	Peter Barnes	SWRCB
10	Alison Willy	USFWS
11	Brian Genzoli	Grower
12	Keith D Boggs	Stanislaus County
13		
14	John Buckley	CSERC
15	Deanna Probst	Stanislaus
		Business Alliance
16	Phillip Stino	Farmer
17	Leonard Van	Yosemite Farm
	Elderen	Credit
18	Allen Peterson	Farmer
19	Stacy Henderson	THT, APC
20	Luke Miller	Farmer
21	Andrea Fuller	FISHBIO
22	Marco Moreno	LCR
23	Peter Drekmeier	TRT
24	Michelle Reimers	TID
25	Bill Ketscher	Farmer
26		
27	Larry Thompson	NOAA-NMFS
28	Jim Alves	City of Modesto
29	Cecil Russell	Modesto Chamber
30	John Holland	Modesto Bee
31	Calvin Curtin	TID
32	Matt Moses	SFPUC
33	Ellen Levin	SFPUC
34	Adrianne Carr	BAWSCA
35	John Wooster	NMFS
36	Tom Holley	NMFS
37	Steve Edmondson	NMFS

38	Richard Gemperle	GEP Inc
39		
40	Dave Absher	Absher Land &
		Livestock
41	Joy Warren	MID
42	Larry Byrd	MID
43	Bill Paris	O'Laughlin & Paris
44	Steve Boyd	TID
45	Jesse Deason	HDR
46	Art Godwin	TID
47	Bill Johnston	MID
48	Jenna Borovansky	HDR
49	John Devine	HDR
50	Roger Varney	MID
51	Anna Brathwaite	MID
52		
53	Melissa Williams	MID
54	Samantha Wookey	MID
55	Herb Smart	TID

Please direct any corrections in the translations of the names from the handwritten sign-in sheets to the attention of Rose Staples at

rose.staples@hdrinc.com. Thank you.

#### ATTACHMENT B

Meeting Agenda Meeting PowerPoint Presentation





#### La Grange Hydroelectric Project Study Plan Meeting Monday, October 6, 10:00 am – 4:00 pm MID Offices, 1231 11<sup>th</sup> Street, Modesto, CA

(Times are approximate and subject to change)

TIME	торіс	
9:30 am to 10:00 am	SIGN-IN	
10:00 am to 10:15 am	Introductions, review agenda and purpose of the meeting	
10:15 am to 12:00 pm	<ul> <li>Discussion of water and aquatic resources study requests</li> <li>Upstream and downstream fish passage studies requested by licensing participants <ul> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Confirmation of target species (Criteria 6)</li> <li>Estimate of run size (Criteria 6)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> </ul> </li> <li>Discussion of the Districts' Fall-Run Chinook Salmon Migration Barrier Draft Study Plan</li> <li>Upstream habitat studies requested by licensing participants</li> <li>Discussion of availability of existing information (Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> <li>Discussion of basis for study cost estimate and schedule (Criteria 7)</li> </ul>	
12:00 pm to 1:15 pm	Discussion of the Districts' response to upstream nabitat study requests	
1:15 pm to 2:00 pm	<ul> <li>Discussion of the Recreational Access and Facilities Feasibility study request         <ul> <li>Discussion of availability of existing information (ILP Study Plan Criteria 4)</li> <li>Discussion of basis for project nexus (Criteria 5)</li> </ul> </li> <li>Discussion of the Districts' Recreation Access and Safety Assessment Draft Study Plan</li> </ul>	
2:00 pm to 2:15 pm	Discussion of the Districts' Cultural Resources Draft Study Plan	
2:15 pm to 3:45 pm	<ul> <li>Discussion of remaining study requests</li> <li>Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project, Draft Redd Dewatering Study, and Tailrace Habitat Assessment</li> <li>Effects of Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout <i>Oncorhynchus mykiss</i> in the Tuolumne River</li> <li>Effects of Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River</li> <li>Draft Juvenile Salmonid Floodplain Rearing Study</li> <li>Draft Genetics of Chinook Salmon in the Upper Tuolumne River</li> </ul>	
3:45 pm to 4:00 pm	n to 4:00 pm Closing summary and action items	
4:00 pm	ADJOURNMENT	





# MID and TID welcome you to the La Grange Hydroelectric Project Proposed Study Plan Meeting

http://www.lagrange-licensing.com





#### The Integrated Licensing Process Where We Are

Pre-Application Document	February 24, 2014
FERC's Scoping Document 1	May 23, 2014
PAD/SD1 Comments and Study Requests Due	July 22, 2014
Proposed Study Plan Document	September 5, 2014
FERC's Scoping Document 2	September 5, 2014
Proposed Study Plan Meeting	October 6, 2014
Proposed Study Plan Comments Due	December 4, 2014
Revised Study Plan Document	January 3, 2015
Revised Study Plan Comments Due	January 18, 2015
FERC's Study Plan Determination	February 22, 2015





#### **Today's Agenda**

9:30 am to 10:00 am	Sign-In	
10:00 am to 10:15 am	Introductions, review agenda, purpose of the meeting	
10:15 am to 12:00 pm	<ul> <li>Discussion of water and aquatic resources study requests</li> <li>Upstream and downstream fish passage studies requested by LPs</li> <li>Discussion of the Districts' Fall-Run Chinook Salmon Migration Barrier Draft Study Plan</li> <li>Upstream habitat studies requested by LPs</li> <li>Discussion of the Districts' response to upstream habitat study requests</li> </ul>	
12:00 pm to 1:15 pm	Lunch (Lunch is on your own)	
1:15 pm to 2:00 pm	<ul> <li>Discussion of the Recreational Access and Facilities Feasibility study request</li> <li>Discussion of the Districts' Recreation Access and Safety Assessment Draft Study Plan</li> </ul>	





#### **Today's Agenda**

2:00 pm to 2:15 pm	Discussion of the Districts' Cultural Resources Draft Study Plan
2:15 pm to 3:45 pm	<ul> <li>Discussion of remaining study requests         <ul> <li>Effects of the Project and Related activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project, Draft Redd Dewatering Study, and Tailrace Habitat Assessment</li> <li>Effects of the Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout Oncorhynchus mykiss in the Tuolumne River.</li> <li>Effects of Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River</li> <li>Draft Juvenile Salmonid Floodplain Rearing Study</li> <li>Draft Genetics of Chinook Salmon in the Upper Tuolumne River</li> </ul> </li> </ul>
3:45 pm to 4:00 pm	Closing summary and action items
4:00 pm	Adjournment





### Location



- La Grange Diversion Dam (LGDD) is located in Stanislaus County
- La Grange impoundment is located in Stanislaus and Tuolumne counties

Map of La Grange Hydroelectric Project





#### **Project Facilities**



La Grange Hydroelectric Project Facilities

- Two-unit powerhouse on south side of river
- TID diversion tunnel and forebay
- La Grange Diversion Dam (131 ft high)
- Spillway
- Penstock intakes and penstocks
- Tailrace
- Substation





#### La Grange Diversion Dam





#### ILP Study Criteria 18 CFR Section 5.9(b)(1) – (7)



- 1. Describe the goals and objectives of each study proposal and the information to be obtained;
- 2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
- 3. If the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study;
- 4. Describe existing information concerning the subject of the study proposal, and the need for additional information;
- 5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
- 6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
- 7. Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.





# La Grange Hydroelectric Project FERC No. 14581



Study Plan Meeting October 6, 2014

**Study Requests Received** 





# Fish Passage Feasibility Study at Project Facilities (USFWS)

#### **Effects of the Project and Related Activities on Fish Passage for Anadromous Fishes (NMFS)**

Fish Passage Engineering Assessment (CG)





# La Grange Hydroelectric Project FERC No. 14581



Fall-Run Chinook Salmon Migration Barrier Study

> Study Plan Meeting October 6, 2014

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#### Fall-Run Chinook Salmon Migration Barrier Study **Project Nexus**

- Whether the LGDD constitutes an actual barrier to upstream anadromous fish migration is unknown at this time.
- If only a small percentage of the migrating fall-run Chinook population actually reaches the LGDD, and if those fish that do reach the LGDD typically move back downstream to spawn, then the existence of the LGDD is not a barrier to spawning.
- Therefore, the Districts propose to conduct a two-year study to investigate whether and to what extent the Project is a barrier to the upstream migration of fall-run Chinook salmon and whether it adversely affects spawning.





# Fall-Run Chinook SalmonMigration Barrier StudyStudy Goals and Objectives

- The study will document the fall-run Chinook salmon that may migrate upstream to the Project and become stranded.
- Objectives
  - Determine the number of fall-run Chinook salmon migrating upstream to the Project during the 2015/2016 and 2016/2017 migration seasons.
  - Compare the number of fall-run Chinook salmon migrating upstream to the Project to total escapement during the 2015/2016 and 2016/2017 migration seasons.
  - Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon migrating upstream to the Project, which do not move back downstream to spawn.





#### Fall-Run Chinook Salmon Migration Barrier Study

#### **Study Area**

The study area consists of the Tuolumne River channel opposite the Project powerhouse and in the tailrace just downstream of the powerhouse.





#### Fall-Run Chinook Salmon Migration Barrier Study

#### **Study Methods**

- Operate a fish counting weir to determine the number of fall-run Chinook salmon migrating upstream to the Project.
- Compare the number of fall-run Chinook salmon migrating upstream to the Project (i.e., above the counting weir) and not returning to downstream habitat to total fall-run Chinook escapement.
- Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon migrating upstream to the Project (i.e., those that do not return to downstream habitats below Project facilities to spawn).



#### Fall-Run Chinook Salmon Migration Barrier Study Fish Counting Weir Approximate Location



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MID





#### Fall-Run Chinook Salmon Migration Barrier Study

#### **Study Schedule**

Planning and Permitting	October 2014 – August 2015
Field Work	September 2015 – April/May 2016
Field Work	September 2016 – April/May 2017
Data Entry, QA/QC, and Analysis	September 2015 – June 2017
Initial Study Report Issuance	February 2016
Updated Study Report Preparation	February 2017 – July 2017





#### Quantifying Existing Upper Tuolumne River Habitats for Anadromous Fish as They Pertain to Fish Passage Blockage at La Grange diversion dam (NMFS)

#### Upper Tuolumne River Habitat Assessment (USFWS)

#### Upper Tuolumne River Anadromous Fish Habitat Assessment (CG)





## ILP Criteria 4: Availability of Existing Information

- CCSF Upper Tuolumne River Ecosystem Program
- NMFS ongoing study
- BLM and NPS Tuolumne River Wild and Scenic River Draft Comprehensive Management Plan and EIS
- CCSF Water System Improvement Program (WSIP)
- Historical, unimpaired, and current temperature data
- Historical, unimpaired, and current flow data
- Clavey River feasibility study





## **ILP Criteria 5: Project Nexus**

# ILP Criteria 7: Basis for Study Cost Estimate and Schedule




# **Recreational Access and Facilities Feasibility Study (CG)**





## La Grange Hydroelectric Project FERC No. 14581



# Recreation Access and Safety Assessment

Study Plan Meeting October 6, 2014





#### Recreation Access and Safety Assessment Project Nexus

FERC regulations require that the license application include a description of existing recreation facilities to be maintained during the term of the license, new measures or facilities proposed by the applicant, and measures to ensure the safety of the public in its use of Project lands and waters.





## Recreation Access and Safety Assessment Study Goals and Objectives

The goals of this study are:

- 1) to identify and characterize public use and potential recreation opportunities in the study area, and
- 2) to assess the public safety risk of identified recreation opportunities in the study area.





### Recreation Access and Safety Assessment Study Area

- The study area includes the Tuolumne River from RM 51.8 (which is approximately 200 feet downstream of where the tailrace meets the bypass reach) upstream to Don Pedro Dam, located at RM 54.8.
- Above the LGDD, the study area will extend to elevation 300 feet.







La Grange Hydroelectric Project FERC No. 14581





#### Recreation Access and Safety Assessment Study Methods

- Step 1 Identify and Describe Existing Public Access and Potential Recreation Opportunities in the Study Area
- Step 2 Assess Risk to Public Safety
  - 1. Establish Boundaries of Site Components (Areas)
  - 2. Identify Potential Recreation Activities within Each Component
  - 3. Identify Hazards within Each Component
  - 4. Identify Existing Risk Treatments (Measures) and Their Effectiveness
  - 5. Assign Incident Likelihood Ratings (ILR)
  - 6. Assign Incident Consequence Ratings
  - 7. Determine Risk Rating and Assign Risk Level
- Step 3 Prepare Report





#### Canadian Dam Association Public Safety Around Dams Risk Assessment Tool

<b>CDA ACB</b>														<u>c</u>	DA	P	ut	olic	S	afe	ety	Arc	oun	d	Dar	ns	Ri	sk	As	se	ess	me	nt	To	<u>ol</u>							
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re/Structure	Fishing from Shore Walking Cimbing Camping Pionicking ATV / Dirt Biking Hiking Skiing Snowshoeing Drówing																																									

PDF available at the La Grange Hydroelectric Project website

La Grange Hydroelectric Project FERC No. 14581





# **Recreation Access and Safety Assessment**

#### **Study Schedule**

Step 1 (Identify and describe existing public access and potential recreation opportunities)	March 2015 – April 2015
Step 2 (Assess risk to public safety)	May 2015 – July 2015
Step 3 (Prepare report)	August 2015 – October 2015
Initial Study Report Issuance	February 2016





#### Recreation Access and Safety Assessment Portions of Study Request Not Adopted

- Requests for study of manmade hazards and downstream recreation opportunities are not related to the Project and were not adopted
- Requests for studies of PM&E measures are premature at this stage of the licensing process
- Requests for regional recreation needs and recreation potential this information is already available in such sources as the California
   Outdoor Recreation Plan (2008) and the Don Pedro Project Recreation Facility Condition and Public Accessibility Assessment, and Recreation Use Assessment Study Report (2013).





## La Grange Hydroelectric Project FERC No. 14581



## **Cultural Resources Study**

### Study Plan Meeting October 6, 2014





## Cultural Resources Study Project Nexus

The Districts' continued operation and maintenance (O&M) of the La Grange Hydroelectric Project may affect historic properties that are listed on or eligible for listing on the National Register of Historic Places (NRHP).





## Cultural Resources Study Study Goals and Objectives

- The primary study goal is to assist FERC in meeting its compliance requirements under Section 106 of the NHPA, as amended, by determining if licensing of the La Grange Hydroelectric Project will have an adverse effect on historic properties.
- The objective of this study is to identify cultural resources within the area of potential effects (APE), formulate a plan to evaluate their eligibility to the NRHP, if needed, and identify La Grange Hydroelectric Project-related effects on those resources.





### Cultural Resources Study Area of Potential Effects

The APE has been initially defined as the lands incorporating the La Grange Hydroelectric Project facilities, and La Grange Hydroelectric Project access roads.





#### **Cultural Resources Study**

#### **Area of Potential Effects**



La Grange Hydroelectric Project FERC No. 14581





### Cultural Resources Study Study Methods

- Step 1 Obtain SHPO Approval of APE
- Step 2 Archival Research
- Step 3 Field Survey
- Step 4 Tribal Field Visit
- Step 5 National Register of Historic Places Evaluation
- Step 6 Identify and Assess Potential Effects on National Register-Eligible Properties
- Step 7 Reporting





### Cultural Resources Study Study Schedule

Obtain SHPO approval of APE	January 2015					
Archival Research/Field Work	February – April 2015					
Tribal Field Visit	April 2015					
NRHP Evaluation/Identify and Assess Effects	April – May 2015					
Report Preparation	June – September 2015					
Report Submittal to Tribes	October 2015					
Report Submittal to SHPO	December 2015					
Initial Study Report Issuance	February 2016					





## La Grange Hydroelectric Project FERC No. 14581



Study Plan Meeting October 6, 2014

Remaining Study Requests Not Adopted





### Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project (NMFS)

#### **Draft Redd Dewatering Study (USFWS)**

**Tailrace Habitat Assessment (SWRCB)** 





### Effects of the Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout *Oncorhynchus mykiss* in the Tuolumne River (NMFS)





### Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River (NMFS)





### Draft Juvenile Salmonid Floodplain Rearing (USFWS)





#### **Juvenile Chinook Salmon Survival (USFWS)**





### Genetics of Chinook Salmon in the Upper Tuolumne River (USFWS)





#### **Chinook Salmon Egg Viability (USFWS)**





# **Questions and Comments**

http://www.lagrange-licensing.com

La Grange Hydroelectric Project FERC No. 14581





# **EXTRA SLIDES**

La Grange Hydroelectric Project FERC No. 14581





### **Scoping Document 2 Schedule**

<b>Responsible Party</b>	Pre-Filing Milestone	Date	FERC Regulation
The applicants	Issue Public Notice for NOI/PAD	11/15/13	5.3(d)(2)
The applicants	File NOI/PAD with FERC	2/24/14	5.5, 5.6
FERC	Issue Notice of Commencement of Proceeding; Issue Scoping Document 1	5/23/14	5.8
FERC	La Grange Project Environmental Site Review and Scoping Meetings	6/22/14	5.8(b)(viii)
All stakeholders	PAD/SD1 Comments and Study Requests Due	7/22/14	5.9
FERC	Issue Scoping Document 2	9/5/14	5.1
The applicants	File Proposed Study Plan (PSP)	9/5/14	5.11(a)
All stakeholders	Proposed Study Plan Meeting	10/5/14	5.11(e)
All stakeholders	Proposed Study Plan Comments Due	12/4/14	5.12
The applicants	File Revised Study Plan	1/3/15	5.13(a)
All stakeholders	Revised Study Plan Comments Due	1/18/15	5.13(b)
FERC	Director's Study Plan Determination	2/2/15	5.13(c)





## **Scoping Document 2 Schedule**

<b>Responsible Party</b>	Pre-Filing Milestone	Date	FERC Regulation
FS, FWS, Ecology	Any Study Disputes Due	2/22/15	5.14(a)
Dispute Panel	Third Dispute Panel Member Selected	3/9/15	5.14(d)
Dispute Panel	Dispute Resolution Panel Convenes	3/14/15	5.14(d)(3)
The applicants	Applicant Comments on Study Disputes Due	3/19/15	5.14(j)
Dispute Panel	Dispute Resolution Panel Technical Conference	3/24/15	5.14(j)
Dispute Panel	Dispute Resolution Panel Findings Issued	4/13/15	5.14(k)
FERC	Director's Study Dispute Determination	5/3/15	5.14(l)
The applicants	First Study Season	2015	5.15(a)
The applicants	Initial Study Report	2/2/16	5.15(c)(1)
All stakeholders	Initial Study Report Meeting	2/17/16	5.15(c)(2)
The applicants	Initial Study Report Meeting Summary	3/3/2016	5.15(c)(3)





## **Scoping Document 2 Schedule**

<b>Responsible Party</b>	Pre-Filing Milestone	Date	FERC Regulation
All stakeholders	Any Disputes/Requests to Amend Study Plan Due	4/2/2016	5.15(c)(4)
All stakeholders	Responses to Disputes/Amendment Requests Due	5/2/16	5.15(c)(5)
FERC	Director's Determination on Disputes/Amendments	6/1/16	5.15(c)(6)
The applicants	Second Study Season	2016	5.15(a)
The applicants	Updated Study Report due	2/1/17	5.15(f)
All stakeholders	Updated Study Report Meeting	2/16/17	5.15(f)
The applicants	Updated Study Report Meeting Summary	3/3/17	5.15(f)
All stakeholders	Any Disputes/Requests to Amend Study Plan Due	4/2/17	5.15(f)
All stakeholders	Responses to Disputes/Amendment Requests Due	5/2/17	5.15(f)
FERC	Director's Determination on Disputes/Amendments	6/1/17	5.15(f)
The applicants	File Preliminary Licensing Proposal	1/18/16	5.16(a)
All stakeholders	Preliminary Licensing Proposal Comments Due	4/17/16	5.16(e)
The applicants	File Final License Application	6/16/16	5.17
The applicants	Issue Public Notice of License Application Filing	6/30/16	5.17(d)(2)





#### Entities providing study requests and/or comments on SD1 and PAD

Licensing Participant	Date of Comment Letter
Bay Area Water Supply and Conservation Agency	July 21, 2014
Conservation Groups	July 22, 2014
NOAA – National Marine Fisheries Service	July 22, 2014
State Water Resources Control Board	July 22, 2014
U.S. Fish and Wildlife Service	July 22, 2014

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#### Licensing participant study requests filed with FERC

CGs	<ul> <li>Fish Passage</li> <li>Upper Tuolumne Habitat Suitability</li> <li>Recreation Access and Facilities Feasibility</li> </ul>
	Draft Juvenile Salmonid Floodplain
	Rearing Study
	Draft Chinook Salmon Egg Viability Study
USFWS	<ul> <li>Draft Juvenile Chinook Salmon Survival Study</li> </ul>
	• Draft Genetics of Chinook Salmon in the Upper Tuolumne River
	Draft Redd Dewatering Study
	Fish Passage Feasibility Study
SWRCB	Upper Tuolumne River Habitat
DWRCD	Assessment
	Tailrace Habitat Assessment

- Effects of the La Grange Project and Related Activities on Fish Passage for Anadromous Fishes
- Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project
- Quantifying Existing Upper Tuolumne River Habitats for Anadromous Fish as They Pertain to Fish Passage Blockage at La Grange Dam
  - Effects of Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout *Oncorhynchus mykiss* in the Tuolumne River
  - Effects of Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River

La Grange Hydroelectric Project FERC No. 14581

**NMFS** 

#### **UPDATED STUDY PLAN**

#### LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN

DRAFT FOR LICENSING PARTICIPANTS' REVIEW AND COMMENT

#### **DRAFT STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### November 2014

#### 1.0 <u>Project Description</u>

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the south (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.
### 2.0 <u>Study Requests, Project Nexus, and Information Needed</u>

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upstream Habitat Assessment; (3) Downstream Habitat Assessment and Fish Stranding Observations. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this updated study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with Licensing Participants.

### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish passage at La Grange is necessary to support viable salmon and/or steelhead populations on the

Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from successfully spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn successfully.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O.mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams" justification ("If you build it, they will come.") that the courts have found to be legally inadequate. See Bangor Hydro-Electric Co. v. FERC, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constituted an actual barrier to successful fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro The Districts acknowledge that conducting the Districts' proposed study as a Project. prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

### 2.2 Upstream Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic

habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

### 2.3 Downstream Habitat Assessment and Fish Stranding Observations

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project. The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

### 3.0 <u>Resource Agency Management Goals</u>

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of O.mykiss. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

### 4.0 <u>Summary of Study Objectives</u>

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts to the reproductive success of these fish. Specific objectives are listed below:
    - 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.

- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upstream Reach Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Project Boundary.
  - a. Barriers to upstream anadromous salmonid migration:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water temperature monitoring and modeling</u>:
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.
  - c. <u>Upstream Habitat Suitability Assessment:</u>
    - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
    - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.

- 3. Habitat Assessment and Fish Stranding below La Grange Dam and Powerhouse:
  - a. <u>Develop hydrologic data for flow conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect topographic, depth, and habitat data in the vicinity of the La Grange Project</u> <u>Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess fish presence and potential for stranding</u>: Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

### 5.0 <u>Need for Additional Information</u>

### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O.mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O.mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O.mykiss* are not specifically being investigated as part of this study, weir counts will extend through at least April, flows permitting, and any apparent anadromous *O.mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather

information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

### 5.2 Upstream Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

### 5.3 Habitat Assessment and Fish Stranding below La Grange Dam and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

### 6.0 <u>Study Area and Methods</u>

### 6.1 Study Area

### 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

### 6.1.2 Upstream Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

### 6.1.3 Habitat Assessment and Fish Stranding below LGDD and La Grange Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

### 6.2 Study Methods

### 6.2.1 Fish Passage Facilities Assessment

### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

# Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with licensing participants. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; and (9) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be a barrier to the upstream migration and successful spawning of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,

- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a fish counting device (i.e., video system or Vaki Riverwatcher).

### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any O.mykiss encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. To the Districts' knowledge, salmon egg retention (i.e., pre-spawn mortality) has never been documented on the Tuolumne River. To evaluate the potential effect of the LGDD and the La Grange powerhouse on reproductive success of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. The Districts will promptly notify CDFW of any carcasses observed. Similar to egg retention evaluations conducted by CDFW on the Stanislaus and upper Sacramento rivers, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% or more), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002).

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;
- Identification of species, if possible;
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream

counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or *O.mykiss*, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017.

### 6.2.2 Upstream Habitat Assessment

### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration in the Upper Tuolumne River Basin

### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne

River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

### 6.2.2.2 Water Temperature Monitoring and Modeling

### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where temperatures appear to be suitable for anadromous salmonids.

### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be

supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA - 2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

### 6.2.2.3 Habitat Assessment

### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

# 6.2.3 Habitat and Fish Stranding Assessment Downstream of La Grange Dam and Powerhouse

### 6.2.3.1 Develop Hydrology Datasets Specific to Flow Conduits at the La Grange Project

### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.
- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

# 6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project

### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along

each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

# 6.2.3.3 Fish Presence and Potential Stranding in the TID Sluicegate Channel and La Grange Tailrace

### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until

complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O.mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

### 7.0 <u>Schedule</u>

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

### 7.1 Fish Passage Facilities Assessment

### 7.1.1 Concept-Level Fish Passage Alternatives

<ul> <li>Collaboration on biological and engineering considerations</li> </ul>	SApril – December 2015
■ Fish passage consultation workshops	April, July, and October 2015
■ Functional design drawings and cost estimates	March 2016 – November 2016
■ Initial study report	February 2016

### 7.1.2 La Grange Project Fish Barrier Assessment

<ul> <li>Fieldwork September 2015 – April/May 2016; September 2016 – April/May 2017</li> <li>Incidental fish observations at Project Facilities</li></ul>
■ Incidental fish observations at Project Facilities
J i J
■ Data entry, QA/QC, and analysis September 2015 – August 2017
■ Initial study report February 2016
■ Updated study report February 2017
■ Final study report

### 7.2 Upstream Habitat Assessment

### 7.2.1 Barriers to Upstream Migration

• Compile and review existing data	
Conduct field surveys	August 2015 – June 2016
Initial study report	
■ Updated study report	

### 7.2.2 Water Temperature Monitoring and Modeling

Synthesize and interpret existing water temperature data	March – May 2015
Licensing participant workshop	
Install temperature data loggers	June – September 2015
Temperature data collection	June 2015 – October 2016
■ Initial study report	
■ Water temperature modeling	March 2016 – November 2016
Updated study report	
	-

### 7.2.3 Upstream Habitat Characterization

■ Review of results from NMFS Upstream Habitat Study <sup>2</sup>	otember/October 2015
■ Incorporation of results from NMFS study with barrier study and in	terim temperature data
and identification of additional information needs	February 2016

### 7.3 Downstream Habitat Assessment

### 7.3.1 Flow and habitat measurements

■ Initiate flow recording at project conduits	April 2015 – December 2016
■ Collect topographic, depth, and habitat data	August – November 2015
■ Data entry, QA/QC, and analysis	
■ Initial study report	
■ Updated study report	

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

### 7.3.2 Fish Stranding Observations

■ Fish observations in TID sluicegate	and tailrace channels	August 2015 – Apri	il/May 2016
■ Data entry, QA/QC, and summarizin	ngSep	otember 2015 – Dec	ember 2016

- Initial study report
  February 2016
- Updated study report ...... February 2017

### 8.0 <u>Consistency of Methodology with Generally Accepted Scientific Practices</u>

### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

### 8.2 Upstream Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

### 8.3 Downstream Habitat Assessment and Fish Stranding Observations

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

### 9.0 Level of Effort and Cost

Placeholder for costs.

### 10.0 <u>References</u>

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From: Gard, Mark [mailto:mark\_gard@fws.gov]
Sent: Friday, January 02, 2015 8:37 AM
To: Borovansky, Jenna
Cc: alison\_willy@fws.gov; Zachary Jackson
Subject: Re: Lower Tuolumne River Floodplain Hydraulic Assessment

I'll need to sit down with Alison and Zack to discuss this before we can give you an answer, as I haven't been in the loop on the study request you are referring to.

Mark Gard Ph.D., PE 40701 Fish and Wildlife Biologist U.S. Fish and Wildlife Service Anadromous Fish Restoration Program 2800 Cottage Way, Suite W-2605 Sacramento, CA 95825 Phone: Mon,Wed, Fri (916) 414-6589; Tues, Thur (916) 799-0534 Fax: (916) 414-6712

On Wed, Dec 31, 2014 at 4:33 PM, Borovansky, Jenna < Jenna. Borovansky@hdrinc.com > wrote:

Hello Mark and Alison:

Mark, thank you for attending the Districts' W&AR-21 Lower Tuolumne River Floodplain Hydraulic Assessment workshop on December 18. I understand you and the modelers exchanged some additional information following the meeting, and I hope that the workshop was helpful to introduce you to the extensive, on-going model effort.

As you know, the Districts are preparing to file their Revised Study Plan for the La Grange Project on January 5. In the Revised Study Plan, the Districts have noted that the Districts believe the W&AR-21 model being constructed for the Don Pedro Hydroelectric Project relicensing process will be able to provide the information need identified by the USFWS and will meet the intent of the Juvenile Salmonid Floodplain Rearing Study the USFWS proposed in the La Grange licensing process.

I understand it is the holiday season, and response time is limited. However, I wanted to inquire whether based on the study plan sent to Alison in November, and the model overview presented at the workshop, whether the USFWS still feels the new study request in the La Grange licensing process is necessary. If possible, the Districts would like to inform FERC if the USFWS' additional study request is no longer necessary (either by noting this in the RSP filing, or in a separate filing with FERC).

Thank you again for your participation in the meeting on December 18 and I look forward to hearing from you.

Best wishes for a Happy New Year!

Jenna

#### Jenna Borovansky

Senior Regulatory Specialist

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To: Borovansky, Jenna
Cc: alison\_willy@fws.gov; Zachary Jackson
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From: Sent: To:

#### Staples, Rose

#### Monday, January 05, 2015 2:30 PM

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Subject: Attachments:

Follow Up Flag:	Follow up
Flag Status:	Completed

The Districts e-filed with FERC today the Revised Study Plan (RSP) for the La Grange Hydroelectric Project FERC Project No. 14581. A copy of the RSP is attached—and it is also available on FERC's e-library at <u>www.ferc.gov</u>.

If you have any difficulties accessing the attached file or viewing/downloading from the FERC website, please let me know. Thank you.

### Rose Staples, CAP-OM

Executive Assistant

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January 5, 2015

### Filed via Electronic Submittal (E-File)

The Honorable Kimberly D. Bose Federal Energy Regulatory Commission 888 First Street NE Washington DC 20426

### Subject: La Grange Hydroelectric Project, FERC Project No. 14581 Revised Study Plan

Dear Secretary Bose:

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts), co-owners of the La Grange Diversion Dam located on the Tuolumne River, herewith file their Revised Study Plan (RSP) in accordance with Federal Energy Regulatory Commission (FERC) regulations at 18 CFR § 5.13.

Pursuant to 18 CFR § 5.11, on September 5, 2014, the Districts filed their Proposed Study Plan (PSP) document with the Commission and distributed the PSP to interested agencies and stakeholders for review and comment. On October 2, 2014, Thomas Terpstra filed comments on the PSP document. On October 6, 2014, pursuant to 18 CFR § 5.11(e), the Districts held a Proposed Study Plan meeting at MID's offices in Modesto, California. Based on discussions at the PSP meeting, the Districts prepared an Updated Study Plan (USP) document and provided this document to licensing participants for review on November 21, 2014. Also on November 21, the Districts provided notes from the PSP meeting to licensing participants. On December 4, 2014, National Marine Fisheries Service, the Conservation Groups, and the California Department of Fish and Wildlife filed comments on the PSP and/or USP documents.

The Districts will make this RSP available to appropriate federal and State of California resources agencies, Indian tribes, local governments, non-governmental organizations and members of the public likely to be interested in the proceeding. In accordance with 18 CFR § 5.13(b), any comments on the RSP must be filed with FERC by January 20, 2015. The Commission's Study Plan Determination is anticipated to be issued by February 4, 2015.

If you have any questions about this filing, please contact the undersigned at the addresses or telephone numbers listed below.

Sincerely,

Steve Boyd Turlock Irrigation District P.O. Box 949 Turlock, CA 95381 (209) 883-8364 seboyd@tid.org

fory Dias

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

cc:

Licensing Participants E-Mail List

Attachments:

La Grange Hydroelectric Project Revised Study Plan Document

## LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

## **REVISED STUDY PLAN DOCUMENT**







Prepared by: Turlock Irrigation District Turlock, California and Modesto Irrigation District Modesto, California

January 2015

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ac	acres
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ACHP	Advisory Council on Historic Preservation
ACOE	U.S. Army Corps of Engineers
APE	Area of Potential Effects
BAWSCA	Bay Area Water Supply and Conservation Agency
BLM	U.S. Department of the Interior, Bureau of Land Management
CCIC	Central California Information Center
CCSF	City and County of San Francisco
CDA	Canadian Dam Association
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Parks and Recreation
CEQA	California Environment Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CG	Conservation Groups
CNDDB	California Natural Diversity Database
CORP	California Outdoor Recreation Plan
Districts	Turlock Irrigation District and Modesto Irrigation District
DOI	Department of Interior
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
ft	feet
GLO	General Land Office
GPS	Global Positioning System
HPMP	Historic Properties Management Plan
ICR	Incident Consequence Rating
IFIM	Instream Flow Incremental Methodology

ILP	Integrated Licensing Process
ILR	Incident Likelihood Rating
ISR	Initial Study Report
LGDD	La Grange Diversion Dam
LP	Licensing Participants
M&I	municipal and industrial
MID	Modesto Irrigation District
MOA	Memorandum of Agreement
MW	megawatts
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
O&M	operation and maintenance
PA	Programmatic Agreement
PAD	Pre-Application Document
РМ&Е	Protection, Mitigation and Enhancement
POAOR	Public Opinions and Attitudes in Outdoor Recreation
Project	La Grange Hydroelectric Project
PSP	Proposed Study Plan
RM	river mile
RSP	Revised Study Plan
SD1	Scoping Document 1
SD2	Scoping Document 2
SHPO	State Historic Preservation Officer
SRMP	Sierra Resource Management Plan
SWRCB	State Water Resources Control Board
TID	Turlock Irrigation District
TLP	Traditional Licensing Process
USDC	U.S. Department of Commerce

- USFWS ......U.S. Department of Interior, Fish and Wildlife Service
- USGS .....U.S. Geological Survey
- USP.....Updated Study Plan
- USR.....Updated Study Report
- UTM.....Universal Transverse Mercator

#### 1.0 **INTRODUCTION**

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) are public agencies with headquarters located in Turlock and Modesto, California, respectively, organized under the laws of the State of California to provide water and retail electric service to their respective service territories. Together, the Districts own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. TID owns and operates the La Grange powerhouse.

On December 19, 2012<sup>1</sup>, the Federal Energy Regulatory Commission (FERC or Commission) issued an order from the Director of the Division of Hydropower and Administration finding that the La Grange Hydroelectric Project (Project) was subject to FERC's licensing jurisdiction under Part I of the Federal Power Act. On January 18, 2013, the Districts filed a timely request for rehearing and stay of the jurisdictional order. FERC granted rehearing on February 19, 2013, and subsequently issued on July 19, 2013<sup>2</sup> an order affirming the original December 19, 2012 jurisdictional order. On September 13, 2013, the Districts filed an appeal of this decision in the Court of Appeals for the District of Columbia Circuit.

FERC did not grant the Districts' request for a stay to the licensing proceeding. Therefore, the Districts began the multi-year licensing process for the La Grange Hydroelectric Project by filing a Pre-Application Document (PAD) with FERC on January 29, 2014. The filing of the PAD formally initiated the licensing process under Title 18 of the Code of Federal Regulations (CFR) Part 5, which provides FERC's regulations governing the Integrated Licensing Process (ILP). The Districts' PAD included descriptions of the La Grange Hydroelectric Project facilities and operations. It also contained a summary of the extensive amount of information available on water resources; fish and aquatic resources; terrestrial and wildlife resources; rare, threatened, and endangered species; recreation and land use; cultural resources; and socioeconomic resources relevant to the La Grange Hydroelectric Project. A preliminary assessment of the resource effects of the La Grange Hydroelectric Project operations was provided in the PAD.

The Districts filed their Proposed Study Plan (PSP) document on September 5, 2014, in response to study requests submitted by licensing participants (LPs) by July 22, 2014. On October 6, 2014, the Districts held a study plan meeting. Based on discussions with LPs at the study plan meeting, the Districts significantly expanded their original Fall-Run Chinook Salmon Migration Barrier Study Plan. On November 21, 2014, the Districts issued this updated study plan (USP), now titled Fish Passage Assessment Study Plan. LPs filed comments with FERC on the Districts' PSP and USP on December 4, 2014. The Districts herein file with FERC their Revised Study Plan (RSP) pursuant to 18 CFR § 5.13. The RSP contains the following elements:

- summary of study requests submitted by licensing participants (LPs) and the Districts' response;
- Districts' response to LP written comments on the PSP and USP: and

<sup>141</sup> FERC ¶ 62,211 (2012)

<sup>144</sup> FERC (61,051 (2013)

• Districts' three proposed studies, updated and expanded to reflect LP comments received and discussion during the PSP meeting on October 6, 2014.

In accordance with ILP regulations, the RSP is being filed with FERC and simultaneously distributed to federal and state resource agencies, local governments, affected Indian tribes, non-governmental organizations, and members of the public. This RSP is also being made available on the Districts' licensing website (http://www.lagrange-licensing.com/).

# 1.1 General Project Description

The Districts own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.1-1 and 1.1-2). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than 5 megawatts (MW). The La Grange Hydroelectric Project operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Hydroelectric Project or the La Grange pool.



Figure 1.1-1. La Grange Hydroelectric Project location map.



Figure 1.1-2. La Grange Hydroelectric Project site plan.

# **1.2** Licensing Activities to Date

The Districts have selected the ILP, as defined by 18 CFR Part 5, for the licensing of the La Grange Hydroelectric Project. On January 29, 2014, pursuant to 18 CFR Sections 5.5 and 5.6, the Districts filed the La Grange Hydroelectric Project PAD with FERC.

On May 23, 2014, FERC provided formal notice of the Districts' PAD, issued Scoping Document 1 (SD1), and solicited study requests and comments on the PAD and SD1. In the same notice, FERC set a date of June 18, 2014, for scoping meetings in Modesto and Turlock, California, and a date of June 19, 2014, for a La Grange Hydroelectric Project site visit. Appendix B of SD1 contained a *Process Plan and Schedule* which called for parties to provide comments on the SD1 and PAD by July 22, 2014, and established the same deadline for the filing of study requests.

The U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the California State Water Resources Control Board (SWRCB), the Conservation Groups<sup>3</sup> (CGs), and the Bay Area Water Supply and Conservation Agency (BAWSCA) each filed comment letters by the July 22, 2014 deadline. The USFWS, NMFS, SWRCB and CGs submitted a total of 16 study requests. BAWSCA submitted comments on the PAD, but did not submit any study requests. The PSP, containing three draft study plans, was issued on September 5, 2014 and provided the Districts' initial response to those study requests. On November 17, 2014, the Districts notified licensing participants that they would be issuing an Updated Study Plan to expand the Fall-Run Chinook Salmon Migration Barrier Study Plan (which is now titled the Fish Passage Assessment Study Plan). On November 21, 2014, the Districts filed the USP with FERC and distributed the USP to LPs for review and comment, and on or before December 4, 2014, Mr. Thomas Terpstra, the California Department of Fish and Wildlife (CDFW), CGs, and NMFS filed comments, on both the PSP and USP. The CGs also submitted an additional study request with their PSP comments. Subsequently, the Districts modified the Fish Passage Assessment Study Plan and the Recreation Access and Safety Assessment Study Plan based on comments received during the October 6<sup>th</sup> study plan review meeting and comments on the PSP and USP.

# **1.2.1** Discussion of Licensing Process with Interested Participants

On January 29, 2014, the Districts requested that FERC approve use of the Traditional Licensing Process (TLP) for the La Grange Hydroelectric Project instead of the default ILP. The due date for comments on the TLP request was February 28, 2014. On February 24, 2014, the Districts hosted a meeting with interested participants to discuss the possible use of the TLP instead of the ILP. Representatives from NMFS, USFWS, CDFW, SWRCB, California Sportfishing Protection Alliance, Tuolumne River Trust, CCSF, and Friends of the River attended the meeting.

<sup>&</sup>lt;sup>3</sup> Conservation groups identified in the July 22, 2014 comment letter: American Rivers, American Whitewater, California Sportfishing Protection Alliance, California Trout, Central Sierra Environmental Resource Center, Friends of the River, Golden West Women Flyfishers, Merced Fly Fishing Club, Northern California Federation of Flyfishers, Pacific Coast Federation of Fishermen's Associations, Trout Unlimited, and the Tuolumne River Trust.

Due to the timing of the workload associated with the relicensing of the Don Pedro Hydroelectric Project (FERC Project No. 2299), attendees at the meeting requested a 21-day extension to the February 28, 2014 deadline for comments on the La Grange Hydroelectric Project TLP request. The Districts agreed to seek additional time and on February 25, 2014 filed with FERC a request for a three-week extension to the due date for comments. In letters dated February 26 and 27, 2014, CDFW and NMFS, respectively, filed letters supporting the use of the ILP. On February 28, 2014, FERC extended the deadline for comments to March 21, 2014.

On March 21, 2014, NMFS and the CGs<sup>4</sup> filed comment letters declining to adopt the TLP and supporting use of the ILP for the La Grange Hydroelectric Project. On March 24, 2014, the Districts stated they did not object to use of the ILP and, subject to FERC's final decision, would plan to proceed using the ILP. On April 17, 2014, FERC established March 24, 2014 as the pre-filing process start date for the ILP.

### **1.2.2** FERC's Issuance of Scoping Document 1

On May 23, 2014, FERC issued SD1 in accordance with 18 CFR Section 5.8. SD1 provided FERC's preliminary list of issues and alternatives to be addressed in an environmental assessment to accompany FERC's consideration of a La Grange Hydroelectric Project license. FERC requested that comments on SD1 and the PAD be provided to FERC by July 22, 2014.

### 1.2.3 FERC's National Environmental Policy Act Scoping Meetings and Site Visit

FERC held two public scoping meetings for the La Grange Hydroelectric Project on June 18, 2014: a daytime meeting held in Turlock, California and an evening meeting held in Modesto, California. The scoping meetings were recorded and transcripts are available through FERC. FERC conducted a Project site visit on June 19, 2014.

### 1.2.4 Licensing Participants Filing of Comments and Study Requests

In accordance with the ILP schedule, five parties filed letters providing study requests and/or comments on the SD1 and PAD by July 22, 2014 (Table 1.2-1). All parties except BAWSCA filed requests for studies to be undertaken by the Districts as part of La Grange Hydroelectric Project licensing.

Tuble 112 11 Entitles providing study requests t	Tuble 112 11 Elithes providing study requests und or comments on SDT und TID.		
Licensing Participant	Date of Comment Letter		
Bay Area Water Supply and Conservation Agency	July 21, 2014		
Conservation Groups	July 22, 2014		
NOAA - National Marine Fisheries Service	July 22, 2014		
State Water Resources Control Board	July 22, 2014		
U.S. Fish and Wildlife Service	July 22, 2014		

Table 1 2-1	Entities providing study requests and/or comments on SD1 and PAD
1 abit 1.2-1.	Entrices providing study requests and/or comments on SD1 and I AD.

<sup>&</sup>lt;sup>4</sup> Conservation groups identified in the March 21, 2014 comment letter: American Rivers, American Whitewater, California Sportfishing Protection Alliance, California Trout, Central Sierra Environmental Resource Center, Friends of the River, Golden West Women Flyfishers, Northern California Federation of Flyfishers, Trout Unlimited, and the Tuolumne River Trust.

# 1.2.5 Districts' Filing of the Proposed Study Plan

On September 5, 2014, pursuant to 18 CFR § 5.11, the Districts filed with FERC their PSP document. The PSP consisted of five sections. Section 1.0 described the Project, licensing activities to date, and the Districts' ongoing studies and data collection activities. Section 2.0 summarized the LPs' study requests filed with FERC and the Districts' general approach to evaluating study requests. Section 3.0 summarized the three study plans proposed by the Districts in response to study requests received. Section 4.0 identified those study requests the Districts had not adopted in the PSP and provided an explanation as to why the requests were not adopted. Section 5.0 described the Districts' plan to hold a proposed study plan meeting within 30 days of filing the PSP and provided a summary of upcoming milestones in the ILP.

# **1.2.6** FERC's Issuance of Scoping Document 2

On September 5, 2014, FERC issued Scoping Document 2 (SD2) in accordance with 18 CFR § 5.10. SD2 stated the Commission's intent to prepare a single environmental impact statement (EIS) for licensing the La Grange Project and relicensing the Don Pedro Project and provided updates to the Process Plan and Schedule. SD2 also made several additions to both the list of resources that have the potential to be cumulatively affected by continued Project operations and the preliminary list of environmental issues to be addressed in the NEPA analysis. The Districts reserve their right to comment on SD2 in future filings.

# 1.2.7 Proposed Study Plan Meeting

On October 6, 2014, pursuant to 18 CFR § 5.11(e), the Districts held a PSP meeting at MID's offices in Modesto, California. The purpose of the meeting was to discuss the PSP with LPs in order to attempt to resolve any outstanding issues on studies to be included in the Districts' RSP. Notes from the meeting were filed with the Commission and issued to LPs on November 21, 2014 via email. Meeting notes were also made available on the Districts' licensing website at www.lagrange-licensing.com.

### 1.2.8 Study Plan Development Consultation Completed Prior to the Deadline for Filing Proposed Study Plan Comments

On November 17, 2014, the Districts issued a notice to LPs stating that the Districts anticipated making several changes to the PSP and would therefore issue an Updated Study Plan (USP) prior to the December 4, 2014 deadline for PSP comments to allow LPs the opportunity to comment on the most current version of the study plan. The Districts distributed the USP on November 21, 2014.

As a result of discussion at the October PSP meeting, the Districts contacted NMFS and USFWS, respectively, to request additional information regarding agency comments and study requests discussed at the PSP meeting. On November 12, the Districts provided NMFS with a CD containing temperature data available in the upper Tuolumne River. On December 1, 2014, NMFS provided the Districts a brief draft description of the ongoing study being conducted by NMFS of instream habitat in the upper Tuolumne River. The information provided by NMFS

included the location of seven temperature loggers recently placed in the upper Tuolumne River by NMFS. This information is referenced in the Districts' Fish Passage Assessment Study Plan. On November 25, 2014, the Districts requested feedback from USFWS on whether USFWS staff had reviewed the study plan for the ongoing W&AR-21 Lower Tuolumne River Floodplain Hydraulic Assessment being completed for the Don Pedro relicensing; the Districts also notified the USFWS of components of the USP that were responsive to USFWS' study requests. As of this filing, the USFWS have provided no additional comments. A representative of the USFWS attended the Districts' W&AR-21 Floodplain Hydraulic Assessment Workshop held on December 18, 2014 as a part of the Don Pedro relicensing process.

### 1.2.9 Licensing Participants' Comments on the Proposed Study Plan Document

In accordance with 18 CFR § 5.12, comments on the PSP were due to FERC by December 4, 2014. Four comment letters on the Districts' PSP and USP documents were filed with FERC by the December 4, 2014 deadline (Table 1.2-2).

Table 1.2-2. Entitles providing comments on th	the Districts 1 51 and 051 documents.
Licensing Participant	Date of Comment Letter
Conservation Groups <sup>5</sup>	December 4, 2014
NOAA - National Marine Fisheries Service	December 4, 2014
California Department of Fish and Wildlife	December 4, 2014
Thomas Terpstra	October 8, 2014

 Table 1.2-2.
 Entities providing comments on the Districts' PSP and USP documents.

# **1.3** Future Licensing Activities

As required by 18 CFR § 5.11(c) and (f), within one year of the date of FERC's Study Plan Determination the Districts will file with FERC and distribute to LPs an Initial Study Report (ISR) and within two years of the date of FERC's Study Plan Determination the Districts will file an Updated Study Report (USR). Each report will describe the Districts' overall progress in implementing the studies, any study plan variances, and any initial study conclusions. Within 15 days of filing both the ISR and the USR, the Districts will hold a meeting with the LPs and Commission staff to discuss the study results and any proposals to modify the study plan in light of the progress of the study plan and data collected. Within 15 days following each meeting, the Districts will file a meeting summary.

# 1.4 Districts' Ongoing Studies and Data Collection Activities

Extensive information on potential cumulative effects to environmental resources in the vicinity of the La Grange Hydroelectric Project and the lower Tuolumne River are available as part of the Don Pedro Hydroelectric Project relicensing docket (P-2299). A list of studies is provided in Tables 1.4-1 and 1.4-2. In addition to studies already completed in support of the Don Pedro Hydroelectric Project, there are several additional water and aquatic resources studies to be filed with the Commission in the Don Pedro docket in 2015 that will be available to interested parties involved in the La Grange Hydroelectric Project licensing (Table 1.4-3).

<sup>&</sup>lt;sup>5</sup> Conservation groups identified in December 4, 2014 comments on the PSP: American Rivers, American Whitewater, California Sportfishing Protection Alliance, California Trout, Central Sierra Environmental Resource Center, Friends of the River, Golden West Women Flyfishers, Trout Unlimited, and the Tuolumne River Trust.

Study Number	Study Name
	Salmon Population Models
1992 Appendix 1	Population Model Documentation
1992 Appendix 26	Export Mortality Fraction Submodel
1002 Appendix 2	Stock Recruitment Analysis of the Population Dynamics of San Joaquin River
1992 Appendix 2	System Chinook salmon
Report 1996-5	Stock-Recruitment Analysis Report
	Salmon Spawning Surveys
1992 Appendix 3	Tuolumne River Salmon Spawning Surveys 1971-88
Report 1996-1	Spawning Survey Summary Report
Report 1996-1.1	1986 Spawning Survey Report
Report 1996-1.2	1987 Spawning Survey Report
Report 1996-1.3	1988 Spawning Survey Report
Report 1996-1.4	1989 Spawning Survey Report
Report 1996-1.5	1990 Spawning Survey Report
Report 1996-1.6	1991 Spawning Survey Report
Report 1996-1.7	1992 Spawning Survey Report
Report 1996-1.8	1993 Spawning Survey Report
Report 1996-1.9	1994 Spawning Survey Report
Report 1996-1.10	1995 Spawning Survey Report
Report 1996-1.11	1996 Spawning Survey Report
Report 1996-1.12	Population Estimation Methods
Report 1997-1	1997 Spawning Survey Report and Summary Update
Report 1998-1	Spawning Survey Summary Update
Report 1999-1	1998 Spawning Survey Report
Report 2000-1	1999 and 2000 Spawning Survey Reports
Report 2000-2	Spawning Survey Summary Update
Report 2001-1	2001 Spawning Survey Report
Report 2001-2	Spawning Survey Summary Update
Report 2002-1	2002 Spawning Survey Report
Report 2002-2	Spawning Survey Summary Update
Report 2003-1	Spawning Survey Summary Update
Report 2004-1	2003 and 2004 Spawning Survey Reports
Report 2004-2	Spawning Survey Summary Update
Report 2006-1	2005 and 2006 Spawning Survey Reports
Report 2006-2	Spawning Survey Summary Update
Report 2007-1	2007 Spawning Survey Report
Report 2007-2	Spawning Survey Summary Update
Report 2008-2	Spawning Survey Summary Update
Report 2009-1	2008 and 2009 Spawning Survey Reports
Report 2009-2	Spawning Survey Summary Update
Report 2009-8	2009 Counting Weir Report
Report 2010-1	2010 Spawning Survey Reports
Report 2010-2	Spawning Survey Summary Update
Report 2010-8	2010 Counting Weir Report
Report 2011-2	Spawning Survey Summary Update
Report 2011-8	2011 Tuolumne River Weir Report
Report 2012-2	Spawning Survey Summary Update
Report 2012-6	2012 Tuolumne River Weir Report

# Table 1.4-1.Studies performed by the Districts during the current license term of the Don Pedro<br/>Hydroelectric Project.

Study Number	Study Name	
Seine, Snorkel, Fyke Reports and Various Juvenile Salmon Studies		
1992 Appendix 10	1987 Juvenile Chinook Salmon Mark-Recapture Study	
1002 Annondiv 12	Data Reports: Seining of Juvenile Chinook salmon in the Tuolumne, San	
1992 Appendix 12	Joaquin, and Stanislaus Rivers, 1986-89	
1002 Annondia 12	Report on Sampling of Chinook Salmon Fry and Smolts by Fyke Net and Seine	
1992 Appendix 13	in the Lower Tuolumne River, 1973-86	
1992 Appendix 20	Juvenile Salmon Pilot Temperature Observation Experiments	
Report 1996-2	Juvenile Salmon Summary Report	
Report 1996-2.1	1986 Snorkel Survey Report	
Report 1996-2.2	1988-89 Pulse Flow Reports	
Report 1996-2.3	1990 Juvenile Salmon Report	
Report 1996-2.4	1991 Juvenile Salmon Report	
Report 1996-2.5	1992 Juvenile Salmon Report	
Report 1996-2.6	1993 Juvenile Salmon Report	
Report 1996-2.7	1994 Juvenile Salmon Report	
Report 1996-2.8	1995 Juvenile Salmon Report	
Report 1996-2.9	1996 Juvenile Salmon Report	
Report 1996-9	Aquatic Invertebrate Report	
Report 1997-2	1997 Juvenile Salmon Report and Summary Update	
Report 1998-2	1998 Juvenile Salmon Report and Summary Update	
Report 1999-4	1999 Juvenile Salmon Report and Summary Update	
Report 2000-3	2000 Seine/Snorkel Report and Summary Update	
Report 2001-3	2001 Seine/Snorkel Report and Summary Update	
Report 2002-3	2002 Seine/Snorkel Report and Summary Update	
Report 2003-2	2003 Seine/Snorkel Report and Summary Update	
Report 2004-3	2004 Seine/Snorkel Report and Summary Update	
Report 2005-3	2005 Seine/Snorkel Report and Summary Update	
Report 2006-3	2006 Seine/Snorkel Report and Summary Update	
Report 2007-3	2007 Seine/Snorkel Report and Summary Update	
Report 2008-3	2008 Seine Report and Summary Update	
Report 2008-5	2008 Snorkel Report and Summary Update	
Report 2009-3	2009 Seine Report and Summary Update	
Report 2009-5	2009 Snorkel Report and Summary Update	
Report 2010-3	2010 Seine Report and Summary Update	
Report 2010-5	2010 Snorkel Report and Summary Update	
Report 2011-3	2011 Seine Report and Summary Update	
Report 2011-5	2011 Snorkel Report and Summary Update	
Report 2012-3	2012 Seine Report and Summary Update	
Report 2012-5	2012 Snorkel Report and Summary Update	
Screw Trap Monitoring		
Report 1996-12	Screw Trap Monitoring Report: 1995-96	
Report 1997-3	1997 Screw Trap and Smolt Monitoring Report	
Report 1998-3	1998 Tuolumne River Outmigrant Trapping Report	
Report 1999-5	1999 Tuolumne River Upper Rotary Screw Trap Report	
Report 2000-4	2000 Tuolumne River Smolt Survival and Upper Screw Traps Report	
Report 2000-5	1999-2000 Grayson Screw Trap Report	
Report 2001-4	2001 Grayson Screw Trap Report	
Report 2004-4	1998, 2002, and 2003 Grayson Screw Trap Reports	
Report 2004-5	2004 Grayson Screw Trap Report	
Report 2005-4	2005 Grayson Screw Trap Report	
Report 2005-5	Rotary Screw Trap Summary Update	
Report 2006-4	2006 Rotary Screw Trap Report	

Study Number	Study Name	
Report 2006-5	Rotary Screw Trap Summary Update	
Report 2007-4	2007 Rotary Screw Trap Report	
Report 2008-4	2008 Rotary Screw Trap Report	
Report 2009-4	2009 Rotary Screw Trap Report	
Report 2010-4	2010 Rotary Screw Trap Report	
Report 2011-4	2011 Rotary Screw Trap Report	
Report 2012-4	2012 Rotary Screw Trap Report	
	Fluctuation Assessments	
1992 Appendix 14	Fluctuation Flow Study Report	
1992 Appendix 15	Fluctuation Flow Study Plan: Draft	
Report 2000-6	Tuolumne River Chinook Salmon Fry and Juvenile Stranding Report	
2005 Ten-Year Summary		
Report Appendix E	Stranding Survey Data (1996-2002)	
	Predation Evaluations	
1992 Appendix 22	Lower Tuolumne River Predation Study Report	
1992 Appendix 23	Effects of Turbidity on Bass Predation Efficiency	
Report 2006-9	Lower Tuolumne River Predation Assessment Final Report	
•	Smolt Monitoring and Survival Evaluations	
1002 America 21	Possible Effects of High Water Temperature on Migrating Salmon Smolts in the	
1992 Appendix 21	San Joaquin River	
Report 1996-13	Coded-wire Tag Summary Report	
Report 1998-4	1998 Smolt Survival Peer Review Report	
Report 1998-5	CWT Summary Update	
Report 1999-7	Coded-wire Tag Summary Update	
Report 2000-4	2000 Tuolumne River Smolt Survival and Upper Screw Traps Report	
Report 2000-8	Coded-wire Tag Summary Update	
Report 2001-5	Large CWT Smolt Survival Analysis	
Report 2001-6	Coded-wire Tag Summary Update	
Report 2002-4	Large CWT Smolt Survival Analysis	
Report 2002-5	Coded-wire Tag Summary Update	
Report 2003-3	Coded-wire Tag Summary Update	
Report 2004-7	Large CWT Smolt Survival Analysis Update	
Report 2004-8	Coded-wire Tag Summary Update	
Report 2005-6	Coded-wire Tag Summary Update	
Report 2006-6	Coded-wire Tag Summary Update	
Report 2007-5	Coded-wire Tag Summary Update	
Fish Community Assessments		
1992 Appendix 24	Effects of Introduced Species of Fish in the San Joaquin River System	
1992 Appendix 27	Summer Flow Study Report 1988-90	
Report 1996-3	Summer Flow Fish Study Annual Reports: 1991-94	
Report 1996-3.1	1991 Report	
Report 1996-3.2	1992 Report	
Report 1996-3.3	1993 Report	
Report 1996-3.4	1994 Report	
Report 2001-8	Distribution and Abundance of Fishes Publication	
Report 2002-9	Publication on the Effects of Flow on Fish Communities	
Report 2007-7	2007 Rainbow Trout Data Summary Report	
Report 2008-6	2008 July Oncorhynchus mykiss Population Estimate Report	
Report 2010	Tuolumne River <i>Oncorhynchus mykiss</i> Monitoring Report (submitted January 15)	
Attachment 5	March and July 2009 Population Estimates of Oncorhynchus mykiss Report	
Report 2011	Tuolumne River Oncorhynchus mykiss Monitoring Summary Report (submitted	

Study Number	Study Name	
	January 15)	
Report 2010-6	2010 Oncorhynchus mykiss Population Estimate Report	
Report 2010-7	2010 Oncorhynchus mykiss Acoustic Tracking Report	
Report 2011-6	2011 Oncorhynchus mykiss Population Estimate Report	
Report 2011-7	2011 Oncorhynchus mykiss Acoustic Tracking Report	
	Invertebrate Reports	
1992 Appendix 16	Aquatic Invertebrate Studies Report	
1992 Appendix 28	Summer Flow Invertebrate Study	
Report 1996-4	Summer Flow Aquatic Invertebrate Annual Reports: 1989-93	
Report 1996-4.1	1989 Report	
Report 1996-4.2	1990 Report	
Report 1996-4.3	1991 Report	
Report 1996-4.4	1992 Report	
Report 1996-4.5	1993 Report	
Report 1996-9	Aquatic Invertebrate Report	
Report 2002-8	Aquatic Invertebrate Report	
Report 2004-9	Aquatic Invertebrate Monitoring Report (2003-2004)	
Report 2008-7	Aquatic Invertebrate Monitoring (2005, 2007, 2008) and Summary Update	
Report 2009-7	2009 Aquatic Invertebrate Monitoring and Summary Update	
	Delta Salmon Salvage	
Report 1999-6	1993-99 Delta Salmon Salvage Report	
	Gravel, Incubation, and Redd Distribution Studies	
1992 Appendix 6	Spawning Gravel Availability and Superimposition Report (incl. map)	
1992 Appendix 7	Salmon Redd Excavation Report	
1992 Appendix 8	Spawning Gravel Studies Report	
1992 Appendix 9	Spawning Gravel Cleaning Methodologies	
1992 Appendix 11	An Evaluation of the Effect of Gravel Ripping on Redd Distribution	
Report 1996-6	Redd Superimposition Report	
Report 1996-7	Redd Excavation Report	
Report 1996-8	Gravel Studies Report: 1987-89	
Report 1996-10	Gravel Cleaning Report: 1991-93	
Report 2000-7	Tuolumne River Substrate Permeability Assessment and Monitoring Program	
	Report	
Report 2006-7	Survival to Emergence Study Report	
Report 2008-9	Monitoring of Winter 2008 Runoff Impacts from Peaslee Creek	
Water Temperature and Water Quality		
1992 Appendix 17	Preliminary Luolumne River Water Temperature Report	
1992 Appendix 18	Instream Temperature Model Documentation: Description and Calibration	
1992 Appendix 19	Tuolumne River	
Report 1996-11	Intragravel Temperature Report: 1991	
Report 1997-5	1987-97 Water Temperature Monitoring Data Report	
Report 2002-7	1998-2002 Temperature and Conductivity Data Report	
Report 2004-10	2004 Water Quality Report	
Report 2007-6	Flow, Delta Export, Weather, and Water Quality Data Report: 2003-2007	
	IFIM Assessment	
1992Appendix 4	Instream Flow Data Processing, Tuolumne River	
1992 Appendix 5	Analysis of 1981 Lower Tuolumne River IFIM Data	
	1995 USFWS Report on the Relationship between Instream Flow and Physical	
	Habitat Availability (submitted by Districts to FERC in May 2004)	

Study Number	Study Name		
	Flow and Delta Exports		
Report 1997-4	Streamflow and Delta Water Export Data Report		
Report 2002-6	1998-2002 Streamflow and Delta Water Export Data Report		
Report 2003-4	Review of 2003 Summer Flow Operation		
Report 2007-6	Flow, Delta Export, Weather, and Water Quality Data Report: 2003-2007		
Report 2008-8	Review of 2008 Summer Flow Operation		
Report 2009-6	Review of 2009 Summer Flow Operation		
Restoration, Project Monitoring, and Mapping			
Report 1996-14	Tuolumne River GIS Database Report and Map		
Report 1000 8	A Summary of the Habitat Restoration Plan for the Lower Tuolumne River		
Report 1999-8	Corridor		
Report 1999-9	Habitat Restoration Plan for the Lower Tuolumne River Corridor		
Report 1999-10	1998 Restoration Project Monitoring Report		
Report 1999-11	1999 Restoration Project Monitoring Report		
Report 2001-7	Adaptive Management Forum Report		
Report 2004-12	Coarse Sediment Management Plan		
Report 2004-13	Tuolumne River Floodway Restoration (Design Manual)		
2005 Ten-Year Summary	Salmonid Habitat Mana		
Report Appendix D			
2005 Ten-Year Summary	GIS Manning Products		
Report Appendix F			
Report 2005-7	Bobcat Flat/River Mile 43: Phase 1 Project Completion Report		
Report 2006-8	Special Run Pool 9 and 7/11 Reach: Post-Project Monitoring Synthesis Report		
Report 2006-10	Tuolumne River La Grange Gravel Addition, Phase II Annual Report		
Peport 2006 11	Tuolumne River La Grange Gravel Addition, Phase II Geomorphic Monitoring		
Report 2000-11	Report		
General Monitoring Information			
Report	1992 Fisheries Studies Report		
Report 2002-10	2001-2002 Annual CDFW Sportfish Restoration Report		
Report	2005 Ten-Year Summary Report		

# Table 1.4-2. Studies completed by the Districts as part of the Don Pedro Hydroelectric Project relicensing process.

Study Number	Study Title	
Cultural Resour	rces (CR)	
CR-01	Historic Properties Study	
CR-02	Native American Traditional Cultural Properties Study	
Recreation Resources (RR)		
RR-01	Recreation Facility Condition and Public Accessibility Assessment, and Recreation use Assessment	
RR-02	Whitewater Boating Take Out Improvement Feasibility Study	
RR-03	Lower Tuolumne River Lowest Boatable Flow Study	
RR-04	Visual Quality Study	
Terrestrial Resources (TR)		
TR-01	Special-Status Plants Study	
TR-02	ESA- and CESA-Listed Plants Study	
TR-03	Wetland Habitats Associated with Don Pedro Reservoir Study	
TR-04	Noxious Weed Survey	
TR-05	ESA-Listed Wildlife - Valley Elderberry Longhorn Beetle Study	
TR-06	Special-Status Amphibians and Aquatic Reptiles Study	
TR-07	ESA-Listed Amphibians - California Red-Legged Frog Study	

Study Number	Study Title
TR-08	ESA-Listed Amphibians - California Tiger Salamander Study
TR-09	Special-Status Wildlife - Bats Study
TR-10	Bald Eagle Study
Water and Aqu	atic Resources (W&AR)
W&AR-01	Water Quality Assessment
W&AR-02	Project Operations/Water Balance Model
W&AR-03	Don Pedro Reservoir Temperature Model
W&AR-04	Spawning Gravel in the Lower Tuolumne River Study
W&AR-05	Salmonid Population Information Integration and Synthesis Study
W&AR-06	Tuolumne River Chinook Salmon Population Model
W&AR-07	2012 Predation Study
W&AR-08	Salmonid Redd Mapping Study
W&AR-10	Oncorhynchus mykiss Population Model
W&AR-13	Fish Assemblage and Population Between Don Pedro Dam and La Grange Dam Study
W&AR-15	Socioeconomics Study
W&AR-16	Lower Tuolumne River Temperature Model
W&AR-17	Don Pedro Fish Population Survey
W&AR-18	Sturgeon Study
W&AR-19	Lower Tuolumne River Riparian Information and Synthesis Study
W&AR-20	Oncorhynchus mykiss Scale Collection and Age Determination Study
NMFS Information Request	Description of La Grange Facilities and Potentially Affected Environment of Anadromous Fish in the Vicinity of the La Grange Facilities
Lower Tuolumne River Instream Flow Study	Lower Tuolumne River Instream Flow Study, including Habitat Suitability Curves for Splittail and Lamprey
Additional Info	rmation Developed in Support of the Final License Application (FLA)
FLA	Assessment of Don Pedro Project Operations to Meet EPA Region 10 Guidance for Pacific
Attachment A	Northwest State and Tribal Temperature Water Quality Standards
	Jayasundara, N. C., M. L. Deas, E. Sogutlugil, E. Miao, E. Limanto, A. Bale, Nd S. K. Tanaka. 2014. Tuolumne River flow and temperature model: without project assessment. Prepared by Watercourse Engineering, Inc., Davis, CA.

#### Table 1.4-3Studies in the Don Pedro Hydroelectric Project yet to be completed.

Study Number	Study Title	
W&AR-11	Chinook Salmon Otolith Study	
W&AR-12	Oncorhynchus mykiss Habitat Survey	
W&AR-14	Temperature Criteria Assessment (Chinook Salmon and O. mykiss)	
W&AR-21	Lower Tuolumne River Floodplain Hydraulic Analysis	
Lower Tuolumne	Effective Weighted Usable Area Estimate for O. mykiss	
River Instream Flow Study	Evaluation of Non-Native Predatory Fish	

# 2.0 LICENSING PARTICIPANTS' STUDY REQUESTS AND COMMENTS

Comments on the Districts' PAD, SD1, PSP and/or USP were received from seven entities, as summarized in Section 1.0. Five LPs submitted study requests and/or suggested modifications to the Districts' PSP and/or Updated Study Plan (Table 2.0-1).

Licensing Participant	Date of Comment Letter	Requested New Study or Modification	
California Department of Fish and Wildlife	December 4, 2014	• Comments on the Districts' Fish Passage Assessment USP	
		• Fish Passage	
	July 22, 2014	Upper Tuolumne Habitat Suitability	
Conservation		Recreational Access and Facilities Feasibility	
Groups		Comments on the Districts' Fish Passage Assessment	
	December 4, 2014	• Comments on the Districts' Recreation Access and Safety Assessment	
		• Water Hyacinth Study	
National Marine Fisheries Service		• Effects of the La Grange Project and Related Activities on Fish Passage for Anadromous Fishes	
	July 22, 2014 and December 4, 2014	• Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project	
		• Quantifying Existing Upper Tuolumne River Habitats for Anadromous Fish as They Pertain to Fish Passage Blockage at La Grange Dam	
		• Effects of Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout <i>Oncorhynchus mykiss</i> in the Tuolumne River	
		• Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River	
State Water		Fish Passage Feasibility Study	
Control	July 22, 2014	Upper Tuolumne River Habitat Assessment	
Board		Tailrace Habitat Assessment	
		Draft Juvenile Salmonid Floodplain Rearing Study	
U.S. Fish		Draft Chinook Salmon Egg Viability Study	
and Wildlife	July 22, 2014	Draft Juvenile Chinook Salmon Survival Study	
Service		• Draft Genetics of Chinook Salmon in the Upper Tuolumne River	
		Draft Redd Dewatering Study	

 Table 2.0-1.
 Study plan modifications and study requests filed with FERC by LPs.

In accordance with 18 CFR Section 5.9(b)(1)-(7), all study requests must be accompanied by a showing that all of the ILP study plan criteria (Table 2.0-2) are met. A study request must meet all seven criteria. The Districts evaluated whether each study request met all study plan criteria.

No.	Criteria (18 CFR Section 5.9(b)(1) – (7))
1	Describe the goals and objectives of each study proposal and the information to be obtained
2	If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied
3	If the requester is not a resource agency, explain any relevant public interest considerations in regards to the proposed study
4	Describe existing information concerning the subject of the study proposal, and the need for additional information
5	Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements
6	Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge
7	Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs

Table 2.0-2.	ILP study plan criteria	

This RSP document contains the studies proposed to be conducted by the Districts during the study phase of the licensing process. Section 3.0 provides a summary of each of the Districts' proposed studies, including responses to related LPs' study requests that were partially or wholly adopted. Section 4.0 provides the Districts' explanation why certain study requests received from LPs have not been adopted by the Districts.

Following submittal of the PSP and the PSP meeting, four LPs submitted comments on the PSP and USP. The Districts' responses to these comments are provided in Appendix A, along with descriptions of how the study plans were modified since the PSP/USP to reflect these comments.

#### SUMMARY OF THE DISTRICTS' STUDY PLANS 3.0

The study plans contained within this RSP (Table 3.0-1) reflect and respond to the discussions held during the October 6, 2014 PSP meeting and additional comment letters received by the Districts. These studies, when combined with existing information as summarized in the Districts' PAD and other ongoing data gathering activities (see Section 1.4), will be used to evaluate the effects of La Grange Hydroelectric Project on environmental resources and inform the development of license requirements. Further, the Fish Passage Assessment Study Plan outlines study elements the Districts are voluntarily implementing in response to LP study requests, even though the Districts contend that many of these studies or study elements do not meet all the ILP Study Plan Criteria, especially Criteria 5 (Project Nexus).

Study Title	Licensing Participants' Study Requests Adopted or Adopted in Part in the Revised Study Plan	
Cultural Resources Study	The Districts proposed this study in the PAD.	
Recreation Access and Safety Assessment	Recreational Access and Facilities Feasibility Study Request (CGs)	
Fish Passage Assessment	<ul> <li>Fish Passage (CGs)</li> <li>Upper Tuolumne Habitat Suitability (CGs)</li> <li>Effects of the La Grange Project and Related Activities on Fish Passage for Anadromous Fishes (NMFS)</li> <li>Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project (NMFS)</li> <li>Quantifying Existing Upper Tuolumne River Habitats for Anadromous Fish as They Pertain to Fish Passage Blockage at La Grange Dam (NMFS)</li> <li>Fish Passage Feasibility Study (SWRCB)</li> <li>Upper Tuolumne River Habitat Assessment (SWRCB)</li> <li>Tailrace Habitat Assessment (SWRCB)</li> </ul>	
	Draft Redd Dewatering Study (USFWS)	

Table 3.0-1. Districts' study plans.

#### 3.1 **Cultural Resources Study**

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies to consider the effects of their undertakings on historic properties listed in or eligible for inclusion in the National Register of Historic Places (NRHP). FERC's issuance of a license for the La Grange Hydroelectric Project is considered a federal undertaking, and is therefore subject to the provisions and regulations of Section 106.

The primary study goal is to assist FERC in meeting its compliance requirements under Section 106 of the NHPA by determining if licensing of the La Grange Hydroelectric Project will have an adverse effect on historic properties or a Traditional Cultural Property. The objective of this study is to identify cultural resources within the La Grange Hydroelectric Project's Area of Potential Effects (APE); evaluate their eligibility to the NRHP, if needed; and identify any La Grange Hydroelectric Project-related effects on those resources. The results of the study will then be used to develop a Historic Properties Management Plan, if necessary, which will ensure that all cultural resources identified within the APE will be appropriately considered and managed during the term of a FERC license. The Districts will develop a technical report

3-1

Revised Study Plan

prepared to current professional standards consistent with the Archaeological Resource Management Report Guidelines (OHP 1995).

The Districts' Cultural Resources Study Plan is provided in Appendix B of this RSP.

# **3.2** Recreation Access and Safety Assessment

FERC regulations require that the license application include a description of existing recreation facilities to be continued and maintained during the term of the license, new measures or facilities proposed by the applicant for the purpose of enhancing recreational opportunities at the Project, and measures to ensure the safety of the public in its use of Project lands and waters. Recreation is a recognized project purpose at FERC-licensed projects under Section 10(a) of the Federal Power Act.

There are no recreation facilities associated with the Project or located along the reach of the Tuolumne River between Don Pedro Dam and La Grange Diversion Dam. Public access to this reach of the Tuolumne River has been historically limited to occasional use by the adjacent private property owners. All existing information on recreational use along the La Grange pool and in the immediate area below La Grange Diversion Dam, and the safety risks potentially associated with recreational use, is anecdotal. The proposed study will identify potential recreational uses at the Project. The Districts will first evaluate whether it is safe for the public to utilize any potential recreational resources identified at the Project; where the potential for safe recreation activities are identified, additional investigations of potential recreation enhancements will be developed in collaboration with licensing participants. The goals of this study area; (1) to identify and characterize public use and potential recreation opportunities in the study area, and (2) to assess the public safety risk of identified recreation opportunities in the study area. The results of the study in Year 1 may be used to develop a Year 2 recreation facilities siting assessment for those recreational activities identified during the Year 1 study as being able to safely occur at the Project.

The Districts' Recreation Access and Safety Assessment Study Plan is provided in Appendix C of this RSP.

# 3.3 Fish Passage Assessment Study Plan

In response to comments received at the PSP meeting and subsequent written comments, the Districts have significantly modified the Fall-Run Chinook Salmon Migration Barrier Study Plan (which is now entitled the Fish Passage Assessment). The Fish Passage Assessment Study Plan contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upstream Habitat Assessment; (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. The components of the Districts' Fish Passage Assessment Study Plan are summarized below, and the plan is provided in Appendix D of this RSP.

# **3.3.1** Fish Passage Facilities Assessment

Resource agencies and CGs requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. While the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in the regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The fish passage facilities assessment includes two components, the initially proposed fish barrier assessment below LGDD and La Grange powerhouse, and an additional concept-level fish passage alternatives analysis, in response to LPs' comments. The fish barrier assessment is designed to evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to potential upstream migration. For the concept-level fish passage alternatives component, the Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs initial biological design criteria for fish passage facilities, (2) gather hydrologic and engineering data and information in cooperation with LPs to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site layouts, and initial cost estimates. In addition, any significant remaining data gaps or additional information needed to develop realistic and reliable facility functional designs and costs will be identified and defined.

# **3.3.2** Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg viability, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. The SWRCB and CGs also requested assessments of potential habitat upstream of the Don Pedro Reservoir. The Districts do not believe these study requests meet FERC's study criteria; nonetheless, the Districts are willing to voluntarily conduct a two-year, phased assessment of certain habitat characteristics in the upper Tuolumne River, including: (1) physical barriers to upstream anadromous salmonid migration; (2) water temperature monitoring and modeling; and (3) upstream habitat characterization using other available information on habitat conditions in the upper Tuolumne River basin, in cooperation with LPs.

# 3.3.3 Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse

NMFS requested information related to the operation of the La Grange Project and associated "five flow conduits". NMFS indicates these "flow conduits" may have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the LGDD have the potential to attract, then possibly strand, fish in multiple locations. The Districts have been asked to document flow, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project. The SWRCB and USFWS also submitted requests for evaluation of potential standing and/or redd dewatering which have now been incorporated into the Fish Passage Assessment Study Plan.

The Districts agree that La Grange facility operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Updated Study Report, January 2014), the NMFS study request identifies the need for information on discharges associated with individual conduits, including the MID hillside discharge and the sluicegate located in the diversion dam, that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts have agreed to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the La Grange Project under certain flow conditions, all as described in the study plan.

### 4.0 DISTRICTS' RESPONSE TO STUDY REQUESTS

Four LPs submitted a total of 17 study requests (Table 2.0-1). Under the regulations governing the ILP, a study request must meet each of seven criteria provided in § 5.9(b) of FERC's regulations. The Districts reviewed each study request in light of the ILP criteria and determined that many study requests, such as the requests to study fish passage for anadromous fish and the requests to study habitat upstream of the Districts' Don Pedro Reservoir, do not meet the ILP criteria. However, to more fully support licensing participants in the development of information and to foster collaboration among all parties, the Districts have adopted elements from 10 of the 17 study requests.

### 4.1 Study Requests Adopted or Adopted in Part

#### 4.1.1 Study Requests Related to Passage of Anadromous Fish

In their initial study request letters, NMFS (Study Request #1), SWRCB, and CGs each requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. The USFWS also indicated in its comment letter that it supports the fish passage planning studies requested by NMFS. While the Districts outline in the study plan contained in this RSP why the Districts do not believe that studies of fish passage facilities meet FERC's criteria specified in its regulations, the Districts are willing to collaborate with LPs and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro projects. In their comments on the USP, CGs indicated that the Districts' Fish Passage Assessment Study Plan incorporates the majority of the study elements requested by the CGs, and that the CGs will address any outstanding areas of disagreement, interpretation, or omission during the defined opportunities for consultation with LPs provided by the collaborative process outlined in the Fish Passage Assessment Study Plan. In its comments on the PSP, NMFS specifically noted that it was not submitting comments on the USP, and would submit any remaining comments on the RSP, however, where NMFS' comments on the fish barrier assessment study were still relevant to the revised plan, the Districts have responded to NMFS comments. The Districts incorporated elements from each fish passage study request into the Fish Passage Assessment Study Plan as summarized in Table 4.1-1.

Licensing Participant(s)	Study Request	Districts' Response
NMFS	NMFS Study #1 (Element #1) Biological and Physical Requirements of Target Species	In collaboration with LPs, the Districts will develop biological and physical design requirements to inform the conceptual fish passage alternatives for upstream and downstream passage.
SWRCB, NMFS, CGs	The SWRCB, NMFS (Element #2), and the CGs requested study of conceptual level alternatives for providing fish passage up to the upper Tuolumne River watershed. Study requests suggested consideration of adult capture locations, release locations, and acclimation facilities, cost, construction impacts, and overall benefit to the fishery.	The Districts have proposed studying conceptual alternatives to upstream fish passage in the Section 6.2.1 of the Fish Passage Assessment.

 Table 4.1-1.
 Districts' response to fish passage study requests.

Licensing Participant(s)	Study Request	Districts' Response
NMFS, CGs	NMFS (Element #3) requested conceptual level downstream passage alternatives, and the CGs requested the Districts evaluate potential locations, facilities and costs for downstream juvenile capture, acclimation and transport facilities	The Districts propose methods for studying conceptual alternatives of downstream fish passage in Section 6.2.1 of the Fish Passage Assessment.
CGs	The CGs recommend establishing a Tuolumne River Fish Passage Technical Working Group	The Districts have adopted a collaborative process, including three workshops during 2015, to implement the Fish Passage Assessment.

### 4.1.2 Study Requests Related to Habitat Upstream of Don Pedro Dam

Little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg viability, fry, and juvenile life stages of anadromous salmonid species in the upper Tuolumne River watershed. NMFS, SWRCB, and CGs each requested that the Districts undertake investigations of potential anadromous salmonid habitat upstream of Don Pedro Project. The Districts do not believe that these requests satisfied the study criteria requirements mandated by FERC's ILP process (e.g., Criteria 5 Project Nexus). Nevertheless, the Districts are willing to voluntarily conduct a two-year, phased assessment of certain habitat characteristics in the upper Tuolumne River, including: (1) physical barriers to upstream anadromous salmonid migration; (2) water temperature monitoring and modeling; and (3) upstream habitat characterization using other available information on habitat conditions in the upper Tuolumne River basin, in cooperation with LPs. The Districts incorporated the majority of information requests from the LPs' Tuolumne River upstream habitat study requests into the Fish Passage Assessment Study Plan, Upper Tuolumne River Basin Habitat Assessment component (Table 4.1-2).

Licensing Participant(s)	Study Request Elements	Districts' Response
NMFS	Request Element #1: Migration Barriers	The Districts have addressed this request in the Fish Passage Assessment, Section 6.2.2
CGs	Conduct a Fish Barrier Assessment	The Districts have included a review of existing studies and a field assessment under existing flow conditions in the Fish Passage Assessment. However, the Districts will not evaluate changes of CCSF's operation of the Hetch Hetchy project on barriers (or other habitat characteristics), as CCSF's operations are not under the Districts' control.
NMFS, CGs	NMFS (Request Element #2) and the CGs request Water Temperature Monitoring and Modeling.	The Districts have included temperature data review, collection, and development of a model in the Fish Passage Assessment.
CGs	The CGs requested that the Districts perform a Habitat Suitability Evaluation, including gravel suitability assessments.	Upstream habitat data to be collected includes a barrier assessment and water temperature information and is described in the Fish Passage Assessment. To the extent that data already exist on other parameters, or data are being collected by other entities (e.g., the on-going NMFS upper Tuolumne River habitat study), the Districts will review these data collaboratively with LPs.
CGs	The CGs suggested utilizing LiDAR and conducting Hyperspectral Remote Sensing to characterize habitat	The Districts have proposed a two-phase habitat assessment. In the first year, the focus of the

Table 4.1-2Districts' response to upstream habitat study requests.

Licensing Participant(s)	Study Request Elements	Districts' Response
	characteristics on the upper watershed.	study is identifying barriers and temperatures. NMFS is conducting an upper watershed habitat study in 2015 and will be defining habitat units based on data collected via LiDAR and field information on substrates, potentially providing information requested by the CGs. In Year 2 of the study, following review of these data, the Districts will work with LPs to determine if additional information, such as suggested by the CGs, is still needed to complete a habitat assessment.
SWRCB	SWRCB requested a habitat assessment to assess amount and types of salmonid habitat upstream Don Pedro Project, and characterize the capacity of the Upper Tuolumne River to support the reintroduction of salmonids and SWRCB and the CGs requests that criteria for evaluation be developed in consultation with LPs.	The Districts contend there are no habitat impacts upstream of the Don Pedro Project Boundary due to the La Grange Hydroelectric Project. Nonetheless, the Districts voluntarily include a habitat assessment to collaborate with LPs to characterize habitat in the Upper Tuolumne River and have proposed workshops with LPs to review information needs and habitat evaluation criteria.
NMFS	NMFS has requests that the Districts determine what additional monitoring actions are funded or need to be implemented as recommended by McBain and Trush (2007) in its request Element #3: Implement Monitoring Actions.	The Districts will review existing information, including McBain and Trush (2007) and have included workshops with LPs to review information gathered in Year 1 in order to inform Year 2 study efforts, as necessary.
CGs	Modification and Additions to Districts' Operations Model	CCSF operations are independent and unrelated to the Districts. The CGs suggested modifications and additions to the Districts' Don Pedro operations model are not relevant to analysis of the potential impacts of the La Grange Hydroelectric Project. Further, existing gage information upstream of the Don Pedro Reservoir will be summarized in the Upstream Habitat Assessment for use in the habitat assessment in the Fish Passage Assessment.
NMFS	Request Element #4: Salmonid Life-Cycle Model. The Applicants should use available information and newly developed information from the tasks outlined above, for use in salmonid life-cycle models for Chinook salmon and steelhead above New Don Pedro reservoir. The models should determine carrying capacities for each lifestage of steelhead and Chinook salmon in the suitable habitat identified in the previous elements of this study. These models should then use literature and field derived values for life- stage survival, potentially utilizing values and relationships already established for the life-cycle models developed for the lower Tuolumne River. In this way, the population-level benefits of restoring access of anadromous fishes to the Upper Tuolumne can be evaluated in the context of downstream influences.	There is no project nexus (ILP Criteria 5) to justify a Salmonid Life-Cycle model. Such a model, if even possible to develop, would be the responsibility of the agency proposing to re- introduce salmonid species. The existing population model developed for the Don Pedro relicensing addresses available habitat downstream of La Grange and Don Pedro in the Tuolumne River and is based on available empirical data.

# 4.1.3 Study Requests Related to Stranding and Potential Redd Dewatering

NMFS and SWRCB requested the Districts study the potential for Project operations to affect anadromous fish behavior in the immediate vicinity of the La Grange facilities, to the extent that anadromous fish may be present in the immediate area of Project facilities. The USFWS also requested a Redd Dewatering Study. The Districts have agreed to conduct a two-year evaluation of flow rates and frequencies, associated habitat attributes, and observations of salmonids and redds in the immediate area of the Project, as described further below. The Districts incorporated methods to address NMFS', SWRCB's, and USFWS' study requests into the revised Fish Passage Assessment Study Plan (Table 4.1-3).

Licensing Participant(s)	Study Request Elements	Districts' Response
NMFS	Request Element #1: Develop hydrological data sets specific to flow conduits at the La Grange Project	The Habitat Assessment and Fish Stranding Observations below LGDD and powerhouse component (Section 6.2.3) of the Fish Passage Assessment incorporate this study request going forward. To the extent past data are available, they will be summarized.
NMFS	Request Element #2: Collect topographic, bathymetric, and habitat data in the vicinity of the La Grange Project	The Habitat Assessment and Fish Stranding Observations below LGDD and powerhouse component (Section 6.2.3) of the Fish Passage Assessment incorporate this study request.
NMFS	Request Element #3: Direct observation of fish presence and potential stranding in the TID canal spillway and tailrace channel	The Habitat Assessment and Fish Stranding Observations below LGDD and powerhouse component (Section 6.2.3) of the Fish Passage Assessment incorporate this study request.
NMFS	Request Element #4: Tailrace Barrier Protection Requirements	The Fish Barrier Assessment incorporates twice daily observations of fish (Section 6.2.1), and the Habitat Assessment and Fish Stranding Observations below LGDD and powerhouse component (Section 6.2.3) of the Fish Passage Assessment incorporates requested hydraulic data gathering.
NMFS	Request Element #5: Implement formal documentation of incidental fish observations at the La Grange Project	The Fish Barrier Assessment (Section 6.2.1.2 of the Fish Passage Assessment) incorporates this study request.
SWRCB	The primary goal of this study is to characterize the salmonid habitat in the Tuolumne River, below the Project powerhouse tailrace in relation to stream flow. Due to Project operations, this stretch of river is subject to rapid flow fluctuations and potential dewatering.	As described in the analysis of stage change provided in the PAD, La Grange operations do not result in "rapid flow fluctuations". Nonetheless, the Districts have included study elements per resource agencies' requests in Section 6.2.3 of the Fish Passage Assessment.
USFWS	The USFWS Redd Dewatering Study Downstream of La Grange Dam requested the Districts determine the amount, extent, and level of redd dewatering that would result from Project operations and to estimate the effect of the dewatering on anadromous and resident salmonids. USFWS requested redd surveys 1- mile below the Project from end-September to February at varying intervals. USFWS also requested documentation whenever there is a reduction in flow following an operational action and that an additional redd survey be conducted within 48 hours of flow reduction, but will only occur in river areas that are 1 foot (25 cm) in depth or less to the high-water mark of the prior 30 days. Reporting for any dewatered redds detected, including redds that are found within 1 foot (25 cm) of the water surface, NMFS, USFWS, and CDFW contacts from the licensing meetings will be contacted via email within 1 day.	As a component of the Fish Barrier Assessment (Section 6.2.1.2 of the Fish Passage Assessment), the Districts will conduct weekly redd surveys from September through April for the 2015/2016 and 2016/2017 migration seasons. Notation of any redds that become dewatered will be made on daily logs described in the study plan. Further, Section 6.2.3 includes a procedure for notification and conduct of additional surveys due to a change in powerhouse operations.

 Table 4.1-3
 Districts' response to stranding and redd dewatering study requests.

# 4.1.4 CGs: Recreation Access and Facilities Feasibility

The Districts have incorporated several elements of this study request (i.e., assess the feasibility of access, determine whether boating and shore-based fishing and hiking at La Grange pool could occur safely, and identify and describe Project features that pose a risk to public safety) into the Recreation Access and Safety Assessment Study Plan (Appendix C) (Table 4.1-4). Other study request elements were not adopted. Several elements, such as requests to evaluate the feasibility of physical and flow improvements at the La Grange Hydroelectric Project, provide a description of agency recommendations for enhancing recreation, and develop and evaluate alternatives for fishing and hiking were requests for PM&E measures and were considered premature at this stage of the licensing process. Other elements, such as the request to identify manmade hazards in the lower Tuolumne River, were not adopted because they have no nexus to the Project (ILP Criteria 5). The Districts did not adopt the CG's proposed study area, which encompasses the Tuolumne River from the La Grange pool downstream to the confluence with the San Joaquin River, because these areas are not under the Districts' control. However, in response to comments on the PSP, the Districts' modified the study area to incorporate the La Grange pool and potential access routes.

The CGs' requests to estimate existing recreation at the Project were not adopted. The Districts note that there is no authorized recreation at the La Grange Hydroelectric Project. The Districts are concerned that the presence and operation of industrial machinery at the Project, as well as unpredictable changes in flows due to operational activities, forced outages, and seasonal variations in upstream flow, may create hazardous conditions that could endanger the safety of individuals recreating onsite. The Districts contend it is inappropriate to attempt to quantify existing recreation for purposes of proposing recreation enhancements, without first evaluating what recreation activities could be safely conducted at the Project. Regarding the CGs' requests to estimate regional recreation needs and recreation potential, the Districts note that this information request does not meet ILP Criteria 4, as adequate information is already available in such sources as the 2008 California Outdoor Recreation Plan (California State Parks 2009) and the Don Pedro Project Recreation Facility Condition and Public Accessibility Assessment, and Recreation Use Assessment Study Report (TID/MID 2013g).

Elements from the Study Request	Districts' Response
The CGs requested that the Districts determine the potential for	Methods to address this request are described in the
recreation activities such as the boating, shore-based fishing, and	Recreation Access and Safety Assessment Study Plan,
hiking to occur safely at the La Grange Reservoir, and to identify	Section 7.0.
operational constraints to such activities.	
The CGs requested that site characteristics to be assessed at the	Methods to address this request are described in the
reservoir including proximity to improved roads, site topography and	Recreation Access and Safety Assessment Study Plan,
bank slope, and presence of sensitive resources. The CGs requested	Section 7.0.
that site conditions be detailed quantitatively, described narratively,	
and photographed.	
The CGS requested that the study report include an engineering	The Districts propose a two-year study. In Year 1
feasibility assessment of alternatives and conceptual drawings,	safety assessments will be conducted and the potential
investigate flow alternatives to enhance downstream recreation	for recreation activities assessed. In Year 2,
opportunities, develop safe boating access alternatives, and identify	feasibility assessments related to potential safe
manmade hazards and other downstream mitigation opportunities.	recreational activities identified during the Year 1
	study will be conducted.
The report must specifically contain a description of any existing	There are no existing recreation facilities at the
recreational facilities at the project, indicating whether the facilities	Project. Potential recreation opportunities will be

Table 4.1-4Districts' response to CGs recreation access and feasibility study request.

Elements from the Study Request	Districts' Response
are available for public use.	evaluated in this study.
The CGs requested estimates of existing and future use of potential	The study plan will first identify potential safe
improvements and operational changes, as well as an estimate of	recreation activities. Ample existing information on
existing and potential recreational use of the project area, in daytime	regional and local (Don Pedro) recreation uses exists
and overnight visits.	to estimate potential use of enhancements that may be
	considered as a result of the proposed study.
The report must specifically contain a description of any measures or	The Districts address this component in the Revised
facilities recommended by the agencies consulted for the purpose of	Study Plan document, Section 4.1.4.
creating, preserving, or enhancing recreational opportunities at the	
project and in its vicinity.	
The CGs suggest that the study report specifically contain a	Specific measures will be considered in the license
statement of the existing measures or facilities to be continued or	application. Specific recreation proposals, if any, will
maintained and the new measures or facilities proposed by the	be evaluated, in conjunction with all resource
applicant for the purpose of creating, preserving, or enhancing	measures in the license application, based on the
recreational opportunities at the project and in its vicinity.	results of the Year 1 and Year 2 studies.
Focus groups with boaters, anglers, hikers, and other outdoor	The La Grange Hydroelectric Project covers a
enthusiasts will be used to elicit potential improvements and	relatively compact area. The Districts have included a
alternative sites. Information will be gathered via interviews or	site visit and consultation meeting with interested LPs
questionnaires. Volunteers for the study team will be identified	following the site visit. Results of the meeting will be
through information provided by relicensing participants	recorded and shared for additional comment by LPs.
knowledgeable about boating, fishing, and hiking in the region,	
agencies responsible for managing the Tuolumne River, and	
professional fishing guides.	

# 4.2 Study Requests Not Adopted by the Districts

### 4.2.1 USFWS: Juvenile Salmonid Floodplain Rearing Study

This study request by the USFWS is intended to obtain the information needed to evaluate Project effects on the total amount of available habitat for various life stages of fall-run Chinook salmon and *O. mykiss* in the lower river, so that resource agencies can design an instream flow regime to protect and enhance stream connectivity, water quality, and aquatic habitat from the Project-affected stream reaches downstream to the San Joaquin River, Sacramento-San Joaquin River Delta, and San Francisco Bay to the Pacific Ocean.

Notwithstanding the fact that the La Grange Hydroelectric Project has no effect on flows in the lower Tuolumne River, the information requested in this USFWS proposal has been developed previously or will be provided by an existing study and the USFWS does not demonstrate a need for additional information (ILP Criteria 4). Specifically, it appears that the USFWS did not consider significant additional information available from the on-going 2D modeling study (2013h, W&AR-21 Lower Tuolumne River Floodplain Hydraulic Assessment, being conducted as required by FERC's May 21, 2013 Determination on Requests for Study Modifications and New Studies for the Don Pedro Hydroelectric Project). Further, the study plan in the Don Pedro relicensing process was developed in consultation with the USFWS and other relicensing participants. This existing study either specifically addresses, or meets the intent of the USFWS current study request, as the resulting model will be able to address the following components of the USFWS study request:

• Quantify the amount, inundation frequency, and inundation period of overbank habitat for fry and juvenile life stages.

- Applies existing depth and velocity habitat suitability criteria (HSC) developed in the Don Pedro IFIM study for juvenile Chinook and *O.mykiss* life stages. The USFWS did not demonstrate why these existing criteria and supporting information is not adequate for describing floodplain habitat suitability. The USFWS proposed data collection to develop floodplain specific HSC would take considerable additional time and expense for limited utility.
- Study area encompasses the entire lower Tuolumne River between La Grange Diversion Dam and the confluence of the San Joaquin River.
- Flows examined exceed those requested by the USFWS. The W&AR-21 TUFLOW model address flows from 1,000 cfs to 9,000 cfs.
- The USFWS suggests use of River 2D model. The Districts' study uses the TUFLOW model, which is also capable of providing overbank inundation and habitat suitability information. The benefits of using TUFLOW are described further in the W&AR-21 Study Plan (TID/MID 2014h).
- The USFWS suggests extensive hydraulic data collection in order to develop the 2D model. For the conduct of W&AR-21, the Districts have compiled the best available information, including existing LiDAR flown in 2012, DWR and FEMA models and newly collected survey information in support of the TUFLOW model and have successfully calibrated the model. These data sources will be fully documented in the W&AR-21 study report, and were summarized at the W&AR-21 Workshop held on December 18, 2014, the PowerPoint presentation for which is available at <u>www.donpedro-relicensing.com</u>.

Information requests regarding development of a river-wide 2D model of *in-channel habitat* were previously addressed in FERC's May 12, 2010 Order Modifying and Approving Instream Flow and Water Temperature Model Study Plans. The existing 1D instream flow report (Stillwater Sciences 2013) provides sufficient information to characterize in-channel spawning and rearing habitat. Lastly, requests for use of Yuba River HSC were previously addressed in HSC workshops and by the consensus development of the final HSC site-specific and composite curves for the Tuolumne River, as documented in the 2013 instream flow study report appendices (Stillwater Sciences 2013).

Beyond this, it is important to note, despite the extensive information to be provided by W&AR-21, the results may not be useful for determining the needs of juvenile Chinook salmon. Information reviews conducted as part of the Salmonid Population Information Integration and Synthesis Study (TID/MID 2013b) as well as simulations conducted as part of the Chinook Salmon Population Model (TID/MID 2013c) indicate that rearing habitat availability is not limiting smolt productivity in the lower Tuolumne River under current conditions, so gaining additional habitat from the inundation of floodplain areas would not necessarily have a positive effect on Chinook productivity.

# 4.2.2 NMFS: Effects of the Project and Related Activities on the Genetic Makeup of Steelhead/Rainbow Trout *Oncorhynchus mykiss* in the Tuolumne River

The Districts have not adopted this study because it constitutes a research effort aimed at determining the genetics of *O. mykiss*, with no clear link to how the information developed would be used to develop license requirements or how the genetics of *O. mykiss* are connected to the La Grange project operations. Moreover, the genetics of Central Valley *O. mykiss* has already been studied by Nielsen et al. (2005) and Garza and Pearse (2008).

The genomes of *O. mykiss* upstream of the Don Pedro Hydroelectric Project reflect introgression resulting from fish stocking conducted by state and federal agencies, CDFW in particular. Lindley et al. (2007) suggest that hatchery introductions have altered the genetic structure of salmonid populations in the Central Valley, and Garza and Pearse (2008) indicate that because of historical planting operations most *O. mykiss* in the Central Valley are of common hatchery origin. Nielsen et al. (2005) did find genetic differences between *O. mykiss* collected upstream and downstream of Don Pedro Dam, but could not determine if these differences reflected the existence of a pre-dam population upstream of Don Pedro Dam or evidence that historical stocking and genetic drift have resulted in genetic separation of the two populations.

Adverse consequences of hatchery supplementation cannot be considered an effect of the La Grange facilities. In addition, it is unclear how additional genetics information, especially in light of the effects of hatchery stocks on native fish, would be used to make decisions about possible PM&Es associated with the Project's licensing. The Districts disagree that it is their responsibility to develop information to enable agencies' "management decisions."

Genetics studies were also proposed during the relicensing of the Don Pedro Hydroelectric Project. In its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, FERC concluded the request for the Districts to study the genetic makeup of fish inhabiting the river upstream of Don Pedro Reservoir constituted a research effort and such an effort, although necessary to make fisheries management decisions, would not inform licensing requirements.

# 4.2.3 NMFS: Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River

The Districts have not adopted this study for several reasons. First, the study request, at least in part, intends to establish pre-Project conditions related to the delivery of marine-derived nutrients to the upper Tuolumne River. The stated objective of Request Element #1 of this proposed study is to "Estimate a range of the <u>historic</u> mass of marine-derived N transported annually by Chinook salmon (all runs) to the Tuolumne River." Request Element #4 states, "Estimate the annual losses, from historic to current levels, of marine-derived N transported by fall-run Chinook salmon to the Tuolumne River." This, like Request Element #1, is inconsistent with FERC's definition of baseline in the context of licensing hydropower projects, and would be purely speculative and, therefore, would not inform the development of license conditions.

Request Element #2 is not only aimed at estimating historical conditions, it focuses on spring-run Chinook salmon, a species for which there is no evidence of a run in the lower Tuolumne River. Information derived from such a request could not be used to inform decision-making in the context of the Project's licensing process.

The Districts have also not adopted this study request because it constitutes an analysis of fish passage at the Don Pedro Project, which is an independent project and not germane to the licensing of the La Grange Hydroelectric Project.

In its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, FERC noted that NMFS' proposed marine-derived nutrients study did not have the ability to discern the attribution of, or even magnitude of, potential Project-related effects and the effects of the many non-Project related independent variables that influence present-day salmon returns to the Tuolumne River, including, but not limited to, naturally occurring oscillations in ocean productivity or climatological effects. Simply subtracting a gross estimate of the current mass of marine-derived nitrogen from an even more uncertain estimate of the historical mass of marine-derived nitrogen would not produce a reliable estimate of losses, and even less so an estimate of potential Project effects.

# 4.2.4 USFWS: Chinook Salmon Egg Viability

The Districts have not adopted this study request as adequate information already exists. Egg survival to emergence has been extensively studied in the Tuolumne River (e.g., TID/MID 1992; Stillwater Sciences 2007) and incubation temperature criteria are well established in the literature. The USFWS provides no explanation why existing information is not adequate to address this request. Further, the data request appears to be substantially identical to the study plan request submitted for the Don Pedro Hydroelectric Project, which was denied by FERC. Additional information is available in the P-2299 relicensing project record and is summarized below.

In its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, FERC denied the USFWS's request for further evaluation of egg viability in the Tuolumne River. FERC noted that it is unnecessary to identify measures or conditions that might improve egg viability in the lower Tuolumne River, because existing studies indicate that poor spawning gravel quality due to infiltration of fine sediment, not water temperature, is the primary cause for low survival-to-emergence rates. These conclusions remain valid and information in support of this premise was expanded upon in the existing studies summarized below. The USFWS does not provide justification why the existing information does not meet the suggested information need.

As noted above, further evaluation of egg viability is not necessary. The Salmonid Population Information Integration and Synthesis Study Report (TID/MID 2013b), Section 5.2.3.2, addresses factors contributing to direct and indirect Chinook salmon mortality. Intra-gravel dissolved oxygen measurements (TID/MID 2007; TID/MID 2005) suggest that hyporheic water quality conditions are suitable for incubating Chinook salmon eggs in the lower Tuolumne River. The report also states that based on assessments of seasonal water temperatures and typical spawning periods, fall-run Chinook salmon in the San Joaquin River basin are unlikely to encounter unsuitable water temperatures leading to reduced egg viability. The Chinook Salmon Population Model (TID/MID 2013c), Section 6.3.4 states that, "smolt productivity is unaffected by normal seasonal variations in air and water temperatures. More specifically, since the

majority of spawning takes place under suitable temperature conditions, modeled egg mortality effects due to potentially unsuitable water temperatures for early arriving spawners during late summer or early fall do not appear to affect subsequent smolt productivity." The USFWS and other agencies did not provide comments on the final Chinook population model, and as such, the Districts consider conclusions based on the model to be the best available science.

The USFWS also errantly characterizes Project nexus, stating that "The Project directly impacts the availability, distribution, and quantity of spawning gravel for anadromous salmonids in the lower Tuolumne River by blocking an estimated 30,000 tons of coarse gravel per year which is accumulating behind the non-Project Don Pedro Dam." This misattributes the effects of the Don Pedro Dam to the La Grange Hydroelectric Project.

The USFWS also notes that the Central Valley Regional Water Quality Control Board adopted a resolution to approve the 2008 update to the 303(d) list of impaired water bodies, which includes the proposed listing of the Tuolumne River downstream of the Don Pedro Hydroelectric Project as impaired due to temperature based on data submitted by CDFW. La Grange pool is shallow and short and does not thermally stratify. Water temperatures in the lower Tuolumne River are affected by the water supply diversions, which result in a cooling effect below La Grange Diversion Dam from June to early October, no significant effect during the early April to mid-May and mid-October to mid-November timeframes, and tends to provide a slight initial warming during the November to early April period (TID/MID 2014, i.e., the Don Pedro Hydroelectric Project FLA).

A without-dams simulation (Jayasundara et al. 2014) reveals that average water temperatures in the Tuolumne River mainstem, in the absence of impoundments, would approach thermal equilibrium well upstream of the current location of the La Grange Hydroelectric Project, and the highest without-dams 7DADM temperatures at RMs 88 and 98 ( $\approx 24^{\circ}$ C) are similar to the highest without-dams temperatures in the lower river ( $\approx 25^{\circ}$ C). These analyses indicate that the La Grange Hydroelectric Project's primary purpose of water supply contributes only slightly to the cumulative effects on temperatures in the lower Tuolumne River. As a result, even if there were observed temperature effects would be the result of a range of factors including, but not necessarily limited to, water storage and diversions beginning at the Hetch Hetchy Project; substantial in-channel and floodplain habitat modifications, including removal of riparian vegetation; return flow from irrigation operations and alteration of groundwater accretion; riparian diversions; Dry Creek inflows; and wastewater discharges.

# 4.2.5 USFWS: Juvenile Chinook Salmon Survival

The Districts have not adopted this study request because existing information is adequate to address the USFWS' objective, i.e., "characterize the limiting factors for juvenile Chinook salmon survival through the lower Tuolumne River". The USFWS does not justify the need for additional information (ILP Criteria 4), as The Chinook Salmon Population Model (TID/MID 2013c) developed as part of the Don Pedro Hydroelectric Project relicensing incorporates existing information on relative smolt survival in the lower Tuolumne River and provides an

information base for evaluation of river-wide and reach-specific mortality of juvenile Chinook salmon.

The population model shows that for fry, juvenile, and smolt life stages, changes in relative passage between the two rotary screw trap locations at Waterford (RM 29.5) and Grayson (RM 5.2) can be attributed to predation-related mortality. The Districts' FERC-approved mark-recapture study (TID/MID 2013d), a continuation of the 2012 Predation Study, developed as part of the Don Pedro Hydroelectric Project relicensing but still to be conducted, will provide additional information to complete the assessment of juvenile Chinook survival in the lower Tuolumne River.

In its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, FERC concluded that existing indices adequately characterized river-wide and reach-specific smolt survival. FERC noted that, in general, river-wide survival was correlated with flow. Moreover, FERC noted that reach-specific survival was near 100 percent in the upstream spawning reach but varied, at times being quite low, in the aggregate mining and sand-bedded reaches. FERC points out that existing information suggests that water temperature and predation are most likely responsible for the relatively high levels of juvenile mortality in parts of the lower Tuolumne River and that the Districts' completed Predation Study (W&AR-07) should lead to a better understanding of how juvenile mortality relates to habitat, flow, and predation in the mining reach. FERC also noted that water temperature would be addressed by the Districts' water temperature modeling in combination with the Tuolumne River Chinook Salmon Population Model (TID/MID 2013c) and the O. mykiss Population Study (TID/MID 2014). The USFWS did not substantially modify its previous (2011) study request, nor did it acknowledge the substantial new information available in the Don Pedro record and referenced above, or make any argument why the models developed in the Don Pedro relicensing process do not address this study request (ILP Criteria 7).

# 4.2.6 USFWS: Genetics of Chinook Salmon in the Upper Tuolumne River

The Districts have not adopted this study request because the genetic composition of Chinook salmon in the upper Tuolumne River basin is a function of CDFW's hatchery program, which is unrelated to La Grange Hydroelectric Project effects and therefore does not meet ILP Criteria 5 - Project Nexus. The USFWS offers only anecdotal support, based on personal communication, for a major assertion in the proposed study, i.e., that there is a self-sustaining adfluvial run of Chinook salmon in the Tuolumne River upstream of the Don Pedro Hydroelectric Project. Further, the Districts disagree that it is their responsibility to develop information for the agencies to use in making "management decisions that will enhance the survival and recovery of the anadromous populations..." This study would not inform the development of potential license conditions because FERC has no authority to control the activities of CDFW's genetic management of its hatchery program or its decisions regarding where to stock hatchery fish.

The USFWS also proposed a Chinook salmon genetics study as part of the Don Pedro Hydroelectric Project relicensing and the study request submitted in this proceeding is not substantially different. In its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project, FERC noted that the USFWS' request for the Districts to study the genetic

makeup of landlocked Chinook salmon was a research effort for determining the genetic makeup of Chinook salmon stocked in Don Pedro Reservoir. FERC concluded that although such a research effort may be needed to make fisheries management decisions, it would not inform the development of license requirements. This conclusion also applies to the genetics study in the context of the La Grange Hydroelectric Project licensing process.

In addition, during the Don Pedro Hydroelectric Project relicensing, the USFWS agreed that the Districts' approach of taking fin clips of Chinook salmon in Don Pedro Reservoir (as part of the fish resources surveys in (TID/MID 2013e and TID/MID 2013f) was adequate for addressing the USFWS' above-dam Chinook genetics study objectives and the USFWS does not provide justification why the existing information provided to the USFWS during the Don Pedro relicensing studies does not meet the suggested information need (ILP Criteria 7).

# 4.2.7 CGs: Hyacinth Study

In their December 4, 2014 comments on the PSP, the CGs requested a study "to determine the most effective means of controlling the spread of water hyacinth which has proliferated within the Project area." The Districts note that this is a new study request, and was not included in the CGs' comments and study requests filed on July 22, 2014. The CGs also acknowledge that this is a new study request, claiming at the time of their original filing, the extent of the water hyacinth problem was not clear. However, the occurrence of water hyacinth in the lower Tuolumne River (well below the La Grange Hydroelectric Project tailrace and potential impact area), and its proliferation in Central Valley rivers is a known river management issue.

Section 5.9(a) of FERC's regulations states that study requests must be filed with the Commission within 60 days following the Commission filing its notice of consultation procedures. The Commission filed its notice of consultation procedures for the La Grange Project on May 23, 2014; therefore, all study requests were due to be filed by July 22, 2014. The CGs filed their water hyacinth study request on December 4, 2014, over four months past the deadline for study requests. Because this study request is not in time and does not meet the ILP schedule for study requests, it must be denied.

Additionally, the Districts note that the CGs' study request does not meet ILP Criteria 5 (Project Nexus). The study request includes documentation of impacts of hyacinth on native species, impacts on recreational opportunities, investigation of nutrient loads from agricultural runoff, instream flow assessments, and exploration of control methods and funding for control. None of these study request elements are related to the operation of the La Grange Hydroelectric Project.

The CG states that "The Project has contributed to...creating more lentic conditions favorable to the proliferation of water hyacinth..." The San Joaquin River and its tributaries below an elevation of about 80 ft are typically characterized by warm sluggish channels, swamps, and sloughs (Moyle 2002). Therefore, even under historical conditions, the lowest reaches of the Tuolumne River had a lentic character under baseflow conditions, which was dictated by geomorphological conditions, chiefly low gradient. The CG provides no evidence that the Project contributes to the proliferation of water hyacinth.

The proliferation of water hyacinth in the lower Tuolumne and in the San Joaquin rivers likely has a number of potential causes, but again, there is no evidence offered by the CGs that its existence and abundance are related to the existence or operation of the La Grange Hydroelectric Project. The CGs acknowledge this in their study request, stating that they are "unaware of any existing information regarding the proliferation of water hyacinth in the Tuolumne River and the Project's contribution to conditions preferred by water hyacinth." Further, management and treatment of water hyacinth is the responsibility of California Department of Boating and Waterways, and study and control of this species is not under the Districts' authority or responsibility.

#### 4.2.8 Study Requests Not Adopted by the Districts Because Study Criteria Were Not Addressed

In addition to the 17 study requests attempting to address the ILP criteria, commenters submitted a number of requests that are properly interpreted as requests for new studies or requests for gathering additional information, even if such requests were not explicitly identified as such in the comments. None of these requests for new studies or additional information gathering attempted to address the requirements identified in FERC's regulations governing the ILP; therefore, by this measure alone, all additional information requests that did not attempt to address the ILP study criteria were not adopted by the Districts. Further, many of these information requests were for information regarding potential protection, mitigation, and enhancement measures, and as such, the information requests are premature. Each of the requests for additional information gathering or new studies is identified below.

- CGs, July 22, 2014 comment letter, page 4: "The Districts should provide additional information regarding Dennett Dam so that OEP Staff and stakeholders can evaluate whether its removal might help mitigate the project's cumulative effects on recreation and fish passage."
- CGs, July 22, 2014 comment letter, pages 4-5: "The former haul road bridge remnant a mile downstream from new La Grange Bridge, J-59...the Districts should provide additional information regarding this structure so that OEP Staff and stakeholders can evaluate removal to protect and develop recreational opportunities in the project area."
- CGs, July 22, 2014 comment letter, page 5: "...the Districts should provide additional information regarding Hickman Spill so that stakeholders can evaluate whether there are actions the Districts can take that would help mitigate the project's cumulative effects on recreation.
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- . 2013. Lower Tuolumne River Instream Flow Study. Final Report. Prepared by Stillwater Sciences, Davis, California for Turlock and Irrigation District and Modesto Irrigation District, California. April 2013.
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- . 2007. 2006 Report of Turlock Irrigation District and Modesto Irrigation District Pursuant to Article 58 of the License for the Don Pedro Project, No. 2299. March.
- . 2013a. Oncorhynchus mykiss Habitat Survey Study Report (W&AR-12). Attachment to Don Pedro Hydroelectric Project Updated Study Report. December 2013.
- Salmonid Population Information Integration and Synthesis Study Report . 2013b. (W&AR-05). Attachment to Don Pedro Hydroelectric Project Draft License Application. December 2013.
- . 2013c. Tuolumne River Chinook Salmon Population Model Study Report (W&AR-06). Attachment to Don Pedro Hydroelectric Project Updated Study Report. December 2013.
- . 2013d 2014 Mark-Recapture Predation Study Plan. September 2013.
- . 2013e. Fish Assemblage and Population Between Don Pedro Dam and La Grange Dam Study Report (W&AR-13). Attachment to Don Pedro Hydroelectric Project Draft License Application. December 2013.
- . 2013f. Don Pedro Fish Population Survey Study Report (W&AR-17). Attachment to Don Pedro Hydroelectric Project Draft License Application. December 2013.
- . 2013g. Recreation Facility and Public Accessibility Assessment, and Recreation use Assessment Study Report (RR-01), Attachment to Don Pedro Hydroelectric Project Updated Study Report. December 2013.
- . 2013h. Lower Tuolumne River Floodplain Hydraulic Assessment (W&AR-21) Study Plan. September 2013.
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## **REVISED STUDY PLAN DOCUMENT**

## APPENDIX A

# DISTRICTS' RESPONSE TO LP COMMENTS ON PSP AND USP

#### APPENDIX A La Grange Hydroelectric Project, Districts' Response to LP Comments on PSP and USP

Resource Area	Entity Submitting Comment	Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response
Fish and Aquatic	CDFW	Page 2	"While the USP states on page 18, 'To the Districts' knowledge, salmon egg retention (i.e., pre-spawn mortality) has never been documented on the Tuolumne River,' the Department does have data of some occurrences of pre-spawn or partial spawn-mortality as shown in Table 1"	The USP was revised to include the following statement: "CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014)." The Districts will request these data from CDFW and incorporate them into the record.
Fish and Aquatic	CDFW	Page 2	"The USP notes that the Department will be notified if any fish carcasses are observed above the counting weirs. The Department requests that the Districts and/or their consultants consult with and then collect and deliver any carcasses to Department staff so that efficient use can be made of any biological materials that can be extracted from the fish (e.g., otoliths, etc.)."	The USP was revised to include the following statement: "The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass." The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.
Fish and Aquatic	CDFW	Page 2	"The Districts propose as part of the data collected from observations of fish above the counting weir the 'identification of species, if possible' (USP page 18). The Department requests that individual fish identifications are made as specific as practical and that at a minimum each fish is put into a category of salmonid or non-salmonid."	<ul> <li>The USP was revised to include the following bulleted statement:</li> <li>Identification of species, if possible; at a minimum each fish will be identified as a salmonid or non-salmonid.</li> </ul>
Fish and Aquatic	CDFW	Pages 2-3	"Finally, the Department does not agree with the Districts' assumptions regarding evidence to indicate whether or not LGDD is a barrier for fishTo infer that the La Grange Dam is not blocking upstream migration of anadromous fish species in the Tuolumne River is not scientifically supportable. It is the nature of anadromous salmonids to migrate as far as they can upstream and if this dam were not present anadromous salmonids would migrate upstream past this location. The scientific literature documents historical occurrence of anadromous salmonids in the Tuolumne River upstream of La Grange Dam."	Historical conditions are not relevant in the context of decision- making related to implementation of fish passage. The relevant question, as dictated by FERC's definition of baseline conditions <sup>1</sup> , is whether or not existing spawning habitat in the lower Tuolumne River is sufficient to support the fall-run Chinook population that currently inhabits the river. The study design as proposed in the USP will indicate whether fall-run Chinook appear to be motivated to migrate upstream of LGDD, and whether existing conditions in the lower Tuolumne River appear to provide sufficient spawning habitat for the existing fall-run Chinook population. The Districts note that there is no evidence of a Central Valley steelhead run in the lower Tuolumne River under current conditions (TID/MID 2013, W&AR-05 Zimmerman et al. 2008) and that native spring- run Chinook salmon have been extirpated from all tributaries in the San Joaquin River Basin (NMFS 2009).

<sup>&</sup>lt;sup>1</sup> The Commission's choice of current environmental conditions as the baseline for environmental analysis in relicense cases was affirmed in *American Rivers v. FERC*, 187 F.3d 1007, amended and rehearing denied, 201 F.3d 1186 (9th Cir., 1999); *Conservation Law Foundation v. FERC*, 216 F.3d 41 (D. C. Cir. 2000).

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Resource Area	Entity Submitting Comment	Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response
Fish and Aquatic	CDFW	Page 3	"It is further noted that both Chinook salmon and steelhead have complex migration behaviors. Females of these species have been shown to search for optimal spawning sites, but confronted with less than optimal conditions they will spawn in those sub-optimal sites. If LGDD prevents access to optimal upstream spawning sites, female steelhead and/or Chinook salmon that encounter LGDD could be impacted by being forced to use less optimal sites than they would have otherwise selected."	First, there is no empirical evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River (TID/MID 2013, W&AR-05 Zimmerman et al. 2008). Second, because there are no data indicating that historical fall-run Chinook spawning habitat upstream of LGDD was more or less "optimal" than what is currently available in the lower Tuolumne River, any statements about such habitat constitute conjecture. The fact that NMFS and the USFWS requested an assessment of the habitat upstream of the dam demonstrates that there is uncertainty regarding the suitability of this habitat relative to what exists in the lower river. Also, current, not historical, conditions are at issue in the context of FERC licensing.
Fish and Aquatic	CDFW	Page 3	"Further, finding that any one year's spawning class is not prevented from moving upstream by LGDD does not demonstrate that during future years, when conditions are different, there would be no effect."	The study design in the USP calls for the evaluation of fish behavior in the 2015/2016 and 2016/2017 migration seasons, i.e., more than "one year's spawning class." The duration of the fieldwork is dictated by FERC's ILP schedule.
Fish and Aquatic	NMFS	Page 1	"NMFS finds that the PSP does not adequately incorporate the vast majority of elements in NMFS' information or study requests filed, in this Integrated Licensing Process (ILP), on July 22, 2014."	This comment is no longer relevant, given that the "vast majority" of study elements requested by NMFS have been incorporated into the Districts' proposed USP. NMFS acknowledged having received the USP but declined to comment on it as indicated in the following statement excerpted from the December 4, 2014 NMFS comment letter: "the recent date of the Districts' filing (November 21, 2014) did not provide sufficient time for NMFS to review and prepare comments on a document revising the PSP by the PSP comment deadline (December 4, 2014)NMFS plans to review and comment on any RSP filed in this ILP, by the deadline for submitting RSP comments established under the ILP schedule and regulations."
Fish and Aquatic	NMFS	Enclosure A, page 2	"(NMFS' Request #1) Effects of the Project and Related Activities on Fish Passage for Anadromous FishesThe Districts' rejected NMFS' Request #1 based primarily on their view that the study request is a fish passage evaluation of the Don Pedro Project (P-2299) and a study of a potential PM&E measure."	The Districts' USP includes a "Fish Passage Facilities Assessment," which is designed to address objectives contained in NMFS' Study Request #1.
Fish and Aquatic	NMFS	Enclosure A, page 5	"(NMFS' Request #2) Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange ProjectThe Districts' rejected NMFS' Request #2 based primarily on their view that information collected as part of the Don Pedro Project (P-	The Districts' USP includes a component titled, "Habitat Assessment and Fish Stranding below La Grange Dam and Powerhouse," which is designed to supplement existing information and further address objectives contained in NMFS' Study Request #2.

Resource Area Entity Page in Submitting Comment Letter		Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response	
			2299) represents sufficient, existing information."		
Fish and Aquatic	NMFS	Enclosure A, page 6	"(NMFS' Request #3) Quantifying Existing Upper Tuolumne River Habitats for Anadromous Fish as they Pertain to Fish Passage Blockage at La Grange diversion damNMFS Request #3 was not adopted by the Districts."	The Districts' USP includes a component titled, "Upstream Reach Assessment," which is designed to address objectives contained in NMFS Study Request #3. Further, the Districts have requested that NMFS collaborate with the Districts and share information that NMFS is gathering independently to meet its own request. Information provided by NMFS regarding its study scope has been incorporated into the RSP.	
Fish and Aquatic	NMFS	Enclosure A, page 8	"(NMFS' Request #4) Quantifying Effects of the Project and Related Activities on the Genetic Makeup of Steelhead/ Rainbow Trout Oncorhynchus mykiss in the Tuolumne River NMFS Request #4 was not adopted by the Districts."	NMFS contends that "The Project has prevented gene flow of <i>O.</i> <i>mykiss</i> between above and below barrier populations since 1894, and continues to in current conditions – this is an ongoing Project effect (Enclosure A, page 9)." Shortly after this, NMFS cites Garza and Pearse (2008), providing a direct quote that states, "In fact, the salient characteristic of population structure for Central Valley <i>O. mykiss</i> inferred from this study is that the populations of naturally-spawning fish sampled here are all closely related, regardless of whether they are currently above or below barriers to anadromy (Enclosure A, page 10)."" If populations above and below dams are "closely related regardless of whether they are currently above or below barriers," of what significance is the presumed effect on gene flow caused by these barriers? The Districts continue to assert that the request for the Districts to study the genetic makeup of fish inhabiting the river upstream of Don Pedro Reservoir constitutes a research effort aimed at making fisheries management decisions rather than informing licensing requirements (as concluded by FERC in its December 22, 2011 Study Plan Determination for the Don Pedro Hydroelectric Project), and as a result there is no Project nexus.	
Fish and Aquatic	NMFS	Enclosure A, page 11	"(NMFS' Request #5) Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne RiverNMFS' Request #5 was not adopted in any part by the Districts."	The Districts reiterate their rationale for not adopting this study, i.e., "The stated objective of the proposed study is to 'Estimate a range of the historic mass of marine-derived N transported annually by Chinook salmon (all runs) to the Tuolumne River." This constitutes an evaluation of historical conditions and as a result is inconsistent with FERC's definition of baseline in the context of licensing hydropower projects.	
Fish and Aquatic	NMFS	Enclosure A, page 15 -16	"The Fall-Run Chinook Salmon Migration Barrier Study [now called La Grange Hydroelectric Project Fish Passage Assessment in the Districts' USP]Installation of a weir	The Districts propose to conduct passive sampling at the weir installed near the LGDD, i.e., using a video system to enumerate fish. The weir will be designed to allow unimpeded upstream and	

Resource Area	rea Entity Page in Submitting Comment Comment Letter		Comment (Quote or Paraphrase)	Districts' Response	
			across a river is a barrier to fish migration in and of itself, that can affect fish behavior, requires additional energy expenditure, as well as results in the fish being handled by humans. In the proposed study, these impacts to the fish could potentially occur twice: once at RM 24.5 and again at the weir near the Project."	downstream fish passage. No fish will be handled at the weir.	
Fish and Aquatic	NMFS	Enclosure A, page 16	"The Fall-Run Chinook Salmon Migration Barrier Study [now called La Grange Hydroelectric Project Fish Passage Assessment in the Districts' USP]Furthermore, weir operation for 16 months (over a two-year period) is an expensive operation that will potentially limit funding available for other more essential data needs related to the La Grange Hydroelectric ILP. Thus, due to the potentially deleterious effects to fish having to pass over multiple weirs, the ancillary nature of the data collected at a second weir beyond what will already be recorded at the weir at RM 24.5, NMFS does not believe the cost to benefit of the proposed multiple weirs merits carrying out this portion of the PSP."	The Districts disagree that the weir will have deleterious effects on fish for the reasons identified above (see previous response). NMFS also appears to misunderstand the intent of the proposed study, which is to establish whether salmonids appear to be motivated to migrate past LGDD when there is sufficient habitat in the lower Tuolumne River. NMFS mischaracterizes the results of the proposed study, stating that the upstream weir would yield data equivalent to those collected at the downstream weir located at RM 24.5. The Districts' proposed study is a rational first step, i.e., evaluating whether there is a justification for fish passage at the La Grange Project.	
Fish and Aquatic	NMFS	Enclosure A, page 16	"The Fall-Run Chinook Salmon Migration Barrier Study [now called La Grange Hydroelectric Project Fish Passage Assessment in the Districts' USP]However, NMFS does recommend less invasive monitoring techniques of fish in the vicinity of the Project through use of DIDSON cameras and direct observation from the banks"	<ul> <li>Again, sampling at the upstream weir will be conducted using a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir. Moreover, the Districts' USP includes two study components that involve conducting direct observations of fish:</li> <li>(1) As part of the La Grange Project Fish Barrier Assessment, observations of fish above the counting weir and in the TID sluicegate channel would be conducted twice daily (times would vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations would be recorded on standardized datasheets, which would include the following information requested by NFMS:</li> <li>Date and time of observation;</li> <li>Approximate discharge and conduit status at time of observation;</li> <li>Powerhouse output at time of observation;</li> <li>Locations of fish (to be indicated on a previously-generated base map);</li> </ul>	

Resource Area	Entity Submitting Comment	Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response
			"The Fall Dury Chinese Solution Mignetica Device Study	<ul> <li>Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;</li> <li>Notation of any observations of fish swimming into the La Grange powerhouse tailrace;</li> <li>Notation of any observations of fish swimming into the TID sluicegate channel;</li> <li>Notation of whether or not any redds become dewatered, and the duration of any dewatering, if it occurs, due to a change in powerhouse operations; and</li> <li>(2) Fish Presence and Potential Stranding in the TID Sluicegate Channel and La Grange Tailrace, which would involve direct visual observation of fish presence from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel, and direct observations of fish in the sluiceway and tailrace channels if the La Grange powerhouse trips offline.</li> </ul>
Fish and Aquatic	NMFS	Enclosure A, page 17	"The Fall-Run Chinook Salmon Migration Barrier Study (now called La Grange Project Fish Barrier Assessment in the Districts' USP)It also appears that the Fall-Run Chinook Salmon Migration Barrier Study assumes that if a female reaches the La Grange Project, is blocked and delayed, and then later recovered as a carcass without any eggs that this salmon was a successful spawner, and not impacted by the Project. This logic is flawed in several aspects. The analysis has no way of knowing if the female and her gametes were deleteriously affected due to excessive delay, stress, or energy expenditure at the Project; these are potential effects that could significantly impact if not eliminate, the reproductive success of that fish at the time of egg release."	The Districts agree that the study design and methods proposed in the USP would not reveal the extent to which spawning is "successful." The documentation of egg retention would only indicate whether or not spawning took place. As a result, the word "successful" was removed as appropriate from the study plan.
Recreation	NMFS	Enclosure A, page 14	"truncating the study area at an arbitrary elevation of 300 feet appears to unnecessarily limit the study area and prevents the study area from extending to Don Pedro Dam as stated in the Study Plan. NMFS requests that the study area elevation threshold either be removed or increased to an elevation suitable to evaluate all potential recreation uses identified in the Study Plan."	The Districts have removed the study area elevation threshold.
Recreation	CG	Page 5	"The Districts propose to extend the study area upstream of La Grange Dam to an elevation of 300 feetto adequately	The Districts have removed the study area elevation threshold. The Districts note that a study area bounded by the 950-foot elevation

Resource Area	Entity Submitting Comment	Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response	
			describe potential public access routes it will be necessary to examine the area surrounding La Grange Reservoir up to approximately 950 feet."	contour would encompass many thousands of acres as this elevation contour is not found in the immediate vicinity of the La Grange Pool.	
Recreation	CG	Page 5	"The proposed study appears to be limited to identifying existing public access routes. We believe that the study plan should examine potential public access routes as well. If the study strictly looks at existing public access routes it is unlikely to identify very many, if any, other than routes that can be hiked on foot, which we consider to be insufficient."	The Districts maintain that it would be inappropriate to evaluate recreational enhancements, including public access enhancements, without first determining that the potential for safe use by the public for recreation exists.	
Recreation	CG	Page 5	"Under Step 1, the Districts state that 'site characteristics in the study area will be assessed for recreation potential.' The Districts should clarify that they intend to assess the characteristics of potential recreational sites. Additionally, potential recreational uses should include hiking, shore-based fishing, and bird watching. Potential recreational facilities should include launches for non-motorized and motorized watercraft, parking, and restrooms."	The Districts propose to use existing aerial photography, topography data, and property ownership data; as well observations made and documented during a site visit, to identify locations with the potential to support public recreation. The Districts have added bird watching to the Canadian Dam Association (CDA) Worksheet. The Districts note that hiking and shore-based fishing are already included on the CDA Worksheet. Depending on the results of the Recreation Access and Safety Assessment, the Districts may propose a Year 2 study to assess the feasibility of potential recreation enhancements.	
Recreation	CG	Page 5	"Also, Step 2, Number 2 of the proposed study has an internal inconsistency. The header of Number 2 states 'Identify <b>Potential</b> Recreation Activities within Each Component' (emphasis added) whereas the description that follows states 'Information will be obtained regarding the types and level of public activities <b>currently associated</b> with each component, where applicable' (emphasis added). We request that the Districts make the description consistent with the header and by modifying the description to read 'Information will be obtained regarding the types and level of <b>existing and</b> <b>potential</b> public activities associated with each component, where applicable.""	The Districts have made this change to the study plan.	
Recreation CG Page 6		Page 6	"we reviewed the Canadian Dam Association Public Safety around Dams Risk Assessment Tool that is to be used in the Recreation Access and Safety Study. We recommend the addition of bird watching to the list of activities identified in the chart that comprises part of the tool. We recommend that skating, ice fishing, and snowmobiling be eliminated from the chart. We believe that jet skiing, water skiing, high speed boating, and ATV/Dirt Biking uses are probably	The Districts have added bird watching to the CDA Worksheet. The Districts have removed skating, ice fishing, and snowmobiling from the CDA Worksheet.	

Resource Area	Area Entity Entity Page in Submitting Comment Comment Letter		Comment (Quote or Paraphrase)	Districts' Response	
			inappropriate recreational activities for the La Grange Project; however, it may be useful to evaluate the safety of these latter activities, since there may be some value-based disagreement about how appropriate they might be."		
Risk Assessment Methodology	CG	Page 6	"The Districts propose to use the Canadian Dam Association's risk assessment process, as outlined in the Guidelines for Public Safety around Dams to assess the risk to public safety of using Project lands and facilities for recreation. The Districts provide no justification as to why the Canadian protocol is most appropriate for the La Grange Project. We request that the Districts consider other protocols that have been used in the United States to assess risk to public safety and explain the basis for their proposal to use the Canadian Dam Association's protocol."	The CDA is a leading authority on public safety related to hydroelectric facilities. CDA's Guidelines for Public Safety Around Dams are generally applicable to facilities located throughout the United States and provide an objective and established methodology to assess public safety risks. The Districts note that while the CG requests that the Districts consider "other protocols", the CG fails to provide any examples of other protocols to assess public safety.	
Risk Assessment Methodology	CG	Page 6	"We are concerned that the Districts may attempt to use the results of Step 2 of the proposed study (Assess Risk to Public Safety) to justify an actual or de facto prohibition on boating and recreation on the reservoir. A de facto prohibition could result from the Districts' finding that the risks are too high and, therefore, no public access facilities should be built. Step 3 of the proposed study is simply to prepare a report on the study results; it does not clarify whether and on what basis the Districts will make a determination and recommendation for public access and recreational facilities."	Upon completion of the study, the Districts will review results of the risk assessment with licensing participations at the Initial Study Report meeting. Depending on the results of the Recreation Access and Safety Assessment, the Districts may propose to complete a Year 2 study to assess the feasibility of potential recreation enhancements.	
Risk Assessment Methodology	CG	Page 6 - 7	"If there are aspects of the Project that do create a hazard, the PSP does not describe a method for determining whether these potential hazards can be mitigated through management policies, signage, buoys, or other meansThese reasonable restrictions on the public's right to navigate are commonly used on reservoirs throughout California."	Depending on the results of the Recreation Access and Safety Assessment, the Districts may propose to complete a Year 2 study to assess the feasibility of potential recreation.	
Public Participation	CG	Page 7	"The Districts should include a public-participation component to this study[a] focus group could generate new and creative ideas for providing public access to the La Grange facility."	The Districts have amended the Recreation Access and Safety Assessment to invite licensing participants to observe field work completed during the site visit. Following the site visit, the Districts propose to host a site visit debrief meeting with LPs. The Districts will prepare meeting notes summarizing discussions at the debrief meeting and circulate these notes to LPs for 30-day review and comment. Final meeting notes will be included in the Recreation Access and Safety Assessment Study Report.	

Resource Area	Entity Submitting Comment	Page in Comment Letter	Comment (Quote or Paraphrase)	Districts' Response
Water Hyacinth Study Request	CG	Page 8	"We request that the Districts undertake a study to determine the most effective means of controlling the spread of water hyacinth which has proliferated within the Project area. We did not request this study in our comments on the pre- application document, which were submitted on July 22, 2014, before the extent of the water hyacinth problem became clear. The problem became more apparent and severe after July following a prolonged flow of just over 90 cfs (June 1 – October 1) coupled with high ambient temperatures."	The proliferation of water hyacinth in the lower river has a number of causes, but there is no evidence that its existence and abundance are related to the existence or operation of the La Grange Hydroelectric Project. The CG acknowledges this in their request where they state the following: "We are unaware of any existing information regarding the proliferation of water hyacinth in the Tuolumne River and the Project's contribution to conditions preferred by water hyacinth." There is no nexus between Project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and the study results would not inform the development of license requirements. As a result, the request does not satisfy FERC's ILP study plan criteria as required by 18 CFR Section $5.9(b)(1) - (7)$ . The CG states that "The Project has contributed tocreating more lentic conditions favorable to the proliferation of water hyacinth" The San Joaquin River and its tributaries below an elevation of about 80 ft are typically characterized by warm sluggish channels, swamps, and sloughs (Moyle 2002). Therefore, even under historical conditions, the lowest reaches of the Tuolumne River had a lentic character under baseflow conditions, which was dictated by geomorphological conditions, chiefly low gradient. Again, the CG provides no evidence that the Project contributes to the proliferation of water hyacinth.
Thomas H. Terpstra	Attorney at Law	Page 1	"Due to the potentially devastating consequences of additional rate increases and the uncertainty surrounding the drought, my Clients want to ensure that each and every requirement FERC imposes is in fact necessary and appropriate under all applicable standards. Accordingly, on behalf of my Clients, I respectfully request that you proceed with extreme caution in the process of evaluating the propriety of requiring licensing of the La Grange project and in determining the scope of related studies. While my Clients appreciate the need for the Districts to comply with applicable rules and regulations, it is imperative that those standards be applied in a conservative manner to avoid unnecessarily overburdening their consumers. Thank you for the opportunity to comment."	The Districts agree that FERC should require only those studies that are necessary and appropriate under all applicable standards.

## **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX B**

## LA GRANGE HYDROELECTRIC PROJECT CULTURAL RESOURCES STUDY PLAN

#### **STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### **Cultural Resources Study**

#### January 2015

## **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than 5 megawatts (MW). The La Grange Hydroelectric Project operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Hydroelectric Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

## 2.0 PROJECT NEXUS

The Districts' continued operation and maintenance (O&M) of the La Grange Hydroelectric Project may affect historic properties that are listed on or eligible for listing on the National Register of Historic Places (NRHP).

Several terms used throughout this Study Plan warrant definition.

- **Historic Properties.** This term is defined under 36 Code of Federal Regulations (CFR) § 800.16(l)(1) as any prehistoric or historic site, building, structure, object, or district, including properties of traditional religious and cultural importance, that are included in or eligible for inclusion in the NRHP. Historic properties are identified through a process of evaluation of specific criteria found at 36 CFR § 60.4.
- **Cultural Resources.** For the purpose of this study plan, this term is used to mean any prehistoric or historic district, site, building, structure, or object, regardless of its NRHP eligibility.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

Issuance of a FERC license for the La Grange Hydroelectric Project may permit activities that "...cause changes in the character or use of historic properties, if any such historic properties exist..." (36 CFR § 800.16(d)). FERC must therefore comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations at 36 CFR 800. These regulations require the head of any federal department or independent agency having authority to license any undertaking to take into account the effects of the undertaking on historic properties. As such FERC's primary goal is to comply with Section 106.

In its Scoping Document 1, FERC designated the Districts as non-federal representatives for purposes of initiating consultation under Section 106 of the NHPA and implementing regulations found at 36 CFR § 800.2(c)(4).

Additionally, the State Historic Preservation Officer (SHPO), in accordance with Section 101(b)(3) of NHPA "...advises and assists Federal agencies in carrying out their Section 106 responsibilities..." by ensuring historic properties are taken into account early in the planning and development processes.

Study results may be used in the development of terms or conditions of any license issued by FERC for the purpose of protecting or treating impacts to historic properties that would result from continued La Grange Hydroelectric Project O&M, or for the purpose of enhancing historic properties that would be affected by continued La Grange Hydroelectric Project O&M. These terms or conditions, which are referred to collectively as protection, mitigation, and enhancement (PM&E) measures, could include development of a Historic Properties Management Plan

(HPMP)<sup>1</sup> that would describe and implement PM&E measures for historic properties potentially affected by continued La Grange Hydroelectric Project O&M. An HPMP is a plan for considering and managing effects on historic properties that may occur from O&M activities and establishes a decision-making process for considering those effects. Because it is not possible to determine all of the effects of various activities that may occur over the course of a license, FERC typically requires, as a license requirement, that a licensee develop and implement an HPMP that considers and manages effects on historic properties throughout the term of the license. For hydropower licensing, FERC typically completes Section 106 by entering into a Programmatic Agreement (PA) or Memorandum of Agreement (MOA) with the Advisory Council on Historic Preservation (ACHP) and the SHPO that typically requires the licensee to develop and implement an HPMP. However, it should be noted that the Section 106 process is still active throughout the life of the license, particularly regarding new activities by the license holder that have not undergone Section 106 requirements or newly identified cultural resources that also have not undergone Section 106 consideration. As such, while the HPMP and PA or MOA conclude the process needed for obtaining a FERC license, the project must continue to comply with Section 106 requirements, the guidelines for which are developed and provided in the HPMP. Additionally, FERC requires that a licensee develop the HPMP in consultation with various other federal, state, Tribal, and non-government parties that have interests in the project.

# 4.0 STUDY GOALS

The primary study goal is to assist FERC in meeting its compliance requirements under Section 106 of the NHPA, as amended, by determining if licensing of the La Grange Hydroelectric Project will have an adverse effect on historic properties. The objective of this study is to identify cultural resources within the area of potential effects (APE), formulate a plan to evaluate their eligibility to the NRHP, if needed, and identify La Grange Hydroelectric Project-related effects on those resources. As defined in 36 CFR 800.16(d), the APE is "...the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historical properties, if any such properties exist." At a later date, the results of the study may then be used to develop the HPMP, which will ensure that all cultural resources identified within the APE will be appropriately considered and managed during the life of the FERC license.

To identify historic properties that may be affected by the La Grange Hydroelectric Project, as required under Section 106, the Districts have defined an APE within which La Grange Hydroelectric Project-related effects could occur. It is possible that the studies implemented as part of the licensing process may identify La Grange Hydroelectric Project-related activities that have the potential to affect historic properties outside this APE. If such areas are identified, the APE will expand to incorporate these areas in accordance with 36 CFR 800.4(a)(1) in consultation with the SHPO, Tribes, and other interested parties, as appropriate.

In addition to Section 106 compliance, the study will also comply with other relevant federal laws including the National Environmental Policy Act (NEPA), the Archaeological Resources Protection Act of 1974 (16 USC 469), the American Indian Religious Freedom Act of 1978 (42

<sup>&</sup>lt;sup>1</sup> While not a part of this study, the information developed by this and other relicensing studies may be used to develop an HPMP in consultation with interested parties, which would be included in the Final License Application.

USC 1996 and 1996a), the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001), Executive Order 11593 (Protection and Enhancement of the Cultural Environment) of 1971 (16 USC 470), the American Antiquities Act of 1906, and Executive Order 13007 (Indian Sacred Sites) of 1996 (73 Federal Register 65, pp. 18293-24).

# 5.0 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

This section describes existing information regarding cultural resources in the vicinity of the APE. It is broken down into three primary components: (1) a brief cultural context of the APE and vicinity, to include overviews of the prehistory, ethnohistory, and history of the area; (2) a summary of a records search of known cultural resources and previously conducted cultural resources investigations in the APE and vicinity; and (3) a summary of existing information and conclusions regarding need for additional information.

## 5.1 Cultural Context

## 5.1.1 Prehistory and Archaeology

Early work in the Sierra Nevada foothills, where the La Grange Hydroelectric Project is located, consisted of compiling information and producing general cultural overviews (Elasser 1960; Heizer and Elsasser 1953). Later investigations of areas to be impacted by water projects in the foothills produced several regional cultural chronologies (Fitzwater 1962; Moratto 1972; Johnson 1967; Ritter 1970; Fitting et al. 1979; Moratto and Riley 1980). In particular, archaeological investigations for the New Melones Reservoir, located 18-19 miles north/northwest of the La Grange Hydroelectric Project on the Stanislaus River, took place during the 1960s and 1970s. A 10-volume report series issued in the 1980s provided the results of all work. The final volume (Moratto et al. 1988) provided a summary of the prehistory and history of the New Melones study area. Archaeological investigations in the late 1960s for the New Don Pedro Reservoir were more limited (Moratto 1971). Additional archaeological data has been added by excavations on Clarks Flat, about 28-29 miles north of the La Grange Hydroelectric Project, near Vallecito as part of the North Fork Stanislaus River Project (Peak and Crew 1990). The chronology presented below is based primarily on the extensive work conducted around the New Melones Reservoir and is applicable to the APE and vicinity.

#### *Clark Flat Phase (~7,600 BC to 4,500 BC)*

Moratto suggests an initial occupation in the New Melones area sometime before 6,000 BC termed the Clarks Flat Phase, characterized by large-stemmed bifaces, a single Great Basin Transverse point (crescent) and large basalt side scrapers (Moratto et al. 1988: 506-508). The evidence of this phase, collected during the New Melones Project, was vague, but later work at CA-CAL-S275 (Peak 1987) and CA-CAL-S342 (Peak and Crew 1990) on Clarks Flat provided many more artifacts of this time period in stratigraphic context. Enough material was recovered to suggest that the Clarks Flat Phase could be divided into early and late periods. The Early Clarks Flat Phase at CA-CAL-S342, beginning at about 7,600 BC or earlier, is characterized by 13 varieties of the Western Stemmed Series points, five varieties of scrapers, notched tools,

beaked gravers, discoidals and retouched flakes (Peak and Crew 1990: 227-228). All of these types are still present in the Late Clarks Flat Phase, beginning at least by 4,800 BC, along with four more point types, five more scraper types, and the first appearance of ground-stone artifacts. The temporal separation of the two phases is established by the occurrence in separate soil strata. The cultural difference may indicate in the increase in the length and intensity of site occupation in the later period, rather than a major cultural change.

#### Stanislaus Phase (~4,500 BC to 3,500 BC)

At about 4,550 BC, there is an introduction of a series of broad-stemmed, concave based projectile points at CA-CAL-S342 that has been designated as the Stanislaus Broad Stemmed type. The temporally diagnostic form at CA-CAL-S342 is a shouldered, expanding stem point with a concave base. Typologically, they generally conform to the Pinto Series as defined by Campbell and Campbell (1935), Rogers (1939), Harrington (1957), Heizer and Clewlow (1969), and Hester and Heizer (1978), but there is enough variation from the norm to justify assigning a different name. A suite of five radiocarbon age determinations indicate an appearance of these Stanislaus Broad Stemmed points at about 4,550 BC and terminal use can be calculated at about 4,250 BC. Other characteristic traits are an intensive use of ground-stone implements, including subrectangular-shaped manos, atlatl weights, net weights, mesh gauges, and the use of steatite for a variety of objects. The period characterized by the presence of this point series has been termed the "Stanislaus Phase" by Peak and Crew (1990: 229-230). Most of the earlier point types persist, as do all of the other types of lithic tools. Other flaked-stone tool types make there first appearance (denticulates, adze-like tools, etc.) and the ground-stone industry includes a greater variety of milling-stone types and the use of steatite objects.

The period between 6,000 and 3,500 BC is poorly represented at the sites investigated in the New Melones Project. Moratto notes:

At no time during the [project] did paleoenviromental specialists conduct field surveys to inventory the relict ancient landforms paleosols most likely to harbor early and middle Holocene archaeological remains. All of the known cultural materials of such antiquity in the study area were discovered fortuitously, in so far as they occurred below younger, more visible archaeological deposits. (Moratto et al. 1988: 509)

#### Texas Charley Phase (~3,500 BC to 2,500 BC)

The earliest well-defined cultural phase at CA-CAL-S286, the site that provided the bulk of the data for the New Melones cultural sequence, is the Texas Charley Phase, circa 3,500 to 2,500 BC. Characteristic artifacts are choppers, large lanceolate bifaces, a contracting-stem biface fragment, scrapers, and possibly manos. There is a lack of midden and a low incidence of artifacts, which impose minimal site use (Moratto et al. 1984: 195). A high portion of the lithic material in this phase is a high-quality chert available at quarries in the Vallecito area and Moaning Cave. There is a break in the record at CA-CAL-S286 after the Texas Charley Phase and the succeeding phase is known primarily from the other sites in the New Melones area.

#### *Calaveras Phase (~2,500 to 1,000 BC)*

The Calaveras Phase tool kit generally corresponds to the Stanislaus Phase, as defined by Peak and Crew (1990), except it is dated at about 2,500 to 1,000 BC (Moratto et al. 1984: 103). The Calaveras Phase is marked by the presence of milling stones, manos, scrapers and a wide range of chipped-stone tools, including Humboldt Concave Base, Sierra Side-notched Pinto Sloping Shoulder, Pinto Square Shoulder and Large Lanceolate projectile points. Obsidian debitage occurs in higher proportions than the earlier phases. Finds of "pestle-like objects" that do not appear to have functioned as pestles are an interesting feature of this phase. Low quantities of fire-altered rock, charcoal, and artifacts suggest that site use was limited in intensity.

#### Sierra Phase (~1,000 BC to 500 AD)

The Sierra Phase was found in stratum B at CA-CAL-S286, a buried midden yielding higher quantities of all types of cultural material than the lower strata. Moratto gives dates of about 1,000 BC to AD 500 for this phase (Moratto et al. 1988: 511-513). Ground stone is abundant, and includes milling stones, manos, cobble mortars, and pestles. There are numerous types of chipped-stone tools, including perforators and "double-sided" scrapers. Projectile points that characterize the phase are: Elko Eared; Elko Corner Notched, Sierra Concave Base, Bipoint, Medium Corner Notched, Triangular Contracting Stem, Medium Triangular Contracting Stem, and Sierra Side Notched forms. The maximum intensity of site use at Texas Charley Gulch occurred during this phase. The discovery of a living floor at CA-CAL-S286, the appearance of mortar and pestle technology suitable for exploiting acorns as a major food source and the density of artifact distribution all imply a "…degree of sedentism not evidenced in the older components…" (Moratto et al. 1988: 273). Stable trade relationships to both the east and west are indicated by the presence of a large amount of obsidian traded in, primarily, from the Bodie Hills source, and the use of Haliotis and Olivella beads and ornaments from the coast.

#### Redbud Phase (~500 AD to 1,300 AD)

The Redbud Phase, from about AD 500 to 1,300, is poorly defined at CA-CAL-S286. In fact, all of the sites in the New Melones Project area that have Sierra Phase components have little or no evidence of occupation in the Redbud Phase. The modest evidence of habitation in this phase found at a few sites in the New Melones Project area suggest a low intensity of use by small, probably mobile populations with no cultural continuity with the preceding phases. The breakdown of trade relationships (obsidian is relatively rare in components of this phase) also suggests a major cultural break. The appearance of Rosegate Series points and "possible" Gunther Barbed points is a hallmark for the introduction of the bow and arrow during this phase. Peak (1973) saw the diminished use of CA-CAL-S347 in this period as a co-occurrence with the expansion of site use at CA-CAL-S276 on Clarks Flat, perhaps due to a larger area at the latter site to accommodate a growing population. However, this does not explain the minimal evidence of the period at most other sites in the vicinity.

#### Horseshoe Bend Phase (~1,300 AD to 1848 AD)

The Redbud Phase is followed by a period of intensive occupation representing the Horseshoe Bend Phase of circa AD 1300 to 1848. Of 68 excavated sites in the New Melones Project area, 42 included middens, bedrock mortars and other evidence of long-term or repeated occupation dating to the Horseshoe Bend Phase. The analysis indicates:

...that late prehistoric times witnessed larger populations, more sedentism, tighter spatial clustering of settlements, and higher levels of both intra- and inter-site organization than in any earlier period. (Moratto et al. 1988: 517).

Characteristics of this phase include Desert Side Notched, Cottonwood Triangular, and Gunther Barbed projectile point forms, Olivella, Saxidomus and steatite beads and a wide variety of flake tools. The use of mano and milling-stone technology continues beside the common pestle and bedrock mortar-grinding technology. In all respects this material culture is similar to that known from ethnography for the Central Sierra Miwok.

#### Peoria Bend Phase (~1848 AD to Present)

The post-contact archaeology of the Central Sierra Miwok is reflected in the 33 components of the Peoria Bend Phase identified in the New Melones area. This material reflects generally ephemeral occupation after AD 1848 and the introduction of many items of European manufacture into the material culture. In some cases traditional tools are made using new materials such as Desert Side Notched and Cottonwood Triangular points made on bottle glass.

#### 5.1.2 Ethnohistory

Ethnographically, the La Grange Hydroelectric Project lies within Central Sierra Miwok territory, located in the Sierra Nevada foothills and mountains spanning the upper drainages of the Stanislaus and Tuolumne Rivers. The Central Sierra Miwok group is considered a member of the Eastern Miwok, one of the two major divisions of the Miwokan subgroup of the Utian language family (Levy 1978). The Eastern Miwok peoples belonged to five separate linguistic and cultural groups each of which had distinct language and cultural characteristics (Levy 1978). Anthropologists have categorized the Eastern Miwok into language areas according to geographical location, which consist of (1) the Bay Miwok that occupied the eastern area of the Contra Costa County extending from Walnut Creek eastward to the Sacramento-San Joaquin delta; (2) the Plains Miwok, which inhabited the lower reaches of the Mokelumne and Calaveras river drainages; (3) the Northern Sierra Miwok that occupied foothills and mountains of the Mokelumne and Calaveras river drainages; (4) the Southern Sierra Miwok, which inhabited the foothill and mountain portions of the Merced and Chowchilla drainages; and (5) the Central Sierra Miwok mentioned above (Levy 1978).

These five groups were further designated as three distinct groups based on their phonological history and structural and lexical similarity (Levy 1978). Plains and Bay Miwok are both members of a different distinct group, while the other three groups comprise a Sierra Miwok language group (Levy 1978). It has been suggested that Plains Miwok separated from the Sierra

Miwok languages around 2,000 years ago (Levy 1978). Lexicostatistical chronology and language classification suggests that ancestral Miwok occupation of the Sierra Nevada and its foothills is probably a much more recent event compared to the central California delta region, since Sierra Miwok internal time depth is estimated at around 800 years (Levy 1978).

The main political unit of the Miwok was the tribelet, which was an independent and sovereign nation that had a defined and bounded territory designating its zone of control over natural resources. Among the Sierra Miwok, tribelets included political lineage localities that made up the permanent settlements with an average population estimate of around 25 persons, as well as several semi-permanent settlements and numerous seasonally occupied campsites that were used at various times throughout the seasonal round of gathering, hunting, and fishing activities (Levy 1978). Ethnographic literature points to the presence of a chief or an assembly house in the community at the capital or principal settlement (Levy 1978). The dominant form of house was a conical structure of bark slabs, supported by posts or frameworks.

The main foci of subsistence were the gathering of wild plant foods, especially acorn, and the hunting of mammals. The Sierra Miwok traveled to higher or lower elevation levels during various seasons of the year to obtain subsistence resources unavailable in the vicinity of their permanent settlements. The inhabitants occupying the Transition Zone forest moved to higher elevations during the summer months in pursuit of deer. Those in the foothill areas would occasionally visit the plains of the central valley to hunt antelope and tule elk, which are unavailable in the mountains. Gathering of plant foods varied seasonally, as greens were gathered in the spring and were used to supplement the diet of acorns stored since the previous fall. Seeds were gathered from May to August. Pine nuts were collected after August, when the land was burned. In the late fall and early winter, acorns were gathered (Levy 1978). Meat consumption was its greatest in the winter months when plant resources were limited to stored foods (Levy 1978).

Technological skills included basket making and production of ground stone items, such as mortars and pestles used in acorn processing. Lithic technology consisted of projectile points, knives, scrapers, and expedient tools like hammer stones and choppers made from various materials, such as chert and obsidian (Levy 1978).

The Eastern Miwok in the Sacramento-San Joaquin Valley were first contacted by Spanish explorers in the second part of the eighteenth century (Levy 1978). Since then, dramatic cultural changes developed, including the transformation of previously independent tribelets into unified militias resisting forced labor, forced missionization, and displacement that was intensified by epidemics and targeted violence against the Miwok by the Spanish, which killed many thousands of Miwok persons in the first half of the nineteenth century (Levy 1978).

During the 1840s, fur trappers, gold miners, and settlers arrived in large numbers and often hostile relations arose between these newcomers and Sierra Miwok. For a brief time, Southern Sierra Miwok supplied labor for J.D. Savage's gold mining operations in the Big Oak Flat district, but as the number of non-indigenous miners increased in the region, large mining operations were shut down, and Miwok participation decreased (Levy 1978). Records indicate that at least 200 Miwok were killed by the miners during the years 1847 to 1860 (Levy 1978).

A period of confiscation of Indian lands began with the annexation of California by the U.S. (Levy 1978). Although treaties were signed by several members of the tribelets, they were never ratified by the U.S. Senate (Levy 1978). A few groups of Sierra Miwok were removed to the Fresno area but most of the Sierra Miwok population remained in rancherias scattered throughout the Sierra Nevada foothills (Levy 1978). Reliance on wage labor steadily increased and dependence on gathering and hunting diminished throughout the end of the nineteenth century and early twentieth century. Federally recognized Sierra Miwok Tribes in the immediate vicinity of the La Grange Hydroelectric Project include the Chicken Ranch Rancheria of Jamestown, California and the Tuolumne Band of Me-Wuk Indians of Tuolumne, California.

#### 5.1.3 History

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and four presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated the majority of the California region during this period. The purpose of the missions and presidios was to establish Spanish economic, military, political, and religious control over the Alta California territory. This included the forced conversion of the native population to Spanish colonial society and Catholicism, which often consisted of subjugating Indians into a life of servitude to Spanish citizens (Castillo 1978; Cleland 1941).

The Mexican Period (1821 to 1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, the vast land holdings of the missions in California were divided into large land grants called ranchos. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978).

The first Americans in the region were made up of teams of trappers led in 1827 by Jedediah Smith and followed by a party led by Ewing Young in 1829. The Hudson Bay Company also sent a number of trapping expeditions, including one led by Peter Ogden, to California during this period that were successful in procuring beaver furs and antelope skins. In 1844, General John C. Fremont crossed into the Central Valley and returned the following year with Kit Carson and Joseph Walker.

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican-American War and marked the beginning of the American Period (1848 to present). The discovery of gold the same year initiated the 1849 California Gold Rush, bringing thousands of miners and settlers to California. The Sierra Nevada foothills experienced a large influx of miners after 1849 (Moratto 1971:5-13). The mining communities of Chinese Camp and La Grange sprang up quickly in the 1850s and mining activities dotted the shores of the Tuolumne River.

The Gold Rush resulted in increased population and settlements in the San Joaquin Valley because the region was a natural transportation corridor that provided goods for miners. The 1850s was a period of abundant wheat harvests and the spread of open cattle grazing in the valley. Notable among these cattlemen were Henry Miller and Charles Lux, whose ranch covered more than one million acres in the Los Banos area in the 1860s.

The MID and TID were formed in 1887 and are the oldest irrigation districts in California (TID/MID 2010). The two districts were created to provide water for agricultural purposes. Today their service areas total approximately 200,000 acres of orchards, vines and row and forage crops (TID/MID 2010). The La Grange Diversion Dam was built by the Districts between 1891 and 1893 to raise the level of the Tuolumne River to permit the diversion of water from the Tuolumne River for irrigation of farmland. The La Grange Diversion Dam replaced the Wheaton Dam built by the Tuolumne Water Company in 1871. In 1924, the 2-unit La Grange powerhouse was built.

#### 5.2 Record Search Results

To gather existing, relevant, and reasonably available information regarding cultural resources in the La Grange Hydroelectric Project APE and vicinity, the Districts requested a record search from the Central California Information Center (CCIC) of the California Historical Resources Information System at California State University, Stanislaus in Turlock. The data gathering area included the APE and a 0.25 mile buffer beyond. The record search was conducted during June 2014 and included a review of cultural resources records, previously conducted cultural resources investigations, historic maps, the NRHP, the California Register of Historic Resources, *California State Historic Landmarks* (California Department of Parks and Recreation (CDPR) 1996), *California Inventory of Historic Resources* (CDPR 1976), the California Points of Historic Interest listing (http://ohp.parks.ca.gov/listedresources/), the Directory of Properties in the Historic Property Data File (Office of Historic Preservation [OHP] current computer list dated 3-20-2014), and the Archaeological Determinations of Eligibility (Office of Historic Preservation current computer list dated 4-04-2012), the *Survey of Surveys* (CDPR 1989), and other pertinent historic data available at the CCIC for Stanislaus and Tuolumne counties.

The results of the records search are provided below and include summaries of the previously conducted cultural resources investigations, the previously documented cultural resources, along with their NRHP eligibility determinations if any have been made, and the historic features identified on historic maps within the APE and 0.25 mile buffer beyond.

#### 5.2.1 Previous Cultural Resources Investigations

The record search identified seven previous cultural resource investigations within the 0.25 mile buffer around the APE, all of which are located within or cross the APE (Table 1.0). The investigations occurred between 1979 and 2006, and were conducted prior to a variety of different undertakings, to include proposed water control facilities improvements, recreational expansion, and transmission line disconnect and installation projects. The previous investigations covered roughly 15 percent of the APE, though many of these studies were not completed to current (2014) professional standards.

Count	Author	Year	CCIC Report #	Other ID #s	Report Name and Description	Within APE (Yes/No)	Within 0.25mi of APE (Yes/No)
1	Balen, B.	1986	TO-03957	NADB-R- 1366425	Cultural Resource Inventory Report: Bloss Ranch, La Grange, California and Addendum Report. Records search and pedestrian survey of 70% of "sensitive areas" related to the proposed recreational expansion along the south shore of Don Pedro reservoir; 25 cultural resources identified.	Yes	Yes
2	Carpenter, K.	2005	ST-05859	NADB-R- 1365752	Letter Report Regarding Turlock Irrigation District Archaeological Survey; TID Upper Main Canal. Records search and pedestrian survey (15-30 meter transects) conducted prior to proposed replacement and rebuilding of a canal; eight previously recorded resources identified, and eight new resources were identified, though only one was within the survey area.	Yes	Yes
3	Carpenter, K.	2006	-	-	TID Supplemental Archaeological Survey and Native American Consultation. Native American consultation and field visit. The field visit was conducted to confirm boundaries of previously recorded resources and to make recommendations for management of those resources. Two out of three previously identified resources were relocated and two new resources identified. Avoidance recommended.	Yes	Yes
4	Jensen, P.	2004	ST-05483	NADB-R- 1365367	Archaeological Inventory Survey, M.I.D—T.I.D. Transmission Line Disconnect Project, Four Locations Crossing the Tuolumne River Near La Grange, Stanislaus County, California. Class III-level archaeological survey conducted prior to disconnect of existing transmission line segments; no cultural resources were identified.	Yes	Yes
5	Jensen, S.	2004	ST-05458	NADB-R- 1365341	Archaeological Inventory Survey: MID's Three New Transmission Lines Project, c. 3.5 Miles of Linear Corridor Interconnecting Existing Transmission Facilities, Stanislaus County, California. Class III-level archaeological survey conducted prior to proposed construction of linear transmission line corridor segments; no cultural resources were identified.	Yes	Yes

Table 1.0.Previous studies in the APE and within 0.25 miles of the APE.

Count	Author	Year	CCIC Report #	Other ID #s	Report Name and Description	Within APE (Yes/No)	Within 0.25mi of APE (Yes/No)
6	JRP Historical Consulting	2005	ST-07441	NADB-R- 1367806	Historical Resources Inventory and Evaluation Report, Turlock Irrigation District, Upper Main Canal, Stanislaus County, CA. Resource inventory and evaluation of irrigation canal prior to canal improvements/retrofitting.	Yes	Yes
7	Napton, L.K. and Greathouse, E.A.	1979	ST-00881	NADB-R- 1361724	Cultural Resource Reconnaissance of the Turlock Main Canal, Turlock Irrigation District, Stanislaus County, California. Pedestrian survey conducted prior to construction of proposed canal improvements; three archaeological resources were identified.	Yes	Yes

#### 5.2.2 Previously Recorded Cultural Resources

The records search identified four previously documented cultural resources within 0.25 miles of the APE (Table 2.0). Of these four resources, two are prehistoric archaeological resources and two are built environment resources. The prehistoric resources represent occupation and tool manufacturing locations, and contain bedrock milling features, habitation debris, lithic debitage, and burials. The built environment resources consist of the La Grange Diversion Dam and the TID Upper Main Canal. Only one of the four resources is located within the APE, while the other three are within 0.25 miles of the APE. Of the four resources, one resource has been evaluated as ineligible for inclusion on the NRHP and three resources remain unevaluated for the NRHP.

Count	Site Number (Primary No. / Trinomial)	CCIC Project No., Recorder and Year, or Associated Report Authors and Year	Description	NRHP Evaluation	Within APE (Yes/No)	Within 0.25mi of APE (Yes/No)
1	P-50-115/ CA-STA-29	Hewes and Hassey 1939	<b>Prehistoric.</b> Native American occupation and burial site.	Unevaluated	No	Yes
2	P-50-1890/ CA-STA-417H	Larson and Johnson 2003	Built. Snake Ravine/TID Upper Main Canal.	Ineligible	No	Yes
3	P-50-258/ CA-STA-173	Heizer and Heizer 1949	<b>Prehistoric.</b> Native American occupation and burial site.	Unevaluated	No	Yes
4	P-50-550	Hata 1979	<b>Built. No form.</b> La Grange Dam, designated State Point of Historical Interest #STA-003.	Unevaluated	Yes	Yes

Table 2.0.Previously recorded sites within the APE and within 0.25 miles of the APE.

#### 5.2.3 Potential Historic Resources Identified on Historic Maps

Historic-period USGS topographic quadrangles and General Land Office (GLO) plats were reviewed during the records search to identify locations of potential historic-era sites and features within the APE and within 0.25 miles of the APE (Table 3.0). This resulted in the identification of roughly 13 historic period features that may be present within the APE. These features include the La Grange Diversion Dam, a gaging station, a powerhouse, two transmission lines, one unimproved road, a jeep trail, La Grange Diversion Dam road, canals, a tunnel, and two structures.

Мар	Map Date	Features within the APE (Note: the same features are referenced on multiple maps)	Features within 0.25 mi of APE
La Grange, CA, 7.5' USGS Quadrangle	1962	Powerhouse, transmission line, two structures, La Grange Dam, a gaging station, La Grange Dam Road, one unimproved road, and a jeep trail	Transmission lines, three structures, a gaging station, La Grange Dam Road, seven unimproved roads, and a jeep trail
Merced Falls, CA, 15' USGS Quadrangle	1962	Powerhouse, two transmission lines, one structure, La Grange Dam, a gaging station, La Grange Dam Road, one unimproved road, and a jeep trail	Transmission lines, three structures, a gaging station, La Grange Dam Road, seven unimproved roads, and a jeep trail
Sonora, CA, 30' USGS Quadrangle	1897	La Grange Dam, two canals, and one tunnel	Two canals and one tunnel
Township 3S, Range 14E GLO plat	1867	No features	No features
County Map of Stanislaus, CA	1906	Dam, two canals, one improved road	Two canals, one improved road
County Map of Tuolumne, CA	1907	Dam, two canals	Two canals

Table 3.0.Historic maps reviewed within the APE and within 0.25 miles of the APE.

#### 5.3 Summary and Conclusions

The records search indicates that the La Grange Hydroelectric Project APE and vicinity is relatively sensitive for prehistoric and historic-era archaeological properties and for built environment resources. The records search also indicates that some areas within the APE have been subject to previous cultural surveys. However, the research also revealed that many areas within the APE have not yet been surveyed for cultural resources. To accomplish this, and to meet the study plan objective, additional archival research and field surveys are necessary. This study plan will be used to guide efforts in acquiring the additional information.

# 6.0 STUDY METHODS

This section is broken down into the following parts: (1) a description of the APE, which is the study area; (2) general concepts that apply to the study; and (3) study specific methods to be used to implement the study and accomplish the study goals.

## 6.1 Area of Potential Effects

For the La Grange Hydroelectric Project, the APE has been initially defined as lands immediately downstream of the LGDD including the La Grange Hydroelectric Project Powerhouse, tailrace, and La Grange Hydroelectric Project access roads. The APE may be modified after consultation with interested parties if the consultation results in the identification of additional lands that may be affected by La Grange Hydroelectric Project-related activities outside of these areas. The APE falls entirely on private lands. The APE is contained on the La Grange, CA, USGS 7.5-minute Topographic Quadrangle, within Township 3 South and Range 14 East. The study area that will be investigated to accomplish the current study is the APE. The APE map is provided here as Attachment A.

#### 6.2 General Concepts

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.
- 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 accommodate actual field conditions and unforeseeable events. Any modifications made will be documented and reported in the draft study report.

#### 6.3 Study Methods

The study approach will consist of the following seven steps:

#### Step 1 - Obtain SHPO Approval of APE

As required under Section 106, pursuant to 36 CFR § 800.4(a)(1), the Districts will submit maps depicting the APE to the SHPO for formal review, comment, and concurrence<sup>2</sup>. Once approved, the maps and SHPO's concurrence letter will be filed with FERC.

The Districts may request that SHPO concur with a modified APE during the study if the Districts determine that the La Grange Hydroelectric Project affects historic properties outside the previously SHPO-approved APE.

<sup>&</sup>lt;sup>2</sup> Participating Tribes and agencies will be provided the opportunity to review and comment on the APE as part of consultation efforts related to this study plan.

#### Step 2 - Archival Research

Information has been obtained from the record search that identified previous cultural surveys and recorded archaeological and historic-era properties within or adjacent to the APE. Archival research will also be conducted at the repositories listed below to obtain additional information specific to the prehistory and history of the APE, the La Grange Hydroelectric Project hydroelectric system in whole, and its individual features. The results of the archival research will serve as the basis for preparing the prehistoric and historic contexts against which cultural resources may be evaluated. Previous NRHP evaluations of resources, if they exist, will be used as much as possible. The places to be contacted and/or visited for archival research may include, but is not restricted to the following:

- Bancroft Library, University of California, Berkeley
- Bureau of Land Management, Mother Lode Field Office Data Files
- Turlock Museum and Archives
- Modesto Museum and Archives
- Tuolumne County Assessor's and Recorder's Offices
- Tuolumne County Historical Society
- Stanislaus County Assessor's and Recorder's Offices
- Stanislaus County Historical Society
- Oral Histories of Project Personnel and/or Local Residents, Historians, or Enthusiasts
- Turlock Irrigation District and Modesto Irrigation District

## Step 3 - Field Survey

FERC is required to make a good faith effort to identify historic properties that may be affected by the proposed federal undertaking (i.e., licensing of the La Grange Hydroelectric Project) (36 CFR § 800), which does not include identifying past La Grange Hydroelectric Project related effects, other than noting present resource conditions in order to determine their existing level of integrity. A comprehensive and intensive field survey will be completed in accordance with the Secretary of Interior's Standards and Guidelines for Identification (NPS 1983). All lands within the APE will be inventoried at this level, unless lands are inaccessible and/or it is determined unsafe to do so by the Districts. Areas that cannot be inventoried will be identified in the resulting survey report in text and maps, with an explanation for survey exclusion.

The field survey will be directly supervised in the field by qualified, professional archaeologists (i.e., individuals who meet the Secretary of the Interior's Standards for professional archaeologists).

Locations of previously recorded cultural resources will be verified and the resources re-recorded only if their existing resource records or other documentation do not meet current standards for recording, or if the condition and/or integrity of the property has changed since its previous

Newly discovered cultural resources, including isolated finds, will be fully recording. documented following the recordation procedures outlined in Instructions for Recording Historical Resources (OHP 1995a), which utilizes state of California Department of Parks and Recreation forms CDPR 523 A-L. Prehistoric isolates will be defined as three or less artifacts (flakes, groundstone, etc.) per 50 square meters. Prehistoric isolated features will not be treated as isolated finds, but will be recorded as a site. Historic isolates will be defined on a case by case basis, depending on the types of historic resources identified within the APE. A sketch map for each resource recorded or re-documented (unless it is an isolate) will be drawn to scale and the property photographed. The locations of all cultural resources documented during the survey will be plotted by the Districts' cultural resources specialist or cultural consultant onto the appropriate USGS 1:24,000-scale topographic map at the time of discovery. Field personnel will use a Global Positioning System (GPS) receiver to document the location of cultural resources (including isolates) recorded during the survey, which will be plotted onto the appropriate USGS topographic quadrangle using the Universal Transverse Mercator (UTM) coordinate system. GPS data related to recordation of historic properties will adhere to CDPR specifications for accuracy and site specific procedures. All artifacts encountered during the field survey will be left in place; no artifacts will be collected during the field survey.

**Inventory of Historic-Era Built Environment.** A field inspection, documentation, and subsequent NRHP evaluation (see below) of any historic-era built environment resources will be undertaken by qualified, professional individuals meeting the Secretary of the Interior's Standards for Architectural and Engineering Documentation. Individual components will be recorded or re-recorded to meet current CDPR standards. This will include digital color photography and sketch maps of each built resource and each associated feature. All built environment resources identified within the APE and constructed in 1976 or older will be documented as part of this study. As this study is scheduled for completion by 2016 and resources constructed in 1976 or older will be 50 years old or older when the study is complete.

**Discovery and Treatment of Human Remains.** If an inadvertent discovery of human remains occurs on federal lands<sup>3</sup>, the person making the discovery shall follow the procedures outlined in 43 CFR § 10(4)(b) of NAGPRA and the guidance provided by the ACHP, requiring that they immediately notify the federal land managing agency, who will contact the affected Tribes, as appropriate, by telephone, and provide written confirmation of the discovery. On federally-administered land, NAGPRA responsibilities cannot be delegated to FERC or to the Districts. All work in the immediate area of the discovery will cease and the area will be secured to protect the remains. The federal land managing agency is responsible for consulting with the affected Tribes to contact the lineal descendent and ascertain the cultural affiliation, as outlined in NAGPRA under 43 CFR § 10(14), in order to otherwise abide by NAGPRA to determine the disposition of the discovered human remains (43 CFR § 10[6]).

On privately owned lands, the California Penal Code, California Health and Safety Code, and California Public Resources Code, also prohibit damage, defacement, or disinterment of human remains without legal authority, and establish civil and criminal penalties for actions associated with private landholdings. If an inadvertent discovery of human remains occurs on private lands during the study, the person making the discovery shall immediately contact the county coroner

<sup>&</sup>lt;sup>3</sup> No federal lands are currently within the proposed APE.

and the affected Tribes, as appropriate, by telephone, and provide written confirmation of the discovery. All work in the immediate area of the discovery will cease and the area will be secured to protect the remains. The coroner will confirm that the find is indeed human and requires no further investigation, per California Health and Safety Code Section 7050.5, and contact the Native American Heritage Commission, who will identify and contact the most likely descendent. The most likely descendent and private land owners should then consult with one another regarding the disposition of the discovered human remains, pursuant to California Public Resources Code Section 5097.98. The Districts may facilitate such discussion, but cannot force discussion or otherwise enforce recommendations made by any party if they are not the subject land owner.

#### Step 4 – Tribal Field Visit

As defined above, historic properties may include properties of traditional religious and cultural importance. To identify resources that may be of traditional religious and cultural importance to local Native American Tribes, the Districts will invite these groups to attend a field visit to the La Grange Hydroelectric Project and/or provide any information regarding such locations in the area. The purpose of the visit would be to provide Tribal representatives the opportunity to examine locations within the APE and/or prehistoric archaeological sites encountered during the field survey, and for the Districts' contractor to then obtain information from the Tribal representatives regarding the importance of these locations.

For the La Grange Hydroelectric Project, the Districts will utilize the list of Tribal contacts associated with the nearby Don Pedro Project (see Table 4.0). Additional groups that might be identified by FERC or the Native American Heritage Commission subsequent to issuance of this study plan will be added to the list and contacted by the Districts.

Table 4.0. I fibal contact list.	
Buena Vista Rancheria	Buena Vista Rancheria
Roselynn Lwenya, Ph.D	Rhonda Morningstar Pope
Environmental Resources Director	Chairperson
1418 20 <sup>th</sup> Street, Suite 200	1418 20 <sup>th</sup> Street, Suite 200
Sacramento, CA 95811	Sacramento, CA 95811
Central Sierra Me-Wuk Cultural & Historic	Chicken Ranch Rancheria of Me-Wuk
Reba Fuller, Spokesperson	Melissa Powell, Chairperson
PO Box 699	P.O. Box 1159
Tuolumne, CA 95379	Jamestown, CA 95327
Chicken Ranch Rancheria of Me-Wuk	Picayune Rancheria of the Chukchansi Indians
Melissa Ralston, Cultural Resources	Nancy Ayala, Chairperson
Coordinator	46575 Road 417 #A
P.O. Box 1159	Coarsegold, CA 93614
Jamestown, CA 95327	
Picayune Rancheria of the Chukchansi Indians	Southern Sierra Miwuk Nation
Mary Motola, Cultural Specialist	Lois Martin, Chairperson
46575 Road 417 #A	P.O. Box 186
Coarsegold, CA 93614	Mariposa, CA 95338

#### Table 4.0.Tribal contact list.

Southern Sierra Miwuk Nation	Southern Sierra Miwuk Nation
Jay Johnson, Spiritual Leader	Les James, Spiritual Leader
5235 Allred Road	P.O. Box 186
Mariposa, CA 95338	Mariposa, CA 95338
Tuolumne Band of Me-Wuk Indians	Tuolumne Band of Me-Wuk Indians
Kevin Day, Chairperson	Rob Cox, Cultural Resources Department
P.O. Box 699	P.O. Box 699
Tuolumne, CA 95379	Tuolumne, CA 95379
Tuolumne Band of Me-Wuk Indians	Tuolumne Band of Me-Wuk Indians
Vicki Stone, Cultural Coordinator	Reba Fuller, Spokesperson
P.O. Box 699	P.O. Box 699
Tuolumne, CA 95379	Tuolumne, CA 95379

Step 5 - National Register of Historic Places Evaluation

During field documentation of each cultural resource identified in the APE, the Districts will document the condition of each resource to assist in identifying potential and existing La Grange Hydroelectric Project-related effects and level of integrity. All previously unevaluated cultural resources that are currently being, or would be negatively affected by the La Grange Hydroelectric Project will be evaluated at this phase if possible, based on the documented remains, background research, and other pertinent information. The NRHP evaluations will be submitted to the SHPO for concurrence. Any NRHP evaluations completed for resources located on federal agency lands will be submitted to the appropriate agency for review prior to obtaining SHPO concurrence. Resources requiring further cultural resources management consideration beyond the study will be identified and included in the Districts' PM&Es for implementation, likely under a FERC-approved HPMP, unless more immediate action is deemed necessary to address La Grange Hydroelectric Project-related effects.

The Districts will utilize the National Register criteria for all resources to be evaluated, which are defined in 36 CFR 60.4, and which include the following:

National Register Criteria for Evaluation. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad pattern of our history;
- (b) that are associated with the lives of persons significant in our past;
- (c) that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;
- (d) that have yielded, or may be likely to yield, information important to prehistory or history.

As well, properties not normally considered for listing in the National Register (i.e., cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historical buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years) may qualify if they are contributing elements of districts that do meet the criteria for evaluation or for which the *Criteria Considerations* found at 36 CFR 60 may be applied.

#### Step 6 - Identify and Assess Potential Effects on National Register-Eligible Properties

As required under 36 CFR § 800.5, the Districts will identify and assess, in consultation with the SHPO and potentially affected Indian Tribes, any adverse effects on historic properties or potential historic properties resulting from La Grange Hydroelectric Project O&M. Adverse effects are defined as follows:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative (36 CFR § 800.5(a)(1).

#### Step 7 - Reporting

The Districts will prepare a technical report prepared to current professional standards consistent with the Archaeological Resource Management Report (ARMR) Guidelines (OHP 1995b). The report will include the following sections: (1) Study Goals and Objectives, (2) Environmental and Cultural Setting, (3) Methods and Analysis, (4) Results, (5) Discussion; and (6) Conclusions. Upon completion of the field studies, cultural maps provided with the Districts' report will clearly depict the following on USGS 1:24,000 topographic maps: the study areas examined; inventory coverage, including intensity of coverage; and locations of cultural resources identified within the study areas.

Copies of the final report and detailed locations of identified properties may be withheld from public disclosure in accordance with Section 304 (16 U.S.C. 4702-3) of the NHPA (as amended). Concurrence of report recommendations will be sought from the SHPO. Draft versions of the report will be provided to Tribes and other parties, as appropriate. If any portion of the documentation is deemed too sensitive for distribution by the affected Tribes, the Districts will work with the concerned groups for an appropriate outcome, which could include withholding information from distribution.

The results of the study will also be reported in Exhibit E of the License Application, which will include a summary of the information and findings of the study plan. Figures and other pertinent
data supporting the summary in Exhibit E will be appended to the License Application. The cultural records and other sensitive information will be included in a confidential appendix withheld from public disclosure, in accordance with Section 304 (16 U.S.C. 4702-3) of the NHPA as amended.

### 7.0 SCHEDULE

The Districts anticipate the following schedule to complete the study plan. The schedule assumes that FERC issues its Study Plan Determination by February 2, 2015, and that the study is not disputed by a mandatory conditioning agency.

•	Obtain SHPO Approval of the APE	January 2015
•	Archival Research/Field Work	February – April 2015
•	Tribal Field Visit	April 2015
•	NRHP Evaluation/Identify and Assess Effects	April – May 2015
•	Report Preparation	June – September 2015
		-
•	Report Submittal to Tribes	October 2015
•	Report Submittal to Tribes Report Submittal to SHPO	October 2015 December 2015

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

The proposed study methods discussed above are generally consistent with the study methods followed in several recent relicensing projects (i.e., Don Pedro Hydroelectric Project, FERC No. 2299; Merced River Hydroelectric Project, FERC No. 2179; Yuba-Bear Hydroelectric Project, FERC No. 2266). The methods presented in this study plan also are consistent with the ACHP's guidelines for compliance with the requirements of Section 106 of the NHPA found at 36 CFR 800.

### 9.0 LEVEL OF EFFORT AND COST

Study plan implementation costs are estimated to be \$90,000.

### **10.0 REFERENCES**

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#### ATTACHMENT A

#### AREA OF POTENTIAL EFFECTS MAP



Figure A-1. Area of Potential Effects Map.

#### **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX C**

#### RECREATION ACCESS AND SAFETY ASSESSMENT STUDY PLAN

#### RECREATION ACCCESS AND SAFETY ASSESSMENT STUDY PLAN

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### **Recreation Access and Safety Assessment**

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than 5 megawatts (MW). The La Grange Hydroelectric Project operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Hydroelectric Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS AND PROJECT NEXUS

Federal Energy Regulatory Commission (FERC) regulations require that the license application include a description of existing recreation facilities to be continued and maintained during the term of the license, new measures or facilities proposed by the applicant for the purpose of enhancing recreational opportunities at the Project, and measures to ensure the safety of the public in its use of Project lands and waters. Recreation is a recognized project purpose at FERC-licensed projects under Section 10(a) of the Federal Power Act.

On October 6, 2014, the Districts held a study plan meeting for the La Grange Hydroelectric Project. The purpose of the meeting was to discuss with licensing participants the Districts' Proposed Study Plan (PSP) in order to attempt to resolve any outstanding issues on studies to be included in the Revised Study Plan. Based on discussions at the study plan meeting, the Districts have made several changes to the Recreation Access and Safety Assessment Study Plan. In response to discussion at the PSP meeting, the Districts have amended the Canadian Dam Association Risk Assessment Form to better reflect activities that may take place at the Project (see Section 7.0 activities), and have amended this study plan to clarify that, depending on the results of this Recreation Access and Safety Assessment, the Districts may develop a Year 2 facilities siting assessment for those recreational activities identified during the Year 1 study as being able to safely occur at the Project.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

Management plans that cover recreation resources within the general vicinity of the Project include the California Department of Parks and Recreation's California Outdoor Recreation Plan (CORP), including the Survey on Public Opinions and Attitudes in Outdoor Recreation; the U.S. Department of Interior (DOI), USFWS Recreational Fisheries Policy; the Tuolumne County General Plan; and the Stanislaus County General Plan. Below is a summary of the recreation needs identified in the management plans applicable to the Project vicinity.

### 3.1 California Outdoor Recreation Plan

The 2008 CORP identifies and prioritizes outdoor recreation opportunities and constraints most critical in California. The plan lists the following seven major priority areas that comprise the state's strategy for meeting California's outdoor recreation needs:

- Projects that provide opportunities for the top 15 outdoor recreation activities identified in the latent demand scoring in the survey of Public Opinions and Attitudes on Outdoor Recreation in California (see Table 1.0 below).
- Projects that provide or improve outdoor recreation opportunities in the geographic region.
- Projects that provide outdoor recreation activities for children.
- Projects that provide outdoor recreation opportunities for those underserved communities.
- Projects that support the wetland priorities being pursued by the state's wetland preservation organizations.

- Projects that support the goals of California's Recreation Policy of (a) adequacy of recreation; (b) opportunities; (c) leadership in recreation management; (d) recreation's role in a healthier California; (e) preservation of natural and cultural resources; and (f) accessible recreation experiences.
- Projects that develop the trail corridors identified in the 2002 California Recreational Trails Plan and its scheduled update.

Rank	Activity	Rank	Activity
1	Walking for fitness or pleasure	9	Attending outdoor cultural events
2	Camping in developed sites with facilities such as toilets and tables	10	Off-highway vehicle use
3	Bicycling on paved surfaces	11	Driving for pleasure, sightseeing, driving through natural scenery
4	Day hiking on trails	12	Camping at primitive sites
5	Picnicking in picnic areas	13	Swimming in a pool
6	Beach activities	14	Wildlife viewing, bird watching, viewing natural scenery
7	Visiting outdoor nature museums, zoos, gardens, or arboretums	15	Outdoor photography
8	Visiting historical or cultural sites		

Table 1.0California's recreation activities with high latent demand.

Source: California Department of Parks and Recreation (CDPR) 2013

# **3.2** Survey on Public Opinions and Attitudes in Outdoor Recreation in California 2009

The 2009 Survey on Public Opinions and Attitudes in Outdoor Recreation in California (POAOR) (CDPR 2009), an element of the CORP, identified the following types of park and recreation facilities and services as the most important for Californian adults:

- 1) Play activity areas for tots and young children.
- 2) Wilderness type areas where no vehicles or development are allowed.
- 3) Areas and facilities for environmental and outdoor education programs.
- 4) Multi-use turf areas for field sports such as softball, baseball, soccer, and/or football.
- 5) Picnic sites for large groups.
- 6) Trails for multiple, non-motorized activities such as hiking, mountain biking, or horseback riding.
- 7) Hard surface trails for biking, jogging, and fitness walking.

### 3.3 Tuolumne County General Plan

The Tuolumne County General Plan (1996) is made up of two categories - the seven mandated elements and an unlimited number of optional elements. The mandatory elements are: Land Use, Circulation, Housing, Conservation and Open Space, Noise, and Safety. Currently, the

General Plan encompasses the following sections under optional elements: Cultural Resource, Economic Development, Agricultural, Recreation, Community Identity, Air Quality, and Public Facilities and Services (TID/MID 2011).

The Recreation Element focuses on the needs associated with its visitors and local residents as well as identifying acquisition funding sources and developing and maintaining parks and recreational facilities. There are seven goals associated with the Recreation Element:

- Provide an adequate supply and equitable distribution of recreation facilities for residents;
- Cooperate with other public agencies and private enterprise to provide park and recreation facilities;
- Further the goals of other General Plan elements in the acquisition and development of lands for recreation facilities and opportunities;
- Address the impacts of new developments on the County's recreational facilities;
- Acquire, manage, and develop recreational lands according to principles which protect private property rights, maximize cost efficiency, promote accessibilities by all residents, advocate safety, and encourage public participation;
- Develop a broad-based financing program with a wide variety of revenue sources which equitably distributes and/or reduces the cost of providing new recreation facilities; and
- Provide for the ongoing acquisition, construction, and maintenance of recreation facilities.

### 3.4 Stanislaus County General Plan

The Stanislaus County General Plan (1994) consists of seven mandatory elements and as many optional elements as the local jurisdiction deems desirable. The mandatory elements include Land Use, Circulation, Housing, Open Space, Conservation, Safety, and Noise. Since the Open Space and Conservation Elements have overlapping requirements, they have been combined in the Stanislaus County General Plan. The County has also adopted one optional element, the Agricultural Element (Stanislaus County 1994).

The Land Use Element focuses on the general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of land. The following goals may be pertinent to the La Grange pool and Project area:

- Provide for diverse land use needs by designating patterns which are responsive to the physical characteristics of the land as well as to environmental, economic, and social concerns of the residents of Stanislaus County.
- Foster stable economic growth through appropriate land use policies.
- Ensure that an effective level of public service is provided in unincorporated areas.

# 4.0 STUDY GOALS

The goals of this study are: (1) to identify and characterize public use and potential recreation opportunities in the study area, and (2) to assess the public safety risk of identified recreation opportunities in the study area. Depending upon the results of the study, the Districts may develop a Year 2 facilities siting assessment related to potential safe recreational activities identified during the Year 1 study.

# 5.0 EXISTING INFORMATION AND NEED FOR ADDITIONAL INFORMATION

There are no recreation facilities associated with the Project or located along the reach of the Tuolumne River between Don Pedro Dam and La Grange Diversion Dam. Public access to this reach of the Tuolumne River has been historically limited to occasional use by the adjacent private property owners. All existing information on recreational use along the La Grange pool and in the immediate area below La Grange Diversion Dam, and the safety risks associated with recreational use, is anecdotal. It would be inappropriate to evaluate recreational enhancements at the Project without first evaluating whether it is safe for the public to utilize the potential recreation access and an associated safety assessment to inform FERC's assessment of recreation potential at the Project. Depending upon the results of the study, the Districts may propose a Year 2 facilities siting assessment for those recreational activities identified during the Year 1 study as being able to safely occur at the Project.

# 6.0 STUDY AREA

The study area includes the Tuolumne River from RM 51.8 (which is approximately 200 feet downstream of where the La Grange Hydroelectric Project tailrace meets the bypass reach) upstream to Don Pedro Dam, located at RM 54.8. The study area includes any potential public access ways that may exist along the east (left) bank of the Tuolumne River along this reach.

# 7.0 STUDY METHODS

#### <u>Step 1 – Identify and Describe Existing Public Access and Potential Recreation Opportunities in</u> <u>the Study Area</u>

#### Public Access Review

Using existing aerial photographs and property ownership data, existing public access routes will be identified via desktop study and then confirmed with a site visit. Observations during a site visit will be used to produce descriptions of each public access route, including route length, terrain, and a qualitative description of the route. Photographs will be taken to augment the written descriptions.

#### **Recreation Opportunity Identification**

Site characteristics in the study area will be assessed for recreation potential using existing aerial photography, topography data, and property ownership data; and observations made and documented during a site visit. Site characteristics to be assessed will include proximity to improved public roads, topography and bank slope, existing access and use, and property ownership. Site conditions will be detailed quantitatively, described narratively, and photographed.

#### **Public Involvement**

As described above, a site visit will be conducted as part of the Public Access Review and Recreation Opportunity Identification. Licensing participants will be invited to this field site visit. At the conclusion of the site visit, the Districts will be available for a debrief meeting with licensing participants to discuss observations during the site visit. The Districts will prepare meeting notes summarizing discussions at the debrief meeting and circulate these notes to licensing participants for 30-day review and comment. Final meeting notes will be including in the Recreation Access and Safety Assessment Study Report.

#### <u>Step 2 – Assess Risk to Public Safety</u>

The Canadian Dam Association's (CDA's) risk assessment process, as outlined in the Guidelines for Public Safety Around Dams (CDA 2011), will be used to assess the risk to public safety of using Project lands and facilities for recreation. The risk assessment process will include the following seven steps:

- 1) **Establish Boundaries of Site Components (Areas)** Boundaries will be established around Project components (e.g., La Grange pool and tailwater) that may be used for recreation.
- 2) Identify Potential Recreation Activities within Each Component Information will be obtained regarding the types and level of existing and potential public activities associated with each component, where applicable Recreation activities to be assessed upstream and downstream of the La Grange Diversion Dam include the following:
  - Fishing from a boat
  - Boating (under power)
  - Canoeing
  - Kayaking
  - Swimming
  - Diving
  - Fishing from the shore
  - Walking
  - Climbing
  - Camping
  - Bird watching

For a complete list of recreation activities that will be considered, please see the sample Risk Assessment Form in Attachment A.

- 3) Identify Hazards within Each Component Through site visit observations, information will be obtained regarding hazards within each component.
- 4) Identify Existing Risk Treatments (Measures) and Their Effectiveness Through site visit observations, current risk treatment (measures) will be evaluated.
- 5) Assign Incident Likelihood Ratings (ILR) ILR will be assigned (Table 2.0).

Table 2.0.	able 2.0. Incident Likelihood Ratings (ILR).													
Description	Description Definition of Likelihood													
Very Frequent	More than 10 occurrences <sup>1</sup> in the hazardous area in any one of the last	5												
	3 years, or 25 or more occurrences in total in the last 3 years													
Frequent	More than 2 occurrences in the hazardous area	4												
	in any one of the last 3 years													
Occasional	Any occurrences in the hazardous area in the last 6 years	3												
Possible	Any occurrences in the hazardous area in the last 10 years	2												
Remote	No known occurrences in last 10 years	1												

1. Occurrence refers to the presence of members of the public (non-workers or contractors) in the hazardous area of the component under consideration, whether or not an "incident" occurs. Occurrences are estimated from known incidents, anecdotal evidence, and additional knowledge about public presence in the area.

6) Assign Incident Consequence Ratings (ICR) – ICR will be assigned (Table 3.0).

Table 3.0.	Incident	Consequence	Ratings	(ICR).
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Anticipated Incident Consequence	Anticipated Nature of Public Exposure to Identified Hazard/Hazardous Area	ICR
Fatality	Fatality	5
Critical	Permanent Partial or Total Disability	4
Major	Medical Treatment; Stranding (rescue required)	3
Minor	First Aid; or Stranding (self-rescue possible)	2
Insignificant	No attention Required	1

7) Determine Risk Rating and Assign Risk Level – Risk level will be assigned (Table 4.0).

Гable 4.0.	<b>Risk rating</b>	and assign	risk level.
	0	0	

				ICR			
ILR		Insignificant	Minor	Major	Critical	Fatality	
		1	2	3	4	5	
Remote	1	Low	Low	Low	Low	High	
Possible	2	Low	Low	Low	Medium	High	
Occasional	3	Low	Low	Medium	Medium	High	
Frequent	4	Low	Medium	Medium	High	High	
Very Frequent	5	Medium	Medium	High	High	High	

A sample Risk Assessment Form is presented in Attachment A to this plan.

#### <u>Step 3 – Prepare Report</u>

A study report will be prepared that summarizes the results of the Year 1 study, including a discussion of the potential need, if any, to develop a Year 2 facilities siting assessment for those recreational activities identified during the Year 1 study as being able to safely occur at the Project.

### 8.0 SCHEDULE

The Districts anticipate the following schedule to complete the study plan. The schedule assumes that FERC issues its Study Plan Determination by February 2, 2015, and that the study is not disputed by a mandatory conditioning agency.

•	Step 1 and Step 2	March – July 2015
•	Step 3	August – October 2015
•	Initial Study Report Issuance	

# 9.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

The CDA is a leading authority on public safety related to hydroelectric facilities. CDA's Guidelines for Public Safety Around Dams are generally applicable to facilities located throughout the United States and provide an objective and established methodology to assess public safety risks.

### **10.0 LEVEL OF EFFORT AND COST**

The Districts estimate the cost to complete this study to be \$50,000.

#### **11.0 REFERENCES**

- California Department of Parks and Recreation (CDPR). 2013. Turlock Lake State Recreation Area. [Online] URL: http://www.parks.ca.gov/. (Accessed March 26, 2013).
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#### RECREATION ACCESS AND SAFETY ASSESSMENT STUDY PLAN

#### ATTACHMENT A

#### SAMPLE RISK ASSESSMENT FORM



Name

Date

Signature

# **UPSTREAM LOCATION (Define)**

Describe the boundary of the Component:

																																						Risk Level at the Time of Assessment
										Pot	entia	l Haz	ard											Pres	Risk ent a	Redu It the	uction Time	Mea of As	isure sses:	s sment				Risl	Asses	ssmei	nt	
Activity Location within the Hazardous Area	Activity Description	Rapidly increasing in water levels	Rapidly increasing water flows Strong currents or underfows	Frequently dry riverbed	Presence of spillway with sluicegate	Automatic Emergency Operation of Spillway Gate	Presence of spillway with stop-logs Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors Inademate quardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures) Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Ratin	g	Risk Level	Comments
		1	2	3 4	5	6	7 8	9	10	11 12	13	14	15 16	17	18	19 20	21	22 2	3 24	25	26	1	2	3 4	5	6	7 8	9	10	11 12	13	14	ILR	ICR	RR		RL	
	Fishing from Boat Boating (under power)																																					
	Sailing																															-1f						
	Windsurfing																																					
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atei	Jet Ski																															= 0						
Ň	Scuba Diving																																					
Шо	Swimming/Diving		_	-			_	-					_		_	_		-	-					_		+ +		-								_		
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Location Name

# UPSTREAM LOCATION (Define)

																	As a resu	Anticipated (Current or ult of recent risk reduction measures implemented or additional
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Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	<b>Operational Controls (Procedures)</b>	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Current or Expected Risk Level	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL	
														-				
	<u></u> .		<u> </u>		<u></u>	<u> </u>	<u></u> .	<u> </u>	<u></u> .	<u>I</u> .	<u></u>	<u> </u>	<u> </u>	<u></u>	<u></u>			
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r Expected) Risk Level al risk reduction measures to be implemented in the immediate future

# Comments

(Includes assumptions, conclusions or observations)

#### **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN

#### **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

#### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

### 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

# 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling:</u>
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding:</u> Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

# **5.0** NEED FOR ADDITIONAL INFORMATION

#### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

### 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

# 6.0 STUDY AREA AND METHODS

#### 6.1 Study Area

#### 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

### 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.
#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

#### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

#### 6.2.2 Upper Tuolumne River Basin Habitat Assessment

#### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

#### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

#### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

#### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

## 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

#### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

•	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 – November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	
•	Fieldwork September 2015 – April/May 2	2016; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	
•	Data entry, QA/QC, and analysis	
•	Initial study report	
•	Updated study report	
•	Final study report	

### 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

-	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	February 2016
•	Updated study report	February 2017

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	February 2016
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

## 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels.	August 2015 – April/May 20	16
•	Data entry, QA/QC, and summarizing	September 2015 – December 20	16
•	Initial study report	February 20	16
•	Updated study report		17

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

## 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

## 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

## 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

## **10.0 REFERENCES**

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#### ATTACHMENT A

#### EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

S'4. Longt' and	G	Tuolumne	Coordinates (Decimal °)		Period of Record	
Site Locations	Source	Source River Mile		Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

Existing	Unner T	uolumne	River '	<b>Femnerature</b>	Monitoring 9	Sites
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<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

<sup>&</sup>lt;sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

	Same 3 Tuolum		Coor (Dec	dinates imal °)	Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

From:	Staples, Rose
Sent:	Tuesday, March 17, 2015 7:45 AM
Cc:	Staples, Rose
Subject:	Districts File Request for Ext of Time to Submit La Grange Study Plan
Attachments:	P-14581_LaGrangeDraftTubesSP_ReqForExt_150316.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed

On March 16, 2015 the Districts e-filed with FERC a request for extension of time to submit a La Grange Project study plan, as recommended by FERC in its February 2, 2015 Study Plan Determination, to monitor anadromous fish movement into the powerhouse draft tubes. A copy of the filing is attached. It is also available for viewing and downloading from FERC's E-Library at <u>www.ferc.gov</u>. Thank you.

Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us





March 16, 2015 Via Electronic Filing FERC Project No. 14581 Tuolumne River - California

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

#### RE: La Grange Hydroelectric Project, FERC Project No. 14581 Request for Extension of Time to Submit Study Plan

Dear Secretary Bose:

On February 2, 2015, the Federal Energy Regulatory Commission ("FERC" or "Commission") issued the Study Plan Determination ("Determination") for the La Grange Hydroelectric Project, FERC No. 14581 located on the Tuolumne River in California. As part of the Determination, FERC staff recommended that the co-applicants, Turlock Irrigation District ("TID") and Modesto Irrigation District ("MID") (collectively, the "Districts") develop a study plan, in consultation with interested parties, for monitoring anadromous fish movement into the powerhouse draft tubes, and implement the plan beginning in 2015 for the anadromous fish migration. The Districts are to allow a minimum of 30 days for parties to submit written comments on a draft study plan, address any comments provided, and file the revised study plan with FERC by April 1, 2015.

As FERC points out in the Determination, the methods and technology to be used to conduct the study is uncertain because of the potential for turbulence at the draft tube exits, and in the tailrace area near the exits, to interfere with reliable detection of fish. The Determination also states that the study purpose is to evaluate the "potential for injury or mortality by *contact with the turbine runners*" [emphasis added]. The two units in the La Grange powerhouse are vertical Francis units with conical, straight-drop draft tubes (not elbow draft tubes) and the low steel of the lowest turbine runner is at approximate elevation of 188 feet, or 8 to 9 feet above the normal tailwater occurring during the controlled releases during fall Chinook migration from October 1 to December 31.

With regard to potential steelhead migrating to the powerhouse, there have been, at the most, very few steelhead counted in the Districts' counting weir operated since 2006. River flows can indeed be higher during the potential steelhead migration period, but the Districts estimate the flows would have to exceed 9,000 cfs (this has occurred very infrequently in the last 45 years) to have water levels reach the turbine runner. Since the draft tubes are vertical, there is little chance for fish to use a burst speed once it enters the draft tube exit area, because any fish finding its way into the draft tube area

Kimberly D. Bose Page 2 March 16, 2015

would then have to get directly under the conical draft tube and then make a direct vertical jump. This seems unlikely.

On March 10, 2015, Bao Le of HDR, Inc. (consultant to the Districts) met with John Wooster, Steve Edmondson, and Larry Thompson of the National Marine Fisheries Service ("NMFS") to discuss the study. Misters Le, Wooster, Edmondson, and Thompson discussed the configuration of the plant, the flows likely to be experienced in 2015, and the feasibility of how observations would be obtained. At the conclusion of the meeting, no consensus had been reached regarding study methods.

Given the uncertainties about exactly what is to be observed, and how such observations may be accomplished, the Districts hereby request an extension of time for submitting the study plan to FERC from the current April 1, 2015, due date to June 22, 2015. This will not interfere with other currently scheduled studies of anadromous fish migration in 2015, which would not begin until circa October 1, 2015; therefore, there would be no delay in the overall licensing process caused by such an extension of time. This time would enable the Districts to continue consulting with licensing participants and assessing available technologies and methodologies.

Thank you for your consideration in this matter.

Sincerely,

Steve Boyd Turlock Irrigation District P.O. Box 949 Turlock, CA 95381 (209) 883-8364 seboyd@tid.org

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

cc: La Grange Licensing Participants Email Group

From: Sent: To: Cc: Subject: Le, Bao Thursday, April 02, 2015 9:59 AM John Wooster - NOAA Federal Devine, John; Borovansky, Jenna; Deason, Jesse NMFS Permit for Temperature Loggers - follow up

#### Hi John.

John Devine let me know that NMFS has an existing permit and some unused capacity for installation of equipment in the upper Tuolumne River watershed that could be possibly support the Temperature Study. I just wanted to drop you a quick line to let you know that 1) I appreciate the offer; and 2) we haven't dropped the ball on this. We wanted to discuss needs/locations and our existing permit application with the study leads before responding/reaching out but unfortunately, they're out this week. We plan to meet with them early next week and will circle back with you after that (before the end of next week). Hopefully this is ok.

#### Thanks, Bao

Bao Le Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us] Sent: Thursday, April 09, 2015 1:55 PM To: Vertucci, Charles Subject: permit

Chuck,

Here is the permit please have Steve Boyd sign and date 3 copies and return them to me once I receive those I will obtain our authorized signature and send a fully executed permit. Thank you.



Debbie Foote Resource Assistant

Forest Service Groveland Ranger District

p: 209-962-7825 x533 f: 209-962-7412 <u>dfoote@fs.fed.us</u>

24545 Hwy. 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

Authorization ID: GRO1122 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE SPECIAL USE PERMIT Authority: ORGANIC ADMINISTRATION ACT June4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers less than 1 acre in the Stanislaus National Forest, ("the permit area"), as shown on the map(s) attached as Appendix A. This permit issued for the purpose of:

Installing, monitoring, and maintaining water temperature recorders at 10 locations. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

#### **TERMS AND CONDITIONS**

#### I. <u>GENERAL TERMS</u>

A. <u>AUTHORITY</u>. This permit is issued pursuant to **ORGANIC ADMINISTRATION ACT June4, 1897** and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

**C.** <u>**TERM.**</u> This permit shall expire at midnight on 12/31/2016, 1 year and 8 months from the date of issuance.

**D.** <u>**RENEWAL.</u>** This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit</u>

is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the new permit is the same as the type of use and occupancy authorized by this permit; and (3) the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

#### F. COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL

**<u>REQUIREMENTS</u>**. In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. <u>ASSIGNABILITY</u>. This permit is not assignable or transferable.

#### II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

#### III. OPERATIONS.

A. <u>PERIOD OF USE</u>. Use or occupancy of the permit area shall be exercised at least 3 months each year.

**B.** <u>**CONDITION OF OPERATIONS</u>**. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.</u>

C. <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for noncompliance with any of the terms and conditions of this permit.

#### IV. RIGHTS AND LIABILITIES

**A.** <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D. SERVICES NOT PROVIDED**. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS**</u>. The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially

damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.

**F.** <u>DAMAGE TO UNITED STATES PROPERTY</u>. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

**G.** <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations, their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment

and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

**H. INDEMNIFICATION OF THE UNITED STATES**. The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

#### V. <u>RESOURCE PROTECTION</u>

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

C. <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

**D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures specified by the authorized officer shall be the responsibility of the holder.

**E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

#### F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE

**SPECIES**. The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

**G.** <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

#### H. CLEANUP AND REMEDIATION

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

#### VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

#### VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>**REVOCATION AND SUSPENSION**</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.
- 5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

**C.** <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION**</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

#### E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION

**WITHOUT RENEWAL**. Upon revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

#### VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>**CURRENT ADDRESSES**</u>. The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.

C. <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

#### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

#### BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

Steve Boyd, Licensing Coordinator

DATE

APPROVED:

Jim Junette, District Ranger

DATE

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 975-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

From:John Wooster - NOAA Federal <john.wooster@noaa.g< th="">Sent:Monday, April 13, 2015 5:47 PM</john.wooster@noaa.g<>		
То:	Le, Bao	
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles	
Subject:	Re: NMFS Permit for Logger Installation	
Follow Up Flag:	Follow up	
Flag Status:	Flagged	

Sounds good Bao. I'm assuming you don't really want to duplicate any installations, so yes I think some sort of coordination would be useful as we are planning on installing a few more loggers in May in addition to the ones we put out last summer. You should have the coordinates of the ones we put out last summer, they were listed in the back of the HDR Study Plan.

John

On Thu, Apr 9, 2015 at 12:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

We met this week to discuss logger deployment and use of the NMFS permit. It turns out that our permit is expected by week's end so I think we'll be ok to deploy everything under that permit here shortly. Again, thank you for the offer. It's much appreciated.

At some point in the future, it would be great to discuss data sharing.

Thanks again,

Bao

#### Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Le, Bao
Sent:	Thursday, April 16, 2015 3:36 PM
То:	dean.marston@wildlife.ca.gov
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	La Grange Project - Agendas for Temp Workshop (May 19) and FP Workshop (May 20)
Attachments:	LG_May20 WorkshopNo1Agenda_20150415.docx; LG May 19_TempWorkshopAgenda_ 20150415.docx
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Dean.

I'm following up on my phone message regarding the availability of workshop draft agendas for two of the La Grange Project licensing studies (see attached). The workshops are intended to be collaborative and so I hope CDFW will be able to attend and participate. Please let me know if you have any questions.

## Thanks,

Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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#### La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:00 pm – 4:00 pm HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA Conference Line: 1-866-994-6437, Passcode: 8140607

#### **Meeting Objectives:**

- 1. Present an overview of the La Grange Hydroelectric Project Temperature Study.
- 2. Review and confirm proposed temperature and flow monitoring locations.
- 3. Review and confirm modeling approach.
- 4. Confirm schedule/tasks and opportunities for collaboration.

TIME	TOPIC
1:00 pm – 1:10 pm	Introduction of Participants (All)
1:10 pm – 1:30 pm	Background/Overview of the La Grange Project Temperature Study (Districts)
1:30 pm – 3:30 pm	Temperature Study Introduction (Districts) a. Study goal and objectives, scope, and study area Review and Discussion of Existing Information a. Parameters and sources b. Review process summary c. Results, findings and recommendations Proposed Monitoring Program – Presentation and Discussion a. Rationale i. Space (locations) ii. Time (periods of interest) iii. Equipment Temperature Modeling – Presentation and Discussion a. Approach (including spatial and temporal resolution) b. Data needs c. Model information/output Schedule and Reporting
3:30 pm – 4:00 pm	Meeting Wrap-up (All) a. Confirm study approach and methods b. Agreements, action items and next steps




# La Grange Hydroelectric Project Fish Passage/Reintroduction Assessment Workshop No. 1 Wednesday, May 20, 9:00 am to 12:00 pm MID Office, 1231 11<sup>th</sup> Street, Modesto, California Conference Line: 1-866-994-6437, Passcode: 8140607

# **Meeting Objectives:**

- 1. Introduce the fish passage/reintroduction evaluation concept, process/framework, and relevant information needs.
- 2. Present and discuss the Tuolumne River Reintroduction/Fish Passage Evaluation Framework.
- 3. Confirm schedule/tasks, subsequent workshops, and opportunities for collaboration.

TIME	TOPIC	
9:00 am – 9:10 am	Introduction of Participants (All)	
9:10 am – 9:30 am	Background/Overview of Tuolumne River Anadromous Fish Reintroduction Collaborative (Districts)	
9:30 am – 10:00 am	<ul> <li>Overview of the Reintroduction Planning Process (NMFS; CDFW) <ul> <li>a. Reintroduction goals, objectives, and expectations</li> <li>b. General fish reintroduction planning concepts</li> <li>c. Alternative methods of anadromous fish reintroduction and applicability to Tuolumne River</li> <li>d. Passive vs. active strategies (natural colonization; transplanting; hatchery releases)</li> <li>e. Key biological issues to be evaluated</li> <li>f. Key socioeconomic issues to be evaluated (e.g. ISAB 2011)</li> <li>g. General reintroduction planning timelines</li> </ul> </li> </ul>	
10:00 am – 10:30 am	Overview of Examples of Anadromous Fish Reintroduction Planning Process (NMFS; CDFW)	
10:30 am – 11:15 am	Overview of the Tuolumne River Fish Passage/Reintroduction Evaluation Framework (Districts) a. Review fish passage/reintroduction evaluation process b. Information needs and key resource considerations c. Available data, data gaps, and potential data sources	
11:15 am – 11:45 am	<ul> <li>Overview of Examples of Anadromous Fish Passage Facilities (Districts)</li> <li>a. Key fish passage considerations</li> <li>b. Upstream passage types and related facilities</li> <li>c. Downstream passage types and related facilities</li> </ul>	

	Tuolumne River Passage Assessment Schedule and Next Steps (All)
11:45 am – 12:00 pm	<ul> <li>a. Schedule: Opportunities for collaboration and incorporation of feedback</li> <li>b. Workshops 2 and 3 – confirm dates and content</li> </ul>

From:	Le, Bao	
Sent:	Thursday, April 16, 2015 3:30 PM	
То:	John Wooster - NOAA Federal	
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse	
Subject:	Agendas for Temp Workshop (May 19) and FP Workshop (May 20)	
Attachments:	LG May 19_TempWorkshopAgenda_20150415.docx; LG_May20 WorkshopNo1Agenda_ 20150415.docx	
Follow Up Flag:	Follow up	
Flag Status:	Flagged	

I'm following up on my phone message regarding the availability of workshop draft agendas for two of the La Grange Project licensing studies (see attached). As discussed previously, the workshops are intended to be collaborative and we hope NMFS can play a key role. Please take a look and if needed, we can plan to circle back and discuss early next week.

Thanks, Bao

Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com





# La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:00 pm – 4:00 pm HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA Conference Line: 1-866-994-6437, Passcode: 8140607

## **Meeting Objectives:**

- 1. Present an overview of the La Grange Hydroelectric Project Temperature Study.
- 2. Review and confirm proposed temperature and flow monitoring locations.
- 3. Review and confirm modeling approach.
- 4. Confirm schedule/tasks and opportunities for collaboration.

TIME	ТОРІС	
1:00 pm – 1:10 pm	Introduction of Participants (All)	
1:10 pm – 1:30 pm	Background/Overview of the La Grange Project Temperature Study (Districts)	
1:30 pm – 3:30 pm	Temperature Study Introduction (Districts) a. Study goal and objectives, scope, and study area Review and Discussion of Existing Information a. Parameters and sources b. Review process summary c. Results, findings and recommendations Proposed Monitoring Program – Presentation and Discussion a. Rationale i. Space (locations) ii. Time (periods of interest) iii. Equipment Temperature Modeling – Presentation and Discussion a. Approach (including spatial and temporal resolution) b. Data needs c. Model information/output Schedule and Reporting	
3:30 pm – 4:00 pm	Meeting Wrap-up (All) a. Confirm study approach and methods b. Agreements, action items and next steps	





# La Grange Hydroelectric Project Fish Passage/Reintroduction Assessment Workshop No. 1 Wednesday, May 20, 9:00 am to 12:00 pm MID Office, 1231 11<sup>th</sup> Street, Modesto, California Conference Line: 1-866-994-6437, Passcode: 8140607

# **Meeting Objectives:**

- 1. Introduce the fish passage/reintroduction evaluation concept, process/framework, and relevant information needs.
- 2. Present and discuss the Tuolumne River Reintroduction/Fish Passage Evaluation Framework.
- 3. Confirm schedule/tasks, subsequent workshops, and opportunities for collaboration.

TIME	TOPIC	
9:00 am – 9:10 am	Introduction of Participants (All)	
9:10 am – 9:30 am	Background/Overview of Tuolumne River Anadromous Fish Reintroduction Collaborative (Districts)	
9:30 am – 10:00 am	<ul> <li>Overview of the Reintroduction Planning Process (NMFS; CDFW) <ul> <li>a. Reintroduction goals, objectives, and expectations</li> <li>b. General fish reintroduction planning concepts</li> <li>c. Alternative methods of anadromous fish reintroduction and applicability to Tuolumne River</li> <li>d. Passive vs. active strategies (natural colonization; transplanting; hatchery releases)</li> <li>e. Key biological issues to be evaluated</li> <li>f. Key socioeconomic issues to be evaluated (e.g. ISAB 2011)</li> <li>g. General reintroduction planning timelines</li> </ul> </li> </ul>	
10:00 am – 10:30 am	Overview of Examples of Anadromous Fish Reintroduction Planning Process (NMFS; CDFW)	
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11:15 am – 11:45 am	<ul> <li>Overview of Examples of Anadromous Fish Passage Facilities (Districts)</li> <li>a. Key fish passage considerations</li> <li>b. Upstream passage types and related facilities</li> <li>c. Downstream passage types and related facilities</li> </ul>	

	Tuolumne River Passage Assessment Schedule and Next Steps (All)
11:45 am – 12:00 pm	<ul> <li>a. Schedule: Opportunities for collaboration and incorporation of feedback</li> <li>b. Workshops 2 and 3 – confirm dates and content</li> </ul>

From:	Le, Bao
Sent:	Friday, April 17, 2015 11:03 AM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)

I was not intimately involved in the identification of workshop dates (except at the very beginning) but from what I can gather, there were a number of factors that played a role in how the dates were established including the locations (note the temp workshop is in Sacramento and the fish passage workshop is in Modesto), availability of numerous interested parties (both internal and external), and existing commitments that were already on the schedule. I'll let others weigh-in if they have any additional insight.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Friday, April 17, 2015 10:57 AM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)

Thanks Bao. As a first order level of feedback, if these are both half day workshops, why not schedule them on the same day? Something like the temp workshop happening in the afternoon after the morning fish passage

workshop?

Thanks

John

On Thu, Apr 16, 2015 at 3:30 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

I'm following up on my phone message regarding the availability of workshop draft agendas for two of the La Grange Project licensing studies (see attached). As discussed previously, the workshops are intended to be collaborative and we hope NMFS can play a key role. Please take a look and if needed, we can plan to circle back and discuss early next week.

Thanks,

Bao

Bao Le Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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From:	Le, Bao
Sent:	Wednesday, April 22, 2015 11:44 AM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)
Follow Up Flag:	Follow up
Flag Status:	Completed

Per my original email, I just wanted to touch base to see if you had any questions or wanted to discuss anything related to the agenda. I'm in all-day meetings today and tomorrow but could be available on Friday. Just let me know.

#### Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Friday, April 17, 2015 10:57 AM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)

Thanks Bao. As a first order level of feedback, if these are both half day workshops, why not schedule them on the same day? Something like the temp workshop happening in the afternoon after the morning fish passage workshop?

Thanks

John

On Thu, Apr 16, 2015 at 3:30 PM, Le, Bao < ChiBao.Le@hdrinc.com> wrote:

Hi John.

I'm following up on my phone message regarding the availability of workshop draft agendas for two of the La Grange Project licensing studies (see attached). As discussed previously, the workshops are intended to be collaborative and we hope NMFS can play a key role. Please take a look and if needed, we can plan to circle back and discuss early next week.

Thanks,

Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

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From:	Staples, Rose
Sent:	Thursday, April 23, 2015 8:55 AM
Cc:	Staples, Rose
Subject:	Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops
Follow Up Flag:	Follow up
Flag Status:	Completed

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

- 1. Upper Tuolumne River Water Temperature Monitoring and Modeling Workshop May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA.
- 2. Upper Tuolumne River Fish Passage Assessment/Anadromous Fish Reintroduction Workshop (first of 3) May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Please hold these dates as your participation is encouraged and appreciated. A detailed agenda will be issued two weeks before the Workshops. In the meantime, if you have any questions about the Workshops, please call Jesse Deason at 206-826-4744.

Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

From:	Le, Bao
Sent:	Thursday, April 23, 2015 4:34 PM
То:	John Wooster - NOAA Federal
Cc:	Borovansky, Jenna; Devine, John; Deason, Jesse; Noah Hume (noah@stillwatersci.com); Caldwell, Jarvis
Subject:	La Grange Project - habitat/topographic survey
Follow Up Flag: Flag Status:	Follow up Flagged

As part of the La Grange Project Licensing Study Program, the Districts will conduct a topographic survey and habitat assessment in the reach immediately downstream of La Grange. The work will be implemented as detailed in the Revised Study Plan and will consider the additional clarification provided by FERC in their Study Plan Determination document. The study scope originates from and is consistent with NMFS' Study Request #2 – Element #2. Some of this work is planned to begin in mid-May and if you're interested, we'd like to have a brief conference call to discuss our approach. Please let me know if you have availability some time during the first week of May.

Thanks, Bao

# Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From:	Staples, Rose
Sent:	Friday, April 24, 2015 10:49 AM
To:	Deason, Jesse
Subject:	Folks from Bao List Sent May Workshop Notice
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Don Pedro, LG Consultation Record

First Send Vaughn, Gary D -FS (<u>gdvaughn@fs.fed.us</u>); 'carussell@tid.org'; 'rhanvelt@co.tuolumne.ca.us'; 'eroyce@co.tuolumne.ca.us'; 'jgray@co.tuolumne.ca.us'; 'krodefer@co.tuolumne.ca.us';

Dusty Vaughn, USFS Carol Russell, DPRA White Water Voyages Zephyr Whitewater Sierra Pacific Forest Products Tuolumne Chamber of Commerce

Tuolumne County Board of Supervisors Randall Hanvelt Evan Royce John L Gray Karl Rodefer

Second send with corrected email addresses: 'don\_neubacher@nps.gov'; 'sbrennan@co.tuolumne.ca.us'

Don Neubacher, NPS

Tuolumne County Board of Supervisors: Sherri Brennan

Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

From:	Le, Bao
Sent:	Monday, April 27, 2015 11:53 AM
To:	John Wooster - NOAA Federal
Cc:	Deason, Jesse; Devine, John; Borovansky, Jenna
Subject:	RE: NMFS LIDAR Data
Follow Up Flag:	Follow up
Flag Status:	Completed
Categories:	LG Consultation Record

Thanks, John. I'll check on needs/preferences for the imagery. Two other things while I have you on email:

- Do you have an interest in discussing the downstream topographic/habitat work that is planned to start in mid-May? Per my previous email, the proposed work is essentially derived directly from NMFS Study Request (with adjustments from FERC's study determination) but should you want to discuss approach with our folks doing the work (Stillwater, HDR, TID surveyors), we could do so the first week of May via conference call. Please let me know.
- 2. If you have any questions regarding the agendas for the upcoming workshops, please let me know. I'm happy to set up time to chat via phone.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 11:48 AM
To: Le, Bao
Cc: Deason, Jesse; Devine, John; Borovansky, Jenna
Subject: Re: NMFS LIDAR Data

Bao:

Do you know if you need geo-rectified images? (I'm sure you would prefer them, but need to know if it is a must).... After working with the LiDAR and images for awhile, we decided that the geo-rectifying on the images was not up to par and sent them back to the vendor for reprocessing - I'm not sure where that turn around is but will check this week.

The original due date on the report was Dec 1, 2015 - for a host of reasons I do not expect the lab to make the initial deadline.....

-John

On Fri, Apr 24, 2015 at 9:48 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

I just wanted to check in regarding acquisition of some less resolute imagery from the LIDAR work that NMFS conducted last year. Per our discussion, you had said you would check to see if this was something you could provide in a less-

processed form to support some of our work this summer related to barriers and temperature monitoring. Also, I have been told that a final report and the processed data would be available this fall. Is this still the case?

Thanks,

Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

hdrinc.com/follow-us



From:	Le, Bao
Sent:	Monday, April 27, 2015 1:55 PM
То:	John Wooster - NOAA Federal
Cc:	Deason, Jesse; Devine, John; Borovansky, Jenna; mike.deas@watercourseinc.com
Subject:	RE: NMFS LIDAR Data
Follow Up Flag:	Follow up
Flag Status:	Completed
Categories:	LG Consultation Record

The assumption on this end was that any useful LIDAR would by default be geo-rectified. The assumption being that these images could be tied to a common coordinate system/datum that would be laid over USGS topographic maps or other coverages. So I guess unless you're seeing this assumption differently, I'd say that in order for the LIDAR to be of use to us, we'd want it to be geo-rectified. I've cc'd Mike Deas, our temperature modeling team member in case he has anything to add here.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 11:48 AM
To: Le, Bao
Cc: Deason, Jesse; Devine, John; Borovansky, Jenna
Subject: Re: NMFS LIDAR Data

Bao:

Do you know if you need geo-rectified images? (I'm sure you would prefer them, but need to know if it is a must).... After working with the LiDAR and images for awhile, we decided that the geo-rectifying on the images was not up to par and sent them back to the vendor for reprocessing - I'm not sure where that turn around is but will check this week.

The original due date on the report was Dec 1, 2015 - for a host of reasons I do not expect the lab to make the initial deadline.....

-John

On Fri, Apr 24, 2015 at 9:48 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

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From:	Le, Bao
Sent:	Monday, April 27, 2015 3:11 PM
То:	John Wooster - NOAA Federal
Cc:	Deason, Jesse; Devine, John; Borovansky, Jenna; mike.deas@watercourseinc.com
Subject:	Re: NMFS LIDAR Data
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	LG Consultation Record

In talking it over with our consultant team, I think the original intent of the aerial imagery was to conduct some desktop analyses on scoping natural barriers. Fortunately, I think we're ok with the information that's already available to support this exercise. They've said that the LIDAR will have utility later as we get into modeling and assessing fish passage information needs. To that end, do you have a sense of updated due date for the report and availability of fully processed LIDAR data?

Thanks, Bao

Sent from my iPhone

On Apr 27, 2015, at 2:13 PM, John Wooster - NOAA Federal <<u>john.wooster@noaa.gov</u>> wrote:

Yes, LiDAR data must be geo-rectified to be of any use at all. But you had asked me for our hires air photos (not the LiDAR) to use for field mapping, that were flown at the same as the LiDAR. While it is always preferred to have coordinates on your images, you don't necessarily have to have them rectified to take them out in the field to map on.

John

On Mon, Apr 27, 2015 at 1:55 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

The assumption on this end was that any useful LIDAR would by default be geo-rectified. The assumption being that these images could be tied to a common coordinate system/datum that would be laid over USGS topographic maps or other coverages. So I guess unless you're seeing this assumption differently, I'd say that in order for the LIDAR to be of use to us, we'd want it to be geo-rectified. I've cc'd Mike Deas, our temperature modeling team member in case he has anything to add here.

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Cc: Deason, Jesse; Devine, John; Borovansky, Jenna
Subject: Re: NMFS LIDAR Data

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The original due date on the report was Dec 1, 2015 - for a host of reasons I do not expect the lab to make the initial deadline.....

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Thanks,

Bao

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Senior Fisheries Biologist

HDR

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--



From <sup>.</sup>	Le Bao
Sent:	Monday, April 27, 2015 2:07 PM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles; mike.deas@watercourseinc.com
Subject:	RE: NMFS Permit for Logger Installation
Attachments:	Upper Tuolumne River Water Temperature_Watercourse_20150422.pdf
Follow Up Flag: Flag Status:	Follow up Flagged
Categories:	LG Consultation Record

We will be duplicating a number of installations for reasons included in the attached memo from our temp monitoring/modeling team that details proposed locations and rationale. Deployment is planned for this week but please take a look and let us know if you have any comments/questions. We can discuss prior to or at the Temp Workshop (May 19<sup>th</sup>) and adapt accordingly as needed; however, folks felt it was really important to get out prior to the spring-run-off (if there is one). With regard to coordination, we're happy to do so and encourage you to use the information in the attached memo to inform your May deployment strategy.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 13, 2015 5:47 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles
Subject: Re: NMFS Permit for Logger Installation

Sounds good Bao. I'm assuming you don't really want to duplicate any installations, so yes I think some sort of coordination would be useful as we are planning on installing a few more loggers in May in addition to the ones we put out last summer. You should have the coordinates of the ones we put out last summer, they were listed in the back of the HDR Study Plan.

John

On Thu, Apr 9, 2015 at 12:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

We met this week to discuss logger deployment and use of the NMFS permit. It turns out that our permit is expected by week's end so I think we'll be ok to deploy everything under that permit here shortly. Again, thank you for the offer. It's much appreciated.

At some point in the future, it would be great to discuss data sharing.

Thanks again,

Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

hdrinc.com/follow-us



To: Steve Boyd, Greg Dias, John Devine, Bao Le

From: Mike Deas, Watercourse Engineering, Inc.

**Subject:** La Grange Hydroelectric Project Water Temperature Study – Proposed Monitoring Locations

As part of the La Grange Hydroelectric Project (Project) Federal Energy Regulatory Commission (FERC) Integrated Licensing Process, the Modesto and Turlock irrigation districts (collectively, the "Districts") have agreed to implement a Fish Passage Assessment Study which contains three related elements: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse.

As part of the Upper Tuolumne River Basin Habitat Assessment (Element #2 above), the Districts are willing to conduct a water temperature investigation to characterize thermal conditions in the Upper Tuolumne River Basin between Early Intake and the Don Pedro Reservoir. This includes the following tasks:

- 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
- 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
- 3. Develop and test a computer model to simulate existing thermal conditions under a range of flows in the Tuolumne River between Early Intake and the Don Pedro Reservoir.
- 4. Report preparation.

The study area includes the main stem of the Tuolumne River between Early Intake and the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Task 1 and 2 are addressed in this memorandum, with model development (Task 3) and reporting (Task 4) left to future communications.

## Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with Licensing Participants (LPs) to identify locations and

seasons where temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

While the assembly and review of existing data is currently underway and the study plan identifies summer deployment of monitoring equipment, Watercourse recommends installing this equipment as soon as practicable in the spring to capture water temperatures in the main stem Tuolumne River and major tributaries during this time period.

## Task 2: Additional Monitoring: Install Data Loggers

As identified in Table 1, the following data-logger deployment locations, associated river miles, and model input for temperature and stage are recommended: (1) five monitoring stations in the main stem Tuolumne River; (2) two stations in the North Fork; (3) two stations in the Clavey River; (4) one station in the South Fork; and (5) five stations in Cherry/Eleanor Creek system. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. One station is proposed for the South Fork below the confluence of the Middle Fork and South Fork because there are multiple barriers immediately upstream in both the South Fork and Middle Fork.

It is important to note that several of the recommended deployment locations may be redundant with locations having historical datasets or that are currently collecting data (Attachment A). Although these data may be valuable for future purposes, we recommend deploying a "full set" of loggers to support the study for several reasons. First, all loggers will be the same model, deployed in a similar manner, and visited and downloaded on the same schedule producing a consistent data set. Second, all loggers will have similar quality control/quality assurance procedures applied to their data. Lastly, having duplicate loggers protects against data loss due to vandalism, malfunction, or other similar issues.

Water temperatures will be measured at 30-minute intervals from the time of data logger deployment in spring 2015 to the time loggers are retrieved in October 2016 (Attachment B and C). Each location will have two temperature loggers for redundancy and data will be downloaded at intermediate intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves. Stage will be used to determine tributary flows necessary for characterizing temperature conditions in the system as well as supporting modeling (Table 1).

The deployment season will range from April 2015 through October 2016. Starting in April of 2015 is earlier than originally anticipated, and prior a temperature workshop planned for May 19<sup>th</sup>, 2015. However, capturing spring runoff in this dry year type was deemed an important event that would provide insight into the temperature conditions during this seasonal high flow event. These data will augment any additional sites identified at the May 19<sup>th</sup> meeting and assist in characterizing the thermal regime in the system and providing information necessary for model development.

The May 19<sup>th</sup>, 2015 workshop will be held with LPs to discuss the temperature study and will include a review of current monitoring locations and identify the need, if any, for additional locations where useful temperature and river stage monitoring stations could be established to support study objectives.

Logger Location River Mile		Temperature	Stage	Model Need*		
Т	Calibration	Boundary				
					Condition	
TR above North Fork	TR 81.3	Х	Х	Х		
TR near Indian Creek	TR 88.2	Х		Х		
TR above Clavey River	TR 91.1	Х	Х	Х		
TR above South Fork	TR 97.0	Х	Х	Х		
TR below Early Intake	TR 105.2	Х		Х	Х	
Tributaries						
North Fork above TR	NF 0.1	Х	Х		Х	
North Fork at RM8 Bridge	NF 8.0	Х	Х	X	Х	
Clavey River above TR	CR 0.1	Х	Х		Х	
Clavey River at Gage	CR 8.4			X	Х	
11283500		Х	Х			
South Fork above TR	SF 0.1	Х	Х		Х	
Cherry Creek above TR	CC 0.6	Х	Х	X		
Cherry Creek above	CC 1.2	v	v	X	Х	
Powerhouse		Λ	Λ			
Cherry Creek below Eleanor	CC 7.1	v			Х	
Creek		Λ				
Cherry Creek above Eleanor	CC 7.2	x	x		Х	
Cr.		Δ	1			
Eleanor Creek Above Cherry	EC 0.1	x	x		Х	
Creek		21	Δ			

Table 1. Recommended monitoring locations, river mile, and model need for water temperature and stage.

\* Calibration data are typically locations within a model domain and are used to calibrate and test a model (i.e., not input data). Boundary conditions are data input to the model and are necessary for simulating information within the model domain. Depending on what mainstem and tributary reaches are modeled, data could form a boundary condition or calibration point.

In addition to the monitoring program above, monitoring in select deeper pools will be explored to identify persistent stratification as it relates to basic modeling assumptions as well as potential habitat conditions. Stratification is a function of meteorological conditions, flow rate, stream inflow temperature, pool thermal structure, pool depth/width/length, pool morphology, potential cold water sources, and other factors. Three large pools on the Tuolumne River and one or two large pools on the North Fork Tuolumne River, Clavey River, and Cherry Creek will be explored for thermal stratification. Seasonal deployment of temperature loggers at near surface and near bottom locations will be completed to assess existence, degree, and persistence of thermal stratification. Based on densimetric Froude number estimates (U.S. Army Corp 1986), pools on the order of 5 to 10 meters of depth and 20 to 25 meters in width may experience persistent stratification. Field observations will focus on the largest, deepest pools in the aforementioned reaches.

# CITATIONS

North Coast Regional Water Quality Control Board. 2010. Final Staff report for the Klamath River Total maximum Daily Loads (TMDLs) Addressing Temperature, Dissolved Oxygen, Nutrient, and Microcystin Impairments in California the proposed Site Specific Dissolved Oxygen Objectives for the Klamath River in California and the Klamath River and Lost River Implementation Plans. March.

Oregon Department of Environmental Quality (ODEQ). 2010. Upper Klamath and Lost River Subbasins Total Maximum Daily Load (TMDL) and Water Quality Management Plan (WPMP). DEQ 10-WQ-030. December.

Turlock Irrigation District. 2015. Standard Form 299 (6/99): Application for Transportation and Utility Systems and Facilities on Federal Lands. Including Attachments A and B. Filed With U.S. Forest Service March 21.

Turlock Irrigation District and Modesto Irrigation District (TID and MID). 2015. Fish Passage Assessment, Revised Study Plan. La Grange Hydroelectric Project (Ferc No. 14581). January.

United States Army Corp of Engineers - Hydrologic Engineering Center (USACE-HEC). 1986. WQRRS Water Quality for River-Reservoir Systems, User's manual. Hydrologic Engineering Center. October 1978, revised 1986.

# ATTACHMENTS

Site Legations	Source <sup>1</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
Site Locations			Latitude	Longitude	Start Date	End Date <sup>2</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09

# Attachment A: Existing Upper Tuolumne River Temperature Monitoring Sites.

<sup>&</sup>lt;sup>1</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data are not yet available.

 $<sup>^{2}</sup>$  End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

	Source <sup>1</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
Site Locations			Latitude	Longitude	Start Date	End Date <sup>2</sup>
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present

	Source <sup>1</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
Site Locations			Latitude	Longitude	Start Date	End Date <sup>2</sup>
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

# Attachment B: Upper Tuolumne River Basin Habitat Assessment - Water Temperature Monitoring Equipment

HDR staff will install Onset ProV2 water temperature recorders in durable housings (Figure 1) in the Upper Tuolumne River (Table 1). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e. non-boating flows) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. Loggers will be set to record water temperature at 30-minute intervals.

Each recorder will be placed in the active channel and secured by a steel cable or chain tethered to a stable root mass, tree trunk, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads. In addition, a location of suitable channel gradient and shading will selected at each site, if possible, such that the loggers are not subjected to excessive pool warming or solar radiation.

HDR staff will install Onset U20 Levelloggers in durable housings in the identified tributaries (Table 1). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e., before or after spring run-off) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. Loggers will be set to record water temperature and stage at 30-minute intervals.

At tributary locations where stage recorders are installed, semi-permanent housings will be affixed to large boulders or bedrock to ensure the levellogger does not move. The water surface

elevation and depth of the logger will be noted at the time of installation. A flow measurement will also be collected anytime a stage recorder is installed or downloaded using standard USGS methods.

Loggers will be installed in late April if conditions allow and checked periodically throughout the monitoring period. Loggers will be removed or prepared to overwinter in late October or early November.



Attachment C: Photograph of water temperature recorder housing.

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 4:58 PM
To: Le, Bao
Subject: Re: La Grange Project - habitat/topographic survey

Bao:

A few more of responses to some of your e-mail questions (somehow need to consolidate all the e-mails, seems like we have 4 different threads where 80% of the people are the same):

1. Yes, I am available the first week of May to talk about the topo survey near La Grange powerhouse, Tuesday or Thursday in the first half of the day look good.

2. NMFS is still mulling over your request to have us present at the first fish passage workshop. I hope to have a response for you in the next couple of days. But in essence, you have asked for a week long training class to be crammed into 1.5 hours.

3. I'm not really sure we need the Wed. 5/19 temp workshop - much of what I would have wanted to cover you set out in the study plan today, and you already will have installed the loggers at that point. Most of NMFS was already unlikely to be able to attend in person both workshops on back to back days. I suggest converting that workshop into a check-in style conference call, since it will be post everyone's field week, with the main objective identifying any gaps that remain to be filled, timelines moving forward etc...

4. I don't have a new date for our habitat report in the upper Tuolumne being finished, but the bottleneck at the moment looks like developing the thermal suitability layer. My best guess is March / April 2016.

-John

On Thu, Apr 23, 2015 at 4:34 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

As part of the La Grange Project Licensing Study Program, the Districts will conduct a topographic survey and habitat assessment in the reach immediately downstream of La Grange. The work will be implemented as detailed in the Revised Study Plan and will consider the additional clarification provided by FERC in their Study Plan Determination document. The study scope originates from and is consistent with NMFS' Study Request #2 – Element #2. Some of this work is planned to begin in mid-May and if you're interested, we'd like to have a brief conference call to discuss our approach. Please let me know if you have availability some time during the first week of May.

#### Bao Le

Senior Fisheries Biologist

HDR

\_\_\_

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

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Flag Status:	Flagged
Categories:	LG Consultation Record

Yes, LiDAR data must be geo-rectified to be of any use at all. But you had asked me for our hi-res air photos (not the LiDAR) to use for field mapping, that were flown at the same as the LiDAR. While it is always preferred to have coordinates on your images, you don't necessarily have to have them rectified to take them out in the field to map on.

John

On Mon, Apr 27, 2015 at 1:55 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

The assumption on this end was that any useful LIDAR would by default be geo-rectified. The assumption being that these images could be tied to a common coordinate system/datum that would be laid over USGS topographic maps or other coverages. So I guess unless you're seeing this assumption differently, I'd say that in order for the LIDAR to be of use to us, we'd want it to be geo-rectified. I've cc'd Mike Deas, our temperature modeling team member in case he has anything to add here.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 11:48 AM
To: Le, Bao
Cc: Deason, Jesse; Devine, John; Borovansky, Jenna
Subject: Re: NMFS LIDAR Data

Bao:

Do you know if you need geo-rectified images? (I'm sure you would prefer them, but need to know if it is a must).... After working with the LiDAR and images for awhile, we decided that the geo-rectifying on the images was not up to par and sent them back to the vendor for reprocessing - I'm not sure where that turn around is but will check this week.

The original due date on the report was Dec 1, 2015 - for a host of reasons I do not expect the lab to make the initial deadline.....

-John

On Fri, Apr 24, 2015 at 9:48 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

I just wanted to check in regarding acquisition of some less resolute imagery from the LIDAR work that NMFS conducted last year. Per our discussion, you had said you would check to see if this was something you could provide in a less-processed form to support some of our work this summer related to barriers and temperature monitoring. Also, I have been told that a final report and the processed data would be available this fall. Is this still the case?

Thanks,

Bao

## Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

--

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



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From: Sent: To: Cc: Subject:	John Wooster - NOAA Federal <john.wooster@noaa.gov> Monday, April 27, 2015 4:16 PM Le, Bao Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles; mike.deas@watercourseinc.com Re: NMFS Permit for Logger Installation</john.wooster@noaa.gov>
Follow Up Flag: Flag Status:	Follow up Flagged
Categories:	LG Consultation Record

Hi Bao:

Thank you for distributing this plan, it is very helpful to see. I don't have a lot of feedback on the location list, it looks nearly identical to ours and the one we submitted to USFS for the permit. The only difference I note, is that we were / are intending on putting three loggers in the Clavey (the two locations you list, plus another at the next road crossing further upstream).

I can appreciate the desire to just get your own comprehensive temp set and make sure it is all parallel. For what it is worth, we also use Onset Pro V2 loggers, set at 15 minute intervals. I am heading out into the field on the upper Tuolumne during the week of May 11 to 14, with multiple objectives, including downloading loggers from last summer and putting in additional ones. I would appreciate confirmation that your crew was able to get into all your intended sites next week (it is fairly aggressive campaign to get to all the locations you have listed, if just 1 crew) - and if you weren't able to get to a few, I could prioritize getting to those locations to bridge the time gap until you can (if you don't want to use our loggers). I intend to still to maintain the loggers we put out and a few more, but I would like to drop some of our intended sites and use what you collect - with the hope of being able to get data sometime this fall in order to deliver to our science center for their habitat report... Can you confirm that you think this will be available to us this fall?

A few tidbits of info from last summer that may help your crew:

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2. While next week you will find minimum releases from HPH upstream, I still expect flows in the mainstem to be up quite a bit relative to late summer minimum releases because of current tributary input. It is really surprising how low the mainstem stage gets at min flow later in the summer, so sink those loggers deeper than you think. Last summer I randomly found the HDR/MID/TID logger Tuolumne River at Indian Creek while looking for a location for ours - the logger was still wet, but there was a bunch of cabling around a rock that was high and dry that made it obvious.

Good luck,

### John

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in the back of the HDR Study Plan.

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At some point in the future, it would be great to discuss data sharing.

Thanks again,

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Senior Fisheries Biologist

HDR

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From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, April 28, 2015 10:55 AM
To: Le, Bao
Cc: Steve Edmondson - NOAA Federal
Subject: Re: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)

Bao:

Checking in to see if you have time today to talk about the agenda for the workshop on May 20. E-mail or cell # 510.755.8040 work the best. If after lunch, the 1 to 2:30 window work the best.

Thanks

John

On Wed, Apr 22, 2015 at 11:43 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

Per my original email, I just wanted to touch base to see if you had any questions or wanted to discuss anything related to the agenda. I'm in all-day meetings today and tomorrow but could be available on Friday. Just let me know.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Friday, April 17, 2015 10:57 AM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)

Thanks Bao. As a first order level of feedback, if these are both half day workshops, why not schedule them on the same day? Something like the temp workshop happening in the afternoon after the morning fish passage workshop?

## Thanks

John

On Thu, Apr 16, 2015 at 3:30 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

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#### Thanks,

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Senior Fisheries Biologist

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--
-----Original Message-----From: Tom Holley [mailto:thomas.holley@noaa.gov] Sent: Tuesday, April 28, 2015 2:57 PM To: Staples, Rose; Devine, John Cc: John Wooster - NOAA Federal Subject: Re: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

John,

The scheduling of these meetings are extremely inconvenient for our Agency. Combining these two half day meetings into one whole day meeting in one location would foster better participation.

Can you also please send me the list of Agency personnel invited to these meetings? This is necessary so we can coordinate participation if we are unable to attend either day.

Thanks,

Tom

On Thu, Apr 23, 2015 at 8:54 AM, Staples, Rose <<u>Rose.Staples@hdrinc.com</u>> wrote:

- > As part of the La Grange Hydroelectric Project Integrated Licensing
- > Process, Modesto Irrigation District and Turlock Irrigation District,
- > joint owners of the La Grange facilities, are planning to conduct
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- > reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study.
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- >
- >
- >
- > Upper Tuolumne River Water Temperature Monitoring and Modeling

> Workshop

> May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway

> Oaks Drive, Suite 200, Sacramento, CA.

>

>

>

> 2. Upper Tuolumne River Fish Passage Assessment/Anadromous Fish

> Reintroduction Workshop (first of 3)

- >
- > May 20, 2015 from 9am to 12pm at the Modesto Irrigation District

> Office,

- > 1231 11th Street, Modesto, CA.
- >

> > Please hold these dates as your participation is encouraged and appreciated. > A detailed agenda will be issued two weeks before the Workshops. In > the meantime, if you have any questions about the Workshops, please > call Jesse Deason at 206-826-4744. > > > > Thank you. > > > > Rose Staples, CAP-OM > > Executive Assistant > > HDR > > 970 Baxter Boulevard Suite 301 > Portland ME 04103 > D 207-239-3857 > rose.staples@hdrinc.com > > hdrinc.com/follow-us > >

--Tom Holley | Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce Office:(916) 930-5592 thomas.holley@noaa.gov

>

From:	Le, Bao				
Sent:	Wednesday, April 29, 2015 7:44 AM				
То:	John Wooster - NOAA Federal				
Cc:	Steve Edmondson - NOAA Federal; Deason, Jesse; Borovansky, Jenna				
Subject:	RE: Agendas for Temp Workshop (May 19) and FP Workshop (May 20)				
Follow Up Flag:	Follow up				
Flag Status:	Flagged				

Hi John.

See my other email for some thoughts on agenda. I am out in the field today but could be available to discuss on Thursday or Friday of this week.

Just let me know.

Thanks, Bao

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Sent: Tuesday, April 28, 2015 10:55 AM
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## Bao Le

Senior Fisheries Biologist

HDR

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From: Sent: To:	Le, Bao Wednesday, April 29, 2015 8:00 AM thomas.holley@noaa.gov Porevanslay_lanna: Daason_lassa: Davina_lahn: Stanlas_Poso
CC:	FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study
Subject:	Workshops
Follow Up Flag:	Follow up
Flag Status:	Flagged

#### Hi Tom.

My name is Bao Le and I'm supporting John in the coordination of the La Grange Licensing fisheries studies. John forwarded this email along to me and asked that I respond to you. I've been coordinating directly with John Wooster on these workshops as my understanding was that he is the agency's lead for the La Grange licensing process. As such, I apologize if you should have also been kept in the loop. We have been collaborating with NMFS and CDFW (Dean Marston) on dates and both confirmed availability of May 20th for the fish passage/reintroduction workshop. We also heard from John that the 19th was also open as an alternative so we scheduled the temperature workshop on May 19. Note that the May 19 workshop is in Sacramento (not Modesto which is the location for the May 20 meeting) for agency convenience. We expect this meeting to be relatively short (i.e., 2 hours) but would still appreciate NMFS' participation (note that I've communicated with John about options to participate by phone as well since he has also voiced concern about meetings on two separate dates). I apologize for any inconvenience this may have caused but please note that we've been coordinating regularly and now that the dates have been set based upon feedback of availability, we've contacted licensing participants/interested parties and have asked them to hold these dates as well as establishing other commitments.

Please let me know if you have any questions.

Thanks, Bao

-----Original Message-----From: Devine, John Sent: Tuesday, April 28, 2015 1:55 PM To: Le, Bao Cc: Borovansky, Jenna; Deason, Jesse Subject: FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

FYI. Please respond to Tom.

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From:	Le, Bao
Sent:	Wednesday, April 29, 2015 7:41 AM
То:	John Wooster - NOAA Federal
Subject:	RE: La Grange Project - habitat/topographic survey
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi John.

Sorry for the delay in response. I'm out in the field with limited email connectivity. See below my responses in red.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 4:58 PM
To: Le, Bao
Subject: Re: La Grange Project - habitat/topographic survey

Bao:

A few more of responses to some of your e-mail questions (somehow need to consolidate all the e-mails, seems like we have 4 different threads where 80% of the people are the same):

1. Yes, I am available the first week of May to talk about the topo survey near La Grange powerhouse, Tuesday or Thursday in the first half of the day look good.

Sounds great. I've sent an email out to key staff for the dates you've provided and will get back to you as soon as I hear to set something up.

2. NMFS is still mulling over your request to have us present at the first fish passage workshop. I hope to have a response for you in the next couple of days. But in essence, you have asked for a week long training class to be crammed into 1.5 hours.

Totally understand that this could be a lot of information however it is envisioned that this would be more of an introduction (10,000 ft. elevation) level presentation given that there is expected to be a diversity of stakeholders with varying levels of knowledge on fish passage/reintroduction processes. Since NMFS is the lead agency in this process, it would be valuable to have the agency layout the factors/framework for how we move through this collaborative process and educate participants from your perspective. In short, I think we could keep it at a higher level to match the level of time we have allocated. In addition, we have at least two more workshops where more information can be provided, as needed.

3. I'm not really sure we need the Wed. 5/19 temp workshop - much of what I would have wanted to cover you set out in the study plan today, and you already will have installed the loggers at that point. Most of NMFS was already unlikely to be able to attend in person both workshops on back to back days. I suggest converting that workshop into a check-in style conference call, since it will be post everyone's field week, with the main objective identifying any gaps that remain to be filled, timelines moving forward etc...

It's good to hear that NMFS appears to have everything that they need for now on the temperature study, however, per the study plan, we're still required to have a workshop with LPs. As such, we will plan on proceeding with the workshop (which will be held in Sacramento). However, if NMFS would like to participate by conference call, that'd be welcome. If participating is not of interest or you're unable, we'd be happy to hold

a separate conference call to discuss your thoughts/comments on the memo. I suggest before May 19 so that it can inform the workshop. Just let me know.

4. I don't have a new date for our habitat report in the upper Tuolumne being finished, but the bottleneck at the moment looks like developing the thermal suitability layer. My best guess is March / April 2016.

Ok. Thanks.

-John

On Thu, Apr 23, 2015 at 4:34 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

As part of the La Grange Project Licensing Study Program, the Districts will conduct a topographic survey and habitat assessment in the reach immediately downstream of La Grange. The work will be implemented as detailed in the Revised Study Plan and will consider the additional clarification provided by FERC in their Study Plan Determination document. The study scope originates from and is consistent with NMFS' Study Request #2 – Element #2. Some of this work is planned to begin in mid-May and if you're interested, we'd like to have a brief conference call to discuss our approach. Please let me know if you have availability some time during the first week of May.

## Thanks, Bao

Bao Le

Senior Fisheries Biologist

HDR

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1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Le, Bao
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To:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles; mike.deas@watercourseinc.com
Subject:	RE: NMFS Permit for Logger Installation
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi John.

We're happy to provide you with a summary of how successful the field deployment was in order to inform your mid-May deployment. This will likely be available mid-late next week.

We'll also provide our temperature data (as required by the study) we collect at these locations. I'll talk with our field staff about schedule for fall download and necessary time for data management, QA/QC, etc. and get back to you as to when the data will be available.

## Thanks, Bao

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



# PHONE CALL MEMORANDUM

<b>Topic</b> Age	Agenda for May 20 La Grange Fish Passage Workshop				
Date Apr	April 30, 2015				
Call Participants	<ol> <li>Mr. Bao Le, HDR Inc. (consultant to the Districts)</li> <li>Mr. John Wooster, National Marine Fisheries Service (NMFS)</li> </ol>				
ParticipantsDur GraMr. agre ther 	2. Mr. John Wooster, National Marine Fisheries Service (NMFS) ring this call, Mr. Le and Mr. Wooster discussed the draft agenda for the May 20 La inge Fish Passage WorkshopWooster said that NMFS is confused about the agenda and does not understand or ee on the need to delve into a detailed discussion about reintroduction. This makes m uncomfortable since NMFS has not decided on whether reintroduction is essary in the Tuolumne River or whether NMFS will exercise its Section 18 scription to require activities to support it. NMFS believes this is beyond the scope he fish passage exercise. Mr. Le responded by saying that it was not the Districts int to suggest that a decision on reintroduction in the Tuolumne River had already urred. Mr. Le said that as the Districts began planning this process and thinking ut how to make this collaborative and well-informed, it was clear to the Districts te valuating fish passage was just one element of a much larger process and that in er to be successful, it would be valuable to be educated on how passage fit into a ger overall recovery/reintroduction framework/strategy since they are linked. Mr. added that from NMFS' study requests and comments during dispute resolution ti t seemed clear that aside from this process needing to be collaborative, there was onsiderable amount of information that would/should inform reintroduction ision-making and therefore, fish passage, if appropriate. Mr. Le cited Anderson et and the Yuba as examples of where reintroduction planning was valuable and had rivou links to fish passage. Mr. Wooster acknowledged that fish passage is a part of troduction but believed it was a small component and also added that he believed information that would be used to inform fish passage; some likely with the. The Districts expected a large and diverse group of participants at the ershop with varying levels of knowledge on fish passage; some likely with the. The Districts believed that it would be informative and valuable for NMFS, as lead agency in				

# PHONE CALL MEMORANDUM

interested understood fish passage and the broader scope of the activity so that nobody would be left behind from day 1. As such, the Districts envisioned this first workshop both from the reintroduction and the fish passage perspective to be educational and introductory (which is why the Districts did not think agency fish passage engineers needed to participate in person). There would be time at subsequent meetings to introduce more information/detail if it was needed but this was meant to be an overview and very general. Mr. Le asked Mr. Wooster who these recovery coordinators were and whether they might be interested in participating and doing a presentation. Mr. Wooster noted that John Ambrose (who served on the study dispute technical panel) and Brian Ellrott were two individuals that were working on Shasta winter run reintroduction. He would ask them. Mr. Le said it would be great if they could provide a brief overview at the meeting.

Mr. Wooster asked about whether the fish passage process would be further clarified. Mr. Le noted that Mike Garello, the Districts' lead engineer on this study, would discuss the process moving forward and that the Districts envisioned this as a highly collaborative and interactive process. There would be a minimum of three workshops and for this process to be successful it may be necessary to have more interaction in between workshops to discuss and review interim information and deliverables. Mr. Le noted that this was identified on the agenda toward the end of the day.

From:	Le, Bao			
Sent:	Friday, May 01, 2015 8:34 AM			
То:	John Wooster - NOAA Federal			
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse			
Subject:	RE: La Grange Project - habitat/topographic survey			
Follow Up Flag:	Follow up			
Flag Status:	Flagged			

Hi John.

Thanks for taking the time to discuss the agenda yesterday. As discussed, you were going to follow up internally at NMFS and then provide us with some comments/feedback. Please note that we'd like to distribute an agenda on May 8 (next Friday) so if you could provide feedback prior to this date with some time to discuss, as needed, that'd be great.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Thursday, April 30, 2015 9:17 AM
To: Le, Bao
Subject: Re: La Grange Project - habitat/topographic survey

Let's do 11 am, cell 510 755 8040

John

On Wednesday, April 29, 2015, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote: I am available at 11am or 2pm tomorrow. Just let me know if either work and I'll give you a call. Thanks, Bao

Sent from my iPhone

On Apr 29, 2015, at 3:21 PM, John Wooster - NOAA Federal <<u>john.wooster@noaa.gov</u>> wrote:

Bao:

I am available tomorrow to discuss before 3 PM.

I think it is important that we discuss ASAP about the May 20 agenda.

Thanks

John

On Wed, Apr 29, 2015 at 7:41 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

Sorry for the delay in response. I'm out in the field with limited email connectivity. See below my responses in red.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 4:58 PM
To: Le, Bao
Subject: Re: La Grange Project - habitat/topographic survey

Bao:

A few more of responses to some of your e-mail questions (somehow need to consolidate all the e-mails, seems like we have 4 different threads where 80% of the people are the same):

1. Yes, I am available the first week of May to talk about the topo survey near La Grange powerhouse, Tuesday or Thursday in the first half of the day look good.

Sounds great. I've sent an email out to key staff for the dates you've provided and will get back to you as soon as I hear to set something up.

2. NMFS is still mulling over your request to have us present at the first fish passage workshop. I hope to have a response for you in the next couple of days. But in essence, you have asked for a week long training class to be crammed into 1.5 hours.

Totally understand that this could be a lot of information however it is envisioned that this would be more of an introduction (10,000 ft. elevation) level presentation given that there is expected to be a diversity of stakeholders with varying levels of knowledge on fish passage/reintroduction processes. Since NMFS is the lead agency in this process, it would be valuable to have the agency layout the factors/framework for how we move through this collaborative process and educate participants from your perspective. In short, I think we could keep it at a higher level to match the level of time we have allocated. In addition, we have at least two more workshops where more information can be provided, as needed.

3. I'm not really sure we need the Wed. 5/19 temp workshop - much of what I would have wanted to cover you set out in the study plan today, and you already will have installed the loggers at that point. Most of NMFS was already unlikely to be able to attend in person both workshops on back to back days. I suggest converting that workshop into a check-in style

conference call, since it will be post everyone's field week, with the main objective identifying any gaps that remain to be filled, timelines moving forward etc...

It's good to hear that NMFS appears to have everything that they need for now on the temperature study, however, per the study plan, we're still required to have a workshop with LPs. As such, we will plan on proceeding with the workshop (which will be held in Sacramento). However, if NMFS would like to participate by conference call, that'd be welcome. If participating is not of interest or you're unable, we'd be happy to hold a separate conference call to discuss your thoughts/comments on the memo. I suggest before May 19 so that it can inform the workshop. Just let me know.

4. I don't have a new date for our habitat report in the upper Tuolumne being finished, but the bottleneck at the moment looks like developing the thermal suitability layer. My best guess is March / April 2016.

Ok. Thanks.

-John

On Thu, Apr 23, 2015 at 4:34 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

As part of the La Grange Project Licensing Study Program, the Districts will conduct a topographic survey and habitat assessment in the reach immediately downstream of La Grange. The work will be implemented as detailed in the Revised Study Plan and will consider the additional clarification provided by FERC in their Study Plan Determination document. The study scope originates from and is consistent with NMFS' Study Request #2 – Element #2. Some of this work is planned to begin in mid-May and if you're interested, we'd like to have a brief conference call to discuss our approach. Please let me know if you have availability some time during the first week of May.

Thanks, Bao

Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From: Sent: To: Subject: Deason, Jesse Monday, May 04, 2015 11:12 AM

FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

Hello Mr. Armstrong,

Following up on our conversation earlier today, here is the May 20 Fish Passage Workshop hold the date email that went out a couple weeks ago. The Districts are working to finalize the May 20 workshop agenda and circulate the document to workshop invitees – I will make sure you are on that distribution list.

Again, thank you so much for taking time out of your day to speak with me! I hope that you are able to squeeze the workshop into your busy schedule, and I look forward to meeting you on May 20. Please feel free to call or email me if you have any questions.

Regards,

Jesse

#### Jesse Fernandes Deason

D 206.826.4744 M 781.249.2452

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From: Staples, Rose
Sent: Thursday, April 23, 2015 8:55 AM
Cc: Staples, Rose
Subject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

- 1. Upper Tuolumne River Water Temperature Monitoring and Modeling Workshop May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA.
- 2. Upper Tuolumne River Fish Passage Assessment/Anadromous Fish Reintroduction Workshop (first of 3) May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Please hold these dates as your participation is encouraged and appreciated. A detailed agenda will be issued two weeks before the Workshops. In the meantime, if you have any questions about the Workshops, please call Jesse Deason at 206-826-4744.

Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR

970 Baxter Boulevard Suite 301 Portland ME 04103

D 207-239-3857 rose.staples@hdrinc.com

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From:	Staples, Rose
Sent:	Monday, May 04, 2015 2:33 PM
Cc:	Staples, Rose
Subject:	La Grange Draft Tube Study Plan Draft for 30-Day Review
Attachments:	LG_Draft Tube Study Plan_20150504.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed
Categories:	Don Pedro

As requested in FERC's February 2, 2015 Study Plan Determination for the La Grange Hydroelectric Project, the Districts have developed the attached draft study plan to monitor fish presence, behavior, and potential for injury related to attraction to discharges from the La Grange powerhouse draft tubes. This draft study plan is being provided to interested Licensing Participants for a 30-day review.

Please review and provide any comments back to Rose Staples at <u>rose.staples@hdrinc.com</u> by Thursday, June 4, 2015. The final study plan is due to FERC by June 22, 2015 for their approval.

Thank you.

Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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## **STUDY PLAN**

## TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

## LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

## Investigation of Fish Attraction to La Grange Powerhouse Draft Tubes

## May 2015

# **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Flows in the Tuolumne River at LGDD are affected by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent drainages entering the river downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. LGDD raises the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0 La Grange Hydroelectric Project location map.



Figure 2.0 La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS AND INFORMATION NEEDED

On July 22, 2014, the National Marine Fisheries Service (NMFS) filed a set of study requests with the Federal Energy Regulatory Commission (Commission or FERC) pertaining to the licensing of the La Grange Hydroelectric Project, P-14581 (Project). As part of NMFS Study #2: *Effects of the Project and Related Activities on Fish Stranding and Salmonid Habitat in the Vicinity of the La Grange Project* – Element #5, NMFS requested an assessment of hydraulic conditions and fish behavior in the vicinity of the La Grange powerhouse tailrace including monitoring of fish presence, behavior, and potential for injury related to attraction to discharges from the La Grange powerhouse draft tubes (NMFS 2014a).

On February 2, 2015, FERC issued its Study Plan Determination for the Project (FERC 2015). In its Determination, FERC directed the Districts to develop, in consultation with licensing participants, a study plan for monitoring anadromous fish movement into the powerhouse tailrace and the potential for injury or mortality by direct contact with the turbine runners (located inside the draft tubes). FERC acknowledged that the methods and technology to be used to conduct the study were uncertain because of the potential for turbulence, at the draft tube exits and in the tailrace area near the exits, to interfere with the reliable detection of fish. FERC recommended that the Districts implement the study plan, once approved by FERC, during the fall 2015 anadromous fish migration. Given the uncertainties related to the technical feasibility of direct observations of fish in the vertical, conical draft tubes, the Districts requested from FERC an extension of time for submitting the study plan from April 1, 2015 to June 22, 2015. FERC granted the extension of time on March 25, 2015.

On March 10, 2015, the Districts representatives met with Messrs. John Wooster, Steve Edmondson, and Larry Thompson of NMFS' staff to discuss the purpose of the study, study methods, the flows likely to be experienced in 2015 and the technical feasibility of making the required observations of fish behavior. It was also noted during these discussions that the two units in the La Grange powerhouse are vertical Francis units with conical, straight-drop draft tubes (not elbow draft tubes) with the low steel of the lowest turbine runner being approximately eight or nine feet higher than the normal tailwater level occurring during the controlled releases during fall Chinook (*Oncorhynchus tshawytscha*) migration. Given the elevation differences between the tailwater level and low steel of the turbine runner, as well as the small size and vertical configuration of the conical draft tubes, the potential for fish injury or mortality by contact with the turbine runners appeared to be small. By the conclusion of the meeting, no consensus had been reached regarding study methodology. The Districts agreed to continue examining potential methods and present a recommendation in this proposed study plan.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

Four agencies have resource management goals potentially related to Tuolumne River Chinook salmon and steelhead/rainbow trout (*Oncorhynchus mykiss*) and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 related to 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 be listed in the future. NMFS' (2014b) Recovery Plan for the Evolutionary Significant Units of Sacramento River Winter-run Chinook salmon and Central Valley Spring-run Chinook salmon and the Distinct Population Segment of California Central Valley steelhead outlines a framework for the recovery of ESA-listed species and populations in California's Central Valley. For Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools within La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O. mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes the potential for reintroduction of spring-run Chinook salmon to the Tuolumne River above Don Pedro Dam, which is considered a candidate area.

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 Wildlife 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 other applicable state law.

# 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed investigation of fish attraction to the La Grange draft tubes and turbine runners (hereinafter referred to as the Draft Tube Study) is intended to evaluate the potential impact of certain La Grange powerhouse facilities on adult fall-run Chinook salmon and *O. mykiss*. Specific information obtained by this study will be used to:

- document adult resident *O. mykiss* and adult anadromous salmonid behavior in the vicinity of the La Grange powerhouse discharge during the fall 2015 (fall-run Chinook) to spring 2016 (*O. mykiss*) migration season;
- identify anadromous fish reaching the La Grange powerhouse;
- describe behavioral activities of fish in relation to La Grange powerhouse operations; and
- determine if fish are moving into the draft tube of operating units.

# 5.0 NEED FOR ADDITIONAL INFORMATION

As noted in FERC's February 2, 2015 Study Plan Determination, the Districts' January 5, 2015, Revised Study Plan did not include "protocols for monitoring anadromous fish movement into the powerhouse tailrace and the potential for injury or mortality by contact with the turbine runners." FERC therefore directed the Districts to develop a study plan, in consultation with licensing participants, to obtain information on the potential for injury to fish that may be attracted to the discharges from the La Grange turbine runners and draft tubes.

There is no existing data on the occurrence of fish at or in the La Grange powerhouse draft tubes. Annual CDFW surveys have identified Chinook redds in the lower portions of the La Grange powerhouse tailrace; however, there is currently no information regarding fish behavior directly below La Grange powerhouse or in the vicinity of unit draft tubes. This study is intended to evaluate adult Chinook salmon and *O. mykiss* interactions with La Grange powerhouse draft tubes and runners in order to inform the potential need for protection measures at the powerhouse.

# 6.0 STUDY AREA AND METHODS

# 6.1 Study Area

The study area includes the immediate vicinity of the discharge from the La Grange powerhouse and operating units.

# 6.2 Study Methods

The proposed Draft Tube Study evaluates the potential impact of La Grange powerhouse discharges to adult fall-run Chinook salmon and *O. mykiss* due to injury caused by attraction to the draft tube and turbine runner discharge. Specific information obtained by this study will be used to:

- document adult resident *O. mykiss* and adult anadromous salmonid behavior in the vicinity of the La Grange powerhouse discharge during the fall 2015 (fall-run Chinook) to spring 2016 (*O. mykiss*) migration season;
- identify anadromous fish reaching the La Grange powerhouse;
- describe behavioral activities of fish in relation to La Grange powerhouse operations; and
- determine if fish are moving into the draft tube of operating units.

The study consists of three tasks: field data collection, data analysis, and report preparation.

# Task 1: Field Data Collection

An imaging sonar unit will be installed at the outlet from the La Grange powerhouse and operated during the 2015/2016 migration season to determine the number of adult salmonids in the vicinity of and entering the powerhouse draft tubes. The Unit 1 draft tube is the focus of the evaluation since water availability and projected generation schedule anticipate the operation of only this unit during the 2015/2016 monitoring period. The Districts retained experts in Adaptive Resolution Imaging Systems (ARIS) and underwater video camera technologies to conduct field investigations in the spring of 2015 at the La Grange powerhouse and the Unit 1 draft tube to assess the feasibility of using imaging sonar and video to meet the study objectives. Results from the feasibility assessment indicated that imaging sonar may be an effective means to observe adult salmonid presence and behavior in the vicinity of and at the draft tube, and for documenting entrance of adult salmonids into the draft tube at Unit 1. Findings from the field assessment exercise included the following:

- Turbulence is not expected to obstruct the ability to detect fish using imaging sonar in the vicinity of the powerhouse and in the draft tube pit. Small fish (< 10 cm estimated total length) were observable with the sonar near the powerhouse outlet in an area of minor turbulence, indicating that large-sized adult salmonids should be able to be detected and imaged with the sonar system.
- Given the topography of the tailrace immediately downstream of the powerhouse outlet and the shape of the imaging sonar sample volume, it is expected that the volume of water below the bottom of the draft tube at Unit 1 will be able to be effectively sampled (Figure 3.0). Therefore, fish entering the draft tube may be assessed.

• Underwater video data collected in the vicinity of the powerhouse outlet and in the draft tube pit indicated that in those specific environments, the range of target detectability was limited to less than 5 feet. Given the range limitations observed, the use of an underwater video system to achieve the study objectives was deemed infeasible.



Figure 3.0 Still image from ARIS data showing the upstream and downstream bottom edges of the Unit 1 draft tube. Note that the sonar unit was located at the draft tube pit entrance bottom, three feet below the bottom of the draft tube, and aimed 17 degrees above horizontal. The aiming configuration allowed for imaging the entire underside edge of the tube.

The study objectives should be achievable by deploying an imaging sonar unit approximately five feet outside the pit entrance close to the bottom and aimed with a positive tilt angle to allow for imaging the bottom edges of the draft tube and the water volume below the Unit 1 draft tube (Figure 4). With this deployment, fish presence and behavior will be assessed at the pit entrance and within the pit including directly below the draft tube.



Figure 4.0 Conceptual depiction of an imaging sonar deployment used to assess fish presence and behavior in the vicinity of and directly below the La Grange Unit 1 draft tube. Note that drawing is not to scale.

The sampling design should reasonably permit the observation of fish that may enter the draft tube pit and the draft tube. The water volume directly below the draft tube will be ensonified and any fish that enter that volume will be detected. Any fish detected within the volume directly below the draft tube and that swim up into the draft tube will be shown to disappear from the field-of-view. Given that the water volume directly below the draft tube entrance will also be ensonified, fish that exit the field-of-view without moving beyond the circumference of the bottom of the tube will be assumed to have moved up into the draft tube. Imaging sonar monitoring will be deployed in October and remain in place until April or May, with removal to occur approximately 5 to 10 days following the spring pulse flow.

Imaging sonar resolution and quality can be affected by entrained air and turbulence created during power generation. As stated above, feasibility testing of the imaging sonar system was conducted to identify deployment configurations and assess the issue of turbulence as a potential limitation for sonar sampling. With a discharge of 150 cfs at Unit 1 (Unit 2 was not operational during the field tests and is not expected to be operational during the proposed sampling periods), turbulence was noted to be fairly minor. Therefore, it is likely that sonar imagery would not be significantly degraded during similar operational conditions within the proposed sampling periods.

In order to determine if fish are attempting to access the La Grange powerhouse and assess their behavior in relation to powerhouse operations, continuous imaging sonar footage will be

collected as described above. Viewing and analyzing the resulting imaging sonar is timeintensive; therefore, the Districts will analyze monitoring footage for a sampling period consisting of five consecutive weeks during the fall-run Chinook spawning period (October – December), and five additional 3-day sampling periods after the fall-run Chinook season (January – April/May). This level of effort is appropriate given that the Districts are simultaneously deploying a counting weir just downstream of the La Grange powerhouse in accordance with the La Grange Hydroelectric Project Fish Passage Assessment Study Plan (Barrier Assessment component). Data from the Fish Passage Assessment will be used to optimize the timing of the sonar imaging analysis (i.e., when fish are in the vicinity of the powerhouse). In addition, sonar data will be recorded during any unit shutdown periods greater than 24 hours at times when salmonids are expected in the vicinity of the tailrace.

The imaging sonar system will consist of a sonar head, data transmission cable, sonar control box, ethernet cable and laptop computer loaded with imaging sonar data acquisition software. Electronic components will be housed in a ventilated environmental box or within the powerhouse structure for protection from rain and heat. The systems will be powered with 110 VAC. The system will also have a surge-protected uninterruptable power supply to prevent loss of data during power surges or short-term power outages. The Districts are investigating the feasibility of a satellite or cellular uplink network to provide remote monitoring functionality.

When in operation, the imaging sonar data will be collected continuously and ported directly to external hard drives. Data will be periodically backed up and archived to additional hard drives and stored in multiple locations to ensure no data are lost.

# Task 2: Data Analysis

Data collected at the powerhouse will be processed depending on the timing of adult salmonids being observed at the tailrace monitoring weir. Raw data will be processed initially by using a Convolved-Samples-Over-Threshold (CSOT) algorithm to filter out data that do not contain moving targets (i.e., all static imagery will be removed, resulting in a much smaller data set to be manually processed). Manually processing the filtered data sets will entail reviewing the data files using playback software that presents the data in echogram form. For all adult-sized (>300 mm) fish detected, the following data will be documented: date, time, estimated total length, direction of travel, and whether the fish entered into and/or exited Unit 1 draft tube. Flow through the powerhouse will also be reported. Fish observations will be reported by hour, day, month and total observations. Segmented data clips and images from the footage will be extracted to provide general examples of fish observations and behaviors.

Imaging sonar is a passive method for sampling fish, as this technique relies on operational frequencies above the known hearing range of all species of fish (Fay and Simmons 1999). Imaging sonar is an accepted fisheries science data collection method and has been used for both fish passage investigations at hydropower dams (Johnson et al. 2013) and for estimating salmonid escapement in large rivers (Burwen et al. 2014). An important limitation of imaging sonar is that fish cannot be identified to species when similar species are present at the same time. In the context of this study this limitation is relevant since it will not be possible to separate observations of Chinook salmon from observations of *O. mykiss* based on imaging sonar data alone as those species are similar in shape. As discussed above, underwater video would

not be effective for species identification given limitations associated with range of detectability. All adult-sized fish (including Chinook salmon and *O. mykiss)* observed entering the powerhouse and draft tube during the sampling period will be recorded. Overall fish observations will be inclusive of both Chinook salmon and *O. mykiss*. However, it may be possible to determine the species of fish observed with the sonar by using data collected simultaneously at the tailrace counting weir.

All collected and entered data will be reviewed for quality assurance purposes. Finalized datasheets will be entered into a Microsoft Excel or Access database and then independently reviewed for accuracy. Database quality assurance and quality control (QA/QC) will consist of a technician reading off the original datasheet information to a second technician affirming appropriate database entry. Only data having gone through QA/QC protocols will be analyzed and presented within the study report.

## Task 3: Report Preparation

The Districts will prepare a report that includes the following sections: (1) Study Goals and Objectives; (2) Study Methods (3) Data Analysis; (4) Findings; and (5) Description of Study Plan Variances, if any. The report will contain relevant summary data, tables and graphs. Due to the size of data files, select time periods of imaging sonar data will be made available on portable hard drives upon request.

The report will generally describe presence, timing, and behavioral activities of adult salmonids at powerhouse operational conditions occurring during the study sampling periods and during previously defined powerhouse operational transition periods. Preliminary data from the Draft Tube Study may be available for inclusion into the Initial Study Report in February 2016. A final report will be submitted as part of the Updated Study Report in February 2017.

# 7.0 SCHEDULE

The Districts anticipate the following schedule to complete the study.

- Planning: April 2015 August 2015
- Field Work and Sonar Deployment: September 2015 April/May 2016
- Data Entry, QA/QC, and Analysis: November 2015 October 2016
- Report Preparation and Issuance: September 2016 February 2017

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

The methods proposed are consistent with similar studies of fish movement at hydroelectric projects in the western United States, as evidenced by the similarity to the approach suggested by NMFS in its study request.

# 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$175,000.

# **10.0 REFERENCES**

- Burwen, D. L., J. A. Miller, S. Fleischman and J. Huang. 2014. Kenai River Chinook salmon sonar assessment. Alaska Department of Fish and Game, Regional Operational Plan ROP.SF2A.2014.06, Anchorage, AK.
- Fay R.R. and A.M. Simmonds. 1999. The sense of hearing in fishes and amphibians. In *Comparative hearing: fishes and amphibians*. R. R. Fay, A. N. Popper (eds). Springer-Verlag: New York; 269-318.
- Federal Energy Regulatory Commission (FERC). 2015. Study Plan Determination for the La Grange Hydroelectric Project. February 2, 2015. 30 pp.
- Johnson, E. L., T. S. Clabough, M. L. Keefer, C. C. Caudill, P. N. Johnson, M. A. Kirk and M. A. Jepson. 2013. Evaluation of dual-frequency identification sonar (DIDSON) for monitoring Pacific lamprey passage behaviour at fishways of Bonneville and John Day Dams, 2012. Final technical report for U.S Army Corps of Engineers, Portland District.
- National Marine Fisheries Service (NMFS). 2014a. NOAA's National Marine Fisheries Service's Comments on the Applicant's Preliminary Application Document, Comments on the Commission's Scoping Document 1, and Requests for Information or Study, La Grange Hydroelectric Project, P-14581-000. July 22, 2014. 141 pp.
- . 2014b. Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead. California Central Valley Area Office. July 2014.
- Reynolds, F.L., T.J. Mills, R. Benthin, and A. Low. 1993. Restoring Central Valley streams: a plan for action. California Department of Fish and Game, Inland Fisheries Division, Sacramento.

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. U.S. Fish and Wildlife Service, Anadromous Fish Restoration Program (U.S.). Core Group, 100 pp.

From:	Deason, Jesse
Sent:	Monday, May 04, 2015 7:24 AM
То:	'rob_grasso@nps.gov'
Subject:	FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study
	Workshops

Hello Mr. Grasso,

Following up on the voicemail I just left you, here is the May 20 Fish Passage Workshop hold the date email that went out a couple weeks ago. The Districts are working to finalize the May 20 workshop agenda and circulate the document to workshop invitees – I will make sure you are on that distribution list.

Again, thank you so much for returning my call! I hope that you are able to squeeze the workshop into your busy fieldwork schedule, and I look forward to meeting you on May 20. Please feel free to call or email me if you have any questions.

Regards,

Jesse

#### Jesse Fernandes Deason

D 206.826.4744 M 781.249.2452

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From: Staples, Rose
Sent: Thursday, April 23, 2015 8:55 AM
Cc: Staples, Rose
Subject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

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Please hold these dates as your participation is encouraged and appreciated. A detailed agenda will be issued two weeks before the Workshops. In the meantime, if you have any questions about the Workshops, please call Jesse Deason at 206-826-4744.

Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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## **MEETING LOG**

Meeting Topic	Discussion of upcoming fieldwork for the habitat assessment below La Grange Diversion Dam and powerhouse				
Meeting Date	May 5, 2015				
Meeting Type	Conference call				
Meeting Attendees	<ol> <li>Jarvis Caldwell, HDR</li> <li>Jesse Deason, HDR</li> <li>Noah Hume, Stillwater Sciences</li> <li>Bao Le, HDR</li> <li>Wayne Swaney, Stillwater Sciences</li> <li>John Wooster, NMFS</li> </ol>				

The objective of this conference call was to review the Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse component of the La Grange Hydroelectric Project Fish Passage Assessment Study Plan and to discuss the upcoming fieldwork for this component of the study plan. During the conference call, attendees discussed the study plan and fieldwork methodology. Representatives from HDR and Stillwater Sciences answered NMFS' questions about the how the fieldwork will be completed.

Action Items

- HDR will look into the availability of survey data at the La Grange plunge pool.

From:	Le, Вао
Sent:	Tuesday, May 05, 2015 12:07 PM
10: Cc:	Jonn Wooster - NOAA Federal Doving, John: Borovansky, Jonna: Doacon, Joseo
Subject:	Temp Field Installations Summary
Attachments:	LaGrange_FieldUpdate_050115.docx
Follow Up Flag: Flag Status:	Follow up Flagged

Hi John.

Good to chat today. As discussed, attached is a summary of the temp deployment field work from last week. As you'll see, several locations were not visited with access being somewhat difficult. HDR staff will work on the logistics of getting back out there to deploy at remaining locations but it likely won't be until later in the month when staff are back from vacation.

One additional note: about the May 20 workshop agenda, we would like to try and distribute an agenda to participants this Friday, May 8. Per our discussion on the conference call you had said that you'd discuss with colleagues about what NMFS could do for your parts of the agenda items and provide comments/feedback back to us. Will you be able to do so sometime this week?

Thanks, Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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Logger Location	River Mile	Access	Temperature	Stage	Coordinates	Equipment	Notes
TR above North Fork	TR 81.3	Heli	х	х	37.896630 -120.252864	LL#1 – 10086741 WT#1 – 10219704	Install complete
TR near Indian Creek	TR 88.2	Heli Car/Hike	х			None	No LZ for Heli. Scouted trail, appears reopened.
TR above Clavey River	TR 91.1	Heli	х	x		None	No loggers installed due to runoff flows and rec flows
TR above South Fork	TR 97.0	Car/Hike	х	х	37.84076 -120.04611	LL#1 – 10106078 WT#1 – 10367839 Baro #1 – 10106068 Baro #2 – 10106077	Install complete
TR below Early Intake	TR 105.2	Car/Hike	х	х	37.87582 -119.9597	WT#1 – 10109342 WT#2 – 10367805	Install complete
North Fork above TR	NF 0.1	Heli	х	х	37.897235 -120.253729	LL#1 – 10106076 LL#2 – 10106072	Install complete
North Fork at RM8 Bridge	NF 8.0	Car/Hike	х	х	37.985196 -120.204608	LL#1 – 10106080 LL#2 – 1184297	Install complete
Clavey River above TR	CR 0.1	Heli	х	x	37.864518 -120.115802	LL#1 – 10106075	Only 1 stage installed and no flow due to runoff
Clavey River at USFS Bridge	CR 8.4	Car/Hike	x	x	37.899398 -120.071984	WT#1 – 10109347	No stage installed or flow due to high runoff and limited access.
South Fork above TR	SF 0.1	Car/Hike	х	х	37.83870 -120.04852	LL#1 – 10086739 LL#2 – 10106069	Install complete
Cherry Creek above TR	CC 0.6	Car/Hike	х	х	37.89253 -119.97121	WT#1 – 10219696 WT#2 – 10367806	Install complete
Cherry Creek above HPH	CC 1.2	Car/Hike	х	х	37.89395 -119.94917	WT#1 – 10219679 WT#2 – 10109345	Install complete
Cherry Creek below Eleanor Creek	CC 7.1	Car/Hike	х			None	Ran out of time – need to scout/install
Cherry Creek above Eleanor Cr.	CC 7.2	Car/Hike	х	х		None	Ran out of time – need to scout/install
Eleanor Creek Above Cherry Creek	EC 0.1	Car/Hike	x	х		None	Ran out of time – need to scout/install

From: Sent:	Le, Bao Tuesday, May 05, 2015 2:39 PM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Temp Field Installations Summary
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi John.

Chuck is out of the country until the 20<sup>th</sup> but I'll reach out to his field partner to get more info on your questions below. With regard to the video, we'll take a look and provide feedback as soon as we can. Unfortunately, John is in Peru until Monday. Hang tight.

## Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, May 05, 2015 2:12 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Temp Field Installations Summary

Thanks Bao, this table is very helpful. Quick question, based on what I see in the equipment and notes, it would appear that under equipment WT = water temperature, and LL = level logger (I'm using the Clavey installations to inform this conclusion).... But if that holds, then there is kind of a weird pattern with 2 level loggers at the North Fork locations and no temperature loggers, same thing at SF location. Could you double check that for me - or at least confirm that temperature loggers went into those locations (according to your study plan that appeared to be the intent)?

Also, on a side note, if Chuck is reachable or whoever else he went in the field with - could you ask him / them for a little more info on flow conditions in the Clavey? From his notes it looks like flows were up and they had challenges with install. I ask because I am set to head there next week (a long drive into the Clavey), and maybe need to rethink... Could you ask if it was wadable? could you cross the channel? or maybe flows were just up enough that it made it hard to get a logger deep in the thalweg so that it would stay wet all summer long?

Yes, I have written feedback to you on the agenda on May 20 coming - going through review now.

I described to you a video that NMFS put together that talks about fish passage / reintroduction. After additional internal discussion, we would like to show the video on May 20 (or a substantial part of if you feel it is too long). A link to the video is below. Could you get me feedback on whether this is an agreeable approach? As it will affect our proposed changes to the agenda.

https://vimeo.com/75552829

-John
On Tue, May 5, 2015 at 12:06 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

Good to chat today. As discussed, attached is a summary of the temp deployment field work from last week. As you'll see, several locations were not visited with access being somewhat difficult. HDR staff will work on the logistics of getting back out there to deploy at remaining locations but it likely won't be until later in the month when staff are back from vacation.

One additional note: about the May 20 workshop agenda, we would like to try and distribute an agenda to participants this Friday, May 8. Per our discussion on the conference call you had said that you'd discuss with colleagues about what NMFS could do for your parts of the agenda items and provide comments/feedback back to us. Will you be able to do so sometime this week?

Thanks, Bao

### Bao Le

Senior Fisheries Biologist

HDR

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From: Sent: To: Subject: Deason, Jesse Tuesday, May 05, 2015 12:11 PM

FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

Hello Mr. Engstrom,

Thank you again for taking some time this morning to discuss with me the upcoming May 20 La Grange Fish Passage Assessment Workshop. Please find below the Workshop hold the date email that was sent out on April 23. As I mentioned on the phone, the Districts are working to finalize the May 20 workshop agenda and circulate the document to workshop invitees – I will make sure you are included on that distribution. The agenda will include call-in information for those planning to participate remotely.

The Fish Passage Assessment Study Plan is available online at http://www.lagrange-

licensing.com/Documents/20150105\_P-14581\_La\_Grange\_RSP\_EFiling-150105.pdf [the study plan starts on pdf page 106].

Please let me know if you have any additional questions and I would be happy to try and answer them.

Regards,

Jesse

### Jesse Fernandes Deason

D 206.826.4744 M 781.249.2452

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From: Staples, Rose
Sent: Thursday, April 23, 2015 8:55 AM
Cc: Staples, Rose
Subject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

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Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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From:Deason, JesseSent:Tuesday, May 05, 2015 8:38 AMTo:'ajamar@co.tuolumne.ca.us'Subject:FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study<br/>Workshops

### Hello Alicia,

Thank you so much for forwarding my voicemail on to the Board! To follow up on your voicemail, please find below the May 20 Fish Passage Workshop hold the date email that was sent out on April 23. I believe that each of the Supervisors was on the hold the date distribution list so they may remember seeing this message come through their inboxes a few weeks back. The Districts are working to finalize the May 20 workshop agenda and circulate the document to workshop invitees – I will make sure you and the Board are on that distribution as well.

Again, thank you so much for following up with me. I hope that one or more of the Supervisors will be able to take time out of their busy schedules to attend. Please let me know if there are any additional questions and I would happy to try and answer them.

Regards,

Jesse

Jesse Fernandes Deason D 206.826.4744 M 781.249.2452

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Thank you.

Rose Staples, CAP-OM Executive Assistant

### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

From:	Alicia Jamar <ajamar@co.tuolumne.ca.us></ajamar@co.tuolumne.ca.us>
Sent:	Tuesday, May 05, 2015 8:42 AM
То:	Deason, Jesse
Subject:	RE: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study
	Workshops

Hi Jesse – I will forward this on. I am 99.9% positive someone will show up.

Thanks again!

Alicia L. Jamar

*Chief Deputy Clerk of the Board of Supervisors of Tuolumne County* 

From: Deason, Jesse [mailto:Jesse.Deason@hdrinc.com]
Sent: Tuesday, May 05, 2015 8:38 AM
To: Alicia Jamar
Subject: FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

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Regards,

Jesse

Jesse Fernandes Deason D 206.826.4744 M 781.249.2452

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From: Staples, Rose
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Cc: Staples, Rose
Subject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

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Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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From:	Le, Bao
Sent:	Wednesday, May 06, 2015 9:15 AM
To:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Temp Field Installations Summary
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi John.

The video has a lot of good footage of fish passage projects however, I think that in addition to some footage, it would be a valuable addition to this collaborative process if NMFS, as the lead agency for recovery of the target species, provided some more background/introductory information around the process by which such a decision would be made (i.e., the general policy framework and decision-making process). Per our discussion last week, fish passage is one component of a larger more significant process of recovery and NMFS has not yet made a decision on fish passage in the Tuolumne River yet. As such, it would be extremely valuable to have NMFS provide information on the bigger picture to what is expected to be a participant group with varying levels of knowledge.

May I suggest the following....NMFS has two agenda items that are allocated 30 minutes each. These are "overview of the reintroduction planning process" and then "examples of the reintroduction planning process". Perhaps NMFS could present a general overview on recovery planning and the reintroduction framework/process, then transition into a real-life example of how the process was applied, and then show one or two of the projects from the video. Ideally, if the real-life process example tied into the video examples, that'd be excellent. I would see the split as being general overview (30), real life example process (15) and video (15) or something within that range. As discussed before, this should be considered a high level introduction/education as there are more meetings to get into additional details as needed. I also think that an approach like this would avoid stealing all of Mike Garello's (lead fish passage engineer) thunder later in the meeting since he will focus on examples of fish passage facilities, etc.

Please let me know your thoughts.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, May 05, 2015 2:12 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Temp Field Installations Summary

Thanks Bao, this table is very helpful. Quick question, based on what I see in the equipment and notes, it would appear that under equipment WT = water temperature, and LL = level logger (I'm using the Clavey installations to inform this conclusion).... But if that holds, then there is kind of a weird pattern with 2 level loggers at the North Fork locations and no temperature loggers, same thing at SF location. Could you double check that for me - or at least confirm that temperature loggers went into those locations (according to your study plan that appeared to be the intent)?

Also, on a side note, if Chuck is reachable or whoever else he went in the field with - could you ask him / them for a little more info on flow conditions in the Clavey? From his notes it looks like flows were up and they had challenges with install. I ask because I am set to head there next week (a long drive into the Clavey), and maybe need to rethink... Could you ask if it was wadable? could you cross the channel? or maybe flows were just up enough that it made it hard to get a logger deep in the thalweg so that it would stay wet all summer long?

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https://vimeo.com/75552829

-John

On Tue, May 5, 2015 at 12:06 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

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Thanks, Bao

Bao Le

Senior Fisheries Biologist

HDR

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---



From: Sent: To: Subject: Deason, Jesse Wednesday, May 06, 2015 8:53 AM

FW: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

Hello Mr. Tate,

Thank you for returning my call! Please find below the Workshop hold the date email that was sent out on April 23. The Districts are working to finalize the May 20 workshop agenda and circulate the document to workshop invitees – I will make sure you are included on that distribution.

If you are interested in reviewing the Fish Passage Assessment Study Plan, the document is available online at <a href="http://www.lagrange-licensing.com/Documents/20150105\_P-14581\_La\_Grange\_RSP\_EFiling-150105.pdf">http://www.lagrange-licensing.com/Documents/20150105\_P-14581\_La\_Grange\_RSP\_EFiling-150105.pdf</a> [the study plan starts on pdf page 106].

I will plan to call you tomorrow when you are back to your Sonora office as a follow up to this email and to answer any other questions you may have.

Regards,

Jesse

Jesse Fernandes Deason D 206.826.4744 M 781.249.2452

hdrinc.com/follow-us

From: Staples, RoseSent: Thursday, April 23, 2015 8:55 AMCc: Staples, RoseSubject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

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Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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From:	Le, Bao
Sent:	Thursday, May 07, 2015 4:27 PM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Steve Edmondson - NOAA Federal; Larry Thompson - NOAA Federal
Subject:	RE: Temp Field Installations Summary
Follow Up Flag:	Follow up
Flag Status:	надва

Thanks for the comments, John.

I'll send along for consideration by the Districts and other team members and get back to you as soon as I can if there are any questions, etc.

Are you around tomorrow and Monday in case there is a need to discuss?

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Thursday, May 07, 2015 2:55 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Steve Edmondson - NOAA Federal; Larry Thompson - NOAA Federal
Subject: Re: Temp Field Installations Summary

Bao:

Attached are NMFS' suggested edits to HDR's proposed agenda for the May 20, 2015 workshop designed to investigate the feasibility of fish passage options for the La Grange Project. You will see that I have removed language referring to the "reintroduction planning process" and your suggestions that NMFS present information on the reintroduction planning process. NMFS has not made a decision as to whether to exercise its Section 18 authority, let alone to reintroduce anadromous fish above the impassable dams on the Tuolumne River. Furthermore, there are several other authorities/processes that could require fish passage at the Project, such as a 401 CWA certification, BLM 4(e) condition, a FERC ordered license condition, or a settlement agreement. Thus NMFS believes it is premature to present information or open a dialogue on the reintroduction planning process on May 20.

The proposed study as submitted by the Districts and approved by FERC (as well as the similar study request submitted by NMFS) describes developing conceptual fish passage engineering designs. NMFS requests that these workshops focus on the goals, objectives, and methods as described in the study plan. You described to me the need to have context for people unfamiliar with this process for how and why NMFS (and other relicensing participants) have asked for an evaluation of fish passage at the Project. Within our proposed

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Sent: Tuesday, May 05, 2015 2:12 PM
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Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Temp Field Installations Summary

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Thanks, Bao

### Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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From:	Le, Bao
Sent:	Thursday, May 07, 2015 2:16 PM
To:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Ashenfelter, Mark
Subject:	RE: Temp Field Installations Summary - Feedback on NMFS questions
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi John.

I got feedback from Mark Ashenfelter regarding your two questions on the temp summary. See below in red. I've also cc'd Mark on this string as well. I hope this helps.

Thanks, Bao

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Also, on a side note, if Chuck is reachable or whoever else he went in the field with - could you ask him / them for a little more info on flow conditions in the Clavey? From his notes it looks like flows were up and they had challenges with install. I ask because I am set to head there next week (a long drive into the Clavey), and maybe need to rethink... Could you ask if it was wadable? could you cross the channel? or maybe flows were just up enough that it made it hard to get a logger deep in the thalweg so that it would stay wet all summer long? Field staff arrived at the Clavey (Forest Rte 1NO1 Bridge) on the afternoon of April 28th and it was readily apparent that flows were substantially elevated. Visibility was less than 1ft and wading more than a few feet into the channel was about as far as one could safely make it. On the 29th, staff were at the mainstem confluence area around noon and conditions had noticeably improved. By looking at the high water mark, staff would estimate the river had dropped approximately 6in and visibility had improved to around 3ft. There were still quite a few submerged willows indicating it wasn't base flow conditions. Staff were just barely unable to cross around the confluence and imagine by next week it should be ok. Hunch is that they were there late enough in the afternoon of the 28th to catch the peak diurnal snowmelt and early enough on the 29th to see the diurnal low flow. Other hunch is that with as hot as it was last week the snowmelt flows have peaked and will only be getting lower from here on.

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Bao Le

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HDR

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John Wooster



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Sent:	Thursday, May 07, 2015 2:55 PM
То:	Le, Bao
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Steve Edmondson - NOAA Federal; Larry Thompson - NOAA Federal
Subject:	Re: Temp Field Installations Summary
Attachments:	LG_May20 WorkshopNo1Agenda_20150415_NMFS_edits_redline.docx
Follow Up Flag: Flag Status:	Follow up Flagged

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# La Grange Hydroelectric Project Fish Passage/Reintroduction Assessment Workshop No. 1 Wednesday, May 20, 9:00 am to 12:00 pm MID Office, 1231 11<sup>th</sup> Street, Modesto, California

Conference Line: 1-866-994-6437, Passcode: 8140607

# **Meeting Objectives:**

- 1. Introduce the fish passage/reintroduction evaluation concept, process/framework, and relevant information needs.
- 2. Present and discuss the Tuolumne River Reintroduction/Fish Passage Evaluation Framework.
- 3. Confirm schedule/tasks, subsequent workshops, and opportunities for collaboration.

TIME	TOPIC
9:00 am – 9:10 am	Introduction of Participants (All)
9:10 am – 9:30 am	Background/Overview of Tuolumne River Anadromous Fish Passage Facilities Assessment Reintroduction Collaborative (Districts)
9:30 am – 10:00 am	<ul> <li>Overview of FPA, Section 18 Authority (Fish Passage Prescription), and NMFS' Section 18 Decision Process (NMFS) <ul> <li>a. Description of FERC Study Process, FPA and Section 18 authority</li> <li>b. Section 18 Decision Framework and how/where an Engineering Feasibility of Fish Passage Evaluation fits in</li> <li>c. Discussion of additional studies being undertaken (NMFS sponsored and Districts) that will support Section 18 Decision Process</li> <li>d. Discussion of NMFS' Recovery Plan and how it relates to the Tuolumne River</li> </ul> </li> <li>Overview of the Reintroduction Planning Process (NMFS; CDFW) <ul> <li>a. Reintroduction goals, objectives, and expectations</li> <li>b. General fish reintroduction planning concepts</li> <li>c. Alternative methods of anadromous fish reintroduction and applicability to Tuolumne River</li> <li>d. Passive vs. active strategies (natural colonization; transplanting; hatchery releases)</li> <li>e. Key biological issues to be evaluated</li> <li>f. Key socioeconomic issues to be evaluated (e.g. ISAB 2011)</li> <li>g. General reintroduction planning timelines</li> </ul> </li> </ul>
10:00 am – 10:30 am	Overview of Examples of Anadromous Fish Reintroduction Planning Process (NMFS; CDFW)

10:30 am – 11:15 am	Overview of the Tuolumne River Fish Passage/Reintroduction Evaluation Framework (Districts) a. Review fish passage/reintroduction evaluation process b. Information needs and key resource considerations c. Available data, data gaps, and potential data sources
11:15 am – 11:45 am	<ul> <li>Overview of Examples of Anadromous Fish Passage Facilities (Districts)</li> <li>a. Key fish passage considerations</li> <li>b. Upstream passage types and related facilities</li> <li>c. Downstream passage types and related facilities</li> </ul>
11:45 am – 12:00 pm	<ul> <li>Tuolumne River Passage Assessment Schedule and Next Steps (All)</li> <li>a. Schedule: Opportunities for collaboration and incorporation of feedback</li> <li>b. Workshops 2 and 3 – confirm dates and content</li> </ul>

From:	John Wooster - NOAA Federal <john.wooster@noaa.gov></john.wooster@noaa.gov>
Sent:	Friday, May 08, 2015 9:34 AM
To:	Le. Bao
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Steve Edmondson - NOAA Federal; Larry Thompson - NOAA Federal
Subject:	Re: Temp Field Installations Summary
Follow Up Flag:	Follow up
Flag Status:	Flagged

I am around today to discuss, and Monday I have a lot of other meetings / calls but could find a short window at some point.

-John

On Thu, May 7, 2015 at 4:27 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Thanks for the comments, John.

I'll send along for consideration by the Districts and other team members and get back to you as soon as I can if there are any questions, etc.

Are you around tomorrow and Monday in case there is a need to discuss?

Bao

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From: Sent: Cc: Subject: Attachments:	Staples, Rose Tuesday, May 12, 2015 10:46 AM Staples, Rose La Grange Workshops Agendas - May 19 and May 20 LG_May20_FishPassage_WorkshopNo1Agenda_Final.pdf; LG May 19 _TempWorkshopAgenda_Final.pdf
Follow Up Flag: Flag Status:	Follow up Completed
Categories:	Don Pedro

To Interested Licensing Participants:

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District (MID) and Turlock Irrigation District (TID), joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

- 1. Upper Tuolumne River Water Temperature Monitoring and Modeling Workshop May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA.
- 2. Upper Tuolumne River Fish Passage Assessment/Anadromous Fish Reintroduction Workshop (first of 3) May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Please find attached the agendas for the two workshops. Your participation is encouraged and appreciated.

Thank you.

Rose Staples, CAP-OM Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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# La Grange Hydroelectric Project Fish Passage Assessment Workshop No. 1 Wednesday, May 20, 9:00 am to 12:00 pm MID Office, 1231 11<sup>th</sup> Street, Modesto, California Conference Line: 1-866-994-6437, Passcode: 8140607 Join Lync Meeting https://meet.hdrinc.com/jesse.deason/8DZ4VNVN

## **Meeting Objectives:**

- 1. Introduce the fish passage-evaluation concept, process/framework, and relevant information needs.
- 2. Present and discuss the Tuolumne River Fish Passage Evaluation Framework.
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9:00 am – 9:10 am	Introduction of Participants (All)
9:10 am – 9:30 am	Background/Overview of Tuolumne River Anadromous Fish Passage Facilities Assessment Collaborative (Districts)
9:30 am – 10:30 am	<ul> <li>Overview of FPA, Section 18 Authority (Fish Passage Prescription), and NMFS' Section 18</li> <li>Decision Process (NMFS) <ul> <li>a. Description of FERC study process, FPA and Section 18 Authority</li> <li>b. Section 18 Decision Framework and how/where an engineering feasibility of fish passage evaluation fits in</li> <li>c. Discussion of additional studies being undertaken (NMFS sponsored and Districts) that will support Section 18 Decision Process</li> <li>d. Discussion of NMFS' Recovery Plan and how it relates to the Tuolumne River</li> </ul> </li> </ul>
10:30 am – 11:15 am	<ul> <li>Overview of the Tuolumne River Fish Passage-Evaluation Framework (Districts)</li> <li>a. Review fish passage evaluation process</li> <li>b. Information needs and key resource considerations</li> <li>c. Available data, data gaps, and potential data sources</li> </ul>
11:15 am – 11:45 am	<ul> <li>Overview and Examples of Anadromous Fish Passage Facilities (Districts)</li> <li>a. Key fish passage considerations</li> <li>b. Upstream passage types and related facilities</li> <li>c. Downstream passage types and related facilities</li> </ul>
11:45 am – 12:00 pm	<ul> <li>Tuolumne River Passage Assessment Schedule and Next Steps (All)</li> <li>a. Schedule: Opportunities for collaboration and incorporation of feedback</li> <li>b. Workshops 2 and 3 – confirm dates and content</li> </ul>





# La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:30 pm – 4:30 pm HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA Conference Line: 1-866-994-6437, Passcode: 8140607 Join Lync Meeting https://meet.hdrinc.com/jesse.deason/8DZ4VNVN

# **Meeting Objectives:**

- 1. Present an overview of the La Grange Hydroelectric Project Temperature Study.
- 2. Review and confirm proposed temperature and flow monitoring locations.
- 3. Review and confirm modeling approach.
- 4. Confirm schedule/tasks and opportunities for collaboration.

TIME	TOPIC
1:30 pm – 1:40 pm	Introduction of Participants (All)
1:40 pm – 2:00 pm	Background/Overview of the La Grange Project Temperature Study (Districts)
2:00 pm – 4:00 pm	<ul> <li>Temperature Study Introduction (Districts) <ul> <li>a. Study goal and objectives, scope, and study area</li> </ul> </li> <li>Review and Discussion of Existing Information <ul> <li>a. Parameters and sources</li> <li>b. Review process summary</li> <li>c. Results, findings and recommendations</li> </ul> </li> <li>Proposed Monitoring Program – Presentation and Discussion <ul> <li>a. Rationale</li> <li>i. Space (locations)</li> <li>ii. Time (periods of interest)</li> <li>iii. Equipment</li> </ul> </li> <li>Temperature Modeling – Presentation and Discussion <ul> <li>a. Approach (including spatial and temporal resolution)</li> <li>b. Data needs</li> <li>c. Model information/output</li> </ul> </li> <li>Schedule and Reporting</li> </ul>
4:00 pm – 4:30 pm	Meeting Wrap-up (All) a. Confirm study approach and methods b. Agreements, action items and next steps

From:	Le, Bao
Sent:	Tuesday, May 12, 2015 10:04 AM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Steve Edmondson - NOAA Federal; Larry Thompson - NOAA Federal
Subject:	FP Workshop Agenda - NMFS Proposed Edits -feedback
Follow Up Flag: Flag Status:	Follow up Flagged

Hi John.

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Subject: Re: Temp Field Installations Summary

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To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
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Thanks, Bao

Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

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John Wooster Hydrologist

NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From: Borovansky, Jenna Sent: Friday, May 15, 2015 4:45 PM To:

Subject: Don Pedro and La Grange Fish Passage Workshop - May 20, 2015 Please attend

Dear fishing tournament organizers:

There is a public meeting next week that may be of interest to you. Turlock Irrigation District and Modesto Irrigation District are studying the feasibility of moving upstream migrating anadromous fish (spring-run Chinook salmon and steelhead) from below La Grange Diversion Dam upstream to Don Pedro Lake and moving the young outmigrating offspring of those fish downstream from Don Pedro Lake to below La Grange Diversion Dam.

Currently, there are no anadromous fish species in the Tuolumne River above Don Pedro Dam. Fish passage at Don Pedro Dam and La Grange Diversion Dam could result in the introduction of anadromous species into Don Pedro Lake and/or upstream of the lake, which may impact management of fishing opportunities and access to certain areas around the lake, if facilities are constructed. As part of the fish passage study, the Districts will hold a series of workshops, open to the public, to discuss upstream and downstream fish passage considerations. These workshops are an opportunity for all lake users to learn about potential fish passage activities and to provide input into the process.

The workshop agenda is attached, and meeting details are below.

### **Upper Tuolumne River Fish Passage Assessment Workshop (first of 3)**

May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Your participation is encouraged and appreciated. If you have any questions, please contact Jenna Borovansky (with HDR, consultant to the Districts at 425.281.9557). Or, if you would like to be added to an email list for future workshop announcements, please reply to this email.

Jenna Borovansky Senior Regulatory Specialist

HDR D 208.665.3987 M 425.281.9557 jenna.borovansky@hdrinc.com

From:	Le, Bao
Sent:	Monday, May 18, 2015 6:02 PM
То:	John Wooster - NOAA Federal
Cc: Subject:	Devine, John; Borovansky, Jenna; Deason, Jesse RE: May 20 Fish Passage Workshop - question
Follow Up Flag: Flag Status:	Follow up Flagged

Thanks for the information, John.

Per your question below, Mike Garello has a pretty robust presentation on upstream/downstream fish passage examples as part of his talk but not with any of the fish passage videos.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, May 18, 2015 4:37 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: May 20 Fish Passage Workshop - question

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On Mon, May 18, 2015 at 4:28 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

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Thanks,

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### Bao Le

Senior Fisheries Biologist

HDR

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Sent:	Tuesday, May 19, 2015 12:29 PM
То:	Steve Edmondson; John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Larry Thompson - NOAA Federal
Subject:	RE: FP Workshop Agenda - NMFS Proposed Edits -feedback
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Steve.

There will be a screen and projector available. If you have your presentation on a stick drive, we can load it onto the presentation computer prior to the workshop.

### Thanks, Bao

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Sent: Tuesday, May 19, 2015 12:14 PM
To: Le, Bao; John Wooster - NOAA Federal
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Larry Thompson - NOAA Federal
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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



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The video has a lot of good footage of fish passage projects however, I think that in addition to some footage, it would be a valuable addition to this collaborative process if NMFS, as the lead agency for recovery of the target species, provided some more background/introductory information around the process by which such a decision would be made (i.e., the general policy framework and decision-making process). Per our discussion last week, fish passage is one component of a larger more significant process of recovery and NMFS has not yet made a decision on fish passage in the Tuolumne River yet. As such, it would be extremely valuable to have NMFS provide information on the bigger picture to what is expected to be a participant group with varying levels of knowledge.

May I suggest the following....NMFS has two agenda items that are allocated 30 minutes each. These are "overview of the reintroduction planning process" and then "examples of the reintroduction planning process". Perhaps NMFS could present a general overview on recovery planning and the reintroduction framework/process, then transition into a real-life example of how the process was applied, and then show one or two of the projects from the video. Ideally, if the real-life process example tied into the video examples, that'd be excellent. I would see the split as being general overview (30), real life example process (15) and video (15) or something within that range. As discussed before, this should be considered a high level introduction/education as there are more meetings to get into additional details as needed. I also think that an approach like this would avoid stealing all of Mike Garello's (lead fish passage engineer) thunder later in the meeting since he will focus on examples of fish passage facilities, etc.

Please let me know your thoughts.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, May 05, 2015 2:12 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Temp Field Installations Summary

Thanks Bao, this table is very helpful. Quick question, based on what I see in the equipment and notes, it would appear that under equipment WT = water temperature, and LL = level logger (I'm using the Clavey installations to inform this conclusion).... But if that holds, then there is kind of a weird pattern with 2 level loggers at the North Fork locations and no temperature loggers, same thing at SF location. Could you double check that for me - or at least confirm that temperature loggers went into those locations (according to your study plan that appeared to be the intent)?

Also, on a side note, if Chuck is reachable or whoever else he went in the field with - could you ask him / them for a little more info on flow conditions in the Clavey? From his notes it looks like flows were up and they had challenges with install. I ask because I am set to head there next week (a long drive into the Clavey), and maybe need to rethink... Could you ask if it was wadable? could you cross the channel? or maybe flows were just up enough that it made it hard to get a logger deep in the thalweg so that it would stay wet all summer long?

Yes, I have written feedback to you on the agenda on May 20 coming - going through review now.

I described to you a video that NMFS put together that talks about fish passage / reintroduction. After additional internal discussion, we would like to show the video on May 20 (or a substantial part of if you feel it is too long). A link to the video is below. Could you get me feedback on whether this is an agreeable approach? As it will affect our proposed changes to the agenda.

https://vimeo.com/75552829

-John

On Tue, May 5, 2015 at 12:06 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

Good to chat today. As discussed, attached is a summary of the temp deployment field work from last week. As you'll see, several locations were not visited with access being somewhat difficult. HDR staff will work on the logistics of getting back out there to deploy at remaining locations but it likely won't be until later in the month when staff are back from vacation.

One additional note: about the May 20 workshop agenda, we would like to try and distribute an agenda to participants this Friday, May 8. Per our discussion on the conference call you had said that you'd discuss with colleagues about what NMFS could do for your parts of the agenda items and provide comments/feedback back to us. Will you be able to do so sometime this week?

Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

--

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Staples, Rose
Sent:	Wednesday, May 20, 2015 8:00 AM
Cc:	Staples, Rose
Subject:	La Grange Fish Passage Workshop No 1 Materials Available on Licensing Website
Follow Up Flag:	Follow up
Flag Status:	Completed
Categories:	Don Pedro

The May 20, 2015 La Grange Fish Passage Workshop No. 1 meeting materials are available on the La Grange Licensing website for your viewing and/or downloading: <u>http://www.lagrange-licensing.com/Lists/Calendar/calendar.aspx?CalendarDate=5%2F20%2F2015&CalendarPeriod=Day</u> (attached to the meeting notification for May 20 on the website CALENDAR).

If you have any problems locating, viewing, and/or downloading these documents, please let me know.

Thank you.

Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

From:	Jonathan Ambrose <jonathan.ambrose@noaa.gov></jonathan.ambrose@noaa.gov>
Sent:	Wednesday, June 03, 2015 8:25 AM
To:	Deason, Jesse
Cc:	Le, Bao
Subject:	Re: Request for documents related to Pajaro River genetic assessment
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Jesse. I am out of the office and will return Monday. When I return I will look for the aforementioned mentioned documents. Sorry for the delay. Jon

On Jun 2, 2015, at 3:17 PM, Deason, Jesse <<u>Jesse.Deason@hdrinc.com</u>> wrote:

#### Hello Mr. Ambrose,

My name is Jesse Deason and I am emailing you on behalf of Turlock Irrigation District and Modesto Irrigation District to request documents related to the Pajaro River genetic assessment. As I noted in the voicemail I left you earlier today, during the La Grange Hydroelectric Project study dispute resolution technical conference you referenced O. mykiss genetics work completed for the Pajaro River. The Districts are interested in reviewing documents related to this genetics work.

If you would, please direct me to where I can locate these documents. Thanks in advance for your help!

Regards,

Jesse

#### Jesse Fernandes Deason Regulatory Specialist

HDR 601 Union Street, Suite 700 Seattle, WA 98101 D 206.826.4744 M 781.249.2452 jesse.deason@hdrinc.com

From:	Jonathan Ambrose - NOAA Federal <jonathan.ambrose@noaa.gov></jonathan.ambrose@noaa.gov>
Sent:	Tuesday, June 09, 2015 9:48 AM
То:	Deason, Jesse
Cc:	Le, Bao; Steve Edmondson - NOAA Federal; John Wooster - NOAA Federal
Subject:	Re: Request for documents related to Pajaro River genetic assessment
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Jesse. These are the studies I referred to during the Tulomne R Dispute Panel.

http://scholarworks.sjsu.edu/etd theses/1956/

http://www.pajarowatershed.org/archive/uploads/Flood%20Protection/2%20Project%20Alternatives/Environme ntal%20Reports/Biotic%20Species/Fisheries/2002%20Steelhead%20SJSU%20Watershed%20Report.pdf

The results of the above studies were evaluated within the context of this NOAA document. This document described the importance of bio-geographic regions to the SCCC steelhead population structure and implications for recovery planning.

http://swfsc.noaa.gov/publications/TM/SWFSC/NOAA-TM-NMFS-SWFSC-394.pdf

Following the study by Sundermeyer, Garza and Pearce came out with the following report using more up-todate techniques. The Garza and Pearce report suggest the conclusions drawn by Sundermeyer may have been premature. If the Garza and Pearce report had been available earlier the concerns over loss of native Pajaro R stock would like likely been much less of an issue regarding fish passage at Uvas Dam.

http://www.permanentereimagined.org/attachments/article/3/Population%20genetics%20of%20Oncorhynchus% 20mykiss%20in%20the%20Santa%20Clara%20Valley%20Region%20Garza-Pearse%20SCVWD%20Report%202008.pdf

Hope this helps. Jon

On Tue, Jun 2, 2015 at 3:17 PM, Deason, Jesse < Jesse. Deason@hdrinc.com > wrote:

Hello Mr. Ambrose,

My name is Jesse Deason and I am emailing you on behalf of Turlock Irrigation District and Modesto Irrigation District to request documents related to the Pajaro River genetic assessment. As I noted in the voicemail I left you earlier today, during the La Grange Hydroelectric Project study dispute resolution technical conference you referenced O. mykiss genetics work completed for the Pajaro River. The Districts are interested in reviewing documents related to this genetics work.

If you would, please direct me to where I can locate these documents. Thanks in advance for your help!

Regards,

Jesse

Jesse Fernandes Deason

Regulatory Specialist

#### HDR

601 Union Street, Suite 700 Seattle, WA 98101 D 206.826.4744 M 781.249.2452 jesse.deason@hdrinc.com

From: Devine, John
Sent: Monday, June 29, 2015 5:34 PM
To: 'Eicher, James'; Vertucci, Charles
Subject: RE: HDR access at the North Fork Tuolumne River

Jim,

Let me try to provide some explanation. The logger deployment is part of the La Grange Project licensing studies. NMFS requested as part of looking at fish reintroduction above Don Pedro that a temperature study and model be performed for the river reach between Don Pedro Reservoir and Early Intake (and tributaries). FERC determined that the Districts did not have to perform such a study in its February 2015 Determination, but the Districts have voluntarily offered to perform the study as NMFS requested. We have been coordinating with NMFS on logger locations since March time frame and once we settled on locations, 15 locations in all and 19 loggers, we hurriedly put together the permit for USFS (13 of the locations and 16 loggers). We expedited the permit with USFS assistance and went forward.

You got it! In our rush to get the loggers in to obtain as much data as possible, and focused on the USFS locations, we completely screwed up on not approaching the BLM and filling you in on the study and to get the proper permits. It is completely HDR's doing and not in any way associated with either TID's or MID's staff. We sincerely apologize for this oversight, and will do whatever BLM determines to be proper. The loggers are important for the joint Districts/NMFS study, and if at all possible, I would like to find a way that we could keep them in for the benefit of the study.

Please give me a call if you would to discuss.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, June 29, 2015 5:14 PM
To: Vertucci, Charles
Cc: Devine, John
Subject: Re: HDR access at the North Fork Tuolumne River

Charles thank you for submitting the attached photographs, please explain what and why you are doing this project? Please explain when you did it and explain how you were helicoptered in and where you were dropped off. Please locate this on GIS map of the area for helicopter landing and for your lat and long on the loggers. Also please explain why BLM wasn't notified as the USFS was on this project. Who is the USFS lead contact on this project. Was NEPA conducted on this project? If NEPA was conducted for this project please

submit the NEPA document on this project. I would like to receive all of the emails, letters, and notes concerning this project and all of the authorizations that were given by the USFS.

Thank you Jim Eicher

On Mon, Jun 29, 2015 at 1:38 PM, Vertucci, Charles <<u>Charles.Vertucci@hdrinc.com</u>> wrote:

Jim,

As requested during our phone conversation is information related to HDR's access of the North Fork Tuolumne River area.

HDR accessed the North Fork Tuolumne and Tuolumne River on April 30 via Helicopter to install water temperature and stage recorders at the North Fork Tuolumne and Tuolumne rivers. Sites were revisited (by helicopter) on June 17 to confirm their effectiveness (water depth, in flowing water) after flows had dropped.

Logger Location	River Mile	Temperature	Stage	Coordinates	Equipment
TR above	TR	X	Х	37.896630	LL#1 – 10086741
North Fork	81.3			-120.252864	WT#1-10219704
North Fork	NF	X	X	37.897235	LL#1 – 10106076
above TR	0.1			-120.253729	LL#2-10106072

Two level logger installations were installed into in-channel boulders to measure water temperature and flow in the North Fork – photo 4292332 and 4292331

One level logger installation was installed into bedrock near the low water line to measure water temperature and flow in the Tuolumne River – photo 4292326

Please let me know if you need additional information.

Thank you,

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 <u>charles.vertucci@hdrinc.com</u>

From: Devine, JohnSent: Monday, June 29, 2015 5:19 PMTo: 'Eicher, James'; Vertucci, CharlesSubject: RE: HDR access at the North Fork Tuolumne River

Jim,

We'll get that to you right away. I just tried to call to walk you through much of that. I also wanted to explain what happened. If you get the chance, please give me a call – numbers are below.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, June 29, 2015 5:14 PM
To: Vertucci, Charles
Cc: Devine, John
Subject: Re: HDR access at the North Fork Tuolumne River

Charles thank you for submitting the attached photographs, please explain what and why you are doing this project? Please explain when you did it and explain how you were helicoptered in and where you were dropped off. Please locate this on GIS map of the area for helicopter landing and for your lat and long on the loggers. Also please explain why BLM wasn't notified as the USFS was on this project. Who is the USFS lead contact on this project. Was NEPA conducted on this project? If NEPA was conducted for this project please submit the NEPA document on this project. I would like to receive all of the emails, letters, and notes concerning this project and all of the authorizations that were given by the USFS.

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TR above	TR	X	Х	37.896630	LL#1 – 10086741
North Fork	81.3			-120.252864	WT#1-10219704
North Fork	NF 0.1	X	X	37.897235	LL#1 – 10106076
above IK	0.1			-120.253729	LL#2-10106072

Two level logger installations were installed into in-channel boulders to measure water temperature and flow in the North Fork – photo 4292332 and 4292331

One level logger installation was installed into bedrock near the low water line to measure water temperature and flow in the Tuolumne River – photo 4292326

Please let me know if you need additional information.

Thank you,

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From:	Devine, John
Sent:	Monday, June 29, 2015 11:20 AM
То:	Eicher, James
Cc:	Le, Bao; 'Mike Deas' (Mike.Deas@watercourseinc.com); Borovansky, Jenna; Deason, Jesse
Subject:	RE: Water Temp loggers on NF Tuolumne River
Follow Up Flag:	Follow up
Flag Status:	Flagged
Categories:	Don Pedro

Thank you Jim. I will immediately check with Bao Le (HDR) and Mike Deas (Watercourse Engineering). The heads-up is much appreciated.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, June 29, 2015 2:02 PM
To: Devine, John
Subject: Water Temp loggers on NF Tuolumne River

Hello John I am not sure if HDR is planning on placing water temp loggers along the NF Tuolumne River. I have heard that this is the case but I want check with you. If that is the case you will need to get Authorization from BLM if the loggers are to be placed on BLM lands. Let me know exactly what you are planning so we can make a determination on the loggers.

Take Care Jim

From:	Staples, Rose
Sent:	Tuesday, June 30, 2015 5:10 PM
Cc:	Staples, Rose
Subject:	La Grange May 2015 Workshops - Notes Available on Licensing Website
Follow Up Flag:	Follow up
Flag Status:	Flagged

The Districts have posted on the <u>www.lagrange-licensing.com</u> website (in the DOCUMENTS section) the meeting notes and material used during the May 2015 La Grange Workshops:

May 19, 2015 – Flow & Temperature Monitoring / Modeling Workshop May 20, 2015 – Fish Passage Assessment Workshop No. 1

If you have any difficulty locating or accessing the documents, please let me know at <u>rose.staples@hdrinc.com</u>.

Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

From: Devine, John
Sent: Wednesday, July 01, 2015 11:09 AM
To: Eicher, James
Cc: Vertucci, Charles; Le, Bao
Subject: RE: HDR access at the North Fork Tuolumne River

Jim,

We are in the process of collecting all the email, letters, and correspondences as you requested below. I'm planning to have all this pulled together and sent to you by the end of next week. In the meantime, I've asked Chuck to send to you the complete permit application that was submitted to the USFS for your information.

We would also like to proceed with submitting the proper permit request to the BLM to cover the logger installs and downloads, including proposed methods of access and schedule of future proposed work (downloads), just in case we are able to keep the loggers in place. This might also serve as a tardy submittal for the work already done, just so a proper permit request is in the queue at BLM. I have asked Bao Le and Chuck to give you a call to make sure we file the correct information. Your thoughts on this would be much appreciated.

Jim, I'm truly sorry for the amount of time you're having to spend on this matter due to our oversight.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Tuesday, June 30, 2015 2:37 PM
To: Devine, John
Subject: Re: HDR access at the North Fork Tuolumne River

Hi John I am still looking into the situation. I will notify you when I have completed my investigation of this incident. If I need more information from HDR I will let you know. I appreciate the information you have sent so far. Please submit your email and letter correspondences you have with the USFS and Licensee on the water temperature loggers. Take Care

Jim

On Tue, Jun 30, 2015 at 11:17 AM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

I wanted to check back with you to see if you needed anything additional from us. I hope my brief explanation provided yesterday helped you understand the circumstances. There was no intent on our part to purposely avoid asking BLM for a permit. That would certainly be a very unwise thing to do. If at all possible, for the benefit of the study, we would very much like to keep the loggers in place.

Would you care to discuss further? We look forward to your direction on how to proceed at this point.

John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Devine, JohnSent: Monday, June 29, 2015 5:34 PMTo: 'Eicher, James'; Vertucci, CharlesSubject: RE: HDR access at the North Fork Tuolumne River

Jim,

Let me try to provide some explanation. The logger deployment is part of the La Grange Project licensing studies. NMFS requested as part of looking at fish reintroduction above Don Pedro that a temperature study and model be performed for the river reach between Don Pedro Reservoir and Early Intake (and tributaries). FERC determined that the Districts did not have to perform such a study in its February 2015 Determination, but the Districts have voluntarily offered to perform the study as NMFS requested. We have been coordinating with NMFS on logger locations since March time frame and once we settled on locations, 15 locations in all and 19 loggers, we hurriedly put together the permit for USFS (13 of the locations and 16 loggers). We expedited the permit with USFS assistance and went forward.

You got it! In our rush to get the loggers in to obtain as much data as possible, and focused on the USFS locations, we completely screwed up on not approaching the BLM and filling you in on the study and to get the proper permits. It is completely HDR's doing and not in any way associated with either TID's or MID's staff. We sincerely apologize for this oversight, and will do whatever BLM

determines to be proper. The loggers are important for the joint Districts/NMFS study, and if at all possible, I would like to find a way that we could keep them in for the benefit of the study.

Please give me a call if you would to discuss.

John Devine, P.E.

D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

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Thank you

Jim Eicher

On Mon, Jun 29, 2015 at 1:38 PM, Vertucci, Charles <<u>Charles.Vertucci@hdrinc.com</u>> wrote:

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Logger Location	River Mile	Temperature	Stage	Coordinates	Equipment
TR above North Fork	TR 81.3	X	X	37.896630	LL#1 - 10086741
				-120.252864	W 1#1 - 10219704
North Fork above TR	NF 0 1	X	Х	37.897235	LL#1 –
	0.1			-120.253729	10106076 LL#2

- 10106072

Two level logger installations were installed into in-channel boulders to measure water temperature and flow in the North Fork – photo 4292332 and 4292331

One level logger installation was installed into bedrock near the low water line to measure water temperature and flow in the Tuolumne River – photo 4292326

Please let me know if you need additional information.

Thank you,

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From:	Le, Bao
Sent:	Wednesday, July 01, 2015 2:05 PM
То:	Stanley, Robert N -FS; Vaughn, Gary D -FS
Cc:	Vertucci, Charles; Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	Special Use Permit - Tuolumne River Temperature Monitoring
Attachments:	SF-299_Trlock Irrigation District_Water Temperature.pdf; Attachment ASF 299 _TID.pdf; Attachment B_SF 299_TID.pdf; Attachment C_SF 299_TID.pdf; SF-299_Permit_ 04_10_15_Final.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

Good afternoon Dusty and Bob,

As requested per discussions yesterday, please find attached the SUP for the temperature monitoring activities that the Districts and HDR are conducting on the National Forest. I've also included the application with attachments as they provide additional detail regarding the monitoring program which appears to be referenced (but not included) in the permit itself.

With regard to advance notification prior to any field work, we'd propose to notify both of you as well as the BLM of any work related to the permit/study a week in advance. If there are others you'd like notified or have any additional or alternative preferences, please let us know.

Lastly, upon review of the temperature work conducted to date, we've determined that an amendment to the existing SUP will be necessary to complete several remaining installations (e.g., by foot around Cherry and Eleanor creeks). I've cc'd Chuck Vertucci, our field lead, on this email. He will be reaching out to Debra Foote and/or Beth Martinez to work through this process. We just wanted to give you both a head's up should you have any questions or concerns.

Thank you again for getting back to us promptly. We appreciate the opportunity to stay coordinated.

Best regards, Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

Attachment A for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. April 1, 2015

### 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, and CDFW) have agreed to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015.

HDR Engineering, Inc. has been retained by the Districts to complete portions of the Fish Passage Assessment including the water temperature monitoring task described below.

### Water Temperature Monitoring

### Schedule and Access

Loggers are proposed to be installed at a total of 10 locations (Table 2) in early April 2015, if conditions allow and checked periodically throughout the monitoring period. Loggers will be removed or prepared to overwinter in late October or early November 2015. The same schedule will be repeated in 2016 (Table 1).

Access to logger installations will occur along existing Forest Service or other public roads. Staff will park safely at a point nearest the desired location and navigate to the river channel. Care will be taken to use any existing trails or traverse areas that will cause little impact to the land.

If areas are deemed too difficult to access on foot, they will be visited by white water boating or helicopter. In the case of boating, HDR will hire a guide with all necessary Forest Service permits to navigate them to areas of the Tuolumne River. For helicopter access (North Fork confluence, Indian Creek confluence and Clavey confluence), all safety elements will be observed and landing areas near logger installations will be within the high water line of the river, usually on a large gravel bar. The Forest Service would be notified of the fly date(s).

HDR will limit the visits to each location in order to provide the least impact while ensuring the collection of necessary data (Table 1).

Month	Vehicle/Hike Access	Helicopter/WW Boat Access					
2015							
March/April (installation)	Х	Х					
May							
June	Х						
July		Х					
August	Х						
September							
October/November (removal	Х	Х					
	2016						
March/April (installation)	Х	Х					
May							
June	Х						
July							
August	Х						
September							
October/November (removal	X	X					

Table 1. Schedule of field visits for 2015 and 2016 include general access.

X = monitoring required by method described.

-- = monitoring not required.

### Installation Equipment and locations

HDR staff proposes to install Onset ProV2 water temperature recorders in durable housings (Figure 1) in the Upper Tuolumne River (Table 2, Attachment B maps). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e. non-boating flows) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

HDR staff proposes to install Onset U20 Level loggers in durable housings in the identified tributaries (Table 2, see separate map). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e. before or after spring run-off) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. At tributary locations where stage recorders are installed, semi-permanent housings will be affixed to large boulders or bedrock to ensure the level logger does not move (Figure 2). The water surface elevation and depth of the logger will be noted at the time of installation. A flow measurement will also be collected anytime a stage recorder is installed or downloaded using standard USGS methods.



Figure 1. Photograph of normal water temperature recorder housing. Approximate size is 4-6 inches with 2-8 feet of associated cabling.

Logger Location	<b>River Mile</b>	Latitude	Longitude	Data value for model				
Tuolumne River								
TR near Indian Creek	TR 88.2	TBD	TBD	Provides temperatures longitudinally				
TR above Clavey River	TR 91.1	TBD	TBD	along the main stem river, including				
TR above South Fork	TR 97.0	TBD	TBD	above major tributaries.				
TR below Early Intake	TR 105.2	TBD	TBD					
	Tributaries							
North Fork at RM8 Bridge	NF 8.0	TBD	TBD	Provides tributary water				
Clavey above TR	CR 0.1	TBD	TBD	temperatures and flow at multiple				
Clavey at Gage 11283500	CR 8.4	TBD	TBD	locations in order to build flow and				
South Fork above TR	SF 0.1	TBD	TBD	temperature data sets for model input				
Cherry Cr. above TR	CC 0.6	TBD	TBD					
Cherry Cr. above Powerhouse	CC 1.2	TBD	TBD					

1 able 2. Locations to install and monitor water temperature and/or st
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Figure 2. Example of level logger installation. Bolted (removable) to boulder or bedrock.

## 13a. Describe other alternative routes and modes considered.

Locations of water temperature loggers were selected based on the data needed to build a complete and accurate water temperature model for the La Grange Project. Locations generally are at tributary confluences with the Tuolumne River and areas of hydrologic interest.

Additionally, much of the upper Tuolumne River watershed is very difficult terrain to access, and locations for installation were also selected with this in mind.

Travel onto the Stanislaus National Forest (SNF) is required because the desired monitoring locations occur on SNF lands and all of the vehicular access will occur via established roadways.

### **16.** Effects on the local population

This project will have no effect on the local population. All installations are small and intentionally installed out of the way and hidden. Installation and maintenance of the loggers will be completed by two staff traveling in a standard vehicle and hiking on foot with minimal equipment.

If a helicopter is used at select locations (North Fork confluence, Indian Creek confluence and Clavey confluence), it will be to access areas not easily available to the general public. If there are people present (most likely white water boaters), care will be taken to avoid disturbing them (including visiting the sites during non-boating days or returning to the site at a different time, if possible).

### 17. Effects on the local environment

This study will have little to no effect to the local environment. The installations are small and made of materials not harmful to local soil and water. Loggers will be installed using existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study.

The visual impact is minimal since all installations are small and will be intentionally placed out of the way and hidden.

Increases in noise would only occur if and when (three one day trips, at most) a helicopter is used to access certain areas (North Fork confluence, Indian Creek confluence and Clavey confluence).

## Attachment B for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. April 1, 2015

8. Maps of proposed water temperature logger locations (Figure 1 to Figure 7).



Figure 1. Approximate location of proposed temperature logger installation on North Fork Tuolumne River.



Figure 2. Approximate location of proposed temperature logger installation on the Tuolumne River near Indian Creek.



Figure 3. Approximate locations of proposed temperature logger installations on the Clavey and Tuolumne rivers.



Figure 4. Approximate location of proposed temperature logger installation on the Clavey River near Forest Route 1N01.



Figure 5. Approximate location of proposed temperature logger installations on the South Fork Tuolumne and Tuolumne rivers.



Figure 6. Approximate location of proposed temperature logger installation on the Tuolumne River below Early Intake Diversion.



Figure 7. Approximate location of proposed temperature logger installations on Cherry Creek above and below the Powerhouse.

# **REVISED STUDY PLAN DOCUMENT**

## **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN

## **REVISED STUDY PLAN**

### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

## LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

### Fish Passage Assessment

### January 2015

# **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.
# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

#### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) There is no evidence of an anadromous spring-run Chinook or steelhead population. (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

#### 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

#### **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

#### 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling</u>:
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic</u>, <u>Depth</u>, and <u>Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding</u>: Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

#### **5.0** NEED FOR ADDITIONAL INFORMATION

#### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

#### 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

#### 6.0 STUDY AREA AND METHODS

#### 6.1 Study Area

#### 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

#### 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

#### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed 24.5). upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

#### 6.2.2 Upper Tuolumne River Basin Habitat Assessment

#### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

#### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

#### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

#### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

#### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

#### 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

#### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

-	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 - November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	October 2014 – July 2015
•	Fieldwork September 2015 – April/May 20	16; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	September 2015 – May 2017
•	Data entry, QA/QC, and analysis	September 2015 – August 2017
•	Initial study report	
•	Updated study report	
•	Final study report	September 2017

#### 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

•	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	
•	Updated study report	

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	February 2016
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

- Review of results from NMFS Upstream Habitat Study<sup>2</sup>...... September/October 2015

### 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels	August 2015 - April/May 2016
•	Data entry, QA/QC, and summarizing	September 2015 – December 2016
•	Initial study report	
•	Updated study report	February 2017

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

#### 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

#### 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

#### **10.0 REFERENCES**

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#### ATTACHMENT A

#### EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

C'4. I and there	Source <sup>3</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
Site Locations			Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

**Existing Upper Tuolumne River Temperature Monitoring Sites.** 

<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

are not yet available. <sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

S'4 I 4	G 3 Tuolum		Coordinates (Decimal °)		Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

Authorization ID: GRO1122 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE SPECIAL USE PERMIT Authority: ORGANIC ADMINISTRATION ACT June4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers less than 1 acre in the Stanislaus National Forest, ("the permit area"), as shown on the map(s) attached as Appendix A. This permit issued for the purpose of:

Installing, monitoring, and maintaining water temperature recorders at 10 locations. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

#### TERMS AND CONDITIONS

#### I. <u>GENERAL TERMS</u>

A. <u>AUTHORITY</u>. This permit is issued pursuant to **ORGANIC ADMINISTRATION ACT June 4**, **1897** and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

**C.** <u>**TERM.**</u> This permit shall expire at midnight on 12/31/2016, 1 year and 8 months from the date of issuance.

**D.** <u>**RENEWAL.</u>** This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit</u>

is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the new permit is the same as the type of use and occupancy authorized by this permit; and (3) the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

#### F. COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL

**REQUIREMENTS.** In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. <u>ASSIGNABILITY</u>. This permit is not assignable or transferable.

#### II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

#### III. OPERATIONS

A. <u>PERIOD OF USE</u>. Use or occupancy of the permit area shall be exercised at least 3 months each year.

**B.** <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

C. <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for noncompliance with any of the terms and conditions of this permit.

#### IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D.** <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS.</u>** The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially</u>

damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.

**F.** DAMAGE TO UNITED STATES PROPERTY. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

G. <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations, their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment

and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

**H. INDEMNIFICATION OF THE UNITED STATES.** The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

#### V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

C. <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

# **D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures specified by the authorized officer shall be the responsibility of the holder.

# **E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

#### F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE

**SPECIES.** The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

G. <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

#### H. CLEANUP AND REMEDIATION.

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

#### VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

#### VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>**REVOCATION AND SUSPENSION**</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.
- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.
- 5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

C. <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION**</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

#### E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION

**WITHOUT RENEWAL.** Upon revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

#### VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>**CURRENT ADDRESSES.</u>** The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.</u>

C. <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

#### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

#### BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

April 10, 2015

Steve Boyd, Licensing Coordinator

DATE

APPROVED:

Jim Junette, District Ranger

DATE

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 975-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

		Page 1 of 4
STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UTI ON	CATION FOR TRANSPORTATION AND LITY SYSTEMS AND FACILITIES I FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082
NOTE: Before completing and filing the application, the	ne applicant should completely review this package	FOR AGENCY USE ONLY Application Number
and schedule a preapplication meeting with re processing the application. Each agency may	epresentatives of the agency responsible for / have specific and unique requirements to be met in	
preparing and processing the application. Ma the application can be completed at the preap	ny times, with the help of the agency representative, plication meeting.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> ) Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 (include zip code)	3. Telephone (area code)
333 Fast Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364
,		Authorized Agent 916-679-8768
<ul> <li>4. As applicant are you? (check one)</li> <li>a Individual</li> <li>b Corporation*</li> <li>c Partnership/Association*</li> <li>d State Government/State Agency</li> <li>e Local Government</li> <li>f Federal Agency</li> </ul>	5. Specify what application is for: (check one)         a.       New authorization         b.       Renewing existing authorization No.         c.       Amend existing authorization No.         d.       Assign existing authorization No.         e.       Existing use for which no authorization f.         Other*	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? 
Yes No

7. Project description (describe in detail): (a) Type of system or facility, (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*)

As part of the La Grange Hydroelectric licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose installing water temperature recorders at 10 locations in Stanislaus National Forest. A detailed description is provided in Attachment A.

8. Attach a map covering area and show location of project proposal						
9. State or Local government approval:	Attached	Applied for	r	$\boxtimes$	Not Required	
10. Nonreturnable application fee:	Attached	Not required				
11. Does project cross international boun	dary or affect internatio	onal waterways?		Yes	🛛 No	(if "yes," indicate on map)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed water temperature monitoring task described in this application and has years of experience installing and maintaining water temperature and stage recorders. HDR biologists have completed similar studies in the Merced, Yuba, and the Lower Tuolumne rivers. HDR staff are skilled at discrete installations that involve minimal impact to the surrounding landscape and general public. HDR staff work closely with local (CDFW) and Federal (NMFS. USFWS, USFS) agencies and private land owners to ensure all access and installations are approved prior to deployment.

13a. Describe other reasonable alternative routes and modes considered.

Locations of water temperature loggers were selected based on the data needed to build a complete and accurate water temperature model, so no alternatives were considered. See Attachment A.

b. Why were these alternatives not selected?

Data needs and subsequent monitoring locations were selected based on the model requirements so no alternatives were considered.

c. Give explanation as to why it is necessary to cross Federal Lands.

Travel onto the Stanislaus National Forest (Federal Lands) is required because the 10 desired monitoring locations occur on Forest Lands and all of the vehicular access will occur via established roadways.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)

None.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the Licensing of the La Grange Hydroelectric Project. Data will be used to build a temperature model to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River. The cost of these loggers is minimal compared to the overall cost of the Licensing effort. The complete study plan is provided in Attachment C.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have minimal effect on the local population. All installations are small and intentionally hidden. Installation and maintenance is completed by two staff traveling in a standard vehicle and hiking on foot with minimal equipment. See Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

This project will have little to no effect on the local environment. The installations are small and made of materials not harmful to local soil and water. Logger installations will use existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study. See Attachment A.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

There will be little to no effects to local flora and fauna since the installations are minor and the materials are not hazardous to fish and wildlife.

 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
 "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

No hazardous materials will be produced, transported or stored in the completion of the proposed Project.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

#### Stanislaus National Forest

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant

Date April 1, 2015

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

#### GENERAL INFORMATION ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture Regional Forester, Forest Service (USFS) Federal Office Building, P.O. Box 21628 Juneau, Alaska 99802-1628 Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency. SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide instructions	CHECK AP BL	PROPRIATE OCK
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation		
b. Corporation Bylaws		
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State		
c. Copy of resolution authorizing filing		
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.		
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.		
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.		
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation		
b. Proof of organization		
c. Copy of Bylaws		
d. Copy of resolution authorizing filing		
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any		
b. If one partner is authorized to sign, resolution authorizing action is		
c. Name and address of each participant, partner, association, or other		
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

From:	Staples, Rose
Sent:	Thursday, July 02, 2015 2:38 PM
Cc:	Staples, Rose
Subject:	La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan
Attachments:	Upper Tuolumne Basin Barrier and Habitat Study Plan_20150702_jf.pdf

La Grange Licensing Participants,

The Districts have developed the attached Upper Tuolumne River Basin Habitat Assessment Fish Migration Barriers Component draft study plan. It is being provided to licensing participants for a 21-day review and comment period. Please provide any comments to <u>rose.staples@hdrinc.com</u> by Thursday, July 23, 2015. The final study plan will be filed with FERC.

A copy of the draft study plan has also been uploaded to the <u>www.lagrange-licensing.com</u> website in the DOCUMENTS section.

Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

### **STUDY PLAN DOCUMENT**

## LA GRANGE HYDROELECTRIC PROJECT

### UPPER TUOLUMNE RIVER BASIN HABITAT ASSESSMENT FISH MIGRATION BARRIERS COMPONENT STUDY PLAN

## STUDY PLAN

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Upper Tuolumne River Basin Habitat Assessment Fish Migration Barriers Component Study Plan

#### July 2015

## **1.0 INTRODUCTION**

The La Grange Hydroelectric Project (La Grange Project) Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. The Upper Tuolumne habitat assessment includes two components: temperature monitoring/modeling and physical barriers assessment. This study plan outlines the methods that will be utilized to complete the fish migration barriers component of the Upper Tuolumne River Basin Habitat Assessment.

To provide information to the La Grange Project licensing process, potential barriers to upstream migration of adult spring-run Chinook salmon (Oncorhynchus tshawytscha) and Central Valley steelhead (Oncorhynchus mykiss) will be evaluated in the Upper Tuolumne River basin in the reach from Don Pedro Reservoir normal maximum water level (elev 830 ft) to the Early Intake tailwater. Neither anadromous spring-run Chinook salmon nor steelhead occurs in the Tuolumne basin upstream of La Grange Diversion Dam. However, the 2014 Recovery Plan developed by National Marine Fisheries Service (NMFS) identifies the Upper Tuolumne River above the Don Pedro Project as a candidate area for reintroduction of these species: Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Little information exists to reliably assess the current quantity and quality of potentially suitable habitat for these salmonid species in the Upper Tuolumne River watershed. Among other information, NMFS has requested a study of upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, Section 18 Fishway Prescriptions, and Endangered Species Act (ESA) consultation. Although the Federal Energy Regulatory Commission (FERC) determined the information was not needed to inform the development of license conditions, the Turlock and Modesto irrigation districts (Districts), agreed to voluntarily conduct a two-year, phased assessment of physical migration barriers in the Upper Tuolumne River, as described in subsequent sections of this plan. An analysis of water temperature conditions for anadromous salmonids in the Upper Tuolumne River is also being conducted voluntarily by the Districts.

## 2.0 GOALS AND OBJECTIVES

The goal of this study is to assess barriers to upstream migration of adult spring-run Chinook salmon and steelhead in the Upper Tuolumne River basin. Study objectives include:

- Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
- Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.

## 3.0 STUDY AREA

The study area includes the following mainstem and tributary stream reaches (Figure 1.0):

- **Tuolumne River** From approximate upstream limit of the Don Pedro Project at RM 81 (below the North Fork confluence) upstream to the first total fish passage barrier (as described in Section 4.3 below) and no further than the tailwater of Early Intake.
- North Fork Tuolumne River From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- South Fork/Middle Fork Tuolumne From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- Clavey River From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- Cherry Creek/Eleanor Creek From the confluence with the Tuolumne River upstream to the first total fish passage barrier.



Figure 1.0 Overview map presenting the study area with notable rivers, tributaries and features.

## 4.0 METHODS

The anadromous fish migration barriers assessment will include both desktop exercises and measurements in the field. Desktop exercises will utilize topographic mapping software, aerial photographs, available hydrological data, and other existing information to identify an initial list of physical features which may potentially be barriers to upstream migration of spring-run Chinook salmon and steelhead. On the ground field assessments will include the collection of physical and hydraulic data to confirm site characteristics and draw final conclusions regarding the ability to pass potential barriers.

The presence and/or absence of potential barriers to upstream passage and documented conclusions regarding the ability of fish to pass identified features will be determined with the use of a phased process as described below:

- A list of potential barriers to upstream passage will be formulated based upon the information gathered in Section 4.1;
- An initial field survey will be performed as described in Section 4.2 to gather physical data at each feature and to characterize major elements which influence fish passage;
- A screening level barrier assessment will be performed using the combined data set gathered as part of the activities described in Section 4.1 and the initial field survey described in Section 4.2;
- Each of the potential barriers will be initially classified as one of the following: a total barrier to fish passage, a passable feature, or a potential barrier to fish passage. The initial classification will be based upon selected screening criteria summarized in Section 4.3. Any feature classified as a potential barrier will be selected for further evaluation.
- A second field survey will be performed to gather more detailed information on features classified as "potential barriers to fish passage;" and
- Final conclusions regarding the ability of fish to pass potential barriers including an estimate of the range of flows (within the target species migration period) which may facilitate fish passage will be refined and documented based upon the results of a preliminary hydraulic assessment.

The following sections provide a more detailed description of the methods that will be used to assess anadromous fish passage migration barriers in the study area.

#### 4.1 Obtain and Review Existing Information

The first step in the anadromous fish migration barrier assessment consists of a compilation and review of information and data from relevant prior studies conducted within the study area. An attempt will be made to locate, access, and compile readily available and relevant existing data pertinent to the existence and classification of migration barriers within the study area. This information review and synthesis will occur throughout 2015.

Completion of this task will include background research into multiple sources of data and information included but not limited to completed habitat studies, recreational documentation, ethnographic data, readily available videos and photographs, newspaper records, historical accounts, and anecdotal data which can be used to characterize conditions within the Upper Tuolumne River basin. Research could include aerial photos and videography records, recreational boating maps/photos, GIS data, and other research efforts conducted in the area. This task will include contacting and coordination with the Districts, federal and state agencies and other entities that have performed work in the study area.

Data from the Upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may also be used, to the extent available, to complement the barrier assessment. According to NMFS' personnel, initial data are expected to be available in April 2016. Therefore, review of and incorporation of relevant information from NMFS study may not be able to occur until after the first field assessment in 2015.

#### 4.2 Perform Field Surveys

Field surveys will be conducted to identify barriers in the mainstem and North, South, and Middle forks of the Upper Tuolumne River, as well as Cherry Creek, Eleanor Creek and the Clavey River. Initial field surveys and site investigations will be performed in August of 2015 (during low flow conditions) to assist with the preliminary classification of migration barriers. The following information will be recorded at each potential barrier during the initial field surveys:

- Global positioning system (GPS) coordinate points;
- Effective height of each barrier;
- Length and estimated maximum and average depth of plunge pools at the base of barriers;
- Water velocity measurements (with a hand-held current meter) at the apex of the barrier if measurements can be made safely - water velocities will be estimated by other means if measurements with a current meter cannot be made safely;
- Gradient/slope of the barrier;
- Measured (or estimated if measurement is unsafe) maximum and average depth of the landing zone on the upstream side of the barrier;
- Distance from apparent leap location to landing zone with notes describing leap conditions and presence of obstacles (e.g. overhanging ledges, shallow bedrock, dewatered, boulder complex, etc.);
- An assessment and documentation of adjacent channel features that might be inundated at higher flows; and
- A photograph of the barrier from one or more photo-points.

Existing information collected during activities summarized in Section 4.1 and field data collected as part of this initial field survey will be synthesized and a screening level fish passage

assessment will be performed to classify each selected feature as one of the following: a total barrier to fish passage, a potential barrier to fish passage, or a passable feature. Barrier classifications will be performed using the methods and criteria as detailed in Section 4.3 below.

Upon completion of the screening level classification assessment, a second field survey will be performed in 2016. The purpose of the second field survey will be to collect additional data and to help further refine conclusions regarding the ability of fish to pass features initially classified as potential barriers to fish passage. No further data collection is anticipated to occur at features originally classified as "total" barriers or as "passable." The objective of the second field survey will be to: 1) obtain a second set of similar data points at a higher flow regime (if such flows are available); and 2) obtain additional longitudinal profile and cross-sectional topographic data so that preliminary hydraulic calculations can be performed. These hydraulic calculations will then be used to quantitatively evaluate fish passage throughout the potential range of flows when spring-run Chinook or steelhead trout are anticipated to migrate upstream. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the Upper Tuolumne River basin.

#### 4.3 Barrier Classification and Rationale

The analysis and classification of potential anadromous fish barriers will be performed by identifying fish swimming and leaping capabilities which will be used to compare against the physical characteristics of each potential barrier identified and initially evaluated in the field. Swimming capabilities for spring-run Chinook salmon and steelhead trout will be calculated with the use of mathematical relationships outlined in Power and Orsborn (1985), Bell (1973), and Hunter and Mayor (1986). Calculated "sustained," "prolonged," and "burst" swim speeds and durations will be used to assess those situations where steep gradients create high velocity, turbulent conditions through chutes or cascades. The calculated burst speed for each fish species resulting from this method will also be used to calculate the leaping capability using mathematical relationships presented in Power and Orsborn (1985). These resulting calculations will provide a series of leap angles, leap spans, and leap heights for specific size classes of adult fish. The combination of calculated swimming and leaping capabilities can then be used to identify whether or not a hydraulic feature (high velocity or leap condition) is passable. The anticipated velocity and minimum leap condition that a fish may experience can vary and is dependent upon the hydraulic regime occurring during the time at which it attempts to ascend a feature. Given that data gathered during the first field survey will likely represent very low-flow conditions, the initial screening level assessment will focus on the identification of features exhibiting no opportunities for passage or those that would be classified as "total barriers." Additional and more detailed information will be sampled in the second field visit only for those barriers that were classified as "potential barriers" to fish passage during the initial screening level assessment. The resulting data will then be used to perform a preliminary hydraulic assessment at "potential barriers" to further refine conclusions on the ability of fish to pass using the original swimming and leaping capability calculated as part of the initial assessment.

Data and analysis presented by Power and Orsborn (1985), Bell (1973), and Hunter and Mayor (1986) speak generally of "Chinook" salmon or "steelhead" without clearly distinguishing between fall-run or spring-run. The swimming and leaping performance for either run can vary. These variations in ability are associated with the degree of maturation at the time of river entry, fish length, migration distance, the temperature and flow characteristics of their spawning site, and their actual time of spawning. The swimming and leaping capabilities developed within this study plan are therefore intended to characterize a representative population of spring-run Chinook and winter-run steelhead that are candidates for reintroduction into the Upper Tuolumne River watershed.

In summary, the determination of fish passage and ultimate classification for each physical feature identified in this assessment will be performed using the process outlined in Figure 2.0.



Figure 2.0 Process flow chart summarizing barrier assessment methodology.

#### 4.3.1 Initial Classification of Total Barriers

Features will be classified initially as a "total barrier" if a feature exhibits a measured effective barrier height that is greater than the calculated maximum leap height of a spring-run Chinook salmon or steelhead. As mentioned previously, the maximum leap height will be estimated using the "burst" speed resulting from swimming capability data presented in Bell (1973) and Hunter and Mayor (1986) and the leap height relationships outlined in Powers and Orsborn (1985).

Results from these calculations will provide estimated leap heights and leap spans over a range of trajectory angles for spring-run Chinook and steelhead. The initial classification for "total barriers" will use the maximum estimated leap height calculated for a trajectory of 85 degrees. For the purposes of this study it is also assumed that a maturity coefficient, Cfc, of 0.75 will be used which represents a fish in good condition (i.e., in the river a short time with spawning colors apparent, but still migrating upstream). The Cfc of 0.75 will be applied to represent the expected general condition of spring-run Chinook salmon and steelhead by the time they would have traveled upstream to the study area. Upstream travel would be a significant distance originating from the Bay-Delta, through the San Joaquin River and therefore this Cfc value is expected to reach the Upper Tuolumne. The maximum leaping capability than many of the fish expected to reach the Upper Tuolumne. The maximum leaping capability calculated for steelhead in good condition is provided in Figure 3.0. The maximum leaping capability calculated for steelhead in Figure 4.0.



Figure 3.0 Maximum leaping capability calculated for steelhead in good condition.



Figure 4.0 Maximum leaping capability calculated for spring-run Chinook salmon in good condition.

The calculated maximum leap heights resulting from an 85 degree leap trajectory and a Cfc of 0.75 are estimated to be 4.36 feet for adult spring-run Chinook salmon and 6.12 feet for adult steelhead. Therefore, any feature with a measured effective height greater than 4.36 or 6.12 feet will be classified initially as a "total barrier," with respect to each individual species. One exception to this conclusion would be if upon inspection it appeared that the effective leap height in question would be significantly influenced by higher flow regimes. One example would be if the cross-sectional geometry of the tailwater control is narrower than the crest height or landing area. If so, such a feature may exhibit lower hydraulic differential conditions at higher flows which may have implications for the initial classification. Such questionable features will be subject to professional judgment and be declassified as a "potential barrier," subject to further evaluation will be performed at that site.

#### 4.3.2 Initial Classification of Passable Features

Features will be classified initially as "passable" for an individual species if that feature exhibits measured effective barrier heights, potential leap spans, and pool depths that fall within the calculated leaping capabilities estimated for each species using the Powers and Orsborn (1985) methodology described or if the average gradient of a feature meets the general requirements outlined in the Forest Service Handbook (FSH) 2090.21 Adult Salmonid Migration Blockage. In this scenario, a number of leap trajectories, leap spans, and resulting leap heights will be evaluated and compared to the barrier heights and leap spans measured in the field. If the

measured field condition for a unique feature exhibits values lower than any combination of estimated leap trajectory, leap span, and leap height capability for each species, the feature will be classified as "passable," for that individual species. If an apparent velocity impediment meets the general gradient and length requirements outlined in the FSH, then the feature will be classified as "passable." Figure and Figure provide an illustration of several potential leaping trajectory, span, and height combinations for adult steelhead and spring-run Chinook salmon in good condition. A selection of these values are also summarized in Table 1.0 below. General criteria for average gradient and pool depth requirements as described by FSH 2090.21 are summarized in Table 2.0.

	Chinook samon and steemead trout.					
	Angle of Trajectory, degrees	Height of Leap, ft	Range of Leap, ft			
	60.0	4.63	5.35			
Steelhead Trout	72.5	5.62	3.55			
	85.0	6.12	1.05			
Spring-run Chinook Salmon	60.0	3.30	3.80			
	72.5	4.00	2.50			
	85.0	4.36	0.75			

Table 1.0	Summary table of leaping trajectory, span, and height capabilities for spring-run
	Chinook salmon and steelhead trout.

## Table 2.0Minimum pool depth and gradient criteria adapted from the Forest Service<br/>Handbook (FSH) 2090.21 Adult Salmonid Migration Blockage.

Metric	Criterion
<b>Pool depth:</b> A blockage may be presumed if pool depth is less than the values to the right.	<ul> <li>1.25 x jump height, except that there is no minimum pool depth for falls:</li> <li>(a) &lt;4 feet in the case of steelhead; and</li> <li>(b) &lt;2 feet in the case of spring-run Chinook salmon</li> </ul>
<b>Steep Channel:</b> A blockage may be presumed if channel steepness is greater than the following without resting places for fish.	>225 feet @ 12% gradient >100 feet @ 16% gradient >50 feet @ 20% gradient

#### 4.3.3 Classification of Potential Barriers Requiring Further Evaluation

If the identified feature exhibits measured effective barrier heights, potential leap spans, pool depths that do not fall within the calculated leaping capabilities estimated with the Powers and Orsborn (1985) method or if the average gradient of a feature does not meet the general requirements outlined in the Forest Service Handbook (FSH) 2090.21 Adult Salmonid Migration Blockage, then the feature will be initially classified as a "potential barrier."

It is recognized that river hydraulics are a significant influence on upstream fish passage and the ability for a fish to pass a barrier is variable and can change seasonally. Higher seasonal flow events may increase plunge pool depths and reduce barrier heights when a certain species or a select portion of a fish population are present and actively migrate upstream. Differences in migration characteristics between adult spring-run Chinook salmon and steelhead play a large part in passage success due to whether arrival timing coincides with higher or lower stream flows. Run timing varies between spring-run Chinook salmon and steelhead. Spring-run

Chinook salmon generally enter streams from the ocean coinciding with high flow events and generally hold for an extended period before spawning which may expose them to low flow periods with higher water temperatures. Steelhead enter streams from the ocean coinciding with higher spring flows, move high in the watershed, hold, and spawn during elevated flows (Moyle 2002). The extent to which either species would ascend upstream in the study area during elevated flows is an unknown factor that makes it difficult to determine at what flow a species would likely encounter a potential barrier. Therefore, all features identified as a "potential barrier," will undergo further data collection and evaluation to determine if variation in site specific hydraulics facilitates passable conditions.

As indicated in Section 4.2, additional data will be collected at each site during a second field survey to be conducted in 2016. The information collected will be used to calculate hydraulic characteristics of potential barriers over a range of potential migration flows. Methods for calculating feature hydraulics may vary as they are dependent upon site access, human safety, and the level of data that can be collected in the field during the second field survey (2016). If sufficient cross-section data can be collected, a preliminary HEC-RAS 1-dimensional numerical model(s) will be developed representing the major features of a subject site. Longitudinal profiles and basic cross-sectional measurements will be used to estimate hydraulic conditions using simple Manning's equation calculations if sufficient cross-sectional data is not collected. Results from either method will result in a number of estimated velocities, depths, leap heights, hydraulic gradients, and headwater vs. tailwater relationships representing conditions that a fish may experience throughout the anticipated range of migration flows.

After the preliminary hydraulic characteristics of each site are estimated, these results will again be compared to the swimming and leaping capabilities of each individual target fish species. Leap conditions will be re-evaluated by comparing the leaping capabilities estimated with the Powers and Orsborn (1985) method with the calculated hydraulic conditions over the anticipated range of migration flows. If the comparison results in hydraulic conditions that exceed any combination of potential leaping trajectories, heights, and ranges by a target fish species, that feature will be documented as a "total barrier." If the comparison identifies a range of flows or a range of leaping conditions that meet the leaping capabilities of a target fish species, that feature will be documented as a "partial barrier" for that specific species and the range of flows facilitating passage will be recorded.

Features initially classified as potential velocity barriers that do not initially meet the gradient criteria outlined by FSH 2090.21 will be re-evaluated by using an analytical technique developed by Hunter and Mayor (1986) to evaluate fish swimming capability. This method can be used to determine the ability of a fish to ascend past a selected feature by comparing estimated flow velocities with fish swimming performance criteria such as duration to exhaustion and swim speed. Swimming capabilities are typically considered and placed into three categories based on data presented by Bell (1973) and Powers and Orsborn (1985) for adult steelhead and spring-run Chinook salmon: sustained, prolonged, and burst swim speeds. These swimming modes represent the speed at which a fish can swim over certain duration until they reach exhaustion and fall-back to a location where they can recover. The associated durations of the three swimming mode categories (sustained, prolonged, and burst) from Powers and Orsborn are listed as 15 seconds to 200 minutes for prolonged swimming mode and less than 15 seconds for burst

swimming mode. Sustained swimming mode is greater than 200 minutes as defined by Powers and Orsborn. A summary of the swim speed capabilities for steelhead and spring-run Chinook salmon is provided by swimming mode in Table 3.0.

Table 3.0	Summary	of the	swim sp	eed capal	bilities for	r steelhead	and	spring-run	Chinook
	salmon by	<sup>,</sup> swimm	ing mode	e (Powers a	and Orsbo	orn, 1985).			

Swimming Mode	Steelhead, ft/s	Chinook Salmon, ft/s	Duration		
Sustained	0 to 4.6	0 - 3.4	Greater than 200 min		
Prolonged	4.6 to 13.7	3.4 - 10.8	15 s to 200 min		
Burst	13.7 to 26.5	10.8 to 22.4	Less than 15 s		

The Hunter and Mayor (1986) equations will be used to scale estimates of fish swimming capability based upon both fish length and time until exhaustion. Fish length can be modified if there is sufficient data available within the watershed to support the conclusion that a smaller fish length is more representative than the larger adults used for the study results summarized in Bell (1973). The maximum burst speed velocity used for leaping capability calculations assumes that a larger fish swims for duration of 1 second prior to leaping. This burst speed can be modified for durations of 2 through 15 seconds to accommodate longer swim times required to ascend a feature possessing very high velocities. The burst speed can also be modified based upon the expected fish length where larger fish generally exhibit higher swimming velocities than do smaller fish. If the average fish length or range of fish lengths of a population is known, burst speeds can be reduced accordingly using the mathematical relationships presented by Hunter and Mayor (1986).

The swimming criteria used for this assessment are generated from burst speeds calculated for durations of 1 through 15 seconds based upon methods suggested in Hunter and Mayor (1986). It is noted that both mathematical relationships presented in the literature relied on data resulting from the largest most capable fish tested and that swim speeds calculated from the published equations are overestimated. Therefore, for the purposes of evaluating swim speed in this evaluation, the mathematical relationships were modified so that the maximum calculated swimming speed comports with other maximum swimming speed estimates presented by Bell (1973) and Powers and Orsborn (1985). The estimated swim speed for each duration was then estimated by applying the same maturity coefficient, Cfc of 0.75 (a fish in good condition) as used throughout this study. The resulting swim speed criteria are provided in Table 4.0 for steelhead trout and spring-run Chinook salmon.

	Steelhea	nd Trout	Spring-run Ch	inook Salmon
Duration, s	Swim Speed, ft/s	Swim Speed, ft/s Cfc of 0.75	Swim Speed, ft/s	Swim Speed, ft/s Cfc of 0.75
1	26.5	19.9	22.4	16.8
2	19.0	14.3	15.8	11.9
5	12.2	9.2	10.0	7.5
10	8.8	6.6	7.1	5.3
15	7.2	5.4	5.8	4.3

Table 4.0Calculated burst swim speeds for durations of 1 through 15 seconds.

These swim speed criteria for each individual species will then be compared to the flow velocity estimates and distances estimated for the remaining velocity features to be evaluated. If some combination of duration and fish burst speed results in a travel distance that exceeds the overall length of the feature in question over some portion of the hydraulic conditions anticipated during migration, the feature will be recorded as a "partial barrier," for that species. If the expected travel distance does not exceed the overall length of the feature in question over the range of anticipated migration flows, the feature will be recorded as a "total barrier."

In many cases, features to be evaluated may resemble step-pool cascades composed of both leaping and velocity impediments. In these cases, both leaping and swimming criteria assessment will be used in series for each potential flow pathway identified during the first and/or second field surveys.

If additional data becomes available which suggests that fish populations targeted for assessment exhibit lengths that are shorter than those used to generate swimming speed characteristics in the literature, the Hunter and Mayor (1986) equations will be used to scale estimates of fish swimming capability based upon fish length as eluded to above. In this case, Table 4.0 will be amended to include a specific fish length or possible range of fish lengths. As the criteria are currently presented, the summary of burst swim speeds represents the maximum estimates provided in the literature. This may result in a more conservative set of conclusions where more features are identified as potentially passable.

## 5.0 **REPORTING**

Results of the 2015 migration barrier assessment activities will be provided in the ISR in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated final technical report summarizing the results of additional activities conducted in 2016 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all features evaluated and will characterize them as passable, partial barriers, or total barriers to fish migration.

## 6.0 SCHEDULE

•	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial Study Report	February 2016
•	Compile field data and complete barriers analysis	June 2016 – November 2016
•	Updated Study Report	February 2017

## 7.0 **REFERENCES CITED**

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From: Sent: Cc: Subject:	Staples, Rose Thursday, July 02, 2015 7:36 AM Staples, Rose La Grange May 19-20 Workshops Notes Should Now Be Accessible on Licensing Website
Follow Up Flag:	Follow up
Flag Status:	Flagged

I was just alerted (thank you!) that the La Grange May 19 and May 20 Workshop Notes were not showing on the DOCUMENTS list on the <u>www.lagrange-licensing.com</u> website.

May 19, 2015 – Flow & Temperature Monitoring / Modeling Workshop May 20, 2015 – Fish Passage Assessment Workshop No. 1

That has been fixed—and the files should now be accessible. They should show up on the list as the number two and number three documents from the top of the list. Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

## memo

То:	La Grange Hydroelectric Project Consultation Record
From:	Bao Le
CC:	Jenna Borovansky, Jesse Deason, John Devine
Date:	7/8/2015
Re:	Phone conversation with Jim Eicher (BLM) regarding permitting mechanism necessary to get North Fork Tuolumne River temperature loggers (on BLM property) into compliance

Comments: I spoke with Jim Eicher, Bureau of Land Management (BLM) regarding the unauthorized deployment of temperature loggers in the North Fork Tuolumne River area owned by BLM land. Below is a summary of the conversation:

- I told him as a follow up to John D.'s email, I wanted to explore how we could make our deployments on the NF in compliance with BLM regs and were not sure of the needed permit. Any guidance would be appreciated. Jim said he did not want to provide us guidance at this time and that we're currently in trespass and he intended to deal with this issue first and then he'd determine how to proceed forward after that (whether to have us pull them out or not). He did not give a timeline for when he could get back to us on this determination.
- 2. He noted we were in violation but that we also violated our USFS Special Use Permit (SUP) with use of the helicopter and that any future work for BLM would not allow this. I politely let him know that I've been communicating with Bob Stanley and Dusty Vaughn about our SUP with them and that originally, we had identified helicopter as a means to access some of these difficult sites as part of our permitting. With regard to the NF, I told him that in the future, if we were allowed to keep the loggers in place, we could access these sites without a helicopter and that this would be fine. He agreed that access by foot was possible.
- 3. He stressed that we should take a look at any other studies we were doing and whether they had any relevance to BLM land. I explained to him we had one other study planned in the Upper TR on fish barriers and that we were in the process of submitting a permit application to the USFS to conduct 5-day float trips. I also told him it was our intent to provide him a courtesy copy of the application when it was available. I explained to him that this work was completely passive and would not require any installations; just taking measurements and hiking but that the float trip would camp at the NF confluence and we would be walking up the NF. He said that BLM still needs to approve this but that it might be something simple like a letter of authorization. He would need to have information to better understand what is being done but it sounded pretty simple. I told him that as soon as it was available, we'd supply him with the USFS permit application. In the application, there would be an attachment that described the barrier study and that this should be sufficient for his purposes.
- 4. He asked directly why we did not get a BLM permit to begin with. I told him that in Chuck's (Vertucci) discussions with the USFS, we had a note that they could not permit the NF site and we needed to acquire the appropriate approval. I told him that in our rush to get loggers out in the spring, this ball just got dropped. I told him I wish I had a better excuse but

# memo

we just made a mistake and missed this. There was never any mal-intent or a conscious decision to bypass the BLM and its requirements, we just missed it and we hope to make it right now. He stated that he had a good understanding of the situation now.

5. In closing the call, he said that he would not address any of the above until his trespass investigation was complete. I told him that we are working on getting him the requests that he'd already made and that the barrier information will be in his inbox when he's ready to look at it. I told him that if he needed anything else, he shouldn't hesitate to contact us and that we were happy to get him what he needed.

From: Devine, John
Sent: Thursday, July 09, 2015 4:42 PM
To: James Eicher (james\_eicher@blm.gov)
Cc: Le, Bao
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Good afternoon Jim,

Please find attached a request to the USFS for a permit (or amendment, subject to USFS preference) to authorize a five-day float trip on the Tuolumne to conduct the fish passage barriers study as part of the licensing of the La Grange Project. I believe Bao Le spoke with you very recently about this trip and its purposes. My understanding from Bao is that BLM also needs to authorize the 5-day float trip, and that the BLM could use a copy of the permit submitted to the USFS for this purpose. The transmitting email to the USFS is provided below as well.

We also understand that your investigation of the recent trespass issue is still ongoing. On that subject, I plan to forward to you tomorrow the emails and correspondence related to the water temperature logger installs and access that occurred on BLM lands (and on USFS lands as well) as you had requested.

To keep the fish barrier study work moving, we would greatly appreciate your consideration of this request for the 5-day float trip to occur the first week of August. The work does not include installation of any equipment or use of helicopters to access USFS or BLM lands. The team will be floating with a permitted outfitter and only use foot access otherwise. Field measurements will be taken as described in the permit request. Camping would occur at the North Fork confluence and field crews would walk up the North Fork to evaluate potential fish barriers. It is highly likely this float trip would be repeated in 2016, therefore, the permit requests such authorization.

Please let me know if we can provide any further information.

John Devine, P.E. D 207-775-4495 M 207-776-2206

From: Le, Bao
Sent: Thursday, July 09, 2015 2:39 PM
To: Vaughn, Gary D -FS; <u>dfoote@fs.fed.us</u>
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards, Bao

**Bao Le** Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423

bao.le@hdrinc.com

hdrinc.com/follow-us

		Page 1 of 4					
STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95	ICATION FOR TRANSPORTATION AND TILITY SYSTEMS AND FACILITIES IN FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082					
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preparing and processing the application. If the application can be completed at the pre	application meeting.	Date Filed					
1. Name and address of applicant ( <i>include zip code</i> Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 ( <i>include zip code</i> )	3. Telephone (area code)					
333 East Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant					
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364					
,		Authorized Agent 916-679-8804					
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *					
* If checked, complete supplemental page	* If checked, provide details under item 7						
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6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

8. Attach a map covering area and show location of project proposal							
9. State or Local government approval:	Attached	Applied for	$\boxtimes$	Not Required			
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11. Does project cross international boundary or affect international waterways? 
 Yes ⊠ No (if "yes," indicate on map)
 12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested. The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed barrier assessment task described in this application. HDR biologists have completed similar studies in the Merced and Yuba Rivers along with various coastal California streams.

13a. Describe other reasonable alternative routes and modes considered.

No other reasonable alternative routes exist that allow for the completion of the study objectives. The rugged terrain and limited access points demand the use of whitewater boat transportation.

b. Why were these alternatives not selected? No reasonable alternatives exist.

c. Give explanation as to why it is necessary to cross Federal Lands. The study site lies almost entirely within the Stanislaus National Forest (SNF). Travel onto the SNF will be on established roadways and within the river.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name) Authorization ID: GRO1122 Use Code: 422

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the FERC Licensing of the La Grange Hydroelectric Project. The complete study plan is provided in Attachment B. Information will be used to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River basin which if determined appropriate, would have implications for the public. See Attachment A.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have no impact on the local population. All measurements will be taken with hand held equipment. No equipment is to be installed during this study. Overnight camping will occur at established locations along the river. No effects to the population, social or economic, are anticipated. See Attachment A.

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 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
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20. Name all the Department(s)/Agency(ies) where this application is being filed. Stanislaus National Forest, USFS. Permit application will also be provided to the Bureau of Land Management for consideration of activities on BLM lands (i.e., North Fork Tuolumne River confluence).

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained							
in the application and believe that the information submitted is correct to the best of my knowledge.							
Signature of Applicant	Date						

StuBoy	July 9, 2015
Title 18 U.S.C. Section 1001 makes it a crime for any person knowingly an	d willfully to make

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4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

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Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

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(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL			
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK		
I - PRIVATE CORPORATIONS	ATTACHED	FILED*	
a. Articles of Incorporation			
b. Corporation Bylaws			
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State			
c. Copy of resolution authorizing filing			
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.			
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.			
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.			
II - PUBLIC CORPORATIONS			
a. Copy of law forming corporation			
b. Proof of organization			
c. Copy of Bylaws			
d. Copy of resolution authorizing filing			
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY			
a. Articles of association, if any			
b. If one partner is authorized to sign, resolution authorizing action is			
c. Name and address of each participant, partner, association, or other			
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UTI ON	CATION FOR TRANSPORTATION AND LITY SYSTEMS AND FACILITIES FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082 FOR AGENCY USE ONLY
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* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

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Page 1 of 4

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

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- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL			
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK		
I - PRIVATE CORPORATIONS	ATTACHED	FILED*	
a. Articles of Incorporation			
b. Corporation Bylaws			
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State			
c. Copy of resolution authorizing filing			
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.			
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.			
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.			
II - PUBLIC CORPORATIONS			
a. Copy of law forming corporation			
b. Proof of organization			
c. Copy of Bylaws			
d. Copy of resolution authorizing filing			
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY			
a. Articles of association, if any			
b. If one partner is authorized to sign, resolution authorizing action is			
c. Name and address of each participant, partner, association, or other			
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.
## **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN

#### **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

## 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

# 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling:</u>
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding:</u> Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

# **5.0** NEED FOR ADDITIONAL INFORMATION

### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

## 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

# 6.0 STUDY AREA AND METHODS

## 6.1 Study Area

## 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

## 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

## 6.2.2 Upper Tuolumne River Basin Habitat Assessment

### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

## Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

# 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

•	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 – November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	October 2014 – July 2015
•	Fieldwork September 2015 – April/May 20	16; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	
•	Data entry, QA/QC, and analysis	
•	Initial study report	
•	Updated study report	
•	Final study report	

## 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

•	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	February 2016
•	Updated study report	February 2017

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	.March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

# 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels.	August 2015 – April/May 20	16
•	Data entry, QA/QC, and summarizing	September 2015 – December 20	16
•	Initial study report	February 20	16
•	Updated study report		17

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

## 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

# 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

# **10.0 REFERENCES**

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#### ATTACHMENT A

#### EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

	Source <sup>3</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
Site Locations			Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

**Existing Upper Tuolumne River Temperature Monitoring Sites.** 

<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

are not yet available. <sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

S'4. Longt'mus	S	Tuolumne	Coordinates (Decimal °)		Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

Attachment A for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

#### 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, and CDFW) have volunteered to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015.

HDR Engineering, Inc. has been retained by the Districts to complete portions of the Fish Passage Assessment including the Upper Tuolumne Basin Fish Migration Barrier task described below.

#### **Barrier Assessment**

#### Goals and Objectives

The goal of this study is to assess barriers to upstream migration of adult spring-run Chinook salmon and steelhead in the Upper Tuolumne River basin. Study objectives include:

- Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
- Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
- Make field observations of general river conditions, including water temperature, gravel availability, pool size and depth.

#### Methods

The study area includes the following mainstem and tributary stream reaches (Figure 1):

- Tuolumne River From approximate upstream limit of the Don Pedro Project at RM 81 (below the North Fork confluence) upstream to the first total fish passage barrier (as described in Section 4.3 below) and no further than the tailwater of Early Intake.
- North Fork Tuolumne River From the confluence with the Tuolumne River upstream to the first total fish passage barrier.

- **South Fork/Middle Fork Tuolumne** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Clavey River** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Cherry Creek/Eleanor Creek** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.



Figure 1. Overview map presenting the study area with notable rivers, tributaries and features.
The anadromous fish migration barriers assessment will include both desktop exercises and measurements in the field. Desktop exercises will utilize topographic mapping software, aerial photographs, available hydrological data, and other existing information to identify an initial list of physical features which may potentially be barriers to upstream migration of spring-run Chinook salmon and steelhead. On the ground field assessments will include the collection of physical and hydraulic data to confirm site characteristics and draw final conclusions regarding the ability to pass potential barriers.

The presence and/or absence of potential barriers to upstream passage and documented conclusions regarding the ability of fish to pass identified features will be determined with the use of a phased process as described below:

- A list of potential barriers to upstream passage will be formulated based upon gathered existing information;
- An initial field survey will be performed to gather physical data at each feature and to characterize major elements which influence fish passage;
- A screening level barrier assessment will be performed using the combined data set gathered and the initial field survey;
- Each of the potential barriers will be initially classified as one of the following: a total barrier to fish passage, a passable feature, or a potential barrier to fish passage. The initial classification will be based upon selected screening criteria. Any feature classified as a potential barrier will be selected for further evaluation.
- A second field survey will be performed to gather more detailed information on features classified as "potential barriers to fish passage;" and
- Final conclusions regarding the ability of fish to pass potential barriers including an estimate of the range of flows (within the target species migration period) which may facilitate fish passage will be refined and documented based upon the results of a preliminary hydraulic assessment.

The following sections provide a more detailed description of the methods that will be used to assess anadromous fish passage migration barriers in the study area.

### Field Surveys

Field surveys will be conducted to identify barriers in the mainstem and North, South, and Middle forks of the Upper Tuolumne River, as well as Cherry Creek, Eleanor Creek and the Clavey River. Initial field surveys and site investigations will be performed in August and September of 2015 (during low flow conditions) to assist with the preliminary classification of migration barriers. The following information will be recorded using hand held instrumentation at each potential barrier during the initial field surveys:

- Global positioning system (GPS) coordinate points;
- Effective height of each barrier;
- Length and estimated maximum and average depth of plunge pools at the base of barriers;

Turlock Irrigation District	Attachment A – Supplemental Information
Modesto Irrigation District	SF-299

- Water velocity measurements (with a hand-held current meter) at the apex of the barrier if measurements can be made safely - water velocities will be estimated by other means if measurements with a current meter cannot be made safely;
- Gradient/slope of the barrier;
- Measured (or estimated if measurement is unsafe) maximum and average depth of the landing zone on the upstream side of the barrier;
- Distance from apparent leap location to landing zone with notes describing leap conditions and presence of obstacles (e.g. overhanging ledges, shallow bedrock, dewatered, boulder complex, etc.);
- An assessment and documentation of adjacent channel features that might be inundated at higher flows; and
- A photograph of the barrier from one or more photo-points.

Collected existing information and field data collected as part of this initial field survey will be synthesized and a screening level fish passage assessment will be performed to classify each selected feature as one of the following: a total barrier to fish passage, a potential barrier to fish passage, or a passable feature.

Upon completion of the screening level classification assessment, a second field survey will be performed in 2016. The purpose of the second field survey will be to collect additional data and to help further refine conclusions regarding the ability of fish to pass features initially classified as potential barriers to fish passage. No further data collection is anticipated to occur at features originally classified as "total" barriers or as "passable." The objective of the second field survey will be to: 1) obtain a second set of similar data points at a higher flow regime (if such flows are available); and 2) obtain additional longitudinal profile and cross-sectional topographic data so that preliminary hydraulic calculations can be performed. These hydraulic calculations will then be used to quantitatively evaluate fish passage throughout the potential range of flows when spring-run Chinook or steelhead trout are anticipated to migrate upstream. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the Upper Tuolumne River basin.

### Boat Based Barrier Assessments

Whitewater boating rafts and guides will be hired for transportation from Lumsden Campground to Ward's Ferry (Figure 2). Boat surveys will be conducted for both the low flow surveys and the migratory flow surveys. Each survey would require a 5-day float schedule to allow for transportation and survey timing. Low flow surveys will be conducted from August 2<sup>nd</sup>-6<sup>th</sup>, 2015 and migratory flow surveys will be conducted in the spring/early summer of 2016 (based on seasonal conditions). Boating surveys will consist of a combination of boat based assessments and hiking based assessments. Potential fish passage barrier sites will be assessed utilizing the metrics previously described. Field crews will measure and document any previously unidentified potential barrier sites encountered during surveys using the same methodology. Sites in the tributaries will be assessed starting from the most downstream

direction. Once a total fish passage barrier is identified no further upstream sites will be assessed. Sites deemed inaccessible by field crews will be documented based on best visual estimates. If a line of sight can be established the potential barrier will be photographed along with barrier metrics being visually estimated. While in transit (both boating and on foot) biologists will collect general site observations on large pools, potential thermal refugia areas and spawning gravels. Data collected at pools will include location, maximum depth, length, width, and temperature/dissolved oxygen. Potential thermal refugia areas such as springs, seeps and creek mouths will be documented by recording location and temperatures taken at descriptive intervals to demonstrate temperature variations. The tentative field schedule for 2015 is as follows;

- Day 1 = Boat from Lumsden Campground to Clavey River Confluence
- Day 2 = Hike the Clavey River while conducting assessments
- Day 3 = Boat from Clavey River to the North Fork
- Day 4 = Hike the North Fork while conducting assessments
- Day 5 = Boat from North Fork to take-out at Ward's Ferry Bridge



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

The schedule for the 2016 spring/summer boat-based survey under migratory flow conditions has not been determined at this time and will be developed based upon the results of the 2015 field work. However, it is expected to also be a 5-day float.

### Hiking Based Barrier Assessments

Data collection and survey methodologies for the hiking based assessments will be the same as those outlined for the boat based surveys. Low flow hiking surveys in the mainstem (Lumsden Campground to Early Intake) will take place after the cessation of recreational boating flows (September 7, 2015) in order to best characterize low flow conditions (Figure 1). Migratory flow surveys (in 2016) will be timed based on seasonal conditions and estimated run timing. The tentative itinerary and survey reaches for the 2015 survey are as follows;

Week 1:

• Day 1 = Hike the South Fork while conducting assessments

• Days 2-5 = Hike Lumsden Campground – Early Intake while conducting assessments Week 2:

- Days 1-4 = Hike Cherry Creek to Eleanor Creek confluence while conducting assessments
- Day 5 = Hike any other unfinished reaches

The schedule for the 2016 hiking-based barrier assessment under migratory flow conditions has not been determined at this time and will be further developed based upon the results of the 2015 field work.

From:	Le, Bao
Sent:	Thursday, July 09, 2015 11:39 AM
То:	Vaughn, Gary D -FS; dfoote@fs.fed.us
Cc:	Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject:	Permit Application(s) for Tuolumne River Fish Barrier Assessment
Attachments:	NEW SF-299_TID_2_07_09_15.pdf; Attachment B_SF 299_TID.pdf; Attachment ASF 299 _TID_2.docx; AMEND SF-299_TID_2_07_09_15.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed
Categories:	Don Pedro

#### Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards, Bao

Bao Le Senior Fisheries Biologist

HDR

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hdrinc.com/follow-us

		Page 1 of 4		
STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95	ICATION FOR TRANSPORTATION AND TILITY SYSTEMS AND FACILITIES IN FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082		
		FOR AGENCY USE ONLY		
NOTE: Before completing and filing the application and schedule a preapplication meeting with processing the application. Each agency m	the applicant should completely review this package representatives of the agency responsible for ay have specific and unique requirements to be met in	Application Number		
preparing and processing the application. If the application can be completed at the pre	application meeting.	Date Filed		
1. Name and address of applicant ( <i>include zip code</i> Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 ( <i>include zip code</i> )	3. Telephone (area code)		
333 East Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant		
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364		
,		Authorized Agent 916-679-8804		
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *		
* If checked, complete supplemental page	* If checked, provide details under item 7			
o. If an individual, of partnership are you a citizen(s)				

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

8. Attach a map covering area and show location of project proposal						
9. State or Local government approval:	Attached	Applied for	$\boxtimes$	Not Required		
10. Nonreturnable application fee:						

11. Does project cross international boundary or affect international waterways? 
 Yes ⊠ No (*if "yes," indicate on map*)
 12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested. The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed barrier assessment task described in this application. HDR biologists have completed similar studies in the Merced and Yuba Rivers along with various coastal California streams.

13a. Describe other reasonable alternative routes and modes considered.

No other reasonable alternative routes exist that allow for the completion of the study objectives. The rugged terrain and limited access points demand the use of whitewater boat transportation.

b. Why were these alternatives not selected? No reasonable alternatives exist.

c. Give explanation as to why it is necessary to cross Federal Lands. The study site lies almost entirely within the Stanislaus National Forest (SNF). Travel onto the SNF will be on established roadways and within the river.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name) Authorization ID: GRO1122 Use Code: 422

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

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18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals. The project will have no effect on the local flora or fauna.

 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
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20. Name all the Department(s)/Agency(ies) where this application is being filed. Stanislaus National Forest, USFS. Permit application will also be provided to the Bureau of Land Management for consideration of activities on BLM lands (i.e., North Fork Tuolumne River confluence).

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained							
in the application and believe that the information submitted is correct to the best of my knowledge.							
Signature of Applicant	Date						

StuBoy	July 9, 2015
Title 18 U.S.C. Section 1001 makes it a crime for any person knowingly an	d willfully to make

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

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3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

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Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

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(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL			
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK		
I - PRIVATE CORPORATIONS	ATTACHED	FILED*	
a. Articles of Incorporation			
b. Corporation Bylaws			
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State			
c. Copy of resolution authorizing filing			
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.			
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.			
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.			
II - PUBLIC CORPORATIONS			
a. Copy of law forming corporation			
b. Proof of organization			
c. Copy of Bylaws			
d. Copy of resolution authorizing filing			
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY			
a. Articles of association, if any			
b. If one partner is authorized to sign, resolution authorizing action is			
c. Name and address of each participant, partner, association, or other			
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.			

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UTI ON	CATION FOR TRANSPORTATION AND LITY SYSTEMS AND FACILITIES FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082 FOR AGENCY USE ONLY
NOTE: Before completing and filing the application, the and schedule a preapplication meeting with re- processing the application. Each agency may	ne applicant should completely review this package presentatives of the agency responsible for y have specific and unique requirements to be met in	Application Number
preparing and processing the application. Ma the application can be completed at the preap	ny times, with the help of the agency representative, plication meeting.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> ) Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 (include zip code)	3. Telephone (area code)
333 East Canal Drive Turlock, CA 95380	HDR 2379 Gateway Oaks Dr #200 Sacramento,CA 95835	Applicant 209-883-8364
		Authorized Agent 916-679-8804
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

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e: otate of Eoodi government approv	<u>ui.</u>		7111001100	<u> </u>		/ upplied for		Not Required	
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11 Deep project errors interpretional boundary or effect interpretional water way $2$ Vec Vec View indicate on man									

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 Yes ⊠ No (*if "yes," indicate on map*)
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Page 1 of 4

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

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Signature of Applicant	Date				
Stu-Boyd July 9, 2015					
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NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK		
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c. Copy of resolution authorizing filing			
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.			
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#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

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# **REVISED STUDY PLAN DOCUMENT**

# **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN This Page is Intentionally Left Blank

## **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

### January 2015

# **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

# 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

# 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

# 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling</u>:
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding:</u> Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

# **5.0** NEED FOR ADDITIONAL INFORMATION

# 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

# 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

# 6.0 STUDY AREA AND METHODS

# 6.1 Study Area

# 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

# 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

## 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

# 6.2 Study Methods

# 6.2.1 Fish Passage Facilities Assessment

# 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

## Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

# Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

# Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

# 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

# Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

# Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

# Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

# 6.2.2 Upper Tuolumne River Basin Habitat Assessment

# 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

# Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

# Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

# Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

# 6.2.2.2 Water Temperature Monitoring and Modeling

# Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

# Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

# Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.
# Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

# 6.2.2.3 Upstream Habitat Characterization

## Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

# Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

# 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

# Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

# Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

# Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

# Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

# Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

## Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

## 6.2.3.3 Assess Fish Presence and Potential for Stranding

# Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

# Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

# 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

# 7.1 Fish Passage Facilities Assessment

# 7.1.1 Concept-Level Fish Passage Alternatives

•	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 – November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

# 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	
•	Fieldwork September 2015 – April/May 2	2016; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	
•	Data entry, QA/QC, and analysis	
•	Initial study report	
•	Updated study report	
•	Final study report	

# 7.2 Upper Tuolumne River Basin Habitat Assessment

# 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

-	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	February 2016
•	Updated study report	February 2017

# 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

# 7.2.3 Upstream Habitat Characterization

# 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

## 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	February 2017

# 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels.	August 2015 – April/May 20	16
•	Data entry, QA/QC, and summarizing	September 2015 – December 20	16
•	Initial study report	February 20	16
•	Updated study report		17

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

# 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

# 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

# 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

# **10.0 REFERENCES**

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# ATTACHMENT A

# EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

S'4. Longt' and	Source <sup>3</sup>	Tuolumne	Coordinates (Decimal °)		Period of Record	
Site Locations		River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

Existing	Unner T	uolumne	River '	<b>Femnerature</b>	Monitoring 9	Sites
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<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

<sup>&</sup>lt;sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

S'4. Longt'mus	S	Tuolumne	Coor (Dec	dinates imal °)	Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

Attachment A for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

### 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, and CDFW) have volunteered to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015.

HDR Engineering, Inc. has been retained by the Districts to complete portions of the Fish Passage Assessment including the Upper Tuolumne Basin Fish Migration Barrier task described below.

### **Barrier Assessment**

### Goals and Objectives

The goal of this study is to assess barriers to upstream migration of adult spring-run Chinook salmon and steelhead in the Upper Tuolumne River basin. Study objectives include:

- Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
- Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
- Make field observations of general river conditions, including water temperature, gravel availability, pool size and depth.

### Methods

The study area includes the following mainstem and tributary stream reaches (Figure 1):

- Tuolumne River From approximate upstream limit of the Don Pedro Project at RM 81 (below the North Fork confluence) upstream to the first total fish passage barrier (as described in Section 4.3 below) and no further than the tailwater of Early Intake.
- North Fork Tuolumne River From the confluence with the Tuolumne River upstream to the first total fish passage barrier.

- **South Fork/Middle Fork Tuolumne** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Clavey River** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Cherry Creek/Eleanor Creek** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.



Figure 1. Overview map presenting the study area with notable rivers, tributaries and features.

The anadromous fish migration barriers assessment will include both desktop exercises and measurements in the field. Desktop exercises will utilize topographic mapping software, aerial photographs, available hydrological data, and other existing information to identify an initial list of physical features which may potentially be barriers to upstream migration of spring-run Chinook salmon and steelhead. On the ground field assessments will include the collection of physical and hydraulic data to confirm site characteristics and draw final conclusions regarding the ability to pass potential barriers.

The presence and/or absence of potential barriers to upstream passage and documented conclusions regarding the ability of fish to pass identified features will be determined with the use of a phased process as described below:

- A list of potential barriers to upstream passage will be formulated based upon gathered existing information;
- An initial field survey will be performed to gather physical data at each feature and to characterize major elements which influence fish passage;
- A screening level barrier assessment will be performed using the combined data set gathered and the initial field survey;
- Each of the potential barriers will be initially classified as one of the following: a total barrier to fish passage, a passable feature, or a potential barrier to fish passage. The initial classification will be based upon selected screening criteria. Any feature classified as a potential barrier will be selected for further evaluation.
- A second field survey will be performed to gather more detailed information on features classified as "potential barriers to fish passage;" and
- Final conclusions regarding the ability of fish to pass potential barriers including an estimate of the range of flows (within the target species migration period) which may facilitate fish passage will be refined and documented based upon the results of a preliminary hydraulic assessment.

The following sections provide a more detailed description of the methods that will be used to assess anadromous fish passage migration barriers in the study area.

### Field Surveys

Field surveys will be conducted to identify barriers in the mainstem and North, South, and Middle forks of the Upper Tuolumne River, as well as Cherry Creek, Eleanor Creek and the Clavey River. Initial field surveys and site investigations will be performed in August and September of 2015 (during low flow conditions) to assist with the preliminary classification of migration barriers. The following information will be recorded using hand held instrumentation at each potential barrier during the initial field surveys:

- Global positioning system (GPS) coordinate points;
- Effective height of each barrier;
- Length and estimated maximum and average depth of plunge pools at the base of barriers;

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- Water velocity measurements (with a hand-held current meter) at the apex of the barrier if measurements can be made safely - water velocities will be estimated by other means if measurements with a current meter cannot be made safely;
- Gradient/slope of the barrier;
- Measured (or estimated if measurement is unsafe) maximum and average depth of the landing zone on the upstream side of the barrier;
- Distance from apparent leap location to landing zone with notes describing leap conditions and presence of obstacles (e.g. overhanging ledges, shallow bedrock, dewatered, boulder complex, etc.);
- An assessment and documentation of adjacent channel features that might be inundated at higher flows; and
- A photograph of the barrier from one or more photo-points.

Collected existing information and field data collected as part of this initial field survey will be synthesized and a screening level fish passage assessment will be performed to classify each selected feature as one of the following: a total barrier to fish passage, a potential barrier to fish passage, or a passable feature.

Upon completion of the screening level classification assessment, a second field survey will be performed in 2016. The purpose of the second field survey will be to collect additional data and to help further refine conclusions regarding the ability of fish to pass features initially classified as potential barriers to fish passage. No further data collection is anticipated to occur at features originally classified as "total" barriers or as "passable." The objective of the second field survey will be to: 1) obtain a second set of similar data points at a higher flow regime (if such flows are available); and 2) obtain additional longitudinal profile and cross-sectional topographic data so that preliminary hydraulic calculations can be performed. These hydraulic calculations will then be used to quantitatively evaluate fish passage throughout the potential range of flows when spring-run Chinook or steelhead trout are anticipated to migrate upstream. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the Upper Tuolumne River basin.

### Boat Based Barrier Assessments

Whitewater boating rafts and guides will be hired for transportation from Lumsden Campground to Ward's Ferry (Figure 2). Boat surveys will be conducted for both the low flow surveys and the migratory flow surveys. Each survey would require a 5-day float schedule to allow for transportation and survey timing. Low flow surveys will be conducted from August 2<sup>nd</sup>-6<sup>th</sup>, 2015 and migratory flow surveys will be conducted in the spring/early summer of 2016 (based on seasonal conditions). Boating surveys will consist of a combination of boat based assessments and hiking based assessments. Potential fish passage barrier sites will be assessed utilizing the metrics previously described. Field crews will measure and document any previously unidentified potential barrier sites encountered during surveys using the same methodology. Sites in the tributaries will be assessed starting from the most downstream

direction. Once a total fish passage barrier is identified no further upstream sites will be assessed. Sites deemed inaccessible by field crews will be documented based on best visual estimates. If a line of sight can be established the potential barrier will be photographed along with barrier metrics being visually estimated. While in transit (both boating and on foot) biologists will collect general site observations on large pools, potential thermal refugia areas and spawning gravels. Data collected at pools will include location, maximum depth, length, width, and temperature/dissolved oxygen. Potential thermal refugia areas such as springs, seeps and creek mouths will be documented by recording location and temperatures taken at descriptive intervals to demonstrate temperature variations. The tentative field schedule for 2015 is as follows;

- Day 1 = Boat from Lumsden Campground to Clavey River Confluence
- Day 2 = Hike the Clavey River while conducting assessments
- Day 3 = Boat from Clavey River to the North Fork
- Day 4 = Hike the North Fork while conducting assessments
- Day 5 = Boat from North Fork to take-out at Ward's Ferry Bridge



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

The schedule for the 2016 spring/summer boat-based survey under migratory flow conditions has not been determined at this time and will be developed based upon the results of the 2015 field work. However, it is expected to also be a 5-day float.

### Hiking Based Barrier Assessments

Data collection and survey methodologies for the hiking based assessments will be the same as those outlined for the boat based surveys. Low flow hiking surveys in the mainstem (Lumsden Campground to Early Intake) will take place after the cessation of recreational boating flows (September 7, 2015) in order to best characterize low flow conditions (Figure 1). Migratory flow surveys (in 2016) will be timed based on seasonal conditions and estimated run timing. The tentative itinerary and survey reaches for the 2015 survey are as follows;

Week 1:

• Day 1 = Hike the South Fork while conducting assessments

• Days 2-5 = Hike Lumsden Campground – Early Intake while conducting assessments Week 2:

- Days 1-4 = Hike Cherry Creek to Eleanor Creek confluence while conducting assessments
- Day 5 = Hike any other unfinished reaches

The schedule for the 2016 hiking-based barrier assessment under migratory flow conditions has not been determined at this time and will be further developed based upon the results of the 2015 field work.

From: Devine, John
Sent: Friday, July 10, 2015 4:31 PM
To: James Eicher (james eicher@blm.gov)
Subject: Correspondence Relating to Logger Installs on the Tuolumne River

Jim,

Please find attached the internal and external correspondence connected with the thermologger installation, access to those locations, and permitting with the USFS. HDR has made a good faith effort at completeness and believe all the relevant emails are provided. I've not included duplicating emails; that is, where a party was copied but had no response to the email. If that is not satisfactory, and you want those emails as well (confirming receipt by the copied party), we are happy to provide those too. Just let me know.

We look forward to your assessment and getting back on track with the BLM. If you have any questions, please let me know.

John Devine, P.E., M.ASCE Senior Vice President, Hydropower Services

HDR

970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com

# **BLM INFORMATION REQUEST**

June 2015

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, June 29, 2015 2:02 PM
To: Devine, John
Subject: Water Temp loggers on NF Tuolumne River

Hello John I am not sure if HDR is planning on placing water temp loggers along the NF Tuolumne River. I have heard that this is the case but I want check with you. If that is the case you will need to get Authorization from BLM if the loggers are to be placed on BLM lands. Let me know exactly what you are planning so we can make a determination on the loggers.

Take Care

Jim

From: Devine, John
Sent: Monday, June 29, 2015 2:20 PM
To: 'Eicher, James'
Cc: Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

Thank you Jim. I will immediately check with Bao Le (HDR) and Mike Deas (Watercourse Engineering). The heads-up is much appreciated.

### John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Vertucci, Charles
Sent: Monday, June 29, 2015 2:46 PM
To: Devine, John
Cc: Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

Logger Location	River Mile	Access	Temperature	Stage	Coordinates	Equipment	Notes
TR above North Fork	TR 81.3	Heli/WWB	х	х	37.896630 -120.252864	LL#1 – 10086741 WT#1 – 10219704	Install complete
North Fork above TR	NF 0.1	Heli/WWB	Х	х	37.897235 -120.253729	LL#1 - 10106076 LL#2 - 10106072	Install complete
North Fork at RM8 Bridge	NF 8.0	Car/Hike	Х	х	37.985196 -120.204608	LL#1 - 10106080 LL#2 - 1184297	Install complete

John – We've already deployed in the North Fork Tuolumne. Here are the details.

I've attached "Attachment A" from our FS permit that describes the installations. We used the angle iron style (Figure 2) to deploy. The NF confluence area is most easily accessed by Helicopter and we try to go on days when there are no recreation releases (and no boaters).

The "RM8 bridge" site is on USFS land (already on our permit), so BLM lands are only at the confluence for our study.

#### **Chuck Vertucci**

**D** 916.679.8768 **C** 916.425.8342

hdrinc.com/follow-us

From: Devine, John
Sent: Monday, June 29, 2015 11:21 AM
To: Vertucci, Charles
Cc: Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

Sorry Chuck – meant to copy you as well.

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Monday, June 29, 2015 2:53 PM
To: Devine, John
Cc: Le, Bao; Mike Deas; Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

No BLM permit

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Devine, John
Sent: Monday, June 29, 2015 11:53 AM
To: Vertucci, Charles
Cc: Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

### So we didn't get a BLM permit?

#### John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Devine, John
Sent: Monday, June 29, 2015 11:56 AM
To: Le, Bao; Vertucci, Charles
Cc: 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

### Please expedite this. I'll let the Districts know, so they don't get blindsided.

#### John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Le, Bao
Sent: Monday, June 29, 2015 2:54 PM
To: Vertucci, Charles; Devine, John
Cc: 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Borovansky, Jenna; Deason, Jesse
Subject: RE: Water Temp loggers on NF Tuolumne River

It appears that we'll need to follow up with BLM since several sites are on their land. I hope having an SUP will expedite any permissions we'll need.

Chuck, can you follow up with Jim, apologize for the oversight and figure out what we need to do to make things right?

From: Borovansky, Jenna
Sent: Monday, June 29, 2015 12:01 PM
To: Vertucci, Charles
Cc: Le, Bao
Subject: FW: Water Temp loggers on NF Tuolumne River

Hi Chuck:

In conversation with BLM, please emphasize that the locations of loggers were reviewed in collaboration with the fish agencies at temp workshop (in addition to the mea culpa for our oversight on the location getting onto BLM land).

Let me know if you need me to do anything today while Bao is on the road.

Jenna Borovansky D 208.665.3987 M 425.281.9557

From: Vertucci, Charles
Sent: Monday, June 29, 2015 3:19 PM
To: Borovansky, Jenna; Devine, John; Le, Bao
Subject: RE: Water Temp loggers on NF Tuolumne River

Conversation went very badly with Jim – he wants the equipment out immediately and we are not allowed to use a helicopter. We need to hike in to get it.

I need to send him all the information we have on the installation or he will file a "trespass" against us.

Please advise ASAP.

**Chuck Vertucci** D 916.679.8768 C 916.425.8342

On Mon, Jun 29, 2015 at 1:38 PM, Vertucci, Charles <<u>Charles.Vertucci@hdrinc.com</u>> wrote:

Jim,

As requested during our phone conversation is information related to HDR's access of the North Fork Tuolumne River area.

HDR accessed the North Fork Tuolumne and Tuolumne River on April 30 via Helicopter to install water temperature and stage recorders at the North Fork Tuolumne and Tuolumne rivers. Sites were revisited (by helicopter) on June 17 to confirm their effectiveness (water depth, in flowing water) after flows had dropped.

Logger Location	River Mile	Temperature	Stage	Coordinates	Equipment
TR above North Fork	TR 81.3	х	х	37.896630	LL#1 - 10086741
				-120.252864	WI#1 – 10219704
North Fork above TR	NF 0.1	х	х	37.897235	LL#1 – 10106076
				-120.233729	LL#2 - 10100072

Two level logger installations were installed into in-channel boulders to measure water temperature and flow in the North Fork – photo 4292332 and 4292331

One level logger installation was installed into bedrock near the low water line to measure water temperature and flow in the Tuolumne River – photo 4292326

Please let me know if you need additional information.

Thank you,

### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com







From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, June 29, 2015 5:14 PM
To: Vertucci, Charles
Cc: Devine, John
Subject: Re: HDR access at the North Fork Tuolumne River

Charles thank you for submitting the attached photographs, please explain what and why you are doing this project? Please explain when you did it and explain how you were helicoptered in and where you were dropped off. Please locate this on GIS map of the area for helicopter landing and for your lat and long on the loggers. Also please explain why BLM wasn't notified as the USFS was on this project. Who is the USFS lead contact on this project. Was NEPA conducted on this project? If NEPA was conducted for this project please submit the NEPA document on this project. I would like to receive all of the emails, letters, and notes concerning this project and all of the authorizations that were given by the USFS.

Thank you

Jim Eicher

From: Devine, JohnSent: Monday, June 29, 2015 5:34 PMTo: 'Eicher, James'; Vertucci, CharlesSubject: RE: HDR access at the North Fork Tuolumne River

Jim,

Let me try to provide some explanation. The logger deployment is part of the La Grange Project licensing studies. NMFS requested as part of looking at fish reintroduction above Don Pedro that a temperature study and model be performed for the river reach between Don Pedro Reservoir and Early Intake (and tributaries). FERC determined that the Districts did not have to perform such a study in its February 2015 Determination, but the Districts have voluntarily offered to perform the study as NMFS requested. We have been coordinating with NMFS on logger locations since March time frame and once we settled on locations, 15 locations in all and 19 loggers, we hurriedly put together the permit for USFS (13 of the locations and 16 loggers). We expedited the permit with USFS assistance and went forward.

You got it! In our rush to get the loggers in to obtain as much data as possible, and focused on the USFS locations, we completely screwed up on not approaching the BLM and filling you in on the study and to get the proper permits. It is completely HDR's doing and not in any way associated with either TID's or MID's staff. We sincerely apologize for this oversight, and will do whatever BLM determines to be proper. The loggers are important for the joint Districts/NMFS study, and if at all possible, I would like to find a way that we could keep them in for the benefit of the study.

Please give me a call if you would to discuss.

### John Devine, P.E.

D 207-775-4495 M 207-776-2206

On Tue, Jun 30, 2015 at 11:17 AM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

Good morning Jim,

I wanted to check back with you to see if you needed anything additional from us. I hope my brief explanation provided yesterday helped you understand the circumstances. There was no intent on our part to purposely avoid asking BLM for a permit. That would certainly be a very unwise thing to do. If at all possible, for the benefit of the study, we would very much like to keep the loggers in place.

Would you care to discuss further? We look forward to your direction on how to proceed at this point.

### John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Tuesday, June 30, 2015 2:37 PM
To: Devine, John
Subject: Re: HDR access at the North Fork Tuolumne River

Hi John I am still looking into the situation. I will notify you when I have completed my investigation of this incident. If I need more information from HDR I will let you know. I appreciate the information you have sent so far. Please submit your email and letter correspondences you have with the USFS and Licensee on the water temperature loggers.

Take Care

Jim

On Tue, Jun 30, 2015 at 1:46 PM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

Jim,

Thanks for getting back to me. Do you want us to remove the loggers at the two BLM locations ASAP?

### John Devine, P.E.

D 207-775-4495 M 207-776-2206
From: Vertucci, Charles
Sent: Tuesday, June 30, 2015 1:15 PM
To: Eicher, James
Cc: Devine, John
Subject: RE: HDR access at the North Fork Tuolumne River

Jim,

Thanks for your response. In addition to the information provided by John, I've attached the following:

- 1. USFS 299 Permit
- 2. Map depicting two installation locations and helicopter landing site. (Red = helicopter location, Green and Yellow = logger locations)

Logger Location	River Mile	Coordinates	Equipment Installed
TR above	TR 81.3	37.896630	1 angle iron with a level logger
North Fork		-120.252864	(stage and temperature)
North Fork	NF 0.1	37.897235	2 angle irons each with a level
above TR		-120.253729	logger (stage and temperature)
		37 8071	No equipment installed
Helicopter Landing Area	TR 81.2	57.0571	Helicopter landed on
		-120.2539	sand bar for ~ 1 hour

Our contact with the USFS was Debra Foote.

Regarding our access at the site. The helicopter landed at the large sand bar (shown on the map) on April 30 and June 17. The pilot landed and shut down for approximately 1-hr during our installation. We accessed both the North Fork and Tuolumne River by hiking along the margin or in the river.

Thank you,

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

FS-2700-4 (V. 01/2014) OMB 0596-0082

Authorization ID: GRO1122 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE SPECIAL USE PERMIT Authority: ORGANIC ADMINISTRATION ACT June4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers less than 1 acre in the Stanislaus National Forest, ("the permit area"), as shown on the map(s) attached as Appendix A. This permit issued for the purpose of:

Installing, monitoring, and maintaining water temperature recorders at 10 locations. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

#### **TERMS AND CONDITIONS**

#### I. GENERAL TERMS

A. <u>AUTHORITY</u>. This permit is issued pursuant to ORGANIC ADMINISTRATION ACT June 4, 1897 and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

C. <u>TERM</u>. This permit shall expire at midnight on 12/31/2016, 1 year and 8 months from the date of issuance.

**D.** <u>**RENEWAL</u>**. This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit</u>

is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the new permit is the same as the type of use and occupancy authorized by this permit; and (3) the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

## F. COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL

**REQUIREMENTS.** In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. ASSIGNABILITY. This permit is not assignable or transferable.

## II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

# III. OPERATIONS

A. <u>PERIOD OF USE</u>. Use or occupancy of the permit area shall be exercised at least 3 months each year.

**B.** <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

C. <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for noncompliance with any of the terms and conditions of this permit.

# IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D.** <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS.</u>** The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially</u>

damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.

F. <u>DAMAGE TO UNITED STATES PROPERTY</u>. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

G. <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations, their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment

and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

**H. INDEMNIFICATION OF THE UNITED STATES.** The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

## V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

C. <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

**D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures specified by the authorized officer shall be the responsibility of the holder.

**E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

## F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE

**SPECIES.** The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

G. <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

## H. CLEANUP AND REMEDIATION.

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

## VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

## VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>**REVOCATION AND SUSPENSION**</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.
- 5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

C. <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION.</u>** This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.</u>

## E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION

**WITHOUT RENEWAL.** Upon revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

## VIII. MISCELLANEOUS PROVISIONS

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A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>CURRENT ADDRESSES</u>. The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.

C. <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

#### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

## BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

+ Bou

April 10, 2015

Steve Boyd, Licensing Coordinator

DATE

04/22/15

APPROVE/

Jim Junette, District Ranger

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (800) 975-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.



------ Original message ------From: "Eicher, James" <<u>jeicher@blm.gov</u>> Date: 06/30/2015 5:20 PM (GMT-05:00) To: "Devine, John" <<u>John.Devine@hdrinc.com</u>> Subject: Re: HDR access at the North Fork Tuolumne River

John I will let you know what the plan will be after I gather all of the information and make a decision on a course of action.

Jim

From: Devine, JohnSent: Tuesday, June 30, 2015 6:50 PMTo: Eicher, JamesSubject: RE: HDR access at the North Fork Tuolumne River

Ok Jim. I understand.

# **Conference Call Notes**

Project:	TID/MID Temperature Study			
Subject:	Compiling HDR Correspondence with Team, Agencies, Licensee regarding deployment of termologgers for Districts' Temperature Study			
Date:	Wednesday, July 01, 2015			
Location:	Conference Call			
Attendees:	John Devine, HDR Bao Le, HDR Chuck Vertucci, HDR Jarvis Caldwell, HDR Jenna Borovansky, HDR Jesse Deason, HDR	Steve Boyd, TID Art Godwin, on behalf of TID		

Jim Eicher, BLM, request of June 29, 2015: "I would like to receive all of the emails, letters, and notes concerning this project and all of the authorizations that were given by the USFS."

Action Items:

1. HDR staff involved with the Districts' Temperature Study (John Devine, Bao Le, Chuck Vertucci, Jenna Borovansky, Jesse Deason) and Mike Deas (Watercourse Engineering) to forward correspondence as noted in the above request to Rose Staples by close of business on Tuesday, July 9, 2015.

2. Rose Staples to compile the documents, which will be forwarded to Jim Eicher, BLM, by the end of the week (Friday, July 10, 2015).

3. John Devine to advise Jim Eicher of the timeline in response to his request

4. Bao Le and Chuck Vertucci to develop BLM permit application request, contacting Jim Eicher to discuss proper form(s) and information needs

From: Devine, John
Sent: Wednesday, July 01, 2015 11:09 AM
To: Eicher, James
Cc: Vertucci, Charles; Le, Bao
Subject: RE: HDR access at the North Fork Tuolumne River

Jim,

We are in the process of collecting all the email, letters, and correspondences as you requested below. I'm planning to have all this pulled together and sent to you by the end of next week. In the meantime, I've asked Chuck to send to you the complete permit application that was submitted to the USFS for your information.

We would also like to proceed with submitting the proper permit request to the BLM to cover the logger installs and downloads, including proposed methods of access and schedule of future proposed work (downloads), just in case we are able to keep the loggers in place. This might also serve as a tardy submittal for the work already done, just so a proper permit request is in the queue at BLM. I have asked Bao Le and Chuck to give you a call to make sure we file the correct information. Your thoughts on this would be much appreciated.

Jim, I'm truly sorry for the amount of time you're having to spend on this matter due to our oversight.

#### John Devine, P.E.

D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Le, Bao
Sent: Wednesday, July 08, 2015 2:22 PM
To: Devine, John
Cc: Vertucci, Charles; Borovansky, Jenna; Deason, Jesse; Ashenfelter, Mark; Staples, Rose
Subject: RE: HDR access at the North Fork Tuolumne River - call with Jim Eicher
Importance: High

#### All, I just talked to Jim Eicher. Below are the main points of our discussion:

- I told him as a follow up to John D.'s email, I wanted to explore how we could make our deployments on the NF in compliance with BLM regs and were not sure of the needed permit. Any guidance would be appreciated. Jim said he did not want to provide us guidance at this time and that we're currently in trespass and he had to deal with this first and then he'd determine how to proceed forward after that (whether to have us pull them out or not). He did not give a timeline for when he could get back to us on this determination.
- 2. He noted again we were in violation but that we also violated our USFS SUP with use of the helicopter and that any future work for BLM would not allow this. I politely let him know that I've been communicating with Bob Stanley and Dusty Vaughn about our SUP with them and that originally, we had identified helicopter as a means to access some of these difficult sites as part of our permitting. With regard to the NF, I told him that in the future, if we were allowed to keep the loggers in place, we could access these sites without a helicopter and that this would be fine. He agreed that access by foot was possible.
- 3. He stressed that we should take a look at any other studies we were doing and whether they had any relevance to BLM land. I explained to him we had one other study up in the Upper TR on fish barriers and that we were in the process of submitting a permit to the USFS for this in the form of a 5-day float trip. I also told him it was our intent to provide him a courtesy copy of the application when it was available. I explained to him that this work was completely passive and would not require any installations; just taking measurements and hiking but that the float trip would camp at the NF confluence and we would be walking up the NF. He said that BLM still needs to approve this but that it might be something simple like a letter of authorization. He would need to have information to better understand what is being done but it sounded pretty simple. I told him that as soon as it was available, we'd supply him with the USFS permit application. In the application, there would be an attachment that described the barrier study and that this should be sufficient for his purposes.
- 4. He asked directly why we did not get a BLM permit to begin with. I was blatantly honest here and told him that in Chuck's discussions with the USFS, we had a note that they could not permit the NF site. I told him that in our rush to get loggers out in the spring, this ball just got dropped. I told him I wish I had a better excuse but we just a mistake and missed this. I told him there was never any mal-intent or conscious decision to bypass the BLM, we just missed it and we hope to make it right now.
- 5. In closing the call, he said that he would not address any of the above until his trespass investigation was complete. I told him that we are working on getting him the requests that he'd already made and that the barrier information will be in his inbox when he's ready to look at it. I told him that if he needed anything else, he shouldn't hesitate to contact us and that we were happy to get him what he needed.

From: Devine, John
Sent: Thursday, July 09, 2015 4:42 PM
To: James Eicher (james eicher@blm.gov)
Cc: Le, Bao
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Good afternoon Jim,

Please find attached a request to the USFS for a permit (or amendment, subject to USFS preference) to authorize a five-day float trip on the Tuolumne to conduct the fish passage barriers study as part of the licensing of the La Grange Project. I believe Bao Le spoke with you very recently about this trip and its purposes. My understanding from Bao is that BLM also needs to authorize the 5-day float trip, and that the BLM could use a copy of the permit submitted to the USFS for this purpose. The transmitting email to the USFS is provided below as well.

We also understand that your investigation of the recent trespass issue is still ongoing. On that subject, I plan to forward to you tomorrow the emails and correspondence related to the water temperature logger installs and access that occurred on BLM lands (and on USFS lands as well) as you had requested.

To keep the fish barrier study work moving, we would greatly appreciate your consideration of this request for the 5-day float trip to occur the first week of August. The work does not include installation of any equipment or use of helicopters to access USFS or BLM lands. The team will be floating with a permitted outfitter and only use foot access otherwise. Field measurements will be taken as described in the permit request. Camping would occur at the North Fork confluence and field crews would walk up the North Fork to evaluate potential fish barriers. It is highly likely this float trip would be repeated in 2016, therefore, the permit requests such authorization.

Please let me know if we can provide any further information.

#### John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Le, Bao

Sent: Thursday, July 09, 2015 2:39 PM

To: Vaughn, Gary D -FS; <u>dfoote@fs.fed.us</u>

**Cc:** Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark **Subject:** Permit Application(s) for Tuolumne River Fish Barrier Assessment

#### Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards,

Bao

#### Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal APF Register Notice 5-22-95	LICATION FOR TRANSPORTATION AND JTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082
		FOR AGENCY USE ONLY
NOTE: Before completing and filing the application and schedule a preapplication meeting wit processing the application. Each agency is	, the applicant should completely review this package representatives of the agency responsible for any have specific and unique requirements to be met in	Application Number
preparing and processing the application. the application can be completed at the pr	Many times, with the help of the agency representative, application meeting.	Date Filed
1. Name and address of applicant ( <i>include zip coo</i> Turlock Irrigation District	e) Name, title, and address of authorized agent if different from item 1 ( <i>include zip code</i> )	3. Telephone (area code)
333 East Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364
		Authorized Agent 916-679-8804
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. A New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	
o. If all individual, of partnership are you a cluzeri(s	$\Box$ $\Box$ $\Box$ $\Box$ $\Box$ $\Box$ $\Box$ $\Box$	

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

8. Attach a map covering area and show location of project proposal								
9. State or Local government approval:	☐ At	ttached		Applied for		$\boxtimes$	Not Required	
10. Nonreturnable application fee:	Attached		Not re	equired				
11 December 19 Sector $M$ No. (if "upper limit on the se								

11. Does project cross international boundary or affect international waterways? 
 Yes ⊠ No (*if "yes," indicate on map*)
 12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested. The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed barrier assessment task described in this application. HDR biologists have completed similar studies in the Merced and Yuba Rivers along with various coastal California streams.

13a. Describe other reasonable alternative routes and modes considered.

No other reasonable alternative routes exist that allow for the completion of the study objectives. The rugged terrain and limited access points demand the use of whitewater boat transportation.

b. Why were these alternatives not selected? No reasonable alternatives exist.

c. Give explanation as to why it is necessary to cross Federal Lands. The study site lies almost entirely within the Stanislaus National Forest (SNF). Travel onto the SNF will be on established roadways and within the river.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name) Authorization ID: GRO1122 Use Code: 422

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the FERC Licensing of the La Grange Hydroelectric Project. The complete study plan is provided in Attachment B. Information will be used to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River basin which if determined appropriate, would have implications for the public. See Attachment A.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have no impact on the local population. All measurements will be taken with hand held equipment. No equipment is to be installed during this study. Overnight camping will occur at established locations along the river. No effects to the population, social or economic, are anticipated. See Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability. This project will have no effect on the local environment. All equipment that will be packed in for this study will be packed out. Equipment to be used for this study do not create noise above that of normal hand held appliances (i.e laser range finders, and digital thermometers).

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals. The project will have no effect on the local flora or fauna.

 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
 "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas. No hazardous materials will be produced, transported or stored in the completion of the proposed project.

20. Name all the Department(s)/Agency(ies) where this application is being filed. Stanislaus National Forest, USFS. Permit application will also be provided to the Bureau of Land Management for consideration of activities on BLM lands (i.e., North Fork Tuolumne River confluence).

HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained					
in the application and believe that the information submitted is correct to the best of my knowledge.					
Signature of Applicant Date					

StuBoy	July 9, 2015
Title 18 U.S.C. Section 1001 makes it a crime for any person knowingly an	d willfully to make

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

#### GENERAL INFORMATION ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture Regional Forester, Forest Service (USFS) Federal Office Building, P.O. Box 21628 Juneau, Alaska 99802-1628 Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency. SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL					
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK				
I - PRIVATE CORPORATIONS	ATTACHED	FILED*			
a. Articles of Incorporation					
b. Corporation Bylaws					
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State					
c. Copy of resolution authorizing filing					
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity, by the affiliate.					
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.					
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.					
II - PUBLIC CORPORATIONS					
a. Copy of law forming corporation					
b. Proof of organization					
c. Copy of Bylaws					
d. Copy of resolution authorizing filing					
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.					
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY					
a. Articles of association, if any					
b. If one partner is authorized to sign, resolution authorizing action is					
c. Name and address of each participant, partner, association, or other					
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.					

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UTI ON	CATION FOR TRANSPORTATION AND LITY SYSTEMS AND FACILITIES FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082 FOR AGENCY USE ONLY
NOTE: Before completing and filing the application, the and schedule a preapplication meeting with re- processing the application. Each agency may	ne applicant should completely review this package presentatives of the agency responsible for y have specific and unique requirements to be met in	Application Number
preparing and processing the application. Ma the application can be completed at the preap	ny times, with the help of the agency representative, plication meeting.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> ) Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 (include zip code)	3. Telephone (area code)
333 East Canal Drive Turlock, CA 95380	HDR 2379 Gateway Oaks Dr #200 Sacramento,CA 95835	Applicant 209-883-8364
		Authorized Agent 916-679-8804
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*) As part of the La Grange Hydroelectric Project licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose two separate, 5-day boat based research endeavors on the Tuolumne River within the Stanislaus National Forest (SNF). See Attachment A for details.

8. Attach a map covering area and show location of project proposal									
9 State or Local government approval:									
5. Otate of Local government approve	ui.		Allacher			Applicator		Not Required	
<ol><li>Nonreturnable application fee:</li></ol>		Attac	ched		Not re	equired			
11 Deep project graph interpretional boundary or offect interpretional water your?									

11. Does project cross international boundary or affect international waterways? 
 Yes ⊠ No (*if "yes," indicate on map*)
 12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested. The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed barrier assessment task described in this application. HDR biologists have completed similar studies in the Merced and Yuba Rivers along with various coastal California streams.

13a. Describe other reasonable alternative routes and modes considered. No other reasonable alternative routes exist that allow for the completion of the study objectives. The rugged terrain and limited access points demand the use of whitewater boat transportation.

b. Why were these alternatives not selected? No reasonable alternatives exist.

c. Give explanation as to why it is necessary to cross Federal Lands. The study site lies almost entirely within the Stanislaus National Forest (SNF). Travel onto the SNF will be on established roadways and within the river.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name) Authorization ID: GR01122 Use Code: 422

Page 1 of 4

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the FERC Licensing of the La Grange Hydroelectric Project. The complete study plan is provided in Attachment B. Information will be used to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River basin which if determined appropriate, would have implications for the public. See Attachment A.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have no impact on the local population. All measurements will be taken with hand held equipment. No equipment is to be installed during this study. Overnight camping will occur at eastablished locations along the river. No effects to the population, social or economic, are anticipated. See Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability. This project will have no effect on the local environment. All equipment that will be packed in for this study will be packed out. Equipment to be used for this study do not create noise above that of normal hand held appliances (i.e laser range finders, and digital thermometers).

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals. The project will have no effect on the local flora or fauna.

 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
 "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas. No hazardous materials will be produced, transported or stored in the completion of the proposed project.

20. Name all the Department(s)/Agency(ies) where this application is being filed. Stanislaus National Forest, USFS. Permit application will also be provided to the Bureau of Land Management for consideration of activities on BLM lands (i.e., North Fork Tuolumne River confluence).

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.					
Signature of Applicant	Date				
StuBoyl	July 9, 2015				
Title 19, LLS C. Section 1001, makes it a arime for any person knowingly and willfully to make to any department or agapty of the United States any					

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

#### GENERAL INFORMATION ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture Regional Forester, Forest Service (USFS) Federal Office Building, P.O. Box 21628 Juneau, Alaska 99802-1628 Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency. SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL					
NOTE: The responsible agency(ies) will provide instructions	CHECK APPROPRIATE BLOCK				
I - PRIVATE CORPORATIONS	ATTACHED	FILED*			
a. Articles of Incorporation					
b. Corporation Bylaws					
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State					
c. Copy of resolution authorizing filing					
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity, by the affiliate.					
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.					
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.					
II - PUBLIC CORPORATIONS					
a. Copy of law forming corporation					
b. Proof of organization					
c. Copy of Bylaws					
d. Copy of resolution authorizing filing					
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.					
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY					
a. Articles of association, if any					
b. If one partner is authorized to sign, resolution authorizing action is					
c. Name and address of each participant, partner, association, or other					
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.					

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Attachment A for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

## 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, and CDFW) have volunteered to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015.

HDR Engineering, Inc. has been retained by the Districts to complete portions of the Fish Passage Assessment including the Upper Tuolumne Basin Fish Migration Barrier task described below.

## **Barrier Assessment**

## Goals and Objectives

The goal of this study is to assess barriers to upstream migration of adult spring-run Chinook salmon and steelhead in the Upper Tuolumne River basin. Study objectives include:

- Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
- Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
- Make field observations of general river conditions, including water temperature, gravel availability, pool size and depth.

## Methods

The study area includes the following mainstem and tributary stream reaches (Figure 1):

- Tuolumne River From approximate upstream limit of the Don Pedro Project at RM 81 (below the North Fork confluence) upstream to the first total fish passage barrier (as described in Section 4.3 below) and no further than the tailwater of Early Intake.
- North Fork Tuolumne River From the confluence with the Tuolumne River upstream to the first total fish passage barrier.

- **South Fork/Middle Fork Tuolumne** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Clavey River** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.
- **Cherry Creek/Eleanor Creek** From the confluence with the Tuolumne River upstream to the first total fish passage barrier.



Figure 1. Overview map presenting the study area with notable rivers, tributaries and features.

The anadromous fish migration barriers assessment will include both desktop exercises and measurements in the field. Desktop exercises will utilize topographic mapping software, aerial photographs, available hydrological data, and other existing information to identify an initial list of physical features which may potentially be barriers to upstream migration of spring-run Chinook salmon and steelhead. On the ground field assessments will include the collection of physical and hydraulic data to confirm site characteristics and draw final conclusions regarding the ability to pass potential barriers.

The presence and/or absence of potential barriers to upstream passage and documented conclusions regarding the ability of fish to pass identified features will be determined with the use of a phased process as described below:

- A list of potential barriers to upstream passage will be formulated based upon gathered existing information;
- An initial field survey will be performed to gather physical data at each feature and to characterize major elements which influence fish passage;
- A screening level barrier assessment will be performed using the combined data set gathered and the initial field survey;
- Each of the potential barriers will be initially classified as one of the following: a total barrier to fish passage, a passable feature, or a potential barrier to fish passage. The initial classification will be based upon selected screening criteria. Any feature classified as a potential barrier will be selected for further evaluation.
- A second field survey will be performed to gather more detailed information on features classified as "potential barriers to fish passage;" and
- Final conclusions regarding the ability of fish to pass potential barriers including an estimate of the range of flows (within the target species migration period) which may facilitate fish passage will be refined and documented based upon the results of a preliminary hydraulic assessment.

The following sections provide a more detailed description of the methods that will be used to assess anadromous fish passage migration barriers in the study area.

## Field Surveys

Field surveys will be conducted to identify barriers in the mainstem and North, South, and Middle forks of the Upper Tuolumne River, as well as Cherry Creek, Eleanor Creek and the Clavey River. Initial field surveys and site investigations will be performed in August and September of 2015 (during low flow conditions) to assist with the preliminary classification of migration barriers. The following information will be recorded using hand held instrumentation at each potential barrier during the initial field surveys:

- Global positioning system (GPS) coordinate points;
- Effective height of each barrier;
- Length and estimated maximum and average depth of plunge pools at the base of barriers;

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- Water velocity measurements (with a hand-held current meter) at the apex of the barrier if measurements can be made safely - water velocities will be estimated by other means if measurements with a current meter cannot be made safely;
- Gradient/slope of the barrier;
- Measured (or estimated if measurement is unsafe) maximum and average depth of the landing zone on the upstream side of the barrier;
- Distance from apparent leap location to landing zone with notes describing leap conditions and presence of obstacles (e.g. overhanging ledges, shallow bedrock, dewatered, boulder complex, etc.);
- An assessment and documentation of adjacent channel features that might be inundated at higher flows; and
- A photograph of the barrier from one or more photo-points.

Collected existing information and field data collected as part of this initial field survey will be synthesized and a screening level fish passage assessment will be performed to classify each selected feature as one of the following: a total barrier to fish passage, a potential barrier to fish passage, or a passable feature.

Upon completion of the screening level classification assessment, a second field survey will be performed in 2016. The purpose of the second field survey will be to collect additional data and to help further refine conclusions regarding the ability of fish to pass features initially classified as potential barriers to fish passage. No further data collection is anticipated to occur at features originally classified as "total" barriers or as "passable." The objective of the second field survey will be to: 1) obtain a second set of similar data points at a higher flow regime (if such flows are available); and 2) obtain additional longitudinal profile and cross-sectional topographic data so that preliminary hydraulic calculations can be performed. These hydraulic calculations will then be used to quantitatively evaluate fish passage throughout the potential range of flows when spring-run Chinook or steelhead trout are anticipated to migrate upstream. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the Upper Tuolumne River basin.

## Boat Based Barrier Assessments

Whitewater boating rafts and guides will be hired for transportation from Lumsden Campground to Ward's Ferry (Figure 2). Boat surveys will be conducted for both the low flow surveys and the migratory flow surveys. Each survey would require a 5-day float schedule to allow for transportation and survey timing. Low flow surveys will be conducted from August 2<sup>nd</sup>-6<sup>th</sup>, 2015 and migratory flow surveys will be conducted in the spring/early summer of 2016 (based on seasonal conditions). Boating surveys will consist of a combination of boat based assessments and hiking based assessments. Potential fish passage barrier sites will be assessed utilizing the metrics previously described. Field crews will measure and document any previously unidentified potential barrier sites encountered during surveys using the same methodology. Sites in the tributaries will be assessed starting from the most downstream

direction. Once a total fish passage barrier is identified no further upstream sites will be assessed. Sites deemed inaccessible by field crews will be documented based on best visual estimates. If a line of sight can be established the potential barrier will be photographed along with barrier metrics being visually estimated. While in transit (both boating and on foot) biologists will collect general site observations on large pools, potential thermal refugia areas and spawning gravels. Data collected at pools will include location, maximum depth, length, width, and temperature/dissolved oxygen. Potential thermal refugia areas such as springs, seeps and creek mouths will be documented by recording location and temperatures taken at descriptive intervals to demonstrate temperature variations. The tentative field schedule for 2015 is as follows;

- Day 1 = Boat from Lumsden Campground to Clavey River Confluence
- Day 2 = Hike the Clavey River while conducting assessments
- Day 3 = Boat from Clavey River to the North Fork
- Day 4 = Hike the North Fork while conducting assessments
- Day 5 = Boat from North Fork to take-out at Ward's Ferry Bridge



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

The schedule for the 2016 spring/summer boat-based survey under migratory flow conditions has not been determined at this time and will be developed based upon the results of the 2015 field work. However, it is expected to also be a 5-day float.

# Hiking Based Barrier Assessments

Data collection and survey methodologies for the hiking based assessments will be the same as those outlined for the boat based surveys. Low flow hiking surveys in the mainstem (Lumsden Campground to Early Intake) will take place after the cessation of recreational boating flows (September 7, 2015) in order to best characterize low flow conditions (Figure 1). Migratory flow surveys (in 2016) will be timed based on seasonal conditions and estimated run timing. The tentative itinerary and survey reaches for the 2015 survey are as follows;

Week 1:

• Day 1 = Hike the South Fork while conducting assessments

• Days 2-5 = Hike Lumsden Campground – Early Intake while conducting assessments Week 2:

- Days 1-4 = Hike Cherry Creek to Eleanor Creek confluence while conducting assessments
- Day 5 = Hike any other unfinished reaches

The schedule for the 2016 hiking-based barrier assessment under migratory flow conditions has not been determined at this time and will be further developed based upon the results of the 2015 field work.

# **REVISED STUDY PLAN DOCUMENT**

# **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN This Page is Intentionally Left Blank
#### **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

## 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

# **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

# 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling</u>:
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding:</u> Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

# **5.0** NEED FOR ADDITIONAL INFORMATION

### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

## 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

# 6.0 STUDY AREA AND METHODS

## 6.1 Study Area

## 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

## 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

## 6.2.2 Upper Tuolumne River Basin Habitat Assessment

### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

#### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

# 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

#### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

•	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 – November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	
•	Fieldwork September 2015 – April/May 2	2016; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	
•	Data entry, QA/QC, and analysis	
•	Initial study report	
•	Updated study report	
•	Final study report	September 2017

## 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

-	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	February 2016
•	Updated study report	February 2017

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	.March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	February 2016
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

# 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels.	August 2015 – April/May 20	16
•	Data entry, QA/QC, and summarizing	September 2015 – December 20	16
•	Initial study report	February 20	16
•	Updated study report		17

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

## 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

# 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

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#### ATTACHMENT A

### EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

S'4. Longt' and	S	Tuolumne	Coordinates (Decimal °)		Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

Existing	Unner '	Tuolumne	River	Temnerature	Monitoring 9	Sites
Eaisting	Opper	I uoiumine	INIVUI	1 cmpci atur c	Monitor ing k	sites.

<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

<sup>&</sup>lt;sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

S'4. Longt'mus	S	Tuolumne	Coor (Dec	dinates imal °)	Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

"BCC" DISTRIBUTION LIST FOR LA GRANGE LICENSING PARTICIPANTS USED FOR APRIL 2015 "SAVE THE DATE" ANNOUNCEMENT AND MAY 2015 "DISTRIBUTION OF AGENDA" PRIOR TO WORKSHOP

#### SENT TO LA GRANGE LICENSING PARTICIPANTS LIST AS A "bcc" on 4/23/2015

From: Staples, Rose
Sent: Thursday, April 23, 2015 11:55 AM
Cc: Staples, Rose (Rose.Staples@hdrinc.com)
Subject: Hold the Dates May 19-20 for La Grange Hydroelectric Project Licensing Study Workshops

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District and Turlock Irrigation District, joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

- 1. Upper Tuolumne River Water Temperature Monitoring and Modeling Workshop May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA.
- 2. Upper Tuolumne River Fish Passage Assessment/Anadromous Fish Reintroduction Workshop (first of 3)

May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Please hold these dates as your participation is encouraged and appreciated. A detailed agenda will be issued two weeks before the Workshops. In the meantime, if you have any questions about the Workshops, please call Jesse Deason at 206-826-4744.

Thank you.

Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

#### SENT TO LA GRANGE LICENSING PARTICIPANTS AS A "BCC" ON 5/12/2015

From: Staples, Rose
Sent: Tuesday, May 12, 2015 1:44 PM
Cc: Staples, Rose (Rose.Staples@hdrinc.com)
Subject: La Grange Workshops Agendas - May 19 and May 20

#### To Interested Licensing Participants:

As part of the La Grange Hydroelectric Project Integrated Licensing Process, Modesto Irrigation District (MID) and Turlock Irrigation District (TID), joint owners of the La Grange facilities, are planning to conduct feasibility studies associated with fish passage and fish reintroductions above La Grange and Don Pedro dams. The Districts will also conduct a water temperature study. As part of the implementation of these studies, Workshops will be held to inform interested parties about the studies and receive input on the study effort. The Workshops will be held as follows:

- 1. **Upper Tuolumne River Water Temperature Monitoring and Modeling Workshop** May 19, 2015 from 1:30pm to 4:30pm at the HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA.
- Upper Tuolumne River Fish Passage Assessment/Anadromous Fish Reintroduction Workshop (first of 3) May 20, 2015 from 9am to 12pm at the Modesto Irrigation District Office, 1231 11th Street, Modesto, CA.

Please find attached the agendas for the two workshops. Your participation is encouraged and appreciated.

Thank you.

#### Rose Staples, CAP-OM Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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#### La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:30 pm – 4:30 pm HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA Conference Line: 1-866-994-6437, Passcode: 8140607 Join Lync Meeting https://meet.hdrinc.com/jesse.deason/8DZ4VNVN

#### **Meeting Objectives:**

- 1. Present an overview of the La Grange Hydroelectric Project Temperature Study.
- 2. Review and confirm proposed temperature and flow monitoring locations.
- 3. Review and confirm modeling approach.
- 4. Confirm schedule/tasks and opportunities for collaboration.

TIME	TOPIC
1:30 pm – 1:40 pm	Introduction of Participants (All)
1:40 pm – 2:00 pm	Background/Overview of the La Grange Project Temperature Study (Districts)
2:00 pm – 4:00 pm	<ul> <li>Temperature Study Introduction (Districts) <ul> <li>a. Study goal and objectives, scope, and study area</li> </ul> </li> <li>Review and Discussion of Existing Information <ul> <li>a. Parameters and sources</li> <li>b. Review process summary</li> <li>c. Results, findings and recommendations</li> </ul> </li> <li>Proposed Monitoring Program – Presentation and Discussion <ul> <li>a. Rationale</li> <li>i. Space (locations)</li> <li>ii. Time (periods of interest)</li> <li>iii. Equipment</li> </ul> </li> <li>Temperature Modeling – Presentation and Discussion <ul> <li>a. Approach (including spatial and temporal resolution)</li> <li>b. Data needs</li> <li>c. Model information/output</li> </ul> </li> </ul>
4:00 pm – 4:30 pm	Meeting Wrap-up (All) a. Confirm study approach and methods b. Agreements, action items and next steps
From: Sent: Cc: Subject:	Staples, Rose Tuesday, June 30, 2015 5:10 PM Staples, Rose La Grange May 2015 Workshops - Notes Available on Licensing Website
-----------------------------------	---
Follow Up Flag:	Follow up
Flag Status:	Flagged

The Districts have posted on the <u>www.lagrange-licensing.com</u> website (in the DOCUMENTS section) the meeting notes and material used during the May 2015 La Grange Workshops:

May 19, 2015 – Flow & Temperature Monitoring / Modeling Workshop May 20, 2015 – Fish Passage Assessment Workshop No. 1

If you have any difficulty locating or accessing the documents, please let me know at rose.staples@hdrinc.com.

Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

#### La Grange Hydroelectric Project Licensing (FERC No. 14581) Flow and Temperature Monitoring/Modeling Workshop HDR Office 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA

#### Tuesday, May 19, 2015 1:30 pm to 4:30 pm

#### **Meeting Notes**

On May 19, 2015, Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) hosted a workshop about the flow and temperature monitoring and modeling component of the La Grange Hydroelectric Project Fish Passage Assessment. This document summarizes discussion during the meeting. It is not intended to be a transcript of the meeting. Attachment A to this document includes the following meeting documents: agenda, sign-in sheet, presentations, and handouts.

Mr. John Devine of HDR, Inc. (HDR), consultant to the Districts, welcomed participants to the meeting. Attendees went around the room and introduced themselves. Attendees on the phone introduced themselves: Mr. John Shelton and Ms. Gretchen Murphy of the California Department of Fish and Wildlife (CDFW) and Messrs. Tom Holly and John Wooster of the National Marine Fisheries Service (NMFS) participated in the meeting remotely.

Mr. Devine reviewed the meeting agenda and presented introductory slides. Mr. Devine described the La Grange Project and gave an overview of the La Grange Project Integrated Licensing Process (ILP). The flow and temperature monitoring and modeling is one part of a larger study of fish passage and reintroducing fish to the Upper Tuolumne River above Don Pedro Reservoir. Mr. Devine reviewed the objectives of the flow and temperature monitoring and modeling as well as the study area and schedule for reporting.

Mr. Chris Shutes (California Sportfishing Protecting Alliance) asked if there would be consultation for other components of the study request, in addition to the workshops for the flow and temperature modeling component and the fish passage feasibility component. Mr. Devine replied that for the upstream barrier study component, the Districts would be developing a criteria document, and would send the document out to licensing participants for review. The Districts will keep licensing participants apprised of the schedule and licensing participants are welcome to attend the fieldwork. Mr. Devine noted that this is a two-year study, and fieldwork will be completed this August and next spring/summer. The schedule for fieldwork in 2016 will be dependent on runoff; however, fieldwork will likely be scheduled to begin during high flows in May/June.

Mr. Shutes asked about the upper habitat characterization component of the study. Mr. Devine noted that similar to the temperature monitoring and modeling, the Districts would be voluntarily conducting a barriers assessment and summarized the study component. Mr. Devine also stated that NMFS was conducting LIDAR/hyperspectral remote sensing work to support additional upper habitat characterization objectives. Mr. Devine asked that NMFS provide the time frame

for completion of this work and its availability to interested parties as the Districts would like to wait and see what the results of that work are and then come together as a group with licensing participants to discuss the data gaps. Mr. Devine noted that it would be helpful if NMFS could provide an updated schedule for completing the LIDAR/hyperspectral work and when it would be available.

Mr. Devine finished his slide presentation and noted that the meeting handouts would be made available on the La Grange Hydroelectric Project licensing website after the meeting. He then introduced Mr. Mike Deas (Watercourse Engineering) as the modeling and monitoring lead for this effort. Mr. Deas began his presentation. Mr. Deas provided additional details about the objectives of the modeling and monitoring, scope of the work, and the study area. Referring to the map of the study area, Mr. Shutes asked if RM 81 was the extent of Don Pedro Reservoir at full pool. Mr. Devine replied that RM 81 is roughly the Don Pedro Project Boundary at elevation 845 ft.

Mr. Deas resumed his presentation. Mr. Deas provided details about the availability and sources of existing flow and temperature data. He described the rationale for choosing the locations and periods to be monitored for flow and temperature and the equipment that would be used for the study. Mr. Peter Drekmeier (Tuolumne River Trust) asked if a temperature gage was installed on the North Fork Tuolumne River, as he had seen similar equipment on a recent float trip. Mr. Devine replied that it may have been a gage as both the Districts and NMFS have monitoring equipment deployed in that area.

Mr. Deas resumed his presentation. Referring to the slide summarizing the locations of currently installed loggers, Mr. Bao Le (HDR) noted that stage loggers collect both stage data and temperature data.

Mr. Drekmeier asked why data was being collected at Cherry and Eleanor, upstream of Holm Powerhouse, as Mr. Drekmeier believed Holm to be a barrier to fish passage. Mr. Deas replied that there may be suitable habitat upstream of Holm. Mr. Devine added that because the Districts had not yet completed the barrier work, Holm was not yet confirmed to be a barrier to fish passage.

Referring to the table summarizing the available water temperature data, Mr. Bill Sears (City and County of San Francisco) noted that U.S. Geological Survey (USGS) temperature gage data was not included in the table. Mr. Sears asked if the Districts were only using data that came from standardized equipment, and were thus excluding the USGS data. Mr. Deas replied that the Districts would be using USGS temp gage data, but because the team had not yet processed the USGS temp data, it had not been included in the table.

Mr. Mark Gard (U.S. Fish and Wildlife Service) asked if the Districts would be collecting seasonal flow data in the South Fork Tuolumne River, or alternatively use mass balance to calculate the flow. Mr. Deas replied that the Districts would be collecting stage data on the South Fork.

Mike Deas resumed the presentation. Mr. Deas noted that the Districts would like access to the NMFS LIDAR data as soon as possible and asked what the schedule was for data availability. Mr. John Wooster (NMFS) replied that he had not been in touch recently with the research team completing the work, but he would look into it.

Mike Deas concluded the slide presentation. Mr. Deas said anyone wanting more information about the study was welcome to contact the Districts or HDR.

Mr. Devine asked Mr. Wooster to give an update on the status of the NMFS logger deployments. Mr. Wooster replied that during the prior week, NMFS had installed a logger on the Clavey around RM 16. Referring to the three downstream Tuolumne River locations where the Districts had installed loggers, Mr. Wooster noted that last July NMFS had deployed loggers in nearly identical locations, except that the NMFS logger above the North Fork is a bit further upstream than the Districts' logger. Mr. Wooster said that the NMFS logger near the South Fork is downstream of the confluence and close to Merals Pool. Given that loggers are installed both upstream and downstream of the South Fork, there may be an opportunity to evaluate mixing in the area. Mr. Wooster said NMFS had South Fork and Clavey loggers at almost identical river miles to the locations of the Districts' loggers. Mr. Wooster noted that data from the NMFS loggers may be helpful for extending the Districts' data set.

Mr. Devine asked if there was any data available from the loggers that NMFS had installed in July. Mr. Wooster replied that so far there had been only one data download, and that download was from the loggers on the Tuolumne River below South Fork. He said NMFS would be back in the field the first week of June to revisit some of the other loggers. Mr. Devine asked if NMFS has another download visit scheduled for later in the summer. Mr. Wooster replied that NMFS has summer fieldwork scheduled throughout the watershed for the genetics sampling, and will be downloading data opportunistically as NMFS staff are in the vicinity for other fieldwork. After the summer fieldwork is complete, NMFS will try to revisit all the loggers in the fall to complete another download.

Mr. Deas asked if NMFS planned to leave the loggers deployed over the winter. Mr. Wooster said yes, the loggers would be left out over the winter.

Mr. Bob Hughes (CDFW) asked if the Districts had a written study plan. Mr. Devine replied that the study plan is available in the La Grange Revised Study Plan document filed with licensing participants and FERC. Mr. Hughes asked if the study plan includes collaboration with interested parties, such as collaboration during model development and to review the data once it is available. Mr. Devine replied that the study plan does include future collaboration. Although there are no other workshops planned at this date, the Districts would certainly consider hosting an additional meeting(s) if licensing participants were interested. Mr. Hughes said that as long as everyone is kept up to speed on the progress, a formal workshop would not necessarily be needed. Mr. Shutes added that the Don Pedro Project hydrology workshop had been helpful. He noted that prior to the workshop, there had been considerable concern about the model. However, after the workshop, people had been satisfied that the study was in good shape.

Mr. Devine said that the availability of the Districts' logger data would depend on when the data could be downloaded and the schedule for QA/QC. Preliminary results are expected this fall.

Mr. Hughes said he thought the presentation was very thorough and that all the bases had been covered.

Mr. Wooster noted that the Districts planned to model the months June through October, but thought he heard the potential to model all months. Mr. Wooster asked how and when a decision would be made about the months to be modeled. Mr. Deas replied that the Districts had identified June through October as the critical period, and as the study proceeds and identifies additional information, the time period may be adjusted. Mr. Deas clarified that the reference to modeling all months was simply to illustrate that data would be collected year-round and thus all months could be modeled. Mr. Devine added that the months included in the model would be driven by life history of the species of interest (the timing of spawning, egg incubation, fry rearing, etc.). The end of the critical period is October because that is when temperatures start to get cold. However, the time period used in the model is up for discussion.

Mr. Wooster replied that to cover steelhead migration, NMFS would be interested in including some of the spring months prior to June. Mr. Wooster asked for clarification on the significance of the June to October period for the model. Would the model be built to cover all 12 months, but only be calibrated using the months of June through October? Mr. Deas replied that the months covered in the model will be dependent on the availability of data. The Districts will have year-round data for much of the system. However, the Districts anticipate that loggers will not be able to be maintained in some places over the winter, so there will be data gaps for some places. Mr. Deas said it was important to have confidence in the period of focus. Mr. Devine added that life history of target species would inform the modeling time period, and that discussions on that topic would start the next day (May 20) at the first La Grange Fish Passage Facilities Assessment Workshop.

Mr. Hughes requested that materials for the May 20 Fish Passage Facilities Assessment Workshop be posted online prior to the start of the workshop. Mr. Devine said that the Districts would do that. Mr. Wooster requested that a set of handouts from today's workshop be brought to the May 20 workshop for NMFS, as no NMFS representatives were able to attend today's meeting in-person. Mr. Devine said that a set of handouts would be brought for NMFS.

The meeting adjourned at 3:00 pm.

#### ACTION ITEMS

- 1. The Districts will post the meeting handouts to the La Grange Hydroelectric Project Licensing Website.
- 2. NMFS will provide a schedule for the LIDAR/hyperspectral study report and availability of the data.

- 3. Regarding meeting materials for the May 20 La Grange Fish Passage Facilities Assessment Workshop, the Districts will post the meeting materials to the licensing website prior to the start of the workshop.
- 4. The Districts will bring a set of handouts from this meeting to the May 20 Workshop and give the handouts to NMFS.

### ATTACHMENT A





#### La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:30 pm – 4:30 pm HDR Office, 2379 Gateway Oaks Drive, Suite 200, Sacramento, CA Conference Line: 1-866-994-6437, Passcode: 8140607 Join Lync Meeting https://meet.hdrinc.com/jesse.deason/8DZ4VNVN

#### **Meeting Objectives:**

- 1. Present an overview of the La Grange Hydroelectric Project Temperature Study.
- 2. Review and confirm proposed temperature and flow monitoring locations.
- 3. Review and confirm modeling approach.
- 4. Confirm schedule/tasks and opportunities for collaboration.

TIME	ΤΟΡΙΟ									
1:30 pm – 1:40 pm	Introduction of Participants (All)									
1:40 pm – 2:00 pm	Background/Overview of the La Grange Project Temperature Study (Districts)									
2:00 pm – 4:00 pm	<ul> <li>Temperature Study Introduction (Districts) <ul> <li>a. Study goal and objectives, scope, and study area</li> </ul> </li> <li>Review and Discussion of Existing Information <ul> <li>a. Parameters and sources</li> <li>b. Review process summary</li> <li>c. Results, findings and recommendations</li> </ul> </li> <li>Proposed Monitoring Program – Presentation and Discussion <ul> <li>a. Rationale</li> <li>i. Space (locations)</li> <li>ii. Time (periods of interest)</li> <li>iii. Equipment</li> </ul> </li> <li>Temperature Modeling – Presentation and Discussion <ul> <li>a. Approach (including spatial and temporal resolution)</li> <li>b. Data needs</li> <li>c. Model information/output</li> </ul> </li> <li>Schedule and Reporting</li> </ul>									
4:00 pm – 4:30 pm	Meeting Wrap-up (All) a. Confirm study approach and methods b. Agreements, action items and next steps									





#### La Grange Hydroelectric Project Flow and Temperature Monitoring/Modeling Workshop Tuesday, May 19, 1:30 pm to 4:30 pm

#### **Sign-In Sheet**

No.	Name	Entity	Email Address
1	Bao le	HOR	
2	JESSE DEASON	HDR	. 1
3	Bill Paris	MID	ł
4	Art Godwin	TID	
5	mike deas	Watercourse Engineering	i n
6	John Devine	HDR	
7	Steve Boyd	τιδ	
8	Ron Yoshiyama	San Francisco	
9	Peter Barnes	SURCB	E. ob
10	Chris Shutes	CSPA	
11	MarkeGard	USFUS	iV
12	Bob Huglos	CDFW	_
13	BIM SEARS	SPAC	
14	Peter Drehmun	TRT	C

By Phone: John Shelton (CDFW) Gretchen Murphy (CDFW) John Wooster (NMFS) Tom Holley (NMFS)





## La Grange Hydroelectric Project FERC No. 14581

### Fish Passage Assessment -Temperature Monitoring/Modeling Scope

La Grange Hydroelectric Project FERC No. 14581





## La Grange Project History



La Grange Diversion Dam

- La Grange Diversion Dam was constructed from 1891 to 1893
- The dam is owned jointly by Turlock Irrigation District and Modesto Irrigation District
- Purpose is to divert irrigation and municipal and industrial (M&I) water
- La Grange powerhouse was constructed in 1924. The powerhouse is owned by TID





### **Overview of La Grange Project ILP**

ILP Milestone	Schedule
Pre-Application Document (PAD)	January 2014
Scoping and study plan development	January 2015
FERC Study Plan Determination	February 2015
NMFS Request for Rehearing	April 2015
Study plan dispute resolution	May 2015
Study plan implementation	2015/2016
Initial Study Report	February 2016
Updated Study Report	February 2017
Final license application	June 2016





## **Revised Study Plan**

### **Study Components**

Fish Passage Facilities Assessment

Concept-Level Fish Passage Alternatives

La Grange Project Fish Barrier Assessment Upper Tuolumne River Basin Habitat Assessment

> Barriers to Upstream Anadromous Salmonid Migration

Water Temperature Monitoring and Modeling

> Upstream Habitat Characterization

Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Develop Hydrologic Data for Flow Conduits at the La Grange Project

Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

Assess Fish Presence and Potential for Stranding





### Water Temperature Monitoring and Modeling

- 1. Originally a study request from NMFS. FERC determines Districts are not required to do the study. Study being conducted voluntarily by the Districts.
- 2. Study tasks include evaluating existing information, collecting additional information and developing a temperature model to simulate existing thermal conditions in the Upper Tuolumne River between Early Intake and Don Pedro Reservoir.
- 3. Primary objective is identifying where temperatures appear to be suitable for the various life stages of salmonids.





### Today's Temperature Workshop

- 1. Districts' proposed a collaborative Workshop with LPs.
- 2. Core Study Team:
  - a) HDR select and acquire monitoring equipment, deployment, maintenance, and download.
  - b) Watercourse Engineering, Inc. water temperature modeling Lead Engineer.
- 3. Objectives include:
  - a) Review existing information and discuss additional information needs for temperature and river stage monitoring to support modeling.
  - b) Discuss and confirm modeling approach.
  - c) Discuss and confirm schedule/tasks and future collaboration.





## La Grange Hydroelectric Project FERC No. 14581

### Upper Tuolumne River Flow and Water Temperature Assessment

### May 19, 2015

La Grange Hydroelectric Project FERC No. 14581





# Topics

- Temperature Study Overview:
  - Study Goal/Objectives, scope, and study area
- Review and Discussion of Existing Information
- Monitoring Program Presentation and Discussion
- Temperature Modeling
- Meeting Wrap-up





# **Study Objectives**

- Complete a water temperature investigation to characterize thermal conditions in Upper Tuolumne River basin below Early Intake.
- Monitoring Data
  - Existing Data
  - Additional Monitoring
- Develop a flow and temperature model
  - Mainstem Tuolumne River from Early Intake to Don Pedro Reservoir and major tributaries





# **Monitoring Objectives**

- Identify existing data and monitoring locations
- Share current and proposed District monitoring sites
- Ensure locations, methods, need for additional monitoring are consistent/acceptable among parties
- Identify operations or conditions that may be anomalous during the proposed monitoring season (e.g., extreme drought, operational changes, etc.)





## **Temperature Modeling Objectives**

- Develop a tool to assist in assessing a range of
  - Hydrology
  - Temperature
  - Meteorology
  - Thermal regimes and suitability for salmonid life stages on a reach scale basis.
- Model will produce data for suitability criteria at sub-daily time steps, allowing the development of a range of metrics (e.g., daily mean or maximum, 7-day average of the mean or maximum, etc.)





## **Study Scope**

- Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data
- Task 2: Additional Monitoring -- Data Logger Deployment
- Task 3: Water Temperature Modeling and Reporting











7 \* TBD

May 19, 2015

La Grange Hydroelectric Project FERC No. 14581





# Task 1: Existing Data Analysis

- Data sources
  - Flow
  - Water temperature
  - Meteorology
- Review
  - Location, frequency, period assessment
- Findings
  - Identify data gaps
  - Characterize hydrology and thermal conditions
  - Define potential modeling periods
  - Recommendations for additional monitoring

La Grange Hydroelectric Project FERC No. 14581





## Flow – Data Sources

- USGS
  - 11276600 TUOLUMNE R AB EARLY INTAKE NR MATHER CA
  - 11276900 TUOLUMNE R BL EARLY INTAKE NR MATHER CA
  - 11285500 TUOLUMNE R A WARDS FERRY BR NR GROVELAND CA
  - 11277300 CHERRY C BL VALLEY DAM NR HETCH HETCHY CA
  - 11278300 CHERRY C NR EARLY INTAKE CA
  - 11278400 CHERRY C BL DION R HOLM PH, NR MATHER CA
  - 11278000 ELEANOR C NR HETCH HETCHY CA
- CCSF
  - Clavey River (historic data CDEC)
  - Minimum flow schedule
    - Cherry Creek
    - Eleanor Creek
    - Tuolumne River at Early Intake
- HDR proration methodology (ungaged tributaries)





# Flow - Summary

- Mainstem Tuolumne River
  - Early Intake managed operation (and spill)
  - Cherry Creek to Don Pedro Reservoir hydropower peaking with seasonal tributary contributions (e.g., spring snowmelt)
- Cherry/Eleanor Creeks
  - Above Dion R Holm PH managed operation (and spill)
  - Below Dion R Holm PH hydropower peaking
- SF Tuolumne, Clavey, and NF Tuolumne Rivers
  - Unregulated hydrograph
- Monitoring Recommendations
  - Additional seasonal flow data on Clavey and NF Tuolumne R.
  - Stage data on mainstem (travel time)

















## Water Temperature Data - Availability

#### Handout

Lat Viet   Use Viet   Viet	Label Tuolumne Rive TR078.5 USGS TR078.7 CDFG TR079.4 CCSF TR081.9 NMFS TR083.0 TID/N TR088.1 UC Da	er - Ma	vers		JFMA	I M J	JA	SON	DI	FMA	I I N	ASO	NDJ	FMA	M J J	A S O	NDJF	MAM	JJA	SON	I D J	FMA	JJ	ASO	NDJ	FMA		IAS	ON	DJF	MA	I L M	A S	ONI	DJF	MAE	LIM	A S	OND
Norm	Tuolumne Rive           TR078.5         USGS           TR078.7         CDFG           TR079.4         CCSF           TR081.9         NMFS           TR083.0         TID/N           TR088.1         UC Da	er - Ma	YES	·																																			
NUMB       NUMB      NUMB       NUMB      <	TR078.5         USGS           TR078.7         CDFG           TR079.4         CCSF           TR081.9         NMFS           TR083.0         TID/M           TR088.1         UC Da	i i	YES																																				
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# Water Temperature - Summary

- Potential modeling periods
  - June October (critical)
  - Year-round potential
- Analysis in progress
  - Key seasonal elements
  - Flow-temperature nexus
  - Critical periods

- 30 Winter Summer-Fall Winter 25 Base/Storm flow Snowmelt Descending Hydrograph Base/Storm flow Water Temperature (°C) 20 Tw, C 15 Q. cfs 10 1/1 1/31 3/2 4/2 5/2 6/2 7/2 8/1 9/1 10/1 11/1 12/1 12/31
- <u>Monitoring Recommendations</u>
  - Comprehensive data set at basin scale (including tributaries)
  - Tributaries: two or three locations (initially two)
  - Flow <u>and</u> temperature at key tributary locations

20000

17500

15000

12500

10000

7500 5000

2500

Rate

(cfs)





# Meteorology

- Several stations available in project area (CDEC):
  - CVM: CHERRY VALLEY MET STATION
  - SEW: SMITH PEAK RAWS
  - DDL: DUDLEYS (MCDIARMID FIRE STATION)
  - GIN: GIN FLAT
  - BKM: BUCK MEADOWS
  - JFR: JAWBONE LAVA FLAT RAWS
- Rim Fire destroyed long-term Buck Meadows site
- Stations of various duration, for various periods, and measured parameters
- Adopting HDR method consistent with long term data set completed under previous modeling work





# Meteorology

- HDR long-term data set determination (Don Pedro Reservoir)
- Adjusted vapor pressure terms a function of elevation and assumed lapse rate (6°C per 3,128 ft of elevation change)

Parameter	Unit	Source
Cloud Cover <sup>1</sup>	n/a	Calculated
Air Temperature <sup>2</sup>	deg C	Adjusted Stockton
Wet-Bulb Temperature <sup>3</sup>	deg C	Calculated
Barometric Pressure	mmHg	Adjusted Stockton
Wind Speed	m/s	Adjusted Stockton
Solar Radiation	w/m <sup>2</sup>	Sacramento 1973-1990 and Modesto City AP 1991-2010 (both NREL Solar radiation data), 2010 to present – Oakdale CIMIS

<sup>1</sup> Cloud cover was estimated based on solar radiation.

<sup>2</sup> Air temperature was only available from the Stockton meteorological station. Air temperature to be adjusted to representative elevation using a lapse rate.

<sup>3</sup> Wet-bulb temperatures are calculated based on adjusted air temperature and relative humidity from Stockton.





# Task 2: Monitoring

- Rationale
  - Space (locations)
  - Time (periods of interest)
- Summary of deployment
  - USFS special use permit
  - Access whitewater boating and helicopter
  - Installation schedule





## Rationale

- System characterization General
  - Thermal regime, flow conditions
  - Support modeling
- System characterization Spatial/temporal
  - Spatial
    - Mainstem
    - Tributary
  - Temporal
    - Period of interest: late winter late fall
    - Frequency: sub-daily (e.g., hourly)





# **Proposed Monitoring Locations**

	Logger Location	<b>River Mile</b>
1	TR above North Fork	TR 81.3
еЩ	TR near Indian Creek	TR 88.2
nst	TR above Clavey River	TR 91.1
٨aiı	TR above South Fork	TR 97.0
2	TR below Early Intake	TR 105.2
1	North Fork TR above TR	NF 0.1
	North Fork TR at RM8 Bridge	NF 8.0
Tributaries	Clavey R. above TR	CR 0.1
	Clavey R. at Gage 11283500	CR 8.4
	South Fork TR above TR	SF 0.1
	Cherry Ck. above TR	CC 0.6
	Cherry Ck. above Powerhouse	CC 1.2
	Cherry Ck. below Eleanor Ck.	CC 7.1
	Cherry Ck. above Eleanor Ck.	CC 7.2
	Eleanor Ck. Above Cherry Ck.	EC 0.1

- 15 proposed locations
- Mainstem locations to record water temperature at 30minute intervals
- Tributary locations to record water temperature and stage at 30-minute intervals

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# **Monitoring Equipment**



- Hobo Pro V2 or TidBit loggers (+/- 0.2 °C) deployed at identified locations in a protective housing.
- Recorders are placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure.
- Onset U20 level loggers installed to measure stage and temperature.
- Semi-permanent housings affixed to large boulders or bedrock to ensure the level logger does not move.
- A flow measurement will also be collected any location a stage recorder is installed or downloaded to develop a stage-discharge curve and continuous record.







## **Site Access and Monitoring**

Month	Vehicle/Hike Access	Helicopter/ Boat Access
2	2015	
April/May (Installation)	Х	Х
June	Х	
July		
August	Х	Х
September		
October/November (removal	Х	Х
or winter prep)		
2	2016	
March/April (re-installation or	Х	Х
first visit – flow dependent)		
Мау		
June	Х	
July		
August	Х	
September		
October/November (removal)	Х	Х

X = visit, -- = no visit

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- 4 monitoring locations accessed by boat or helicopter
- 3 monitoring locations accessed by foot or helicopter (check Rim Fire conditions)
- 8 monitoring locations accessed by foot

\*USFS SF-299 permit was approved on 4/22/15 for installations on Stanislaus Forest lands.




## Current Site Installations (as of 5/4/15)

Location	<b>River Mile</b>	Equipment	Coordinates	Notes
TR above North Fork	TR 81.3	1 water temp, 1 stage	37.896630 -120.252864	
TR above South Fork	TR 97.0	1 water temp, 1 stage, 2 barometric	37.84076 -120.04611	
TR below Early Intake	TR 105.2	2 water temp	37.87582 -119.9597	Flow from USGS
North Fork above TR	NF 0.1	2 stage	37.897235 -120.253729	
North Fork at RM8 Bridge	NF 8.0	2 stage	37.985196 -120.204608	
South Fork above TR	SF 0.1	2 stage	37.83870 -120.04852	
Cherry Creek above TR	CC 0.6	2 water temp	37.89253 -119.97121	Flow from USGS
Cherry Creek above HPH	CC 1.2	2 water temp	37.89395 -119.94917	Flow from USGS
Clavey River above TR	CR 0.1	1 stage	37.864518 -120.115802	Runoff too high to complete full install
Clavey River at USFS Bridge	CR 8.4	1 water temp	37.899398 -120.071984	Runoff too high to complete full install

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## **Additional Work to be Completed**

- Revisit Tuolumne River near Indian Creek (via Indian Creek trail) to redeploy water temperature loggers.
- Revisit two Clavey River locations to complete stage recorder installations and measure flow. Install stage recorder in Tuolumne River upstream of Clavey.
- Install stage recorder equipment at either the Cherry and Eleanor creeks confluence or at location of identified fish passage barrier.





## **Additional Work to be Completed**

## **Potential Pool Stratification**

- Assess potential pool stratification via temperature monitoring
- Identify one large pool in each tributary and 2-3 pools in mainstem
- Assess with handheld temperature device (e.g., profile)
- Deploy loggers near bottom and surface to identify cold water presence and persistence through time





# Water Temperature Modeling

- Model selection
- Data development
- Model calibration
- Model application







# **Model Selection Considerations**

- System Characteristics
  - Steep channel gradient
  - Variable flow regime
  - Snowmelt hydrograph and thermal response
  - Low summer flows
  - Variable meteorology (spatial/temporal)
  - Topographic, riparian shade
- Previous model applications:
  - Upper Tuolumne River: Hetch Hetchy to Early Intake
  - Upper Tuolumne River: Without Dams Analysis Tuolumne River above Hetch Hetchy to the San Joaquin River confluence
- RMA-2/RMA-11





## **RMA Models**

- A suite of modeling software, RMA-2 (v8) for hydrodynamics and RMA-11 (v8) for water temperature, is proposed to represent the Upper Tuolumne River as a one-dimensional (laterally and depth averaged) finite element model
- RMAGEN (v74): geometry file software (to build river grid)
- RMA-2 (v8): hydrodynamic model that calculates velocity, water surface elevation, and depth at defined nodes of each grid element
- RMA-11 (v8): water quality model that uses the depth and velocity results from RMA-2 to solve advection diffusion constituent transport equations for temperature.





## **RMA-2: Hydrodynamics**

- Steady and unsteady (dynamic) flows can be analyzed (e.g., hydropower peaking) solution of St Venant Equations
- Steep river reach capability
- Branching networks
- Low flow modeling ability
- $\Delta t = 1$  hr (maximum)
- $\Delta x = 25-50$  m (approximately)
- Open source code







## **RMA-11: Water Temperature**

- Solves advection-dispersion equation
- Comprehensive heat budget

• 
$$Q_n = (Q_{sw} + Q_{atm} - Q_b - Q_l + Q_s) + Q_b$$

- Bed Conduction
- Topographic shade
- Riparian Shade (tributaries)
- Capable of variable meteorology zones
- $\Delta t = 1$  hr (maximum)
- $\Delta x = 25-50$  m (approximately)
- Open source code









## **Stream Modeling**

- Data needs
  - Geometry
  - Hydrology (time series)
  - Water temperature (time series)
  - Meteorological data (time series)
- Stream reaches
  - Tuolumne River mainstem: Early Intake to Don Pedro Reservoir
  - Cherry Creek: [TBD]
  - Clavey River: [TBD]
  - North Fork Tuolumne River: [TBD]





## **Stream Geometry**

- Information needs:
  - Planform description of river (x-y information)
  - Longitudinal profile/bed slope
  - Channel cross sections
  - Riparian and topographic shade assumptions
- Data sources
  - LiDAR
  - DEMs
  - Previous studies (modeling, fisheries)
  - Other available information





# Hydrology

- Mainstem and tributary flows
  - Natural flow regimes (daily)
  - Hydropower peaking conditions (hourly)
- Accretions/depletions (calculated based on mass balance)
- Calibration data (within domain to test model)
  - Flow
  - Stage data (assess travel time (if multiple gages available))



USGS 11276600

Simulated

11/10/60

10/01/11

11/01/11

12/01/1





## Water Temperature

- Mainstem and tributary inflow temperatures
  - Natural flow regimes (daily or hourly)
  - Hydropower peaking conditions (hourly)
- Accretions/depletions (daily, weekly, or at river temperature)
- Calibration data (within domain to test model)



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7/31/11





## Meteorology

- Air temperature, Tair
- Relative Humidity, RH
- Dew point (calculate using Tair and RH) or wet bulb temperature
- Cloud cover (estimate or calculate)
- Atmospheric pressure (calculate)
- Wind speed
- Solar radiation







# Model Implementation, Calibration, Application

- Implementation
- Calibration
  - Statistical performance
  - Graphical performance
  - Hydrology
    - Flow
    - Travel time
  - Water temperature
    - Temperature
- Application
  - Comparative analysis
  - Potential years are 2007 to present

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## **Next Steps**

- 2015
  - Data synthesis and assessment (May)
  - Continue with field monitoring (through October 2016)
  - Ongoing coordination with project team on temperature assessment questions as they relate to barrier assessment
- 2016
  - Initial Study Report (February)
  - Develop temperature model based on 2015-16 information (March – November)
- 2017
  - Updated Study Report (February)





## **Questions or Comments?**

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Thm 78       No	
MCCCF       NO       Column New program N	
Triangle	
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1000 m/s       100 Tubune Root Good Strain of Indiane Root Good Strain of	
MMS       M	
MMS       VIS       VIS       VIOLINIAR MIR/LE VOIL	
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Table 1	
NMS       YES       Toulume Ruse in So f Lunger (and Cherry Ck confluence (TRA))       Image: Cherry Ck confluence (TRA)       Image: Cherry Ckerry Cker	
Trials       CSF       NO       Toolume River, ds of Cherry Ck confluence (TR3)       I	
Table a contraction of the region of the	
Table       CCSF       NO       Tuolume River, do f Early Intake Diversion Dam       Image: Company and the	
R105.0       CDF6       N0       Tuolume River at Early Intake       1	
TR103       CCF       NO       Tuolume River, downstream of Preston Falls       Image: Contraction Falls       Image: Contraction Fall	
<form>  Table No Tudume River, downstream of O'Shaughnessy Image: Contract of Contr</form>	
<form></form>	
NFT00.1       UC Davis       NO       North Fruolumne above Tuolumne River       *         Clavey River       VE       VE <t< th=""><th></th></t<>	
Clavey River.       VES       Clavey River Just US of confluence       *         CR0.1       NMFS       YES       Clavey River Just US of confluence       4       4       6       28       1<	
RMPS       YES       Clavey R. just US of confluence       *         CR0.3       UC Davis       NO       Clavey River, upstream of Tuolumne River confluence       1	
CR00.3       UC Davis       NO       Clavey River, upstream of Tuolumne River confluence       I       <	
CR16.9     CCSF     NO     Clavey River at 1N04 Bridge     8     9     9     10     9     10     9     10<	
<u>SF Tuolumne River</u>	
SFT00.2       CDFG       NO       South Fork of the Tuolumne River near confluence       7       18       16       19       19       10       19       10       1	
SFT00.2       CCSF       NO       South Fork Tuolumne River near 1N10 Bridge       6       1 <th1< th="">       1       1</th1<>	
SFT00.2       NMFS       YES       S Fork Tuolumne R. just US of confluence       *	
<u>Cherry Creek</u>	
CC00.6       NO       Cherry Creek Power House       I <thi< th=""> <thi< th="">       I       <th< th=""><th></th></th<></thi<></thi<>	
CC01.2       CCSF       NO       Cherry Creek, upstream of Dion Holm Powerhouse       8       30       30       12 <th12< th=""> <th12< td="" th<=""><td></td></th12<></th12<>	
CC07.0       CCSF       NO       Cherry Creek, ds of confluence with Eleanor Creek       7       1       1       14<	
CC07.1       CCSF       NO       Cherry Creek, upstream of Eleanor Creek confluence       7       1       1       14	
CC09.4       CCSF       NO       Cherry Creek, downstream of Cherry Dam       8       1       1       1       5       1 <th1< th="">       1       <th1< th="">       1       <th< td=""><td></td></th<></th1<></th1<>	
CC10.5       CCSF       NO       Cherry Creek, downstream of Cherry Dam       7       1       <	
CC16.1       CCSF       NO       Upstream of Cherry Lake       7       25       30       4       1	
Eleanor Creek	
EC00.0         CCSF         NO         Eleanor Creek, upstream of Cherry Creek confluence         7         0         3         1         25         1         0         1         1         1         1         1         1         1         1         1         1         1 <th1< th="">         1         <th1< th=""> <th1< th=""></th1<></th1<></th1<>	
EC01.7         CCSF         NO         Eleanor Creek, downstream of Miguel Creek confluence         7         0         1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>	
EC01.7         CCSF         NO         Eleanor Creek, downstream of Miguel Creek confluence         7         0         18         19         19         10 <th10< th=""> <th10< th="">         10</th10<></th10<>	
EC01.7         CCSF         NO         Eleanor Creek, downstream of Miguel Creek confluence         7         1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>	
EC01.8         CCSF         NO         Eleanor Creek, upstream of Miguel Creek confluence         7         0         1 <th1< th="">         1         <th1< th=""> <th1< th=""></th1<></th1<></th1<>	
MC00.0     CCSF     NO     Miguel Creek, upstream of Eleanor Creek confluence     7     5     1 <th1< th="">     1     <th1< th="">     1     1</th1<></th1<>	

\* These data sets have been identified, but data have not been obtained and placed in data base at this time # Less than









From:	Staples, Rose	
Sent:	Thursday, July 02, 2015 7:36 AM	
Cc:	Staples, Rose	
Subject:	La Grange May 19-20 Workshops Notes Should Now Be Accessible on Licensing Website	
Follow Up Flag:	Follow up	
Flag Status:	Flagged	

I was just alerted (thank you!) that the La Grange May 19 and May 20 Workshop Notes were not showing on the DOCUMENTS list on the <u>www.lagrange-licensing.com</u> website.

May 19, 2015 – Flow & Temperature Monitoring / Modeling Workshop May 20, 2015 – Fish Passage Assessment Workshop No. 1

That has been fixed—and the files should now be accessible. They should show up on the list as the number two and number three documents from the top of the list. Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

### **Districts' Temperature Study**

## Thermologger Deployment – Access – USFS Permitting

Correspondence

March – June 2015

From: Le, Bao
Sent: Wednesday, March 11, 2015 3:33 PM
To: <u>mike.deas@watercourseinc.com</u>; Vertucci, Charles
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: La Grange: Request Memo for Proposed Monitoring Locations

Hi Mike and Chuck.

Great meeting today. Thank you for attending.

Per discussions with John after the meeting, we have one additional request. If you could prepare for us a brief memorandum on the proposed temp monitoring locations, rationale and timeframe for deployment and any other relevant/supporting information, we'd like to review and then forward this along to NMFS. This will address some of their concerns about whether this is truly a collaborative process or not. We think it would be better received if they were aware of this sooner rather than later. Coming from Mike D. would be ideal. Can we have something next week? John, please weigh-in if I've missed anything.

Thanks, Bao

#### Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From: Vertucci, Charles
Sent: Wednesday, March 11, 2015 1:43 PM
To: Devine, John
Cc: Le, Bao
Subject: La Grange: Helicopter Usage for Upper Tuolumne Studies.

John – As identified in today's meeting there are several locations in the main stem Tuolumne River and tributaries that require temperature monitoring but are only accessible by boat or helicopter. Specifically the North Fork/Main Stem confluence, Main Stem at Indian Creek and Clavey River/Tuolumne Confluence.

I believe in a single day, staff could access these locations via helicopter to install the equipment and take needed data. Otherwise staff will have to use a guide service to raft the river including floating 5 miles of unneeded water. In addition, we'd like to install the loggers the week of March 30<sup>th</sup> and boating flows will not be available.

Staff will revisit the sites in October or November via helicopter in order to remove the equipment. The same logistical concerns apply at this time. The schedule would be repeated again in 2016.

Thanks,

Chuck

### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From: Le, Bao
Sent: Wednesday, March 11, 2015 6:00 PM
To: Vertucci, Charles; Devine, John
Subject: RE: La Grange: Helicopter Usage for Upper Tuolumne Studies.

Chuck, I think this is consistent with what we discussed at the tail end of the meeting for 2015; essentially scope helicopter use for deployment and retrieval with the float trip in between as the one download period. For 2016, I think we discussed deployment by raft in spring (given that is when we'd conduct the barrier assessment –  $2^{nd}$  time) with no downloads in between and retrieval in November, presumably by helicopter. Is this correct?

Thanks, Bao

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Friday, March 13, 2015 12:35 PM
To: Sears, William
Subject: La Grange: Water temperature deployments in Upper Tuolumne

Greetings Bill,

I'm working on logistics to deploy some water temperature loggers in the Upper Tuolumne and tributaries in the next few weeks to support the La Grange licensing process. I'm hoping you can provide some assistance on access to some sites historically monitored by CCSF staff.

Of particular interest is how to get to the Eleanor Creek/Cherry Creek confluence by car/foot. We're also trying to access the North Fork and Clavey rivers at their confluence with the Tuolumne but it looks like boat or Helicopter is the best bet.

Finally, did CCSF obtain any permits with the Stanislaus forest to install loggers? We've done work in other forests and had the blessing of the forest but never an official permit.

Any help is appreciated and thank you,

Chuck

### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com From: Le, Bao
Sent: Sunday, March 15, 2015 4:08 PM
To: Borovansky, Jenna; Deason, Jesse
Cc: Devine, John; Ashenfelter, Mark; Vertucci, Charles; Le, Bao
Subject: action items from the 3/11 temp meeting

Hi all.

### Action items from our temperature meeting last week:

Items not pertaining to logger location /deployment/installation and permitting have been removed

-R Staples 7/08/2015

- 4. Check on permitting requirements for temp loggers (Chuck)
- 5. Ideally, loggers to be in prior to April 8<sup>th</sup> meeting (Chuck)
- 6. Develop a proposed temperature monitoring locations tech memo for District review and ultimately to provide to NMFS for review in support of the collaborative process (Chuck and Mike D.)

I know some of these have been completed or are in process but if I have mischaracterized or missed anything, please weigh-in.

Thanks, Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From: Vertucci, Charles
Sent: Tuesday, March 17, 2015 6:28 PM
To: Le, Bao; Borovansky, Jenna; Devine, John
Subject: RE: La Grange: Water temperature deployments in Upper Tuolumne

All – Do you want me to pursue the details of the special use permit with the forest service, and getting one if it is indeed needed? Or is that something one of you need/want to champion?

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Sears, William [mailto:WSears@sfwater.org]
Sent: Tuesday, March 17, 2015 10:27 AM
To: Vertucci, Charles
Subject: RE: La Grange: Water temperature deployments in Upper Tuolumne

Hi Chuck – how are things? Load up the attached KMZ file in Google Earth and zoom in on the Cherry/Eleanor confluence. There are pins there showing where to park and how to get down to the creek. It's a steep gnarly slope so be careful, especially with the post-fire debris.

We maintain thermographs there (see pins in the KMZ) if you'd like to avoid the cost/effort. Jenna should have our latest data download and we're happy to share our data of course (it's public data).

For the North Fork and Clavey – try emailing Ryan Peek with UC Davis (<u>rapeek@ucdavis.edu</u>) and ask him how they do it. The best way is by raft...that's how we've done it. but I think they've been hiking down to both as well.

Yes, we do have a Special Use Permit with Stanislaus NF for thermistors and other studies we do, although we're having trouble getting it renewed due to staffing issues there. Contact Beth Martinez at the Stan (<u>bethmartinez@fs.fed.us</u>), she should be able to help get you started. If you don't get a response there let me know...I have some other routes we can try.

Best,

Bill

From: Devine, John
Sent: Wednesday, March 18, 2015 12:19 PM
To: Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Vertucci, Charles; Ashenfelter, Mark
Cc: Le, Bao; Borovansky, Jenna; Deason, Jesse; Bill Johnston; Boyd, Steve; Brathwaite, Anna; Campbell, Lien; Devine, John; Dias, Greg; Godwin, Art; Paris, Bill; Smart, Herb; Staples, Rose; Warren, Joy
Subject: Permits for Loggers in Wild & Scenic

In meeting with the Districts today, a question was raised about the need for permits for the loggers in the Wild & Scenic River section. The US Forest Service manages this reach. Can someone reach out to the USFS on this item? Probably Dusty Vaughn. Let me know.

### John Devine, P.E., M.ASCE

Senior Vice President, Hydropower Services

HDR

970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com

From: Vertucci, Charles
Sent: Wednesday, March 18, 2015 3:22 PM
To: Devine, John; Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Ashenfelter, Mark
Cc: Le, Bao; Borovansky, Jenna; Deason, Jesse; Bill Johnston; Boyd, Steve; Brathwaite, Anna; Campbell, Lien; Dias, Greg; Godwin, Art; Paris, Bill; Smart, Herb; Staples, Rose; Warren, Joy
Subject: RE: Permits for Loggers in Wild & Scenic

I already asked Bill Sears about this - he recommended Beth Martinez. Here are his comments below.

Yes, we do have a Special Use Permit with Stanislaus NF for thermistors and other studies we do, although we're having trouble getting it renewed due to staffing issues there. Contact Beth Martinez at the Stan (<u>bethmartinez@fs.fed.us</u>), she should be able to help get you started. If you don't get a response there let me know...I have some other routes we can try.

I'm happy to contact Beth to get this moving unless someone else want to handle it.

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Devine, John
Sent: Wednesday, March 18, 2015 12:24 PM
To: Vertucci, Charles; Le, Bao; 'Mike Deas' (<u>Mike.Deas@watercourseinc.com</u>); Ashenfelter, Mark
Cc: Le, Bao; Borovansky, Jenna; Deason, Jesse; Bill Johnston; Boyd, Steve; Brathwaite, Anna; Campbell, Lien; Dias, Greg; Godwin, Art; Paris, Bill; Smart, Herb; Staples, Rose; Warren, Joy
Subject: RE: Permits for Loggers in Wild & Scenic

Please move forward Chuck.

### John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Wednesday, March 18, 2015 2:20 PM
To: Martinez, Beth H -FS
Subject: water temperature monitoring in the Stanislaus Forest

Hi Beth,

I'm leading a water temperature monitoring effort as part of the La Grange FERC licensing and would like to install some long term temperature recorders at various locations (approximately 13) in the forest – the main stem Tuolumne and major tributaries. Monitoring would begin in March/April 2015 and continue through November 2016 (excluding winter). The cabling and housings would be removable at the end of the study, with the maximum impact being a few small holes in larger boulders or bedrock to hold mounting brackets in place.

I'm inquiring regarding a special use permit for these installations. We'd like to begin installing recorders the week of March 30, if possible.

Please let me know the best path forward and what additional information you may need.

Thanks in advance for your help with this request,

Chuck

### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From: Martinez, Beth H -FS [mailto:bethmartinez@fs.fed.us]
Sent: Wednesday, March 18, 2015 6:13 PM
To: Vertucci, Charles
Cc: Foote, Debra -FS; Vaughn, Gary D -FS
Subject: RE: water temperature monitoring in the Stanislaus Forest

Charles -

Attached please find the required SF-299, our application for special use permits. Please complete it in as much detail as possible. A map of locations for sites is needed, along with access routes defined.

Please send the completed application to the contacts cc'd above at the Groveland Ranger District.

The permit will be subject to Cost Recovery.....once we receive the application and see the complexity, we'll be able to let you know what the Cost Recovery fee will be.

I can't speak for the Groveland staff, but I suspect it is doubtful to complete a permit effort by the week of March 30<sup>th</sup>, but once a completed proposal/application package is received, we'll be able to provide an estimated time frame for permit preparation.

Thank you!

Beth

From: Vertucci, CharlesSent: Thursday, March 19, 2015 11:02 AMTo: Devine, John; Le, Bao; Borovansky, JennaSubject: FW: water temperature monitoring in the Stanislaus Forest

See attached special use permit. Sounds like we won't have a permit in hand to be out the week of March 30.

Also, I can write most of the technical aspects – what we'll do, where we need to go etc. but I need help from this team or the Districts on the legal side of things. There is also going to be a fee.

Thanks,

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Devine, JohnSent: Thursday, March 19, 2015 8:28 AMTo: Vertucci, Charles; Le, Bao; Borovansky, JennaSubject: RE: water temperature monitoring in the Stanislaus Forest

Chuck,

Please identify right off the questions/items needed for legal input and forward to Jesse who can work with legal. Please involve Mike Deas involved.

John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Vertucci, CharlesSent: Thursday, March 19, 2015 11:50 AMTo: Deason, JesseSubject: FW: water temperature monitoring in the Stanislaus Forest

Jesse – see email string below and attached FS permit. I'm going to work on the first few pages but can you work with HDR legal/corporate on getting the information for page 4

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342
STANDARD FORM	A 299 (6/99)				
Prescribed by DOI	/USDA/DOT				FORM APPROVED
P.L. 96-487 and Fe	P.L. 96-487 and Federal APPLICATION FOR TRANSPORTATION AND			OMB NO 0596-0082	
Register Notice 5-2	22-95 <b>UT</b> I	LITY	SYSTEM	IS AND FACILITIES	
	ON	FED		NDS	
					FOR AGENCY USE ONLY
NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative.					Application Number
the appli	cation can be completed at the preap	plicat	tion meeti	ng.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> )			Name, title, and address of authorized agent if different from item 1 <i>(include zip code)</i>		3. Telephone (area code)
					Applicant
					Authorized Agent
4. As applicant are	e you? (check one)	5.	Specify w	hat application is for: (check one)	
a. 🗌 Indivi	dual		a. 🗌	New authorization	
b. 🗌 Corp	pration*		b. 🗌	Renewing existing authorization No.	
c. 🗌 Partn	ership/Association*		c. 🗌	Amend existing authorization No.	
d. 🗌 State	Government/State Agency		d. 🗌	Assign existing authorization No.	
e. 🗌 Local	Government		e. 🗌	Existing use for which no authorization	has been received *

f. 🗌 Federal Agency	f. 🗌 Other*
* If checked, complete supplemental page	* If checked, provide details under item 7
6. If an individual, or partnership are you a citizen(s) of t	the United States?  Yes No
7. Project description (describe in detail): (a) Type of sy specifications ( <i>Length, width, grading, etc.</i> ); (d) term transported; (g) duration and timing of construction; a space is needed.)	ystem or facility, ( <i>e.g., canal, pipeline, road</i> ); (b) related structures and facilities; (c) physical of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be and (h) temporary work areas needed for construction ( <i>Attach additional sheets, if additional</i> and (h) temporary work areas needed for construction ( <i>Attach additional sheets, if additional</i>
8. Attach a map covering area and show location of pro	ject proposal
9. State or Local government approval:  Attack	hed Applied for Not Required
10. Nonreturnable application fee: Attached	Not required
11. Does project cross international boundary or affect in	nternational waterways?  Yes No (if "yes," indicate on map)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

13a. Describe other reasonable alternative routes and modes considered.

b. Why were these alternatives not selected?

c. Give explanation as to why it is necessary to cross Federal Lands.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number,

date, code, or name)

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant	Date

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

GENERAL INFORMATION	Department of Transportation
ALASKA NATIONAL INTEREST LANDS	Federal Aviation Administration
	Alaska Region AAL-4, 222 West 7th Ave., Box 14
This application will be used when applying for a right-of-way, permit, license, lease,	Anchorage, Alaska 99513-7587
and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National	Telephone: (907) 271-5285
Forest Monuments.	NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (EHWA).
Transportation and utility systems and facility uses for which the application may be used are:	
	OTHER THAN ALASKA NATIONAL INTEREST LANDS
1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.	Use of this form is not limited to National Interest Conservation Lands of Alaska.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.	Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.	For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.
A Systems for the transmission and distribution of electric energy	SPECIFIC INSTRUCTIONS
Cystems for the transmission and distribution of electric chergy.	(Items not listed are self-explanatory)
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.	7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

 Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture

Regional Forester, Forest Service (USFS)

Federal Office Building,

P.O. Box 21628

Juneau, Alaska 99802-1628

Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior

Bureau of Indian Affairs (BIA)

Juneau Area Office

Federal Building Annex

9109 Mendenhall Mall Road, Suite 5

Juneau, Alaska 99802

- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.

14 The responsible agency will provide instructions.

15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.

16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is

Telephone: (907) 586-7177

Department of the Interior

Bureau of Land Management

222 West 7th Avenue

P.O. Box 13

Anchorage, Alaska 99513-7599

Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS)	National Park Service (NPA)

Office of the Regional Director	Alaska Regional Office,

1011 East Tudor Road	2225 Gambell St. Rm. 107
IUTI East Tuuur Ruau	2225 Gambeli St., Rifi. 107

Anchorage, Alaska 99503 Anchorage, Alaska 99502-2892

Telephone: (907) 786-3440 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL					
NOTE: The responsible agency(ies) will provide instructions	CHECK AP	PROPRIATE			
	BL	OCK			
I - PRIVATE CORPORATIONS	ATTACHED	FILED*			
a. Articles of Incorporation					
b. Corporation Bylaws					
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State					
c. Copy of resolution authorizing filing					
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.					
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.					
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.					
II - PUBLIC CORPORATIONS					
a. Copy of law forming corporation					
b. Proof of organization					

C.	Copy of Bylaws		
d.	Copy of resolution authorizing filing		
e.	If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
	III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a.	Articles of association, if any		
b.	If one partner is authorized to sign, resolution authorizing action is		
C.	Name and address of each participant, partner, association, or other		
d.	If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
*	If the required information is already filed with the agency processing this application and is current, shock block aptitled "Ei	Ind " Drovido the	filo

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

From: Vertucci, Charles
Sent: Thursday, March 19, 2015 3:05 PM
To: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: water temperature monitoring in the Stanislaus Forest

John – from what I can tell. It seems like TID should be the Applicant and HDR is listed as the authorized agent – which means for the application we'll need a signature from TID as well as their legal/financial info as requested on the permit – does that make sense?

I'm working on getting a draft together.

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Devine, John
Sent: Saturday, March 21, 2015 8:43 AM
To: Vertucci, Charles; Le, Bao; Borovansky, Jenna; Deason, Jesse
Cc: Steve E. Boyd (<u>seboyd@tid.org</u>); Arthur Godwin <<u>afg@mrgb.org</u>> (<u>afg@mrgb.org</u>) (<u>afg@mrgb.org</u>)
Subject: RE: water temperature monitoring in the Stanislaus Forest

Yes, that makes sense. Please work with Steve Boyd and Art Godwin

John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Thursday, March 19, 2015 11:11 AM
To: Mike Deas
Subject: RE: water temperature monitoring in the Stanislaus Forest

Mike - this is all good and in line with what I have been writing myself.

## **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Mike Deas [mailto:Mike.Deas@watercourseinc.com]
Sent: Thursday, March 19, 2015 11:09 AM
To: Vertucci, Charles
Subject: RE: water temperature monitoring in the Stanislaus Forest

Chuck,

No, I have not had to fill one of these out, but we have had to "explain" ourselves before. I just took a few minutes to address a couple of the questions – perhaps this will help you. Let me know if you want to chat more about any of this,

Mike

Question 7:

a) Water temperature, stage, and flow monitoring network, (b) none, (c) deployment of remote sensing equipment (see attached description), (d) two (dates), (e) year-round, (f) n/a, (g) no construction required, but deployment will occur between date X and Y and sites will be visited approximately monthly to assess condition and download data, (h) n/a

Question 8: Map

Question 9: Not required

Question 12: for HDR to fill out

Question 13:

- a. None: only way to acquire data is to deploy information at mapped locations is to cross federal lands
- b. n/a
- c. Access to Tuolumne River and tributaries is required.

Question 15: Need – to complete FERC and other Agency (I would list the other <u>Federal</u> Agencies, NMFS, USFWS) (a) no construction, all materials deployed will be removed at the end of the project (b) n/a (c) n/a

Question 16: none

Question 17:

- a. None
- b. Minimal all monitoring equipment is small and not readily seen by visitors to federal lands
- c. None
- d. None
- e. None
- f. None

Question 18:

- a. None
- b. None

Question 20 (maybe a battery, but every rafter has a camera (go pro), gps, smart phone, radio, etc. out there. So I don't think this is an issue.

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Thursday, March 19, 2015 8:51 AM
To: Mike Deas
Subject: FW: water temperature monitoring in the Stanislaus Forest

Mike – it appears we do need a special use permit to drop loggers in the Tuolumne. Do you have any experience getting these?

I'm going to start working on the permit application ASAP.

## **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Deason, Jesse
Sent: Friday, March 20, 2015 1:28 PM
To: Vertucci, Charles
Cc: Devine, John; Borovansky, Jenna; Le, Bao
Subject: RE: water temperature monitoring in the Stanislaus Forest

Hi Chuck,

I reviewed the permit application. Page 4 is titled "Supplemental" and notes that the agency responsible for processing the application will provide instructions for this page. Did you receive any instructions from Beth? If not, would it be appropriate to ask her for instructions?

Thanks,

Jesse

#### **Jesse Fernandes Deason**

D 206.826.4744 M 781.249.2452

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Friday, March 20, 2015 7:09 AM
To: Mike Deas; Vertucci, Charles
Cc: Borovansky, Jenna
Subject: RE: water temperature monitoring in the Stanislaus Forest

Hi guys.

I just wanted to check in with regards to the site selection memo due to us this week. It's looking like we're still reviewing some additional data and we have some other considerations like CCSF's data at Cherry/Eleanor (and confidence in availability), etc. I imagine these will inform our locations and therefore the memo? Please let me know.

Thanks, Bao

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Tuesday, March 24, 2015 8:57 PM
To: Steve E. Boyd (seboyd@tid.org); Arthur Godwin
Cc: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: La Grange: water temperature monitoring in the Stanislaus Forest

Steve and Art – Please see attached Forest Service special use permit application with associated attachments for your review. We'd like to submit these to the Stanislaus Forest shortly so we can begin logger installations to capture spring temperatures.

Once the Forest reviews the permit, they will provide more information and a cost for the permit.

Please let me know if you have any questions.

Thanks,

Chuck

## **Charles Vertucci**

Senior Aquatic and Water Resources Scientist

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From: Arthur Godwin [mailto:afg@mrgb.org]
Sent: Wednesday, March 25, 2015 3:54 PM
To: Vertucci, Charles; Steve E. Boyd (seboyd@tid.org)
Cc: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

A few comments on the application and attachments.

1. Box 4 of the form, I would check e. Local Government as the applicant.

2. Box 7 should read Stanislaus National Forest.

3. In the Project Description (Attachment A) there is a sentence that reads: As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, CDFW) have agreed to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015. I suggest changing it to read that the districts have proposed to complete a series of studies. There is no actual agreement regarding the scope and extent of the studies and FERC's study plan determination eliminated this particular study from the required studies.

Art

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Thursday, March 26, 2015 10:53 AM
To: Arthur Godwin; Steve E. Boyd
Cc: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

Thanks Art. I'll incorporate those changes and any that Steve provides prior to sending it on to the Forest Service.

## **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Steve E. Boyd [mailto:seboyd@tid.org]
Sent: Friday, March 27, 2015 2:42 PM
To: Vertucci, Charles; 'Arthur Godwin'
Cc: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

I'm fine with those and proceeding.

From: Vertucci, Charles
Sent: Friday, March 27, 2015 2:58 PM
To: 'Steve E. Boyd'; 'Arthur Godwin'
Cc: Devine, John; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

Thanks Steve and Art.

Steve – I listed TID as the applicant on the permit (since the space was limited) so can you please sign (on page 3), scan and send me back a copy of the attached. I'll provide it to the forest after that.

Thank you,

## **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Tuesday, March 31, 2015 9:14 AM
To: Steve E. Boyd
Subject: FW: La Grange: water temperature monitoring in the Stanislaus Forest

Good Morning Steve – As a quick reminder, I need your signature on the Forest Service Permit before I can send it out.

Attached is a copy of the permit. Also, I heard you might be in Sacramento today, so I have a hard copy you can sign as well if that's easier.

Thanks,

**Chuck Vertucci** 

**D** 916.679.8768 **C** 916.425.8342

From: Vertucci, Charles [Charles.Vertucci@hdrinc.com]
Sent: Tuesday, March 31, 2015 5:19 PM
To: Le, Bao; Mike Deas
Cc: Ashenfelter, Mark; Borovansky, Jenna
Subject: RE: NMFS Temp Permit - some opportunity

# Bao – I'm in the field this Thursday. Could likely call in if needed. I'll be in the office tomorrow if you want to talk more with the internal team (afternoon is best)

Here is our proposed list with some additional information

Logger Location	River Mile	Access	Notes	Flow also	Potential Proposed Use of NMFS permit
TR above North Fork	TR 81.3	WW/Heli	Not in FS, NMFS gage here		
TR near Indian Creek	TR 88.2	WW/Heli	NMFS gage here		
TR above Clavey River	TR 91.1	WW/Heli	NMFS gage here		<mark>#2</mark>
TR above South Fork	TR 97.0	Car	NMFS gage blw SF		<mark>X#2</mark>
TR below Early Intake	TR 105.2	Car			×
North Fork above TR	NF 0.1	WW/Heli	Not in FS	Х	
North Fork at RM8 Bridge	NF 8.0	Car		Х	
Clavey above TR	CR 0.1	WW/Heli	NMFS gage here	Х	<mark>#1</mark>
Clavey at Gage 11283500	CR 8.4	Car		Х	<mark>X #2</mark>
South Fork above TR	SF 0.1	Car	NMFS gage here	х	<mark>X #1</mark>
Cherry above TR	CC 0.6	Car		Х	<mark>X #1</mark>

Cherry above Powerhouse	CC 1.2	Car		Х	<mark>X #1</mark>
Cherry below Elenor Cr.	CC 7.1	Car	CCSF still maintaining here – tough		
Cherry above Elenor Cr.	CC 7.2	Car	hike, especially	Х	
Elenor Cr. Above Cherry Cr.	EC 0.1	Car	after fire, Do we just use their loggers/data? No flow.	Х	

So there are 5 sites we identified with no current monitoring and accessed by car and one with a NMFS temp (but no flow).

Three more sites (Eleanor/Cherry area are car access but CCSF is already monitoring under their permit).

The tributary locations we also want flow. That requires a bit more of an installation. Not sure how specific NMFS permit is or how they install loggers.

Due to the delay in needing a permit, I've currently got the work scheduled for week of April 28 – I hope we have our own permit or we may still need NMFS. Getting out sooner will be tougher with scheduling. Could possibly sneak out for a few days April 9-10.

I also need to know if/what the Districts position on helicopter usage is and if they have a vendor. If it's a non-starter, we need to re-evaluate. Need to know the forests position on helicopters as well.

## **Chuck Vertucci**

**D** 916.679.8768 **C** 916.425.8342

From: Le, Bao
Sent: Tuesday, March 31, 2015 7:37 PM
To: Devine, John
Cc: Borovansky, Jenna; Deason, Jesse
Subject: RE: Bunch of things

Hi John.

It was a little of everything but a good trip. I've been tracking stuff and did some work so as not to fall too far behind. See below my responses in red.

From: Devine, John Sent: Tuesday, March 31, 2015 4:25 PM To: Le, Bao Cc: Borovansky, Jenna; Deason, Jesse Subject: Bunch of things

Bao,

I hope your vacation was totally relaxing (or exciting, if that's what you wanted it to be). Lots going on. Here's a few things to catch up on:

- How are we looking to be ready for April 7/8? Can we get agendas out to Districts? Will these be Live meetings? Conference lines, etc Draft agendas for both prep meetings are being kicked around. You've been cc'd on both strings. I suspect that with your blessing, we could get these out by COB tomorrow. Regarding materials, I've not gotten a lot of response from folks on the fish passage side of things. I'm working on a draft information needs list and I hope Mike G. is putting together materials on his end. Given we're on a tight timeframe, I imagine we'll get as much developed as possible and talk through approach/strategy for some of the topics. I also have a question to you as to who you'd like at the fish passage prep meeting from the team. Obvious participants are Chuck and Mike G. Paul B. is out recovering from surgery but requested his assistant attend...how do you feel about that? And Noah will be at the meeting in the morning (I assume). Did you want him to attend the afternoon or no? A number of emails in your inbox regarding agendas with attached drafts.
- At the Dispute Technical conference today, I asked Jim Hastreiter about his availability on May 19 and 20 (half day on 20<sup>th</sup>). Jim said he might have a conflict. He said he would check and get back to me. I mentioned to John Wooster that Jim might have a conflict and could NMFS give me some other dates, just as a back-up. He said he would, but that the week after that was out of the question for him. Ok. Boy, it'd be a lot easier if Jim could just make the May 20 meeting. It'd be a lot of schedules to juggle around for a new date but understand; especially if Jim needs to be at the workshop.
- John Wooster asked if we were still going to try to deploy temp loggers above Don Pedro. I said yes, we've applied for permits. He mentioned that NMFS has a permit for up to 15 loggers, and only deployed 8. He said NMFS might be

amenable to having the Districts use the other 7. I said we ought to get right on a call this Thursday and we could show NMFS what we were planning, and we could confirm where NMFS' are located, and see if we could work out a way to get our loggers in the field soon.

Bao – can you get right on this, try to get you, Mike D, Mark, and Chuck linked up with a call with NMFS for this Thursday. We can share with NMFS where we hoped to put loggers, where theirs are, and maybe locate a half dozen to get in right away. We should still continue to get our permits and add additional loggers, so try to get Chuck and Mike D to be thinking about where is it most important to get loggers where NMFS doesn't have them already. We can later add loggers redundant to NMFS' when we get our permits. Worth a shot, I think. Please check with Mike D. Mark and Chuck and then reach out (by tomorrow) to John Wooster via email to try to arrange a Thursday call. You'll have to lead the call, I don't want us talking about anything with NMFS except details on locations, and the potential to use their permits. Of course, it would still be NMFS permit, so might have to be considered NMFS' loggers. If we think that we should be getting our permits any day now – then no need for this. It's just an option to consider. If we don't want to pursue this option, we still need to reach out to john W and thank him for the offer. I will get this rolling with those guys and see what their thoughts are on this approach. This would add another field visit to the budget. It'll be interesting to see how/what Chuck thinks about turnaround time on the application (note Chuck was waiting for signature from Steve Boyd for submittal this morning so I think we're a bit further off from permits) and whether it's worth it or not. One other issue is that we were really hesitant to depend upon other sources of data (especially from agencies) in case we could not get the data when we needed it for our study schedule.

• Jesse -- We evidently referenced Lindley 2007 in our RSP. The Technical Panel requested we provide this paper to them. Can you locate and forward this to me. Attached is the Lindley paper.

John Devine, P.E., M.ASCE Senior Vice President, Hydropower Services

## HDR

970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com From: Le, Bao
Sent: Wednesday, April 01, 2015 11:22 AM
To: Vertucci, Charles
Cc: Borovansky, Jenna
Subject: helicopter use

Chuck, if you have not already, please run the helicopter issue to ground with both Steve Boyd and the USFS. If you get the USFS on the phone, might as well ask them about expected process timing too.

Thanks, Bao

#### **Bao Le**

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Wednesday, April 01, 2015 11:53 AM
To: Steve E. Boyd
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

Steve – On thing we mentioned in the permit was the potential use of helicopters to access some of the temperature sites. Does TID have a helicopter vendor they use for work or have any issues with us pursuing use of a helicopter? Perhaps CCSF has a vendor we could contract with?

For your information the helicopter usage is due to the inaccessibility by vehicle/foot to a few of the proposed locations – staff may be able to scramble down the canyon walls at certain locations but it is a safety issue (especially after the rim fire) and takes a very long time. During boating flows, these same sites may be accessed by raft (with a guide).

Thanks for any information you can provide,

## **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Vertucci, Charles
Sent: Wednesday, April 01, 2015 9:37 AM
To: Foote, Debra -FS; Vaughn, Gary D -FS
Cc: 'Martinez, Beth H -FS'
Subject: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

Beth – Thank you for providing the SF-299.

Gary and Debra - Attached is the completed SF-299 application. We are hoping to install the proposed monitoring equipment in late April in order to capture spring flows and temperatures. With that in mind, please let me know if you need additional information and the details of the cost recovery at your earliest convenience.

Thanks for your assistance with this request,

Chuck

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

		Page 1 of 4
STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UTI ON	CATION FOR TRANSPORTATION AND LITY SYSTEMS AND FACILITIES I FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082
NOTE: Before completing and filing the application, the	ne applicant should completely review this package	FOR AGENCY USE ONLY Application Number
and schedule a preapplication meeting with re processing the application. Each agency may	epresentatives of the agency responsible for / have specific and unique requirements to be met in	
preparing and processing the application. Ma the application can be completed at the preap	ny times, with the help of the agency representative, plication meeting.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> ) Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 (include zip code)	3. Telephone (area code)
333 Fast Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364
,		Authorized Agent 916-679-8768
<ul> <li>4. As applicant are you? (check one)</li> <li>a Individual</li> <li>b Corporation*</li> <li>c Partnership/Association*</li> <li>d State Government/State Agency</li> <li>e Local Government</li> <li>f Federal Agency</li> </ul>	5. Specify what application is for: (check one)         a.       New authorization         b.       Renewing existing authorization No.         c.       Amend existing authorization No.         d.       Assign existing authorization No.         e.       Existing use for which no authorization f.         Other*	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? 
Yes No

7. Project description (describe in detail): (a) Type of system or facility, (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*)

As part of the La Grange Hydroelectric licensing, Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose installing water temperature recorders at 10 locations in Stanislaus National Forest. A detailed description is provided in Attachment A.

8. Attach a map covering area and show	location of project prop	oosal				
9. State or Local government approval:	Attached	Applied for	r	$\boxtimes$	Not Required	
10. Nonreturnable application fee:	Attached	Not required				
11. Does project cross international boun	dary or affect internatio	onal waterways?		Yes	🛛 No	(if "yes," indicate on map)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed water temperature monitoring task described in this application and has years of experience installing and maintaining water temperature and stage recorders. HDR biologists have completed similar studies in the Merced, Yuba, and the Lower Tuolumne rivers. HDR staff are skilled at discrete installations that involve minimal impact to the surrounding landscape and general public. HDR staff work closely with local (CDFW) and Federal (NMFS. USFWS, USFS) agencies and private land owners to ensure all access and installations are approved prior to deployment.

13a. Describe other reasonable alternative routes and modes considered.

Locations of water temperature loggers were selected based on the data needed to build a complete and accurate water temperature model, so no alternatives were considered. See Attachment A.

b. Why were these alternatives not selected?

Data needs and subsequent monitoring locations were selected based on the model requirements so no alternatives were considered.

c. Give explanation as to why it is necessary to cross Federal Lands.

Travel onto the Stanislaus National Forest (Federal Lands) is required because the 10 desired monitoring locations occur on Forest Lands and all of the vehicular access will occur via established roadways.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)

None.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the Licensing of the La Grange Hydroelectric Project. Data will be used to build a temperature model to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River. The cost of these loggers is minimal compared to the overall cost of the Licensing effort. The complete study plan is provided in Attachment C.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have minimal effect on the local population. All installations are small and intentionally hidden. Installation and maintenance is completed by two staff traveling in a standard vehicle and hiking on foot with minimal equipment. See Attachment A.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

This project will have little to no effect on the local environment. The installations are small and made of materials not harmful to local soil and water. Logger installations will use existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study. See Attachment A.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

There will be little to no effects to local flora and fauna since the installations are minor and the materials are not hazardous to fish and wildlife.

 State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities.
 "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

No hazardous materials will be produced, transported or stored in the completion of the proposed Project.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

## Stanislaus National Forest

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant

Date April 1, 2015

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

#### GENERAL INFORMATION ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture Regional Forester, Forest Service (USFS) Federal Office Building, P.O. Box 21628 Juneau, Alaska 99802-1628 Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency. SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide instructions	CHECK AP BL	PROPRIATE OCK
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation		
b. Corporation Bylaws		
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State		
c. Copy of resolution authorizing filing		
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.		
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.		
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.		
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation		
b. Proof of organization		
c. Copy of Bylaws		
d. Copy of resolution authorizing filing		
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any		
b. If one partner is authorized to sign, resolution authorizing action is		
c. Name and address of each participant, partner, association, or other		
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Attachment A for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. April 1, 2015

# 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (NMFS, USFWS, and CDFW) have agreed to complete a series of studies including a Fish Passage Assessment study which was submitted to FERC as part of the Revised Study Plan document on January 5, 2015.

HDR Engineering, Inc. has been retained by the Districts to complete portions of the Fish Passage Assessment including the water temperature monitoring task described below.

# Water Temperature Monitoring

## Schedule and Access

Loggers are proposed to be installed at a total of 10 locations (Table 2) in early April 2015, if conditions allow and checked periodically throughout the monitoring period. Loggers will be removed or prepared to overwinter in late October or early November 2015. The same schedule will be repeated in 2016 (Table 1).

Access to logger installations will occur along existing Forest Service or other public roads. Staff will park safely at a point nearest the desired location and navigate to the river channel. Care will be taken to use any existing trails or traverse areas that will cause little impact to the land.

If areas are deemed too difficult to access on foot, they will be visited by white water boating or helicopter. In the case of boating, HDR will hire a guide with all necessary Forest Service permits to navigate them to areas of the Tuolumne River. For helicopter access (North Fork confluence, Indian Creek confluence and Clavey confluence), all safety elements will be observed and landing areas near logger installations will be within the high water line of the river, usually on a large gravel bar. The Forest Service would be notified of the fly date(s).

HDR will limit the visits to each location in order to provide the least impact while ensuring the collection of necessary data (Table 1).

Month	Vehicle/Hike Access	Helicopter/WW Boat Access
	2015	
March/April (installation)	Х	X
May		
June	Х	
July		Х
August	Х	
September		
October/November (removal	Х	Х
	2016	
March/April (installation)	Х	Х
May		
June	Х	
July		
August	Х	
September		
October/November (removal	X	X

Table 1. Schedule of field visits for 2015 and 2016 include general access.

X = monitoring required by method described.

-- = monitoring not required.

# Installation Equipment and locations

HDR staff proposes to install Onset ProV2 water temperature recorders in durable housings (Figure 1) in the Upper Tuolumne River (Table 2, Attachment B maps). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e. non-boating flows) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

HDR staff proposes to install Onset U20 Level loggers in durable housings in the identified tributaries (Table 2, see separate map). Duplicate loggers will be installed in order provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e. before or after spring run-off) in order to capture both high and low river flows. All monitoring locations will be documented with photographs and GPS coordinates. At tributary locations where stage recorders are installed, semi-permanent housings will be affixed to large boulders or bedrock to ensure the level logger does not move (Figure 2). The water surface elevation and depth of the logger will be noted at the time of installation. A flow measurement will also be collected anytime a stage recorder is installed or downloaded using standard USGS methods.



Figure 1. Photograph of normal water temperature recorder housing. Approximate size is 4-6 inches with 2-8 feet of associated cabling.

Logger Location	<b>River Mile</b>	Latitude	Longitude	Data value for model
		Tuolumne R	River	
TR near Indian Creek	TR 88.2	TBD	TBD	Provides temperatures longitudinally
TR above Clavey River	TR 91.1	TBD	TBD	along the main stem river, including
TR above South Fork	TR 97.0	TBD	TBD	above major tributaries.
TR below Early Intake	TR 105.2	TBD	TBD	
		Tributarie	es	
North Fork at RM8 Bridge	NF 8.0	TBD	TBD	Provides tributary water
Clavey above TR	CR 0.1	TBD	TBD	temperatures and flow at multiple
Clavey at Gage 11283500	CR 8.4	TBD	TBD	locations in order to build flow and
South Fork above TR	SF 0.1	TBD	TBD	temperature data sets for model input
Cherry Cr. above TR	CC 0.6	TBD	TBD	
Cherry Cr. above Powerhouse	CC 1.2	TBD	TBD	

1 able 2. Locations to install and monitor water temperature and/or st
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Figure 2. Example of level logger installation. Bolted (removable) to boulder or bedrock.

#### 13a. Describe other alternative routes and modes considered.

Locations of water temperature loggers were selected based on the data needed to build a complete and accurate water temperature model for the La Grange Project. Locations generally are at tributary confluences with the Tuolumne River and areas of hydrologic interest.

Additionally, much of the upper Tuolumne River watershed is very difficult terrain to access, and locations for installation were also selected with this in mind.

Travel onto the Stanislaus National Forest (SNF) is required because the desired monitoring locations occur on SNF lands and all of the vehicular access will occur via established roadways.

#### **16.** Effects on the local population

This project will have no effect on the local population. All installations are small and intentionally installed out of the way and hidden. Installation and maintenance of the loggers will be completed by two staff traveling in a standard vehicle and hiking on foot with minimal equipment.

If a helicopter is used at select locations (North Fork confluence, Indian Creek confluence and Clavey confluence), it will be to access areas not easily available to the general public. If there are people present (most likely white water boaters), care will be taken to avoid disturbing them (including visiting the sites during non-boating days or returning to the site at a different time, if possible).

#### 17. Effects on the local environment

This study will have little to no effect to the local environment. The installations are small and made of materials not harmful to local soil and water. Loggers will be installed using existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study.

The visual impact is minimal since all installations are small and will be intentionally placed out of the way and hidden.

Increases in noise would only occur if and when (three one day trips, at most) a helicopter is used to access certain areas (North Fork confluence, Indian Creek confluence and Clavey confluence).

#### Attachment B for Forest Service SF-299 Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. April 1, 2015

8. Maps of proposed water temperature logger locations (Figure 1 to Figure 7).



Figure 1. Approximate location of proposed temperature logger installation on North Fork Tuolumne River.



Figure 2. Approximate location of proposed temperature logger installation on the Tuolumne River near Indian Creek.



Figure 3. Approximate locations of proposed temperature logger installations on the Clavey and Tuolumne rivers.



Figure 4. Approximate location of proposed temperature logger installation on the Clavey River near Forest Route 1N01.



Figure 5. Approximate location of proposed temperature logger installations on the South Fork Tuolumne and Tuolumne rivers.



Figure 6. Approximate location of proposed temperature logger installation on the Tuolumne River below Early Intake Diversion.



Figure 7. Approximate location of proposed temperature logger installations on Cherry Creek above and below the Powerhouse.

### **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN This Page is Intentionally Left Blank

#### **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

#### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) There is no evidence of an anadromous spring-run Chinook or steelhead population. (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

## 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

# 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

## **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

## 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling</u>:
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic</u>, <u>Depth</u>, and <u>Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding</u>: Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

## **5.0** NEED FOR ADDITIONAL INFORMATION

#### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

## 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

## 6.0 STUDY AREA AND METHODS

### 6.1 Study Area

#### 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

## 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

#### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed 24.5). upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

#### 6.2.2 Upper Tuolumne River Basin Habitat Assessment

#### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

#### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

#### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

#### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

#### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

## 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

#### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

-	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 - November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	October 2014 – July 2015
•	Fieldwork September 2015 – April/May 20	16; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	September 2015 – May 2017
•	Data entry, QA/QC, and analysis	September 2015 – August 2017
•	Initial study report	
•	Updated study report	
•	Final study report	

#### 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

•	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	
•	Updated study report	

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	February 2016
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

- Review of results from NMFS Upstream Habitat Study<sup>2</sup>...... September/October 2015

## 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels	August 2015 - April/May 2016
•	Data entry, QA/QC, and summarizing	September 2015 – December 2016
•	Initial study report	
•	Updated study report	February 2017

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

### 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

## 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

## **10.0 REFERENCES**

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# ATTACHMENT A

# EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

Site Locations	Source <sup>3</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
			Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

**Existing Upper Tuolumne River Temperature Monitoring Sites.** 

<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

are not yet available. <sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

Site Locations	Source <sup>3</sup>	Tuolumne River Mile	Coordinates (Decimal °)		Period of Record	
			Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

From: Vertucci, Charles
Sent: Wednesday, April 01, 2015 9:41 AM
To: Le, Bao; Borovansky, Jenna; Devine, John; Arthur Godwin (<u>afg@mrgb.org</u>); <u>seboyd@tid.org</u>
Subject: FW: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

All – I submitted the SF-299 permit application to the Stanislaus this morning. Thanks for your help getting it put together. I'll update the group as I learn more.

Thanks,

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Steve E. Boyd [mailto:seboyd@tid.org]
Sent: Thursday, April 02, 2015 7:32 AM
To: Vertucci, Charles
Subject: RE: La Grange: water temperature monitoring in the Stanislaus Forest

Hi Chuck

We do not have a helicopter vendor we use. We have used one a couple of times for various things, but the times I was involved it just came out of the Sacramento phone book.

From: Vertucci, Charles
Sent: Thursday, April 02, 2015 3:38 PM
To: Sears, William (<u>WSears@sfwater.org</u>)
Cc: Le, Bao; Borovansky, Jenna
Subject: Upper Tuolumne Access question

Hi Bill – We're still working on getting some loggers installed in the upper Tuolumne and thanks for your help so far. Another topic that has come up is the use of a helicopter to access some of the sites – specifically the North Fork confluence and Clavey confluence. There appear to be no "good" ways in on foot and we can't even boat to them until releases start for the summer.

Does CCSF have a vendor for helicopter services if/when you need one and that you'd recommend? Do you have any experience navigating that topic with the Stanislaus Forest?

Thanks for the assistance!

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Le, Bao
Sent: Thursday, April 02, 2015 12:59 PM
To: John Wooster - NOAA Federal
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: NMFS Permit for Temperature Loggers - follow up

Hi John.

John Devine let me know that NMFS has an existing permit and some unused capacity for installation of equipment in the upper Tuolumne River watershed that could be possibly support the Temperature Study. I just wanted to drop you a quick line to let you know that 1) I appreciate the offer; and 2) we haven't dropped the ball on this. We wanted to discuss needs/locations and our existing permit application with the study leads before responding/reaching out but unfortunately, they're out this week. We plan to meet with them early next week and will circle back with you after that (before the end of next week). Hopefully this is ok.

Thanks, Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From: Le, Bao
Sent: Friday, April 03, 2015 9:27 AM
To: Vertucci, Charles; Borovansky, Jenna
Subject: RE: FW: Upper Tuolumne Access question

That's funny. Thanks, Chuck.

It might also be more acceptable to the USFS to avoid the helo. That said, refresh my memory about whether the helo was only considered for these spots. That is, would we use rafting as our primary access vs. helo now? I recall that the primary reason to consider it was on the fringe periods when we did not believe we could get to specific locations due to the lack of boatable flows. Please confirm.

Bao

From: Vertucci, Charles Sent: Friday, April 03, 2015 8:52 AM To: Le, Bao; Borovansky, Jenna Subject: FW: FW: Upper Tuolumne Access question

See below from Bill Sears – perhaps boating will be the best option (even before official rec flows start) but we should keep discussing.

My favorite part of Bill's email to the guide service "You'd probably have to do a two day trip w/stops for nerds to pound rebar and temp things in the river bed..?" - Definitely got a good laugh from that!

Chuck Vertucci

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Sears, William [mailto:WSears@sfwater.org] Sent: Thursday, April 02, 2015 6:06 PM To: Vertucci, Charles Subject: FW: FW: Upper Tuolumne Access question

Hi Chuck – there are ways to hike in, but like you say, they're not easy. See the email below from Steve at ARTA. They've been floating the mainstem recently, and releases from Holm Powerhouse should be good through the 7<sup>th</sup> or so. It doesn't look like we currently have any vendors for helo services; I don't think we've used them much if at all.

Best, Bill

From: ARTA River Trips [mailto:arta@arta.org] Sent: Thursday, April 02, 2015 6:01 PM To: Sears, William Subject: Re: FW: Upper Tuolumne Access question

Hi Bill -

Yes, we can get there. We can get there on less than ~950. I got there last weekend at 550. (It was

glorious by the way).

Would be glad to help and will cost less than a helicopter.

Steve ARTA River Trips non-profit and friendly since 1963 call us: 800-323-2782 visit us: <u>www.arta.org</u> follow us: <u>facebook</u> circle us: <u>google+</u> On 4/2/2015 4:26 PM, Sears, William wrote:

Hey Steve – HDR is trying to install temp sensors in the rafting reach on the T...particularly Clavey and NF confluence. Can't you float the reach on Adam's ~950? You'd probably have to do a two day trip w/stops for nerds to pound rebar and temp things in the river bed..?

From: Vertucci, Charles
Sent: Friday, April 03, 2015 12:29 PM
To: Le, Bao; Borovansky, Jenna
Subject: RE: FW: Upper Tuolumne Access question

The Helo was considered because we didn't think boating was an option during non-boating flows. It sounds like it is.

I'm still going to research the helo a bit more (we used one at Merced) because we could easily do all the difficult sites in a single day vs a multi day raft trip.

But cost and USFS buy in might lend itself to the boating.

I'll keep gathering as much information as I can.

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

On Fri, Apr 3, 2015 at 12:34 PM, Vertucci, Charles <<u>Charles.Vertucci@hdrinc.com</u>> wrote:

Hi Ryan – I'm leading the water temperature monitoring portion of the studies starting for the La Grange licensing. As part of that, we need to install temp loggers in a variety of locations in the Tuolumne river including some tough to access spots.

Bill Sears mentioned you may have some experience hiking down to both the North Fork Tuolumne and Clavey River confluences and I'd appreciate any feedback about both those sites. We're researching rafting companies and even helicopters as additional access options but want to understand what hiking would look like if we decided on it.

I guess in related news, does UC Davis still have any monitoring going on in the Tuolumne?

Thanks for any assistance you can provide.

Chuck

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D <u>916.679.8768</u> C <u>916.425.8342</u> charles.vertucci@hdrinc.com

From: Ryan Peek [mailto:rapeek@ucdavis.edu]
Sent: Friday, April 03, 2015 2:38 PM
To: Vertucci, Charles
Cc: Sarah Hayes
Subject: Re: Tuolumne River access

Hi Chuck,

Thanks for the email. Probably easier to chat about access details via the phone, but we do currently have monitoring loggers and cameras at the Clavey Confluence as part of a long term river monitoring project and a ecogeomorphology class taught here at UC Davis

(https://watershed.ucdavis.edu/project/long-term-river-monitoring, and class: https://watershed.ucdavis.edu/education/classes/ecogeomorphology-tuolumne-river-2014).

As far as access, we've tried accessing the NF Tuolumne by foot, but it requires a long hike and a bit of a circuitous drive through private property which requires permission from local landowners...best arranged through SFPUC. We tried once and decided we weren't going that way again.

We do access the Clavey via a trail on the South side of the Canyon. It's very steep switch backs, about 3-4 miles down to the confluence, maintained by the USFS. We usually hike in or raft down, but flows this year are going to be difficult for rafting, so hiking may be the only option.

For data we've been collecting, we installed solinst loggers at the confluence (in the mainstem Tuolumne upstream of the Clavey) and in the Clavey (a half mile upstream) which are recording 15 min stage and temperature. We also have a few time lapse cameras in the area recording photos every hour for time lapse videos we've been using for education/presentations (link to videos here: <a href="https://watershed.ucdavis.edu/doc/recession/time-lapse-hydrography#">https://watershed.ucdavis.edu/doc/recession/time-lapse-hydrography#</a>). We've been monitoring stream conditions as well as a suite of biotic variables (frogs, bmi, algae, etc) since 2012.

I have been updating and trying to make all flow/temperature data available here when possible. <u>https://aquapeek.shinyapps.io/thermohydrographs/</u>

I'm also cc'ing Sarah Yarnell, who has been involved in these projects from the start, she's our resident geomorphologist research scientist and has been teaching the undergraduate ecogeomorphology class for the last several years here at the Watershed Center.

Hope this helps. I'm available via phone as well.

530-383-3764.

Adios,

Ryan

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Monday, April 06, 2015 11:44 AM
To: Foote, Debra -FS; Vaughn, Gary D -FS
Subject: RE: SF-299 Permit Application - Water temperature Monitoring in the Stanislaus Forest for Turlock Irrigation District

Greetings Gary and Debra,

I just wanted to check in to make sure you have everything you'll need to evaluate our permit request for water temperature monitoring on the Stanislaus Forest. If possible, I'd appreciate an approximate date when we will hear about the permit, as I have a client meeting later this week.

In related news has the Indian Creek trail been reopened to the public since the rim fire?

Thank you for your help,

Chuck

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us]
Sent: Monday, April 06, 2015 3:08 PM
To: Vertucci, Charles
Cc: Vaughn, Gary D -FS
Subject: RE: SF-299 Permit Application - Water temperature Monitoring in the Stanislaus Forest for Turlock Irrigation District

I received your application. I will be starting work on that permit today I will contact you should I need further information.

From: "Foote, Debra -FS" <<u>dfoote@fs.fed.us</u>> Date: 04/08/2015 2:09 PM (GMT-08:00) To: "Vertucci, Charles" <<u>Charles.Vertucci@hdrinc.com</u>> Subject: Permit questions

Hi Chuck,

I'm working on your permit I will hopefully have it ready for your review and signature by tomorrow if I do not run in to any difficulties.

We can issue a research permit for up to 5 years. In your application I see that you want it for this year and it will be repeated in 2016 will you be needing this use longer than 12/31/2016?



Debbie Foote Resource Assistant

Forest Service

**Groveland Ranger District** 

p: 209-962-7825 x533 f: 209-962-7412 <u>dfoote@fs.fed.us</u>

24545 Hwy. 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Wednesday, April 08, 2015 3:44 PM
To: Foote, Debra -FS
Subject: RE: Permit questions

Debbie, thanks for the quick turnaround. Our current schedule is only through 2016. There is a slight chance we would want to collect data in 2017 depending on the water year. Would it be easier to have us reapply at that point if we need data in 2017?

Thanks again,

Chuck Vertucci

HDR

916.425.8342

From: "Foote, Debra -FS" <<u>dfoote@fs.fed.us</u>> Date: 04/08/2015 3:48 PM (GMT-08:00) To: "Vertucci, Charles" <<u>Charles.Vertucci@hdrinc.com</u>> Subject: RE: Permit questions

#### Chuck,

If there is any possibility of continuing use beyond 2016 it would be best to have the expiration date to be for the latest date that use may be needed up to 5 years can be issued. At the time the project is complete and no longer needed you would just notify us and we could terminate the permit.

Who will be signing the permit I need the name and title.

Thank you

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Wednesday, April 08, 2015 4:08 PM
To: Foote, Debra -FS
Subject: RE: Permit questions

Let's extend through 2017.

Steve Boyd will sign. He is the Licensing Coordinator for Turlock Irrigation district

Thank you,

Chuck Vertucci

HDR

916.425.8342

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us]Sent: Wednesday, April 08, 2015 7:22 PMTo: Vertucci, CharlesSubject: RE: Permit questions

Thank you I will complete the edits. To speed the process I would like to email the permit and have the person signing print 3 signature pages and return those to me. Will I email the completed permit to you or another email for the signatures and also when the fully executed permit is completed would I send the final copy to the Turlock Irrigation District attention Sam Boyd?

From: Vertucci, Charles

Sent: Wednesday, April 08, 2015 10:04 PM

**To:** Le, Bao; Borovansky, Jenna; Devine, John; Arthur Godwin (<u>afg@mrgb.org</u>); <u>seboyd@tid.org</u>; Mike Deas

**Subject:** RE: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

All - I heard from the USFS this afternoon that they are preparing to issue our permit this week. I'll review the final permit and Steve will need to sign it (again). I'll send it on to him ASAP.

They also extended the term of the permit through 2017 on the off chance we need to collect more data.

Unless this plan changes dramatically, I think we can let NMFS know there will be no need to coordinate use of their permit.

thanks all, Chuck

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

#### HDR

2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 M 916.679.8700 charles.vertucci@hdrinc.com

From: Le, Bao
Sent: Thursday, April 09, 2015 10:59 AM
To: Vertucci, Charles
Cc: Borovansky, Jenna; Devine, John; Arthur Godwin (<u>afg@mrgb.org</u>); <u>seboyd@tid.org</u>; Mike Deas
Subject: Re: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

Excellent. Thanks, Chuck.

Please let me know when you have it and I'll follow up with NMFS to thank them for their offer. I'll also ask them about the availability of their data to support our activities (if you have not).

On Thu, Apr 9, 2015 at 12:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

We met this week to discuss logger deployment and use of the NMFS permit. It turns out that our permit is expected by week's end so I think we'll be ok to deploy everything under that permit here shortly. Again, thank you for the offer. It's much appreciated.

At some point in the future, it would be great to discuss data sharing.

Thanks again,

Bao

#### Bao Le

Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us] Sent: Thursday, April 09, 2015 1:55 PM To: Vertucci, Charles Subject: permit

Chuck,

Here is the permit please have Steve Boyd sign and date 3 copies and return them to me once I receive those I will obtain our authorized signature and send a fully executed permit.

Thank you.



Debbie Foote Resource Assistant

Forest Service

**Groveland Ranger District** 

p: 209-962-7825 x533 f: 209-962-7412 <u>dfoote@fs.fed.us</u>

24545 Hwy. 120 Groveland, CA 95321 www.fs.fed.us

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On Apr 9, 2015, at 4:34 PM, Vertucci, Charles <<u>Charles.Vertucci@hdrinc.com</u>> wrote:

Steve (and others) – Attached is the permit from the Forest Service.

Steve – Please provide me 3 signed copies of the signature page and I'll forward them on to the Forest.

Thanks,

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Joyce Medeiros [mailto:jamedeiros@TID.ORG]
Sent: Friday, April 10, 2015 12:06 PM
To: Steve E. Boyd; Vertucci, Charles
Cc: Le, Bao; Borovansky, Jenna; Devine, John; Arthur Godwin (afg@mrgb.org)
Subject: RE: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

Please see attached.

Joyce :-)

From: Steve E. Boyd
Sent: Thursday, April 09, 2015 6:16 PM
To: Vertucci, Charles
Cc: Le, Bao; Borovansky, Jenna; Devine, John; Arthur Godwin (<u>afg@mrgb.org</u>); Joyce Medeiros
Subject: Re: SF-299 Permit Application - Water temperature monitoring in the Stanislaus Forest for Turlock Irrigation District

Joyce

I will forward the letter for my signature. Please add my signature and distribute to this group. I will forward you the letter.

Authorization ID: GRO1122 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE SPECIAL USE PERMIT Authority: ORGANIC ADMINISTRATION ACT June4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers less than 1 acre in the Stanislaus National Forest, ("the permit area"), as shown on the map(s) attached as Appendix A. This permit issued for the purpose of:

Installing, monitoring, and maintaining water temperature recorders at 10 locations. Each recorder will be placed in the active channel and secured by a removable steel cable or chain tethered to a stable root mass, boulder, or man-made structure such that the recorder is secured in the channel during high-flow periods. The recorder will be installed in the channel thalweg, and the housing and cable will be disguised as much as possible while ensuring the ability to retrieve the unit for future downloads.

### TERMS AND CONDITIONS

### I. <u>GENERAL TERMS</u>

A. <u>AUTHORITY</u>. This permit is issued pursuant to **ORGANIC ADMINISTRATION ACT June 4**, **1897** and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

**C.** <u>**TERM.**</u> This permit shall expire at midnight on 12/31/2016, 1 year and 8 months from the date of issuance.

**D.** <u>**RENEWAL.</u>** This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit</u>

is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the new permit is the same as the type of use and occupancy authorized by this permit; and (3) the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

# F. COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL

**REQUIREMENTS.** In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. <u>ASSIGNABILITY</u>. This permit is not assignable or transferable.

# II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

# III. OPERATIONS

A. <u>PERIOD OF USE</u>. Use or occupancy of the permit area shall be exercised at least 3 months each year.

**B.** <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

C. <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for noncompliance with any of the terms and conditions of this permit.

# IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D.** <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS.</u>** The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially</u>

damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.

**F.** DAMAGE TO UNITED STATES PROPERTY. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

G. <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations, their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment

and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

**H. INDEMNIFICATION OF THE UNITED STATES.** The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

# V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

C. <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

# **D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures specified by the authorized officer shall be the responsibility of the holder.

# **E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

# F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE

**SPECIES.** The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

G. <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

# H. CLEANUP AND REMEDIATION.

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

# VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

# VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>**REVOCATION AND SUSPENSION**</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.
- 5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

C. <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION**</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

# E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION

**WITHOUT RENEWAL.** Upon revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

# VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>**CURRENT ADDRESSES.</u>** The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.</u>

C. <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

### BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

April 10, 2015

Steve Boyd, Licensing Coordinator

DATE

APPROVED:

Jim Junette, District Ranger

DATE

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.
From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com] Sent: Friday, April 10, 2015 7:18 AM To: Foote, Debra -FS Subject: RE: permit

Debbie – I have a question regarding the permit.

Two of our proposed locations are near the North Fork confluence which appears to be outside of the Forest Service boundary – I did not account for those loggers in my permit request. Did I need to?

Thanks,

### **Chuck Vertucci**

**D** 916.679.8768 **C** 916.425.8342

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us] Sent: Friday, April 10, 2015 2:35 PM To: Vertucci, Charles Subject: RE: permit

I can not permit anything outside of the Forest. If they are on the Forest but on another district they would be included. If BLM or private you would need to have a permit or permission from them. As for the signature for speed send a PDF but please send an original signature page in the mail for the record.

Thanks.

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com]
Sent: Friday, April 10, 2015 3:47 PM
To: Foote, Debra -FS
Subject: RE: permit

Attached is a PDF signature.

I'll have Steve send a hard copy as well.

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us]Sent: Friday, April 10, 2015 7:00 PMTo: Vertucci, CharlesSubject: RE: permit

I will obtain the signature on our side as soon as possible

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 13, 2015 5:47 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles
Subject: Re: NMFS Permit for Logger Installation

Sounds good Bao. I'm assuming you don't really want to duplicate any installations, so yes I think some sort of coordination would be useful as we are planning on installing a few more loggers in May in addition to the ones we put out last summer. You should have the coordinates of the ones we put out last summer, they were listed in the back of the HDR Study Plan.

John

From: Vertucci, Charles [mailto:Charles.Vertucci@hdrinc.com] Sent: Wednesday, April 22, 2015 8:34 AM To: Le, Bao; Mike Deas Subject: RE: Temp memo table update

I was planning on 3 locations

TR above North Fork

TR above Clavey

TR below Early Intake

Are all the boating releases being made from Cherry? Maybe Early intake isn't appropriate since its upstream? We could just do the two locations or add TR above South Fork

Chuck Vertucci D 916.679.8768 C 916.425.8342 hdrinc.com/follow-us

-----Original Message-----From: Le, Bao Sent: Wednesday, April 22, 2015 8:00 AM To: Vertucci, Charles; <u>mike.deas@watercourseinc.com</u> Subject: Temp memo table update

Hi guys. Can you send me information on which locations in the mainstem TR will get level loggers added to them per our prep mtg discussion. I'm working on finalizing the memo for John. Thanks, Bao

From: Mike Deas [mailto:Mike.Deas@watercourseinc.com]
Sent: Thursday, April 23, 2015 1:31 PM
To: Le, Bao; Vertucci, Charles
Cc: Devine, John
Subject: RE: Final water temp install list

To clarify our objective (I've include John as well so he can correct if required).

We would need a lot of geometry information. We do want WSEL, and channel geometry to determine discharge, and we want logger depth because it is typical field information collected at the site (and distance from shore). We did not budget a detailed geometric survey, but will be using:

- River course and gradient (USGS DEM, google earth or similar means)
- Cross section will be estimated based on USGS DEM, google earth (or similar) and a general assessment of pools, runs, riffles from a basic habitat survey (to be completed by HDR).

In short, our modeling is not intended to assess each pool, or sub-reach for local habitat, but rather to assess the conditions on a reach-scale basis in the study area to identify the potential thermal conditions as they relate to reintroduction of the fish in question. For example (completely fictitious), a finding might be "the lower 2-4 miles of XYZ Creek are too warm to persistently support over-summer spring run holding, while river mile 4-5.5 (upstream to a barrier) are marginal, but could function in normal and wetter years." In the mainstem we already have geometry to work with.

Mike

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com] Sent: Thursday, April 23, 2015 9:37 AM To: Vertucci, Charles; Mike Deas Subject: RE: Final water temp install list

I don't know the necessity of #2 as it relates to our study requirements in the plan. Is it absolutely necessary? It seems beyond what we had initially scoped and I'm not sure why. I'll defer to you guys on this but we'll want John to understand why it is necessary to provide final approval.

From: Vertucci, Charles Sent: Thursday, April 23, 2015 8:19 AM To: Mike Deas; Le, Bao Subject: RE: Final water temp install list

Mike,

Regarding equipment installation and field data collection it seems we have two options.

- 1. Deploy level loggers and take discharge measurements at each download this data would allow us to build a best fit curve for stage and discharge
- 2. Deploy level loggers, take discharges, survey in WSEL, depth of loggers and collect channel geometry this would allow us to build a hydrologic model

#1 is certainly easier from a field installation standpoint since it doesn't require survey gear but I'm not sure what level of data you're expecting.

Thanks,

### **Chuck Vertucci**

**D** 916.679.8768 **C** 916.425.8342

hdrinc.com/follow-us

From: Vertucci, Charles Sent: Wednesday, April 22, 2015 12:09 PM To: 'Mike Deas'; Le, Bao Cc: Devine, John Subject: RE: Final water temp install list

We can make that happen Mike.

Are you available for a call this afternoon? I'd like to clarify what you need as far as stage/discharge data so I understand they level of data collection I need to be ready for.

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Mike Deas [mailto:Mike.Deas@watercourseinc.com]
Sent: Wednesday, April 22, 2015 12:04 PM
To: Le, Bao; Vertucci, Charles
Cc: Devine, John
Subject: RE: Final water temp install list

To close this out. I agree with Bao – let's rely on flow from USGS (not necessarily CDEC). For others (NMFS, CCSF, CDFW, UCD or anyone else who might be out there), we should provide redundancy on temperature.

Looking through the data, looks like Cherry (and maybe Eleanor) water temperature in the upper reaches may support spring-run chinook. This depends on access and, ultimately, the barriers work. Given this information, it would be valuable to have flow at the Cherry-Eleanor confluence (recommend collecting Cherry and Eleanor individually and using the sum to represent flow downstream of the confluence. This would be necessary information for the temperature work and valuable information for the barrier study. Thoughts? Mike

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Wednesday, April 22, 2015 11:29 AM
To: Vertucci, Charles; Mike Deas
Cc: Devine, John
Subject: RE: Final water temp install list

Thanks for the clarification, Chuck. If you guys are comfortable with exploring where USGS/CDEC data is available and it makes sense, I'm all for discussing where we can use these data sources as opposed to expending the resources to install our own.

Agree that maybe NMFS and CCSF should not be considered and where we need the data in these locations, we should plan on redundancy.

From: Vertucci, Charles
Sent: Wednesday, April 22, 2015 11:24 AM
To: Le, Bao; Mike Deas
Cc: Devine, John
Subject: RE: Final water temp install list

Bao - I think USGS is an easier "out" for justifying use of their data since they are permanent gage structures and the stage/flow should be well established given the period of records. The data is available in real-time through CDEC. As Mike mentioned – USGS sometimes modifies their data and we'll need to track that.

I think the difference we should focus on regarding NMFS is that they are only monitoring temperature and we need stage at almost every place where we'll overlap.

The CCSF data and NMFS temp data are probably more similar – basic installation etc, so you're right – our reasons to duplicate at NMFS probably apply to CCSF too. The three CCSF sites don't have stage either so if Mike needs flow at that confluence area, we'll need to do the installs.

#### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

hdrinc.com/follow-us

From: Vertucci, Charles Sent: Wednesday, April 22, 2015 10:44 AM To: Mike Deas; Le, Bao Subject: Final water temp install list

Mike and Bao - I want to confirm our main list prior to heading to the field next week – there are a few options where we could use existing data. Even if we decide to use existing data, I'll probably visit these sites and take some pictures and just get a feel for their locations (Mark needs to seem them for fish recon too). I didn't assume use of any NMFS data.

One option could be to use the 3 USGS gage for flow and temp data but install our own temp (only) loggers as back up.

Logger Location	River Mile	Access	Temperature	Stage	Notes
TR above North Fork	TR 81.3	Heli	х	х	Confirmed
TR near Indian Creek	TR 88.2	Heli	х		Confirmed
TR above Clavey River	TR 91.1	Heli	х	х	Confirmed
TR above South Fork	TR 97.0	Car/Hike	х	Х	Confirmed
TR below Early Intake	TR 105.2	Car/Hike	Х	x	USGS has stage and temp here – do we want redundant temp and/or stage? – gage is .5-1 mile below dam, looks like we could get loggers closer (maybe temp only?)
North Fork	NF 0.1	Heli	Х	Х	Confirmed

Please let me know what you think.

above TR					
North Fork at RM8 Bridge	NF 8.0	Car/Hike	х	х	Confirmed
Clavey River above TR	CR 0.1	Heli	Х	х	Confirmed
Clavey River at Gage 11283500	CR 8.4	Car/Hike	Х	х	Confirmed
South Fork above TR	SF 0.1	Car/Hike	Х	х	Confirmed
Cherry Creek above TR	CC 0.6	Car/Hike	Х	х	USGS has stage and temp here – do we want redundant temp and/or stage? Gage listed as "below powerhouse"5 miles below PH and .2 miles abv TR confluence
Cherry Creek above Powerhouse	CC 1.2	Car/Hike	х	х	USGS has stage and temp here – do we want redundant temp and/or stage? Gage 0.5 miles abv PH, first available access
Cherry Creek	· · ·				
below Eleanor Creek	CC 7.1	Car/Hike	Х		CCSF has temp here – difficult hike especially after Rim fire (according to Bill Sears) – he offered to send us their data. Do we want redundant? They don't have flow.
below Eleanor Creek Cherry Creek above Eleanor Cr.	CC 7.1 CC 7.2	Car/Hike Car/Hike	x	x	CCSF has temp here – difficult hike especially after Rim fire (according to Bill Sears) – he offered to send us their data. Do we want redundant? They don't have flow. CCSF has temp here – difficult hike especially after Rim fire (according to Bill Sears) – he offered to send us their data. Do we want redundant? They don't have flow.

Reminder of available gages from CDEC.

CDEC	Location	Lat	Long	Flow/Stage	Water Temp	Logging
TBI	TR blw Early Intake	37.88159	- 119.9701 8	6/7/06 - present	6/7/06 - present	15-minute data
CBD	Cherry below PH	37.8902	- 119.9699	8/2/2012- present	6/7/06- present	15-minute data
CEI	Cherry above PH	37.89437	- 119.9626 8	5/28/08- present	5/28/08- present	15-minute data
CBV	Cherry below Dam	37.9677	- 119.9174	10/18/2001- present	5/30/2006- present	15-minute data
ECK	Elanor below Dam	37.96909	- 119.8821 3	4/28/06- present	5/12/06- present	15-minute data

### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services On Mon, Apr 27, 2015 at 2:06 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

We will be duplicating a number of installations for reasons included in the attached memo from our temp monitoring/modeling team that details proposed locations and rationale. Deployment is planned for this week but please take a look and let us know if you have any comments/questions. We can discuss prior to or at the Temp Workshop (May 19<sup>th</sup>) and adapt accordingly as needed; however, folks felt it was really important to get out prior to the spring-run-off (if there is one). With regard to coordination, we're happy to do so and encourage you to use the information in the attached memo to inform your May deployment strategy.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 13, 2015 5:47 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles
Subject: Re: NMFS Permit for Logger Installation

Sounds good Bao. I'm assuming you don't really want to duplicate any installations, so yes I think some sort of coordination would be useful as we are planning on installing a few more loggers in May in addition to the ones we put out last summer. You should have the coordinates of the ones we put out last summer, they were listed in the back of the HDR Study Plan.

John

On Thu, Apr 9, 2015 at 12:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

We met this week to discuss logger deployment and use of the NMFS permit. It turns out that our permit is expected by week's end so I think we'll be ok to deploy everything under that permit here shortly. Again, thank you for the offer. It's much appreciated.

At some point in the future, it would be great to discuss data sharing.

Thanks again,

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, April 27, 2015 4:16 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles; mike.deas@watercourseinc.com
Subject: Re: NMFS Permit for Logger Installation

Hi Bao:

Thank you for distributing this plan, it is very helpful to see. I don't have a lot of feedback on the location list, it looks nearly identical to ours and the one we submitted to USFS for the permit. The only difference I note, is that we were / are intending on putting three loggers in the Clavey (the two locations you list, plus another at the next road crossing further upstream).

I can appreciate the desire to just get your own comprehensive temp set and make sure it is all parallel. For what it is worth, we also use Onset Pro V2 loggers, set at 15 minute intervals. I am heading out into the field on the upper Tuolumne during the week of May 11 to 14, with multiple objectives, including downloading loggers from last summer and putting in additional ones. I would appreciate confirmation that your crew was able to get into all your intended sites next week (it is fairly aggressive campaign to get to all the locations you have listed, if just 1 crew) - and if you weren't able to get to a few, I could prioritize getting to those locations to bridge the time gap until you can (if you don't want to use our loggers). I intend to still to maintain the loggers we put out and a few more, but I would like to drop some of our intended sites and use what you collect - with the hope of being able to get data sometime this fall in order to deliver to our science center for their habitat report... Can you confirm that you think this will be available to us this fall?

A few tidbits of info from last summer that may help your crew:

1. At the NF Tuolumne mouth. There is a fairly large alluvial fan at the mouth where it hits the main stem. Last summer the NF flow was going subsurface through this fan and any logger installed there would be high and dry. I would imagine next week there will be enough spring time flow that this might not be obvious - that you need to hike upstream a ways to make sure the logger stays wet. Also on this logger, many whitewater trips stop at the NF and hike up to the falls and jump off the rock - there isn't a trail here and everyone just tromps up the river, given how low the flow gets, you'll want an extra camo / hidden location to survive this foot traffic.

2. While next week you will find minimum releases from HPH upstream, I still expect flows in the mainstem to be up quite a bit relative to late summer minimum releases because of current tributary input. It is really surprising how low the mainstem stage gets at min flow later in the summer, so sink those loggers deeper than you think. Last summer I randomly found the HDR/MID/TID logger Tuolumne River at Indian Creek while looking for a location for ours - the logger was still wet, but there was a bunch of cabling around a rock that was high and dry that made it obvious.

Good luck,

John

From: Vertucci, Charles
Sent: Monday, April 27, 2015 7:57 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; <u>mike.deas@watercourseinc.com</u>
Subject: RE: NMFS Permit for Logger Installation

All – this was a timely and useful email from John. I'll work on a summary of our field efforts for both the PPT slides and perhaps to share with John. I'll try to have it out to this team by May 3. I'll be in the office on May 4 for any questions or review but will be out after that.

I'll have limited cell and email the rest of the week but I'll plan to check both in the morning and evening.

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Le, Bao
Sent: Wednesday, April 29, 2015 7:21 AM
To: 'John Wooster - NOAA Federal'
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles; <u>mike.deas@watercourseinc.com</u>
Subject: RE: NMFS Permit for Logger Installation

Hi John.

We're happy to provide you with a summary of how successful the field deployment was in order to inform your mid-May deployment. This will likely be available mid-late next week.

We'll also provide our temperature data (as required by the study) we collect at these locations. I'll talk with our field staff about schedule for fall download and necessary time for data management, QA/QC, etc. and get back to you as to when the data will be available.

Thanks, Bao

From: Vertucci, Charles
Sent: Sunday, May 03, 2015 1:02 PM
To: Devine, John; Le, Bao; <u>mike.deas@watercourseinc.com</u>; Borovansky, Jenna; Garello, Michael; Ashenfelter, Mark
Cc: Caldwell, Jarvis
Subject: La Grange: Update of field installations

All – Attached is an update from the fieldwork last week. We were not able to get all of it complete for a variety of reasons (flat tire, poor access, runoff/higher flows, etc).

A few key points:

- 1. Access is very difficult. Even bridge crossings are often steep scrambles down to the river and there isn't always good access upstream and downstream. The roads are "close" to the rivers only at bridges. The rest of the time, most roads are at least a few hundred vertical feet from the river even if they appear close on the map. Poison Oak is plentiful!
- 2. Plan longer for any field visits roads are long and slow. We didn't get turned back at all but a few of the roads were an adventure.

Some site specifics:

- 1. We need to go back to the TR and Clavey confluence for a few hours once runoff drops a bit more. This is a helicopter or raft access. We (and some rafters) were surprised to find as much water in the Clavey as we did.
- 2. We did not visit the Cherry/Eleanor confluence and still need to assess the access. We did scout Cherry creek a bit and think there may be a fish barrier well below the Cherry/Eleanor conf. Perhaps we should identify the barrier first and install WT/flow monitoring equipment below the barrier?

Mark and I will work on logistics to get back out there but look forward to any insights/reactions you can provide.

Thanks, Chuck

#### **Charles Vertucci**

Senior Aquatic and Water Resources Scientist Hydropower Services

HDR 2379 Gateway Oaks Dr. Suite 200 Sacramento, CA 95833 D 916.679.8768 C 916.425.8342 charles.vertucci@hdrinc.com

Logger Location	River Mile	Access	Temperature	Stage	Coordinates	Equipment	Notes
TR above North Fork	TR 81.3	Heli	Х	х	37.896630 -120.252864	LL#1 – 10086741 WT#1 – 10219704	Install complete
TR near Indian Creek	TR 88.2	Heli Car/Hike	х			None	No LZ for Heli. Scouted trail, appears reopened.
TR above Clavey River	TR 91.1	Heli	Х	х		None	No loggers installed due to runoff flows and rec flows
TR above South Fork	TR 97.0	Car/Hike	Х	Х	37.84076 -120.04611	LL#1 – 10106078 WT#1 – 10367839 Baro #1 – 10106068 Baro #2 – 10106077	Install complete
TR below Early Intake	TR 105.2	Car/Hike	Х	x	37.87582 -119.9597	WT#1 – 10109342 WT#2 – 10367805	Install complete
North Fork above TR	NF 0.1	Heli	Х	х	37.897235 -120.253729	LL#1 – 10106076 LL#2 – 10106072	Install complete
North Fork at RM8 Bridge	NF 8.0	Car/Hike	Х	х	37.985196 -120.204608	LL#1 – 10106080 LL#2 – 1184297	Install complete
Clavey River above TR	CR 0.1	Heli	х	x	37.864518 -120.115802	LL#1 – 10106075	Only 1 stage installed and no flow due to runoff
Clavey River at USFS Bridge	CR 8.4	Car/Hike	х	х	37.899398 -120.071984	WT#1 – 10109347	No stage installed or flow due to high runoff and imited access.
South Fork above TR	SF 0.1	Car/Hike	Х	х	37.83870 -120.04852	LL#1 – 10086739 LL#2 – 10106069	Install complete
Cherry Creek above TR	CC 0.6	Car/Hike	X	х	37.89253 -119.97121	WT#1 – 10219696 WT#2 – 10367806	Install complete

Cherry Creek above HPH	CC 1.2	Car/Hike	Х	х	37.89395 -119.94917	WT#1 – 10219679 WT#2 – 10109345	Install complete
Cherry Creek below Eleanor Creek	CC 7.1	Car/Hike	х			None	Ran out of time – need to scout/install
Cherry Creek above Eleanor Cr.	CC 7.2	Car/Hike	х	x		None	Ran out of time – need to scout/install
Eleanor Creek Above Cherry Creek	EC 0.1	Car/Hike	х	x		None	Ran out of time – need to scout/install

From: Vertucci, Charles [<u>Charles.Vertucci@hdrinc.com</u>]
Sent: Tuesday, June 02, 2015 9:40 AM
To: Mike Deas; Le, Bao
Subject: RE: La Grange Fish Studies - request for status update

Bao and Mike,

Just a check in to let you know our next visit to the Upper Tuolumne will be June 16-18. We'll plan to get the remaining loggers installed as well as check on the loggers we already dropped in.

June 17 is a "no water" day on the Tuolumne so we'll get a good chance to do some low flow work.

I'm not sure if we'll have time to do any deep pool investigations but will continue to be looking for options.

We'll likely hire the helicopter again for access to Clavey and North Fork (hopefully on June 17, no flow).

### **Chuck Vertucci**

D 916.679.8768 C 916.425.8342

From: Devine, John
Sent: Friday, June 26, 2015 3:34 PM
To: Le, Bao; Deason, Jesse; Vertucci, Charles
Subject: Fwd: Call from US Forest Service
Importance: High

### Could this be our folks? Do we need to contact the USFS?

Sent from my Verizon Wireless 4G LTE smartphone

------ Original message ------From: "Jones, Rick" <<u>Rick.Jones@hdrinc.com</u>> Date: 06/26/2015 3:19 PM (GMT-05:00) To: "Devine, John" <<u>John.Devine@hdrinc.com</u>>, "Borovansky, Jenna" <<u>Jenna.Borovansky@hdrinc.com</u>>, "Lynch, Jim" <<u>Jim.Lynch@hdrinc.com</u>> Cc: "Holzmer, Fred" <<u>Frederick.Holzmer@hdrinc.com</u>>, "Ernst, Michael C" <<u>Michael.Ernst@hdrinc.com</u>> Subject: FW: Call from US Forest Service

**John, Jenna, Jim –** FYI. I am not sure if these reports provided to Stanislaus NF are related to Don Pedro or any other related HDR FERC relicensing/compliance activity. Sending this note to you all as a heads-up.

Mike – Thank you for the feedback.

Rick Jones, P.E. D 916.679.8731 M 916.335.4100 hdrinc.com/follow-us

From: Ernst, Michael C Sent: Friday, June 26, 2015 12:05 PM To: Jones, Rick; Holzmer, Fred Subject: Call from US Forest Service Importance: High

Rick/Fred,

I received a call today from the US Forest Service. Ranger Bob Stanley, Lead River Ranger, Stanislaus Forest District has been receiving reports of unauthorized helicopter activity and they have also found some research tools imbedded in natural formations. Some mentioned to him that this could be related to the New Don Pedro FERC relicensing and HDR. He had never heard of HDR before, called our Folsom office, and the receptionist transferred him to me.

I told him I was not the person that could answer his questions, but I would pass the message on to the our hydropower group. His contact number is (209) 962-7825 ext. 534.

Michael Ernst, PE, CPSWQ, QSD

Environmental Engineer

From: Le, Bao
Sent: Monday, June 29, 2015 11:27 AM
To: Devine, John; Carol A. Russell; Steve E. Boyd
Cc: David R. Jigour; Holzmer, Fred; Vertucci, Charles; Borovansky, Jenna; Deason, Jesse; Ashenfelter, Mark
Subject: RE: HDR work in the upper Tuolumne USFS area

Please also note that I called Bob on Friday and left him a message apologizing for any inconvenience but also explaining that we do have an SUP for the work (i.e., anchoring temperature logger deployment equipment) and access via helicopter. I do think we should notify the USFS in advance of all future field events though.

I have cc'd Mark Ashenfelter on this email with regard to the rafting trip details below since he is organizing this fish barriers field work which is not a part of the temperature logger study.

From: Devine, John
Sent: Monday, June 29, 2015 5:50 AM
To: Carol A. Russell; Steve E. Boyd
Cc: David R. Jigour; Holzmer, Fred; Vertucci, Charles; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: HDR work in the upper Tuolumne USFS area

First of all, we have applied for and received the USFS permits for this work. Fred Holzmer is calling Ranger Stanley today.

**Fred** – please check in with Chuck and maybe the two of you can call Ranger Bob together. Please keep everyone on this email up to date.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Carol A. Russell [mailto:carussell@TID.ORG]
Sent: Friday, June 26, 2015 4:27 PM
To: Steve E. Boyd
Cc: Devine, John; David R. Jigour
Subject: FW: HDR work in the upper Tuolumne USFS area

Hi Steve –

FYI – DPRA received a complaint from the USFS regarding fish study work that is taking place in the Wild and Scenic area of the Tuolumne River. Please see the synopsis below. If we get further detail on the complaint, we will forward it on to you as well.

Please give Dave Jigour at extension 18 a call if you have any questions as he is the one that fielded the complaint.

Carol Russell Director Don Pedro Recreation Agency 10201 Bonds Flat Road La Grange, CA 95329 (209) 852-2396 ext. 13 www.donpedrolake.com

Managing the resources while providing for recreational opportunities at Don Pedro Recreation Area.



From: David R. Jigour Sent: Friday, June 26, 2015 1:18 PM To: Carol A. Russell Subject: HDR work in the upper Tuolumne USFS area

Carol,

I received a complaint today from Robert (Bob) Stanley, the USFS Groveland Ranger District, Tuolumne River Ranger, regarding activities of HDR personnel in the Tuolumne Wild and Scenic River areas that are administered by the USFS.

Bob said that HDR has apparently installed fish related study equipment in various locations within the Wild and Scenic River canyon and conducted other various studies without proper permission or permits from the USFS.

Bob said that they have also drilled into some rocks along the river and installed bolts and other equipment without permission or without providing any prior notification to the USFS. He also said that HDR attempted to book a 5 day rafting trip in the Tuolumne with one of the rafting outfitters in violation of the 3 day maximum stay that Bob said is prescribed by Federal CFRs.

I asked Bob to email me further specifics on what they have attributed to HDR activities in their area. I will forward this to you when I receive it.

I also told Bob that I would forward this information on to the TID person in charge of coordinating FERC re-licensing studies.

David R. Jigour Recreation Division Manager Lake Operations Don Pedro Recreation Agency Turlock Irrigation District 209-852-2396 ext. 18 Fax 209-852-2780 www.donpedrolake.com From: Devine, John
Sent: Monday, June 29, 2015 12:11 PM
To: David R. Jigour; Carol A. Russell; Steve E. Boyd
Cc: Holzmer, Fred; Vertucci, Charles; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: HDR work in the upper Tuolumne USFS area

### And also, apparently, he didn't think to check internally first. Emergency over.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: David R. Jigour [mailto:drjigour@TID.ORG]
Sent: Monday, June 29, 2015 11:37 AM
To: Devine, John; Carol A. Russell; Steve E. Boyd
Cc: Holzmer, Fred; Vertucci, Charles; Le, Bao; Borovansky, Jenna; Deason, Jesse
Subject: RE: HDR work in the upper Tuolumne USFS area

Bob Stanley from USFS, Groveland Ranger District, Stanislaus National Forest emailed me and let me know that apparently their Sonora Office forgot to inform them about HDR's special use permit.

David R. Jigour Recreation Division Manager Lake Operations Don Pedro Recreation Agency Turlock Irrigation District 209-852-2396 ext. 18 Fax 209-852-2780 www.donpedrolake.com

To:	La Grange Hydroelectric Project Consultation Record
From:	Bao Le
CC:	Jenna Borovansky, Jesse Deason, John Devine
Date:	6/30/2015
Re:	Conservation with River Ranger Robert Stanley, USFS re: Special Use Permit for Upper Tuolumne River Temperature Study

Comments: I spoke with Bob Stanley, USFS River Ranger regarding the unauthorized deployment of temperature loggers in the Upper Tuolumne River area. Bob stated that he was unaware of the fact that HDR had a Special Use Permit (SUP) to conduct this work and was apologetic that this was not better coordinated within his own office. He requested that I send to him the SPU as he hasn't had luck acquiring it internally. I told him that I would be happy to send the permit and our original application to him. I also stated that we were happy to be more coordinated on all future field events related to the SUP. To this end, I told him we would be happy to provide advance notification to him, his supervisor, Dusty Vaughn, and any other appropriate staff. Bob was appreciative of the offer and stated that I coordinate with Dusty and cc him on future communications since he was often out of the office for long periods of time during the recreation season.

From: Le, Bao
Sent: Tuesday, June 30, 2015 11:31 AM
To: 'Stanley, Robert N -FS'
Cc: Vaughn, Gary D -FS; Vertucci, Charles; 'Devine, John'; 'Borovansky, Jenna'
Subject: RE: special use permit for installing/removing data collection devices in Wild River Corridor

Thanks, Bob.

I've cc'd Chuck Vertucci who can dig up the details on the SUP for you. I've also cc'd others who are managing the La Grange Licensing Process for which the temperature/stage information is being collected (i.e., in support of temperature model development in collaboration with NMFS and others).

Dusty, Bob and I discussed setting up notification in advance of any temperature field events which we're happy to do (and sorry that we did not do for this last event). Please let us know the details of this notification (i.e., who you'd like on the notification, details, and period of time in advance).

Best regards,

Bao

From: Stanley, Robert N -FS [mailto:rstanley@fs.fed.us]
Sent: Tuesday, June 30, 2015 11:04 AM
To: Le, Bao
Cc: Vaughn, Gary D -FS
Subject: special use permit for installing/removing data collection devices in Wild River Corridor

Ні Вао

Thanks for returning my call.

Dusty Vaughn's phone is 209 962 7825 x 525 and his email is cc'd above.

I'm going to be out of the office for the next couple of weeks

**Bob Stanley** 

Lead River Ranger, USDA Forest Service, Stanislaus NF

Groveland RD, 24545 Highway 120, Groveland Ca. 95321

209-962-7825 x 534 Fax 209-962 7412 Cell 209-988-5159

From:	Le, Bao
Sent:	Friday, July 10, 2015 8:22 PM
То:	Vaughn, Gary D -FS; Foote, Debra -FS
Cc:	Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter,
	Mark
Subject:	RE: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Thanks for getting back to us, Gary.

We're working with Marty McDonnell (Sierra Mac River Trips). The dates of the upcoming raft trip would be August 2-6.

Please don't hesitate to let me know if you need anything else.

Bao

From: Vaughn, Gary D -FS [mailto:gdvaughn@fs.fed.us]
Sent: Friday, July 10, 2015 6:50 PM
To: Le, Bao; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: RE: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Bao,

Sorry for the delayed response. We're working with the special use permit leader, Beth Martinez, at our Forest Headquarters to try and clarify the use of the rafting companies as part of the permit and if such use impacts their allotment of days permitted to operate. Do you know the exact dates for your trip yet?

Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us Service State State

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Thursday, July 09, 2015 11:39 AM
To: Vaughn, Gary D -FS; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards, Bao

**Bao Le** Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From:	Vertucci, Charles
Sent:	Friday, July 10, 2015 6:50 PM
То:	Stanley, Robert N -FS; Vaughn, Gary D -FS; Foote, Debra -FS (dfoote@fs.fed.us)
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse; Le, Bao
Subject:	RE: Special Use Permit - Tuolumne River Temperature Monitoring
Attachments:	SF-299_TID_Amendment_071015.pdf; Attachment C_SF 299_TID_Amendment_
	071015.pdf; Attachment A_SF 299_TID_Amendment_071015.pdf; Attachment B_SF 299
	_TID_Amendment_071015.pdf

Dusty, Bob and Deb,

As Bao described in his earlier email, please find attached a permit amendment for additional water temperature monitoring on the Stanislaus National Forest. Additional monitoring locations have been identified in the Tuolumne River and Cherry and Eleanor creeks as model development continues to progress. Details are provided in our application and attachments.

Please note that this amendment application is in addition to the recent (new) application for the fish barrier assessment filed with the Forest earlier this week.

Should you have any questions please do not hesitate to contact us at your earliest convenience. I will be out of the office next week but feel free to email the group or contact Bao directly (contact information below).

We appreciate your consideration of our application and look forward to working with you.

Chuck Vertucci D 916.679.8768 C 916.425.8342

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From: Le, Bao
Sent: Wednesday, July 01, 2015 2:05 PM
To: Stanley, Robert N -FS; Vaughn, Gary D -FS
Cc: Vertucci, Charles; Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Special Use Permit - Tuolumne River Temperature Monitoring

Good afternoon Dusty and Bob,

As requested per discussions yesterday, please find attached the SUP for the temperature monitoring activities that the Districts and HDR are conducting on the National Forest. I've also included the application with attachments as they provide additional detail regarding the monitoring program which appears to be referenced (but not included) in the permit itself.

With regard to advance notification prior to any field work, we'd propose to notify both of you as well as the BLM of any work related to the permit/study a week in advance. If there are others you'd like notified or have any additional or alternative preferences, please let us know.

Lastly, upon review of the temperature work conducted to date, we've determined that an amendment to the existing SUP will be necessary to complete several remaining installations (e.g., by foot around Cherry and Eleanor creeks). I've cc'd Chuck Vertucci, our field lead, on this email. He will be reaching out to Debra Foote and/or Beth Martinez to work through this process. We just wanted to give you both a head's up should you have any questions or concerns.

Thank you again for getting back to us promptly. We appreciate the opportunity to stay coordinated.

Best regards,

Bao

### Bao Le

Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

		Page 1 of 4
STANDARD FORM 299 (6/99) Prescribed by DOI/USDA/DOT P.L. 96-487 and Federal Register Notice 5-22-95 UT ON	CATION FOR TRANSPORTATION AND ILITY SYSTEMS AND FACILITIES I FEDERAL LANDS	FORM APPROVED OMB NO. 0596-0082
		FOR AGENCY USE ONLY
NOTE: Before completing and filing the application, the and schedule a preapplication meeting with re- processing the application. Each agency may	he applicant should completely review this package epresentatives of the agency responsible for y have specific and unique requirements to be met in	Application Number
preparing and processing the application. Ma the application can be completed at the prear	any times, with the help of the agency representative, pplication meeting.	Date Filed
1. Name and address of applicant ( <i>include zip code</i> ) Turlock Irrigation District	Name, title, and address of authorized agent if different from item 1 (include zip code)	3. Telephone (area code)
333 East Canal Drive	HDR 2379 Gateway Oaks Dr #200	Applicant
Turlock, CA 95380	Sacramento,CA 95835	209-883-8364
		Authorized Agent 916-679-8768
<ul> <li>4. As applicant are you? (check one)</li> <li>a. Individual</li> <li>b. Corporation*</li> <li>c. Partnership/Association*</li> <li>d. State Government/State Agency</li> <li>e. Local Government</li> <li>f. Federal Agency</li> </ul>	<ul> <li>5. Specify what application is for: (check one)</li> <li>a. New authorization</li> <li>b. Renewing existing authorization No.</li> <li>c. Amend existing authorization No.</li> <li>d. Assign existing authorization No.</li> <li>e. Existing use for which no authorization</li> <li>f. Other*</li> </ul>	has been received *
* If checked, complete supplemental page	* If checked, provide details under item 7	

6. If an individual, or partnership are you a citizen(s) of the United States? 
Yes No

7. Project description (describe in detail): (a) Type of system or facility, (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed: (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*)

Turlock and Modesto Irrigation Districts and their consultant, HDR Inc. propose installing water temperature and stage recorders at up to 10 additional locations in Stanislaus National Forest. A detailed description of additional work is provided in Attachment A.

8. Attach a map covering area and show location of project proposal						
9. State or Local government approval:  Attached  Applied for	or 🛛 Not Required					
10. Nonreturnable application fee: 🗌 Attached 🗌 Not required						
11. Does project cross international boundary or affect international waterways?	11 Does project cross international boundary or affect international waterways? Ves Xes Xes Xes indicate on map					

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

The Districts have hired qualified biologists to help them execute each study they have proposed to complete. HDR Inc. will complete the proposed water temperature monitoring task described in this application and has years of experience installing and maintaining water temperature and stage recorders. HDR biologists have completed similar studies in the Merced, Yuba, and the Lower Tuolumne rivers.

13a. Describe other reasonable alternative routes and modes considered. Additional locations of water temperature loggers were selected based on the data needed to build a complete and accurate water temperature model, so no alternatives were considered. See Attachment A.

b. Why were these alternatives not selected?

Additional data needs and subsequent monitoring locations were selected based on the model requirements so no alternatives were considered.

c. Give explanation as to why it is necessary to cross Federal Lands.

Travel onto the Stanislaus National Forest (Federal Lands) is required because the additional monitoring locations occur on Forest Lands and all of the vehicular access will occur via established roadways.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)

This is an amendment to Special Use Permit (OMB 0596-0082), issued on 4/22/15. Authorization ID: GRO1122 Use Code: 422.

 Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

This work is part of the Licensing of the La Grange Hydroelectric Project. Data will be used to build a temperature model to help assess the potential for Chinook salmon and steelhead reintroduction to the upper Tuolumne River. The cost of these loggers is minimal compared to the overall cost of the Licensing effort. The complete study plan is provided in Attachment C.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles. This project will have minimal effect on the local population. All installations are small and hidden as much as possible. Installation and maintenance is completed by two staff traveling in a standard vehicle and hiking on foot with minimal equipment.

See Attachment A for complete installation description.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

This project will have little to no effect on the local environment. The installations are minor and made of materials not harmful to local soil and water. Logger installations will use existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study. See Attachment A.

 Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.
 There will be little to no effects to local flora and fauna since the installations are minor and the materials are not hazardous to fish and wildlife.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCIA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

No hazardous materials will be produced, transported or stored in the completion of the proposed Project.

20. Name all the Department(s)/Agency(ies) where this application is being filed. Stanislaus National Forest, USFS.

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Date

Signature of Applicant

StanBoyd

July 10, 2015

Title 18, U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

#### GENERAL INFORMATION ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.

2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.

3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.

4. Systems for the transmission and distribution of electric energy.

5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.

6. Improved right-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.

7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture Regional Forester, Forest Service (USFS) Federal Office Building, P.O. Box 21628 Juneau, Alaska 99802-1628 Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior Bureau of Indian Affairs (BIA) Juneau Area Office Federal Building Annex 9109 Mendenhall Mall Road, Suite 5 Juneau, Alaska 99802 Telephone: (907) 586-7177

Department of the Interior Bureau of Land Management 222 West 7th Avenue P.O. Box 13 Anchorage, Alaska 99513-7599 Telephone: (907) 271-5477 (or a local BLM Office)

U.S. Fish & Wildlife Service (FWS) Office of the Regional Director 1011 East Tudor Road Anchorage, Alaska 99503 Telephone: (907) 786-3440 National Park Service (NPA) Alaska Regional Office, 2225 Gambell St., Rm. 107 Anchorage, Alaska 99502-2892 Telephone: (907) 786-3440

Note - Filings with any Interior agency may be filed with any office noted above or with the Office of the Secretary of the Interior, Regional Environmental Office, r P.O. Box 120, 1675 C Street, Anchorage, Alaska 9513.

Department of Transportation Federal Aviation Administration Alaska Region AAL-4, 222 West 7th Ave., Box 14 Anchorage, Alaska 99513-7587 Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual department/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency. SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map must show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 Providing this information is as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. Fore example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

EFFECT OF NOT PROVIDING INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, the application may be rejected.

#### DATA COLLECTION STATEMENT

The Federal agencies collect this information from applicants requesting right-ofway, permit, license, lease, or certification for the use of Federal lands. The Federal agencies use this information to evaluate the applicant's proposal. The public is obligated to submit this form if they wish to obtain permission to use Federal lands.

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide instructions	CHECK AP BL	PROPRIATE OCK
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation		
b. Corporation Bylaws		
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State		
c. Copy of resolution authorizing filing		
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.		
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.		
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.		
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation		
b. Proof of organization		
c. Copy of Bylaws		
d. Copy of resolution authorizing filing		
e. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any		
b. If one partner is authorized to sign, resolution authorizing action is		
c. Name and address of each participant, partner, association, or other		
d. If application is for an oil or gas pipeline, provide information required by item "I-f" and "I-g" above.		

\* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (*e.g., number, date, code, name*). If not on file or current, attach the requested information.

#### NOTICE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate the requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act , Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations or the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information is estimated to average 8 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Attachment A for Forest Service SF-299 Amendment Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July 10, 2015

# 7. Project Description

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California. Currently the Districts are working through the Federal Energy Regulatory Commission (FERC) licensing process with the end goal to file an application for a license. As part of the process the Districts, at the request of federal fish and wildlife agencies (i.e., NMFS, USFWS, and CDFW) have agreed to complete a series of studies including a Fish Passage Assessment which was submitted to FERC as part of the Revised Study Plan document (Attachment C of the application) on January 5, 2015.

HDR Engineering, Inc. (HDR) has been retained by the Districts to complete portions of the Fish Passage Assessment including the water temperature monitoring task described below.

# Schedule and Access

A total of up to 10 additional locations are proposed to be monitored under this amendment (Table 2 and Table 3). Installation will occur in July or August 2015 and sites will be checked periodically throughout the monitoring period that terminates in December 2016. Loggers will be removed or prepared to overwinter in late October or early November 2015. The same site visit schedule will be repeated in 2016 (Table 1).

Access to logger installations proposed in this amendment will occur via existing Forest Service or other public roads. Staff will park safely at a point nearest the desired location and navigate to the river channel. Care will be taken to use any existing trails or traverse areas that will cause little impact to the land. HDR will limit the visits to each location in order to provide the least impact while ensuring the collection of necessary data (Table 1).

Month	Vehicle/Hike Access		
	2015		
August	X		
October/November	X		
	2016		
April/May/June (runoff dependent)	X		
August	X		
October/November (removal)	X		

## Table 1. Schedule of remaining field visits for 2015 and 2016 include general access.

### X = monitoring required by method described.

### Installation Equipment and locations

### Stage and Temperature Monitoring

HDR staff proposes to install Onset U20 Level loggers in durable housings in up to seven locations (Table 2 and Attachment B maps). Duplicate loggers will be installed to provide the best chance for a continuous data set. Loggers will be installed during low flow (i.e., before or after spring run-off) to capture both high and low river flows. All monitoring locations will be photographed and GPS coordinates will be recorded. At locations where stage recorders are installed, semi-permanent housings will be affixed to large boulders or bedrock to ensure the level logger does not move (Figure 1). For each installation, 3/8 inch (approximately dime sized) holes will be drilled to support the angle iron and flow measurements. Equipment will be removed at the end of the study. A flow measurement will also be collected anytime a stage recorder is installed or downloaded using standard USGS methods.



Figure 1. Example of level logger installation. Bolted (removable) to boulder or bedrock.

Logger Location	<b>River Mile*</b>	Access	
Specific Monitoring Locations			
Cherry Creek below Eleanor Creek	CC 7.0	Start hiles from Forest Dood 1N07 novigets downslope to	
Cherry Creek above Eleanor Creek	CC 7.1	confluence area. Access and installation on USFS land.	
Eleanor Creek above Cherry Creek	EC 0.1		
Monitoring Locations to be Determined by Barrier Assessment – September 2016			
Mid Cherry Creek**	CC 2-4	Hike upstream in river channel from Forest Road 1N07	
		Bridge, upstream of Holm Powerhouse.	
Upper Cherry Creek (below Dam)	CC 10-11	Hike to river channel from Cherry Oil Rd or other access	
		point.	
Upper Eleanor Creek (below Dam)	EC 2-3	Hike to river channel from Forest Road 1N97 or 1N14.	
* CC – Cherry Creek; EC – Eleanor Creek			
** One or two loggers may be deployed in this reach depending on field findings			

 Table 2. Additional monitoring locations to install water temperature and stage equipment.

Large Pool Monitoring

HDR staff proposes to install Onset Tidbit water temperature recorders in three large pools (Table 3 and Attachment B maps) in the upper Tuolumne River and Cherry Creek to measure water temperature and assess potential pool stratification. Loggers will be installed at multiple depths to monitor near surface and near bottom temperatures over a range of flows. Options for deployment include attaching to large boulders or bedrock, using a chain or cable, or other appropriate method identified in the field. Care will be taken to complete the installations in areas that will not impact recreational or biological interests.

Table 3. Additional locations to install and monitor water temperature in large pools.

Logger Location	<b>River Mile*</b>	Access	
Specific Monitoring Locations			
Cherry Creek – above Holm PH	CC 2-3	Hike downstream from Forest Road 1N97 to access river	
		at appropriate pool.	
Tuolumne River – below Lumsden	TR 97.5	Access river from Lumsden Rd, Forest Service 1N10	
Falls		downstream of bridge.	
Tuolumne River – Merals Pool	TR 96.5	Access river from Lumsden Rd, Forest Service 1N10	
		near rafting put in.	
* CC – Cherry Creek; TR – Tuolumne River			

# 13a. Describe other alternative routes and modes considered.

Additional locations of water temperature and stage loggers were selected based on the data needed to build a complete and accurate water temperature model for the La Grange Project. Locations generally are at tributary confluences with the Tuolumne River and areas of hydrologic interest.

Additionally, much of the upper Tuolumne River watershed is very difficult terrain to access and locations for installation were also selected with this in mind.

Travel onto the Stanislaus National Forest (SNF) is required because the desired monitoring locations occur on SNF lands and all of the vehicular access will occur via established roadways and hiking.

# 17. Effects on the local environment

This study will have little to no effect to the local environment. The installations are temporary, minor, and made of materials not harmful to local soil and water. Loggers will be installed using existing large boulders and bedrock, so no changes to the soil or stream channel will occur. Anchors may be placed into large boulders and bedrock but will be removed at the end of the study.

The visual impact is minimal since all installations are temporary, occupy a small area, and will be placed out of the way as much as possible.
#### **REVISED STUDY PLAN DOCUMENT**

#### **APPENDIX D**

LA GRANGE HYDROELECTRIC PROJECT FISH PASSAGE ASSESSMENT STUDY PLAN This Page is Intentionally Left Blank

#### **REVISED STUDY PLAN**

#### TURLOCK IRRIGATION DISTRICT AND MODESTO IRRIGATION DISTRICT

#### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581

#### Fish Passage Assessment

#### January 2015

#### **1.0 PROJECT DESCRIPTION**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.0 and 2.0). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Project is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project (FERC No. 2299), located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Hydroelectric Project (La Grange Project or Project) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.



Figure 1.0. La Grange Hydroelectric Project location map.



Figure 2.0. La Grange Hydroelectric Project site plan.

# 2.0 STUDY REQUESTS, PROJECT NEXUS, AND INFORMATION NEEDED

The Fish Passage Assessment contains three related elements that together comprise the entire study plan: (1) Fish Passage Facilities Assessment; (2) Upper Tuolumne River Basin Habitat Assessment; and (3) Habitat Assessment and Fish Stranding Observations below La Grange Diversion Dam and Powerhouse. A discussion of the need for information and the potential Project nexus is provided below for each study element. As explained below, the Districts continue to assert that certain elements of the Licensing Participants' (LPs) study requests, and this revised study plan, do not meet FERC's study plan criteria. While the Districts reserve their rights relative to any FERC order in this regard, the Districts do agree to execute the studies described below and herein in collaboration with LPs.

#### 2.1 Fish Passage Facilities Assessment

Resource agencies and Conservation Groups (CGs) requested that the Districts undertake extensive studies of anadromous fish passage facilities at the LGDD as part of the licensing process for the La Grange Project. Specifically, these entities requested that the Districts undertake investigations of upstream and downstream fish passage facilities at both LGDD and the Districts' Don Pedro Dam located upstream of LGDD. Although the Districts do not believe that studies of fish passage facilities meet FERC's study criteria specified in its regulations governing the Integrated Licensing Process (ILP) (see 18 C.F.R. Part 5, Section § 5.9), the Districts are willing to collaborate with licensing participants and FERC staff to perform certain investigations of upstream and downstream anadromous fish passage facilities at the Districts' La Grange and Don Pedro developments as described herein. The Districts are willing to conduct an initial two-year, phased evaluation to (1) develop in cooperation with LPs' initial biological design criteria for fish passage facilities, (2) gather hydrologic data and engineering information in cooperation with licensing participants to inform conceptual upstream and downstream passage facility layouts, (3) identify and discuss the pros and cons of potential fish passage alternatives, and (4) for select passage alternatives, develop preliminary functional design information, facility sizing, site plans, layouts, and initial cost estimates. In addition, any significant additional information needs required to develop reliable facility functional designs, construction cost estimates, and annual operation and maintenance (O&M) costs would be identified and defined.

The Districts continue to point out that the La Grange Project is not a FERC-licensed facility, and it remains uncertain whether FERC will issue a license for it, or if issued, the Districts would accept the license. The resource agencies and CGs have contended in their study requests for the La Grange Project that performing a study of installing fish passage facilities at just the La Grange Project would be of little value. Hence, the resource agencies and CGs are requesting fish passage studies within the La Grange proceeding that encompass both La Grange and Don Pedro facilities. The Districts contend that they cannot be compelled at this point in the Don Pedro relicensing process to study fish passage at Don Pedro, by proxy or otherwise, since Don Pedro is not a barrier to upstream adult migration. Any study of fish passage under the La Grange proceeding must only involve the La Grange facilities in order to meet FERC's seven study criteria. It has not been shown, and no evidence has been offered by any party, that fish

passage at La Grange is necessary to support viable salmon and/or steelhead populations on the Tuolumne River. The potential availability of suitable salmon or steelhead habitat above LGDD or Don Pedro Reservoir would be a sufficient justification for fish passage studies at La Grange *only* if there were not adequate habitat downstream of the La Grange Project. Substantial information has been provided in the Don Pedro Final License Application indicating that there is abundant salmon and steelhead habitat below LGDD, and no party has provided any evidence to the contrary.

Therefore, the Districts continue to assert that an assessment of fish passage facilities at LGDD constitutes a study of a mitigation measure, the need for which has not been adequately demonstrated by the resource agencies or CGs. It has been FERC's policy that costly studies of mitigation measures are not appropriate until a need for the measure has been demonstrated; that is, a project effect has been determined. Just as it is inappropriate to require a licensee to provide mitigation for entrainment mortality unless there is evidence that a fishery population is being adversely affected (*see, e.g., City of New Martinsville v. FERC*, 102 F. 3d 567 (D.C. Cir. 1996), *Tower Kleber Limited Partnership*, 91 FERC ¶ 61,172 (2000)), it is inappropriate to require applicants to undertake costly studies of mitigation measures until some evidence of a need for the mitigation measure has been demonstrated.

While the LGDD may appear to be a barrier to anadromous fish migration, there is no evidence presented in the resource agencies' or CGs' study requests showing that significant numbers of anadromous fish are being prevented from migrating upstream or, more to the point, that *any* upstream migrants are being prohibited from spawning or rearing in the Tuolumne River. Indeed, there is no evidence presented in any study request that indicates anadromous fish are even reaching the LGDD or even the La Grange powerhouse, and that if a few actually reach these locations, they are not moving back downstream to spawn.

Even the National Marine Fisheries Service' (NMFS) study request only goes as far as stating that the La Grange powerhouse and LGDD are "potential" barriers to adult salmon. The salmon population found in the Tuolumne River is a fall-run Chinook (Oncorhynchus tshawytscha) population. There is no evidence of an anadromous spring-run Chinook or steelhead (Oncorhynchus mykiss) population in the Tuolumne River. NMFS only identifies the potential that populations of these two anadromous species *might* at some future time occur in the Tuolumne River; however, there currently are no approved plans or approved funding for reintroduction of spring-run Chinook in the Tuolumne River basin, and, as noted, there is no evidence of a steelhead run in the Tuolumne River. Moreover, studies undertaken as part of the Don Pedro Hydroelectric Project relicensing demonstrate that there is sufficient spawning and rearing habitat in the lower Tuolumne River downstream of LGDD to meet the resource agencies' fall-run Chinook population goals, and the lower river supports a growing O. mykiss population. Proposing to provide upstream and downstream fish passage for spring-run Chinook and steelhead on the Tuolumne River, at a cost of many millions of dollars, is not warranted based on an uncertain and highly speculative projection that populations of these fish may at some future time exist in the Tuolumne River. Indeed, providing such upstream and downstream passage facilities at LGDD or Don Pedro based on the mere hope that such fish might someday be present and might someday make use of such facilities is the very type of "Field of Dreams"

justification ("If you build it, they will come.") that the courts have found to be legally inadequate. *See Bangor Hydro-Electric Co. v. FERC*, 78 F.3d 659, 664 (D.C. Cir. 1996).

In their Proposed Study Plan document filed with FERC and LPs on September 4, 2014, and in the Proposed Study Plan Meeting held on October 6, 2014, the Districts indicated their view that a step-wise approach to the question of the need for fish passage at LGDD was warranted, with the first step consisting of exploring whether, and to what extent, LGDD constitutes an actual barrier to anadromous fish migration. For this assessment, the Districts defined a two-year study to determine the number and timing of anadromous fish approaching and holding (i.e., not returning back downstream to spawning habitat) at LGDD.

In their request for studies, resource agencies and CGs have proposed a two-year study plan that they assert is necessary to evaluate anadromous fish passage at both LGDD and the Don Pedro Project. The Districts acknowledge that conducting the Districts' proposed fish barrier study filed in the PSP as a prerequisite to beginning an evaluation of upstream and downstream passage facilities would further extend the study period; therefore, in the spirit of cooperation, the Districts are willing to undertake the two-year study of fish passage facilities in parallel with its two-year study of the need for fish passage instead of conducting these studies sequentially, *i.e.*, conducting the study of fish passage facilities after completing the study of the need for fish passage contingent upon a need being established. To this end, the Districts have combined their original fish barrier study with the LPs' requests for studies of fish passage facilities. The study plan contained in this document is consistent with this in-parallel performance of the work. The Districts agree to undertake this "in-parallel" study approach, as described further below, as a voluntary action on their part in an attempt to foster a collaborative investigation of issues related to fish passage on the Tuolumne River. The fact that the Districts are agreeing to undertake this "in-parallel" study approach at this time should not be construed in any way as a waiver of the Districts' position that anadromous fish passage studies are premature unless and until a need for such facilities has been demonstrated by substantial evidence, and the Districts specifically reserve their right to advance this position at any time.

## 2.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). However, little information exists to reliably assess the current quantity and quality of suitable habitat for the adult, egg, fry, and juvenile life stages of these salmonid species in the upper Tuolumne River watershed. NMFS has requested information on upstream fish migration barriers and water temperatures in the upper basin to inform its decision making in the context of potential Federal Power Act (FPA) 10(j) recommendations, section 18 fishway prescriptions, and Endangered Species Act (ESA) consultation. For the reasons discussed below, the Districts do not believe that this request satisfies the study criteria requirements mandated by FERC's ILP process. Nevertheless, as with the fish passage facilities assessment, the Districts are willing to voluntarily conduct a two-year, phased assessment of physical barriers and temperature conditions in the upper Tuolumne River, as described in subsequent sections of this plan, and in cooperation with licensing participants.

Because the La Grange Project does not affect in any way habitat in the upper Tuolumne River, the request to study habitat in upstream reaches does not satisfy the ILP's project nexus criterion. NMFS' study request states that "...this study will primarily focus on an evaluation of historic habitat, to inform a potential reintroduction that will likely target the historic salmonid habitat above Don Pedro Reservoir as called for in NMFS Recovery Plan (NMFS 2014)." NMFS' Recovery Plan is based on the idea that prior to the construction of Wheaton Dam ca. 1878 and La Grange Dam in 1893, habitat in the upper Tuolumne River was suitable for spring-run Chinook and steelhead. To the extent that NMFS's requested study is an assessment of "historic habitat", the study request is considered an assessment of pre-Project conditions, and as a result, is inconsistent with FERC's definition of baseline. In any event, it is apparent that any study conducted under current conditions is a study of today's habitat conditions, which are markedly different from historical conditions (e.g., due to upstream water resource development and climate change to name two significant changes occurring over the last 130 years). NMFS' Recovery Plan did not have the benefit of prior field study or research to determine whether suitable habitat still exists above Don Pedro Reservoir; therefore, NMFS's current study request constitutes baseline research to identify whether, and the extent to which, suitable habitats may exist to support its Recovery Plan.

NMFS requires information to support judgments made as part of its Recovery Plan development and to inform its decision-making regarding the suitability of upstream habitats. In its December 22, 2011, Study Plan Determination for the Don Pedro Hydroelectric Project, FERC stated with respect to essentially the identical study request that "the suitability of upstream habitat for anadromous salmonids, as it relates to recovery planning under NMFS guidelines, pertains to management decisions and actions which most appropriately fall under NMFS jurisdiction. For these reasons, we conclude that a study of upriver populations and habitat is not warranted." The Districts continue to agree with FERC staff's December 2011 determination that it is the responsibility of the fisheries management agencies, not the license applicant, to conduct the research needed to understand the conditions in river reaches for which the agencies are proposing significant fish introduction programs, especially when the proposed project does not affect that habitat in any respect.

Nonetheless, to more fully support licensing participants in their development of information to supplement the proposed fish passage studies described above, to provide further useful information, to document important river conditions between Early Intake and the upstream end of the Don Pedro Reservoir, and to foster collaboration among all parties, the Districts will cooperate with licensing participants by conducting certain studies of this reach, as described further in this study plan.

## 2.3 Habitat Assessment and Fish Stranding Observations Below LGDD and Powerhouse

Licensing Participants requested information related to the operation of the La Grange Project and associated "five flow conduits" (i.e., La Grange powerhouse, LGDD spillway, TID sluicegate, MID hillside discharge, and LGDD sluicegate) because these "flow conduits" are asserted to have the potential to influence fish behavior and movement in the vicinity of the La Grange Project, as upstream migrating fish may be attracted to different sources of flow. LPs believe that the discharge patterns resulting from flows passed at the La Grange Project have the potential to attract, and then possibly strand, fish in multiple locations. The Districts have been asked to document flows, characterize physical habitat, and observe fish behavior in the immediate vicinity of the La Grange Project.

The Districts agree that Project operations have the potential to affect anadromous fish behavior, to the extent that anadromous fish may be present in the immediate area of Project facilities, thereby establishing a reasonable project nexus. Although the Districts have previously presented information on flow variability downstream of the La Grange Project (see Don Pedro Project Update Study Report, January 2014), NMFS' study request identifies the need for information on discharges associated with two conduits, i.e., the MID hillside discharge and the LGDD sluicegate that were not individually evaluated as part of the previous study under the Don Pedro relicensing proceeding. As such, the Districts agree to conduct a two-year evaluation of flows, associated habitat attributes, and observations of salmonids in the immediate area of the Project under certain flow conditions, as described further below.

## **3.0 RESOURCE AGENCY MANAGEMENT GOALS**

The Districts contend that four agencies have resource management goals related to Chinook salmon and steelhead and/or their habitat: (1) U.S. Department of Interior, Fish and Wildlife Service (USFWS); (2) NMFS; (3) California Department of Fish and Wildlife (CDFW); and (4) State Water Resources Control Board (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 Central Valley steelhead, the relevant recovery actions identified by NMFS for the Tuolumne River are to: (1) conduct habitat evaluations, and (2) manage cold water pools behind La Grange and Don Pedro dams to provide suitable water temperatures for all downstream life stages of *O.mykiss*. For Chinook salmon, the relevant goals are to enhance the Essential Fish Habitat downstream of LGDD and achieve a viable population of Central Valley fall/late fall-run

Chinook salmon in the Tuolumne River. NMFS' spring-run Chinook salmon conceptual recovery scenario for the Southern Sierra Nevada Diversity Group includes reintroduction of spring-run Chinook salmon to candidate areas of the Tuolumne River above Don Pedro Dam.

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 Wildlife 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.

## 4.0 SUMMARY OF STUDY OBJECTIVES

The proposed La Grange Project Fish Passage Assessment has the following objectives to be achieved using a phased approach over the course of two consecutive study years (study phases are described in Methods [Section 6] and Schedule [Section 7]).

- 1. Fish Passage Facilities Assessment:
  - a. <u>Concept-level fish passage alternatives</u>: Identify and develop concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. Specific objectives are listed below:
    - 1. Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities.
    - 2. Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration.
    - 3. Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities.
    - 4. Develop Class-V opinions of probable construction cost and annual O&M costs for select fish passage concept(s).
  - b. <u>La Grange Project fish barrier assessment:</u> Evaluate the potential impact of the LGDD and the La Grange powerhouse as barriers to upstream migration of adult fall-run Chinook salmon and, if they occur, steelhead, including documentation of the

proportion of the fall-run Chinook salmon population that may migrate upstream to these facilities and an evaluation of potential impacts on spawning of these fish. Specific objectives are listed below:

- 1. Determine the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse during the 2015/2016 and 2016/2017 migration seasons.
- 2. Compare the number of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse to total escapement during the 2015/2016 and 2016/2017 migration seasons.
- 3. Document carcass condition (egg retention) to evaluate pre-spawn mortality rates of fall-run Chinook salmon and steelhead migrating upstream to the LGDD and the La Grange powerhouse, which do not move back downstream to spawn.
- 4. Implement formal documentation of incidental fish observations in the vicinity of the LGDD, La Grange powerhouse tailrace, and TID sluicegate channel.
- 2. <u>Upper Tuolumne River Basin Habitat Assessment:</u> Conduct an assessment of certain habitat characteristics of the Tuolumne River upstream of the Don Pedro Hydroelectric Project Boundary.
  - a. <u>Barriers to Upstream Anadromous Salmonid Migration</u>:
    - 1. Compile results from any relevant prior studies and conduct field surveys to identify barriers (both complete and partial) to upstream anadromous salmonid migration in the mainstem Tuolumne River upstream of the Don Pedro Project Boundary and tributaries, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River.
    - 2. Characterize and document the physical structure of each barrier under base flow and spawning migration flow conditions.
  - b. <u>Water Temperature Monitoring and Modeling:</u>
    - 1. Use existing data to characterize the thermal regimes of the upper Tuolumne River and tributaries from the Don Pedro Project Boundary to CCSF's Early Intake, including the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Identify locations where temperatures appear to be suitable for salmonids.
    - 2. Depending on the availability of information, logistical feasibility, and safety, install data loggers to obtain additional information in locations for which existing data are inadequate.
    - 3. Develop and test a computer model to simulate existing thermal conditions in the Tuolumne River between Early Intake and the Don Pedro Reservoir.

- c. <u>Upstream Habitat Characterization:</u>
  - 1. Summarize data from the upper Tuolumne River habitat suitability evaluation being conducted by NMFS; data will be used, if applicable, to complement the barrier assessment and temperature studies identified above.
  - 2. Identify additional information needs following completion of barrier assessment, temperature assessment, and review of available data from the NMFS study.
- 3. <u>Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse:</u>
  - a. <u>Develop Hydrologic Data for Flow Conduits at the La Grange Project</u>:
    - 1. Continue existing monitoring of discharges associated with the La Grange powerhouse, LGDD spillway, and the TID sluicegate.
    - 2. Conduct two years of monitoring of the MID hillside discharge and LGDD sluicegate.
    - 3. Based on existing information, to the extent available, characterize the magnitude and rate of flow and stage changes when project conduits are shut down.
  - b. <u>Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange</u> <u>Project Facilities</u>:
    - 1. Survey longitudinal profiles and transects along the channel thalweg in the La Grange powerhouse tailrace channel, TID sluicegate channel, and the mainstem river channel upstream of where it joins the tailrace channel.
    - 2. Measure water depths at a flow of approximately 25 cfs in the mainstem river channel upstream of where it joins the tailrace channel and at approximately 75 to 100 cfs in the La Grange powerhouse tailrace channel and the TID sluicegate channel.
    - 3. Map substrate and habitat in the reaches where longitudinal profiles are surveyed, delineating pools, runs, high- and low-gradient riffles, step-pools, and chutes.
    - 4. Map patches of spawning-sized gravels in the tailrace and mainstem upstream of the tailrace that are greater than  $2 \text{ m}^2$ .
    - 5. Conduct pebble counts in riffles, runs, and pool tailouts to document substrate particle size distribution in these habitats.
  - c. <u>Assess Fish Presence and Potential for Stranding:</u> Conduct periodic direct visual observations in the TID sluicegate channel downstream to the confluence of the

La Grange powerhouse tailrace and the main channel of the Tuolumne River to assess the presence and potential stranding of salmonids.

## **5.0** NEED FOR ADDITIONAL INFORMATION

#### 5.1 Fish Passage Facilities Assessment

Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, however, only a fall-run Chinook salmon population is present in the Tuolumne River. Central Valley spring-run Chinook salmon, currently listed as threatened, were proposed as endangered by NMFS on March 9, 1998. NMFS (1998) concluded that the Central Valley spring-run Chinook salmon ESU was in danger of extinction and native spring-run Chinook salmon are extirpated from the San Joaquin River Basin.

As a result, the fish barrier component of this study will focus on the potential stranding of fallrun Chinook and any steelhead that may be present. Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013b). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before they emigrate to the ocean.

Since the completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, CDFW has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Hydroelectric Project relicensing process.

*O. mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River (Zimmerman et al. 2009), there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. As a result, while *O. mykiss* are not specifically being investigated as part of this study, weir counts will extend

through at least April, flows permitting, and any apparent anadromous *O. mykiss* encountered at the weir during the study will be recorded.

NMFS has also requested information to aid in evaluating what would constitute safe, effective, and timely upstream and downstream anadromous fish passage at both the La Grange Project and the Don Pedro Project. NMFS and the CGs contend that suitable habitat for anadromous salmonids may exist upstream of Don Pedro Reservoir and that fish passage evaluations of just the La Grange Project facilities would probably not adequately inform the development of alternatives for safe and effective fish passage to adequate amounts of upstream habitat (i.e., fish would need to be passed upstream of the Don Pedro Project to make a fish passage program feasible). Currently there is inadequate information upon which to base consideration of fish passage.

As noted in Section 2.1 of this study plan, the Districts do not believe that fish passage studies are warranted at this point in the La Grange Project licensing. Nevertheless, the Districts agree to undertake an initial two-year, phased (phases described in the Methods section of this plan) evaluation to (1) identify the biological design criteria for potential fish passage, (2) gather information that would inform the siting and sizing of conceptual upstream and downstream fish passage facilities (3) identify and evaluate potential fish passage alternatives, (4) for select fish passage alternatives, develop preliminary functional layouts and cost estimates, and (5) identify any additional information needs.

## 5.2 Upper Tuolumne River Basin Habitat Assessment

NMFS's Recovery Plan identifies the upper Tuolumne River basin above Don Pedro Reservoir as a candidate area for reintroduction of Central Valley steelhead and spring-run Chinook salmon (NMFS 2014). Currently, there is insufficient information available to assess the quantity and quality of suitable habitat for these salmonid species in the upper Tuolumne River and tributaries below Early Intake. Resource agencies and CGs have requested information on the potential presence of upstream fish migration barriers and water temperatures in the upper basin to inform decision-making in the context of FPA sections 10(a) and 10(j) recommendations, section 18 fishway prescriptions, and any required ESA consultation.

As discussed in detail in Section 2.2 of this study plan, the Districts do not believe that these study requests satisfy the study criteria requirements mandated under FERC's ILP regulations, and as such, cannot be FERC-ordered studies within the context of either the La Grange licensing or the Don Pedro relicensing. Nevertheless, the Districts agree to voluntarily conduct a two-year, phased investigation of migration barriers, temperature conditions, and general habitat conditions in the upper Tuolumne River and appropriate tributaries below CCSF's Early Intake.

# 5.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

The operation of the La Grange Project and the five flow conduits used to pass flow to the lower Tuolumne River have the potential to influence fish behavior and movement in the immediate vicinity of the La Grange Project. Resource agencies and CGs believe that the La Grange Project's discharge pattern has the potential to strand fish in multiple locations, and NMFS has requested flow estimates, characterizations of physical habitat, and fish behavior observations in the immediate vicinity of the La Grange Project.

The Districts agree that flows passed at the La Grange Project might affect fish behavior in the immediate vicinity of the Project facilities. Flow data are available for three of the Project conduits, i.e., the La Grange powerhouse, the LGDD spillway, and the TID sluicegate, which have been presented as part of the Don Pedro relicensing proceeding (see Don Pedro Project Updated Study Report, January 2014). However, systematic flow records for the MID hillside discharge and the LGDD sluicegate do not exist. The Districts will continue to record flow data as they currently do and will also collect two years of operational and flow records at the two conduits where data are currently unavailable (i.e., MID hillside discharge and the LGDD sluicegate). There is also limited information available on physical habitat conditions and fish behavior in the immediate vicinity of the La Grange Project facilities, and as such, the Districts will conduct an evaluation of certain habitat attributes and observations of fish in the immediate area of the Project under the flow conditions specified further below.

## 6.0 STUDY AREA AND METHODS

#### 6.1 Study Area

#### 6.1.1 Fish Passage Facilities Assessment

The concept-level assessment of upstream and downstream fish passage alternatives will encompass the Tuolumne River from immediately below the LGDD to the upstream limit of the Don Pedro Project Boundary. The study area for the fish barrier assessment will consist of the Tuolumne River channel opposite the La Grange powerhouse tailrace and the La Grange tailrace just downstream of the powerhouse. For incidental fish observations, the study area will include the immediate vicinity of the LGDD, the La Grange powerhouse tailrace channel, and the TID sluicegate channel.

## 6.1.2 Upper Tuolumne River Basin Habitat Assessment

Field surveys to identify barriers to the upstream migration of anadromous salmonids will be conducted along the mainstem Tuolumne River upstream of the Don Pedro Project Boundary, the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Provisional temperature monitoring locations (locations to be refined following review of existing information) may be located in portions of the following rivers/reaches: the mainstem Tuolumne River between Early Intake and Don Pedro Reservoir, the Clavey River, Cherry Creek, and the North, Middle, and South forks of the Tuolumne River. Potential habitat characteristics above the Don Pedro Project Boundary and additional habitat information needs will be assessed based on the results of the barrier assessment, temperature evaluation, and NMFS's habitat suitability analysis, which is expected to be available in fall 2015.

#### 6.1.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Flow records will continue to be collected for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Flows from the MID hillside discharge and the LGDD sluicegate will be estimated based on gate position and reservoir water levels. Topographic surveys, depth assessments, and fish habitat mapping/substrate evaluation will be conducted in the La Grange tailrace channel, the TID sluicegate channel, and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. The total length of stream channel to be assessed is approximately 0.5 miles. Direct visual observations of salmonids will be conducted in the TID sluicegate channel. Greater detail regarding specific study locations is presented in the Methods section below.

#### 6.2 Study Methods

#### 6.2.1 Fish Passage Facilities Assessment

#### 6.2.1.1 Concept-Level Fish Passage Alternatives

The evaluation of concept-level upstream and downstream fish passage alternatives will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

#### Task 1: Evaluation of General Biological and Engineering Design Parameters and Alternatives Identification (2015)

In 2015, an evaluation of upstream and downstream fish passage facilities general design criteria and considerations will be conducted by the Districts in collaboration with LPs. The collaborative process will consist of three workshops held in 2015. Workshops will be conducted following FERC's issuance of its Study Plan Determination (February 2015) and are preliminarily suggested to occur in April, July, and October of 2015. Workshop dates will be finalized in consultation with LPs. Existing information will be gathered and summarized to characterize (1) relevant physical characteristics of existing project(s) facilities; (2) relevant project operations and potential limitations associated with those operations; (3) descriptions of local topography and geology, as necessary; (4) the physical environment in the areas of potential facilities locations; (5) Chinook and steelhead life-histories and periodicities<sup>1</sup>; (6) basin hydrology as it pertains to fish periodicities and developing passage facilities; (7) potential land ownership issues; (8) an account of applicable NMFS and CDFW fish passage facility biological and engineering design criteria and any potential limitations resulting from adherence to those criteria; (9) assessment of the relative effects of handling on fish passage options evaluated; and (10) other information affecting siting, sizing, general design, and operation of potential fish passage facilities.

<sup>&</sup>lt;sup>1</sup> Because there are no spring-run Chinook or steelhead runs in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records.

Following the synthesis of the information described above, identification and initial sizing of potential upstream and downstream fish passage facilities will be conducted. Based on this, the Districts and LPs will mutually select potential passage alternatives for which preliminary siting and functional layouts will be developed. Initial sizing, siting, and layouts should be able to be ready for LP review prior to the issuance of the Initial Study Report (ISR) required by the ILP regulations. Factors to be considered when identifying potential passage alternatives will include, but not necessarily be limited to, (1) distance (travel time) to and from the La Grange Project; (2) ease of accessibility for vehicles and/or boats; (3) the availability and cost of providing electrical service; (4) the extent to which construction, maintenance, and operation of the facility could interfere with river or reservoir recreation, (5) potential water quantity and quality concerns; (6) potential predation issues; (7) any relevant siting and/or land ownership limitations and the need for possible easements; and (8) to what extent conditions are compatible with implementation of available fish passage technologies.

#### Task 2: Preliminary Functional Layouts and Cost Estimates (2016)

In 2016, the Districts will develop functional site layouts, general design parameters, and associated Class-V opinions of probable construction and O&M costs for select fish passage alternatives developed in collaboration with LPs in 2015. Considerations addressed during the development of preliminary functional layouts for upstream passage alternatives will include, but not necessarily be limited to, (1) major facility siting and sizing components; (2) water supply infrastructure; (3) fish collection, acclimation, and holding facilities; (4) fish transport infrastructure and vehicles (if needed); (5) debris management; (6) fish attraction flows; (7) instrumentation and control equipment; (8) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (9) identification of any additional information needs.

Considerations addressed during the development of preliminary functional layouts for downstream passage alternatives will include, but not necessarily be limited to, (1) major siting and sizing components; (2) fish sampling, acclimation, and holding facilities; (3) fish transport infrastructure and vehicles (if needed); (4) fish capture and debris management technologies; (5) provision of fish attraction flows; (6) guidance nets/curtains; (7) anchorage and flotation provisions (if needed); (8) dewatering facilities; (9) instrumentation and control equipment; (10) an explanation of how the proposed design complies with NMFS and CDFW fish passage criteria; and (11) identification of any additional information needs.

#### Task 3: Documentation and Reporting

A report will be produced to summarize all biological and engineering considerations, the identification of potential fish passage alternatives, the development of functional layouts, siting, and sizing information, and Class-V opinions of probable construction and annual O&M costs for selected fish passage alternatives.

#### 6.2.1.2 La Grange Project Fish Barrier Assessment

The proposed study will evaluate the potential for the LGDD and the La Grange powerhouse to be barriers to the upstream migration of anadromous fish (i.e., fall-run Chinook and, if they occur, steelhead) or an impediment to their spawning during the 2015/2016 and 2016/2017 migration seasons by:

- Operating a fish counting weir to determine the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse,
- Comparing to total escapement the number of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., above the counting weir) and not returning to downstream spawning habitat,
- Documenting carcass condition (egg retention) to evaluate pre-spawn mortality rates of anadromous fish migrating upstream to the LGDD and the La Grange powerhouse (i.e., those that do not return to downstream spawning habitat), and
- Document fish observations in the immediate vicinity of the LGDD, La Grange powerhouse, and in the TID sluicegate channel.

The study consists of three tasks beginning with planning and permitting, followed by two years of field data collection, and then data analysis and reporting. Each of these tasks is described in the following sections.

#### Task 1: Planning and Permitting

Permits will be required to operate the fish counting weir in the vicinity of the La Grange Project, including a Section 4d take authorization for Central Valley steelhead from NMFS, a Streambed Alteration Agreement and Scientific Collector Permit amendments from CDFW, and a Section 404 permit (which could involve a requirement for a CWA Section 401 permit) from the U.S. Army Corps of Engineers. Existing permits may be amended to include operation of the proposed new counting weir near the La Grange Project facilities. In some cases new permits may need to be obtained. Permits are expected to take six months to obtain, and some permit applications must be submitted prior to FERC's Study Plan Determination. For instance, Section 4d take authorizations are issued on a calendar-year basis, with applications due each fall for the coming year. Due to this timeline, a 4d take authorization was requested in October 2014 to allow counting weir monitoring to begin in fall 2015.

Equipment will be obtained or fabricated in preparation for field data collection, with the primary components consisting of a weir and a video system. The weir will be designed to allow unimpeded upstream and downstream fish passage. No fish will be handled at the weir.

#### Task 2: Field Data Collection

To collect Year-1 data, a fish counting weir consisting of two segments will be installed in the Tuolumne River in late August/early September of 2015 and be operated through at least April 2016, flows permitting. The same monthly schedule will be followed in the 2016/2017 season to

collect Year-2 data. One weir segment will be placed downstream of the large pool below LGDD in the Tuolumne River main channel, and the second segment will be placed just below the La Grange powerhouse in the tailrace channel. The counting weirs will be operated to determine the number of migrating fish that move upstream of the weirs. The total number of migrating fish exhibiting upstream migration behavior will be defined as the net difference between upstream and downstream fish counts at the weir. Sampling will end approximately 5-10 days following the spring pulse flow. In addition to monitoring Chinook salmon, any *O.mykiss* encountered at the counting weir during the sampling period will be recorded. Monitoring methods will be similar to those employed at the weir operated since 2009 at RM 24.5 (Becker et al. 2014). Continued monitoring at the downstream site (RM 24.5) will be used to determine total escapement to the Tuolumne River for comparison to the number of fish approaching the LGDD or the La Grange powerhouse and not moving back downstream to estimate the extent to which the La Grange facilities are actually a barrier to upstream migration and spawning. Hourly water temperature and instantaneous dissolved oxygen data will be collected at the weir.

Salmon encountering barriers to migration may experience pre-spawn mortality. During carcass surveys conducted to estimate salmon escapement, CDFW examines female salmon carcasses for egg retention to estimate pre-spawn mortality of Chinook salmon. Assessments have been conducted in several Central Valley streams in some years, but it is more common for the data not to be collected due to a lack of available funding and staff. CDFW has documented low levels of pre-spawn or partial-spawn mortality of fall-run Chinook in the Tuolumne River during surveys conducted in 1993, 1999, 2008, 2013, and 2014 (CDFW 2014).

To evaluate the potential effect of the LGDD and the La Grange powerhouse on the spawning of upstream migrants, the Districts propose to conduct weekly surveys above the counting weir during 2015/2016 and 2016/2017 to assess the presence/absence of live Chinook salmon, spawning activity or carcasses, and to evaluate egg retention in female carcasses. Similar to egg retention evaluations conducted by CDFW, fresh female carcasses will be classified as spent if few eggs are remaining, as partially spent if a substantial amount of the eggs remain (i.e., 50% to nearly full), and unspent if the ovaries appear nearly full of eggs (Guignard 2005, Snider et al. 2002). The location, date, and time of discovery; sex; and presence of fin clips will be recorded for each carcass. The Districts will collect each anadromous salmonid carcass found upstream of the weir, freeze it, and then deliver it to the CDFW office in La Grange.

Observations of fish above the counting weir and in the TID sluicegate channel will be conducted twice daily (times will vary as a function of existing workload) by project operators in the immediate vicinities of the LGDD, La Grange powerhouse, and within the TID sluicegate channel. Observations will be recorded on standardized datasheets, which will include the following information:

- Date and time of observation;
- Approximate discharge and conduit status at time of observation;
- Powerhouse output at time of observation;
- Number of fish observed and their approximate size;

- Identification of species, if possible; at a minimum each fish will be identified as either a salmonid or non-salmonid
- Locations of fish (to be indicated on a previously-generated base map);
- Description of general fish behaviors, such as moving upstream or downstream, spawning, holding in one specific location, or leaping/jumping;
- Notation of any observations of fish swimming into the La Grange powerhouse tailrace;
- Notation of any observations of fish swimming into the TID sluicegate channel; and
- Notation of any redds that become dewatered, and the duration of any dewatering, due to a change in powerhouse operations.

#### Task 3: Data Management, Analysis, and Report Preparation

Weir monitoring data will be downloaded or entered into a database frequently during the field data collection periods, error checked, and summarized. Data will include images of passing fish and corresponding information such as date, time, and direction of passage, species, and estimated fish size; instream conditions (i.e., water temperature and turbidity); and weir performance. Raw data will be summarized to determine daily upstream and downstream weir counts and the total number of fish exhibiting persistent upstream migration behavior (upstream counts minus downstream counts). The total number of fish exhibiting persistent upstream migration behavior will be divided by total escapement determined at the lower weir (at RM 24.5). Any spawning activity, live Chinook salmon or O. mykiss, or carcasses observed upstream of the weir will be reported. Egg retention rates will be reported for any female Chinook salmon carcasses observed. Datasheets on incidental observations of fish in the vicinity of the LGDD, La Grange powerhouse, or TID sluicegate channel will be input into an electronic database, summarized, and included as part of reporting. Preliminary results for the majority of the fall-run Chinook migration period during the first year of monitoring (i.e., September 2015/December 2016) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015/2016 study season, modifications to the study may be made prior to implementation of the 2016/2017 study season. Comprehensive reporting of the results from the two-year study will be submitted in September 2017. The location of any dewatered redds, and the duration of any dewatering due to a change in powerhouse operations, will be recorded. NMFS, USFWS, and CDFW will be notified within 1-day of observation of dewatered redds.

## 6.2.2 Upper Tuolumne River Basin Habitat Assessment

#### 6.2.2.1 Barriers to Upstream Anadromous Salmonid Migration

#### Task 1: Review Existing Survey Results

The first step in the migration barrier assessment of the upper Tuolumne River basin (i.e., upstream of the Don Pedro Project Boundary) will consist of a compilation and review of results from any relevant prior studies. An attempt will be made to locate, access, and compile readily available and relevant existing data. This information review and synthesis will occur in 2015.

#### Task 2: Conduct Field Surveys (2015 and 2016)

After reviewing existing information, a field survey will be conducted to identify barriers in the mainstem and North, Middle, and South forks of the upper Tuolumne River, as well as Cherry Creek, and the Clavey River. Field crews will identify complete and partial barriers to upstream salmonid migration using definitions agreed upon with LPs.

In 2015, the following information will be recorded during base flow conditions at each barrier identified either through the use of existing information or during the field surveys: (1) global positioning system (GPS) coordinate points; (2) measured height of each barrier; (3) measured length and estimated maximum and average depth of any plunge pools at the base of barriers; (4) measured average water velocity (with a hand-held current meter) at the apex of the barrier, if measurements can be made safely, or estimated velocity if measurements cannot be made; (5) slope of the barrier; (6) measured (or estimated if measurement is unsafe) maximum and average depth of the fish exit point on the upstream side of the barrier; (7) an assessment of adjacent channel features that might be inundated at higher flows; and (8) a photograph of the barrier from one or more (as determined by field crews) designated photo-points.

In 2016, the same information (i.e., the eight items identified in the preceding paragraph) will be recorded at each barrier during flows typical of the spring-run Chinook and steelhead migration seasons. Because there are no spring-run Chinook or steelhead populations in the Tuolumne River, periodicities will be based on existing information from other nearby basins or historical records. Identification of migration flow periods will account for the travel time that would be needed for spring-run Chinook or steelhead to complete their upstream migration to the upper basin.

#### Task 3: Reporting

Preliminary results of the migration barrier assessment activities (i.e., conducted in 2015) may be able to be provided in the Initial Study Report in February 2016. Based on the results of the 2015 study season, modifications to the study may be made prior to implementation of the 2016 study season. An updated technical report summarizing the results of activities described in Tasks 1 and 2 will be submitted in the February 2017 Updated Study Report. The report will include maps showing the locations of all barriers and photo documentation of conditions at the barriers under base flow and migration flow conditions.

#### 6.2.2.2 Water Temperature Monitoring and Modeling

#### Task 1: Identify, Synthesize, and Interpret Existing Water Temperature and Flow Data

In 2015, existing information, to the extent it is available, will be used to characterize the thermal regimes of the upper Tuolumne River below CCSF's Early Intake and in the following tributaries upstream to the location of the first barrier to anadromous fish migration: the North, Middle, and South forks of the Tuolumne River, Cherry Creek, and the Clavey River. Based on these data, a collaborative effort will be undertaken with LPs to identify locations and seasons where

temperatures appear to be suitable for anadromous salmonids. Attachment A includes a table summarizing available temperature data in the study area. These data, and other data sources, if identified, will be used to inform the collaborative effort.

#### Task 2: Install Data Loggers

In 2015, a workshop will be held with LPs to identify locations where useful temperature and river stage monitoring stations could be established. Potential locations for deploying temperature and stage data loggers will be selected, as needed, to provide a general characterization of accessible areas that appear to have thermal regimes suitable for supporting multiple life-stages of Chinook and steelhead under a range of hydrologic conditions, based on data collected under Task 1.

The following provisional data-logger deployment numbers and locations are suggested (these may change depending upon further review of existing information and coordination with LPs): (1) four to five monitoring stations in the mainstem Tuolumne River, depending on the number of data-loggers installed by NMFS in 2014; (2) two stations in the Clavey River; (3) two stations in Cherry Creek; and (4) up to two stations in each of the South, Middle, and North forks of the Tuolumne River. Data logger locations would be spaced at intervals sufficient to generally characterize the thermal regime at each location. Water temperatures would likely be measured at 30-minute intervals from the time of data logger deployment in summer 2015 to the time loggers are retrieved in October 2016. Data would be downloaded at intervals, depending on conditions in the field. Depending upon the availability of existing flow data, stage data may be supplemented by flow measurements sufficient to develop approximate stage-discharge rating curves.

#### Task 3: Water Temperature Modeling

In 2016, existing flow, temperature, meteorological, and channel geometry data–augmented as necessary by results from data loggers deployed as part of Task 2 and any flow/stage data collected by the Districts–will be used to develop a water temperature model to simulate the thermal regimes in the Tuolumne River and reaches of tributaries below Early Intake, including the South, Middle, and North forks of the Tuolumne River, Cherry Creek, and the Clavey River that are accessible to anadromous salmonids.

Preliminarily, the RMA-2 and RMA-11 suite of models appear to be suitable for simulating conditions in the study area. The RMA models can model both flow and temperature in extremely steep reaches and report sub-daily water temperature. Use of the RMA-2 (v8.0 or later) for hydrodynamics and RMA-11 (v8.0 or later) for water temperature would represent the river reaches in a one-dimensional, depth- and laterally-averaged, finite element scheme. RMA-2 calculates velocity, water surface elevation, and depth at defined nodes of each grid element in the geometric network representing the river. Following model development, model calibration will be completed, along with sensitivity analyses. The model will then be used to simulate existing conditions under 2015-2016 flow conditions.

#### Task 4: Reporting

Raw temperature data from data loggers will be provided annually in spreadsheet format to licensing participants. Preliminary results of temperature monitoring activities (i.e., conducted in 2015) will be provided in the Initial Study Report in February 2016. The Updated Study Report (February 2017) will include: (1) the synthesis of existing temperature data, (2) a summary of temperature measurements made with data-loggers (e.g., average, maximum, and 7DADM temperatures), and (3) a description of temperature model development, calibration, sensitivity analyses, and simulation of existing conditions.

#### 6.2.2.3 Upstream Habitat Characterization

#### Task 1: Collaborative Review of Results from NMFS LiDAR/Hyperspectral Remote Sensing <u>Study</u>

Data from the upper Tuolumne River LiDAR and hyperspectral remote sensing-based habitat evaluation being conducted by NMFS may be used, to the extent applicable, to complement the barrier and temperature assessments described above. According to NMFS personnel, initial data are expected to be available in spring 2015 and a full report in fall 2015. Therefore, review of and incorporation of relevant information from the NMFS study into this component of the Districts' study will occur in fall of 2015 in collaboration with NMFS and other LPs.

#### Task 2: Identification of Additional Information Needs

Based on the completed barrier assessment, NMFS's habitat assessment, and preliminary temperature information, the Districts will work with LPs to identify additional information needed to assess upstream habitat conditions.

#### 6.2.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

6.2.3.1 Develop Hydrologic Data for Flow Conduits at the La Grange Project

#### Task 1: Flow Records for Project Conduits

The Districts will continue to estimate flows as they currently do for the La Grange powerhouse, LGDD spillway, and TID sluicegate. Beginning in March 2015, flows at the MID hillside discharge and the LGDD sluicegate will be estimated by recording gate opening and reservoir water levels, or another appropriate and suitable method of estimating flow.

The flow data from each of the five potential flow points will be summarized as follows:

- A daily time-series of approximate flows at each of the five flow points during the two-year monitoring period (when/if discharges are occurring).
- A record, by year and month, of the number of days the La Grange powerhouse is offline for at least some part of the day.

- A record, by year and month, of the number of days the La Grange tailrace channel does not receive any flow for at least some part of the day (i.e., no discharge through the powerhouse or TID sluicegate channel).
- A record, by year and month, of the number of days when the mainstem channel opposite the powerhouse does not receive any discharge for at least some part of the day (i.e., no discharge through the MID hillside discharge, the LGDD spillway, or the LGDD sluicegate).

#### Task 2: Reporting

Existing data for the La Grange powerhouse, the LGDD spillway, and the TID sluicegate will be summarized, and additional flow data collected at the MID hillside discharge and the LGDD sluicegate will be provided to LPs, in spreadsheet format, for 2015 and 2016.

6.2.3.2 Collect Topographic, Depth, and Habitat Data in the Vicinity of the La Grange Project Facilities

#### Task 1: Topographic Surveys

In 2015, topographic surveys will be conducted during low-flow periods in the La Grange tailrace channel, the TID sluicegate channel (to the point upstream of where the sluicegate channel meets the nearly vertical hill slope), and the mainstem Tuolumne River from where it joins the tailrace channel upstream to the LGDD plunge pool. Longitudinal profiles along the channel thalweg will be collected. Measurement points will be located at 10-foot intervals along each longitudinal profile. In addition, topographic points will be documented to characterize the large cobble and bedrock island that separates the La Grange tailrace channel from the mainstem channel. At each data point along the longitudinal profile, data will be tied to a common horizontal and vertical datum. Data will be collected on foot and by boat as necessary.

#### Task 2: Evaluation of Water Depths

During the longitudinal profile data collection (described above), field crews will measure the maximum water depth in the channels. In addition, a visual estimate of average depth will be made. Water depth measurement and observation will be conducted at typical low flows, i.e. 25 cfs in the Tuolumne River main channel and about 75 to 100 cfs in the La Grange Project tailrace channel and TID sluicegate channel. Data will be collected on foot and by boat as necessary.

#### Task 3: Salmonid Habitat Mapping and Substrate Assessment

Habitat unit maps will be generated for the sections of channel identified in Task 1. Maps will be delineated into polygons corresponding to the following macrohabitat types: pools, steppools, runs, high-and low-gradient riffles, and chutes. All patches of spawning gravel that are greater than  $2 \text{ m}^2$  in area will be delineated on the habitat maps. The total length of stream channel that will be mapped (for all sections identified in Task 1) will be about 0.5 miles. All habitat mapping will be conducted by the same field crew members to reduce observer bias.

During habitat surveys, pebble counts will be conducted in riffles, runs, and pool tailouts, and from these counts D50 and D84 statistics will be developed for the relevant habitat units. All substrate counts will be conducted by the same field crew member(s) to reduce observer bias.

#### Task 4: Reporting

A brief technical memorandum describing the methods employed in the field, along with schematics documenting longitudinal profiles, a tabular summary of depth measurements, habitat maps, and a table of D50 and D84 values will be provided in the Initial Study Report in February 2016.

#### 6.2.3.3 Assess Fish Presence and Potential for Stranding

#### Task 1: Observation methods

Daytime, direct visual observation of fish presence will be made from August 2015 through April 2016 and August 2016 through April 2017 any time that a flow change occurs in the TID sluicegate channel. In addition, if during these periods the La Grange powerhouse trips offline, biologists will be notified to report to the site for observation of the sluiceway and tailrace channels. Observations will occur during any flow transition from the time of maximum flow in the sluicegate channel through the subsequent closing of any of the sluice gates and until complete cessation of the sluicegate flow release. Fish observations will be integrated into the Districts' existing protocol as described below.

- Station or unit trips, or powerhouse is shut down.
- TID sluicegate(s) open immediately; auxiliary flow valve at sluicegates also is opened (either remotely or locally).
- Remote system operations center tries to restart the powerhouse or unit (Note: about 80 percent of the time, the powerhouse can be restarted very quickly by the remote operator).
- If unable to restart, a local operator is dispatched to the site to help diagnose the problem and restart the turbine-generator(s) locally, and remote system operator sends an email to a TID biologist or an on-call backup biologist, who arrives at site as soon as practicable.
- Upon station or unit restart, auxiliary flow valve remains open until the biologist arrives on site to inspect the TID sluiceway channel and tailrace for fish.
- If fish are observed, data are recorded to document the fish location, estimated length, and species; photo(s) will taken to document occurrences of fish; any fall-run Chinook observed will be relocated to tailrace; if *O. mykiss* are observed, a NMFS-approved protocol will be initiated.
- Once the sluiceway channel is cleared of any fish present, the auxiliary flow valve of the sluicegates is shut down.

#### Task 2: Reporting

The timing and duration of direct visual observations, details of all salmonid observations, and the photographic record of physical conditions during changes in flow and any incidences of trapped or stranded salmonids will be provided in the Initial Study Report in February 2016 and in the Updated Study Report in February 2017.

## 7.0 SCHEDULE

The Districts anticipate the following schedules for completion of the study components. The schedules assume that FERC will issue its Study Plan Determination in early February 2015, and that the study elements will not be subject to dispute resolution.

#### 7.1 Fish Passage Facilities Assessment

#### 7.1.1 Concept-Level Fish Passage Alternatives

•	Collaboration on biological and engineering considerations.	April – December 2015
•	Fish passage consultation workshops	April, July, and October 2015
•	Functional design drawings and cost estimates	March 2016 – November 2016
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.1.2 La Grange Project Fish Barrier Assessment

•	Planning and permitting	
•	Fieldwork September 2015 – April/May 2	2016; September 2016 – April/May 2017
•	Incidental fish observations at Project Facilities	
•	Data entry, QA/QC, and analysis	
•	Initial study report	
•	Updated study report	
•	Final study report	September 2017

## 7.2 Upper Tuolumne River Basin Habitat Assessment

#### 7.2.1 Barriers to Upstream Anadromous Salmonid Migration

-	Compile and review existing data	March – May 2015
•	Conduct field surveys	August 2015 – June 2016
•	Initial study report.	February 2016
•	Updated study report	February 2017

#### 7.2.2 Water Temperature Monitoring and Modeling

•	Synthesize and interpret existing water temperature data	.March – May 2015
•	Licensing participant workshop	June 2015

•	Install temperature data loggers	June – September 2015
•	Temperature data collection	June 2015 – October 2016
•	Initial study report	
•	Water temperature modeling	March 2016 – November 2016
•	Updated study report	

#### 7.2.3 Upstream Habitat Characterization

## 7.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

#### 7.3.1 Flow and Habitat Measurements

•	Initiate flow recording at project conduits	April 2015 – December 2016
•	Collect topographic, depth, and habitat data	August – November 2015
•	Data entry, QA/QC, and analysis	September 2015 – June 2017
•	Initial study report	February 2016
•	Updated study report	February 2017

#### 7.3.2 Fish Stranding Observations

•	Fish observations in TID sluicegate and tailrace channels.	August 2015 – April/May 20	16
•	Data entry, QA/QC, and summarizing	September 2015 – December 20	16
•	Initial study report	February 20	16
•	Updated study report		17

# 8.0 CONSISTENCY OF METHODOLOGY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICES

#### 8.1 Concept-Level Fish Passage Alternatives and La Grange Project Fish Barrier Assessment

The preliminary functional layouts, siting and sizing of facilities, and Class-V opinions of probable construction cost for upstream and downstream passage measures will be developed according to NMFS criteria (NMFS 2008), industry standards, and general approaches used in the Pacific Northwest, where a wide range of fish passage technologies have been designed and deployed. Direct fish counts conducted at weirs or other fixed points constitute a well established and commonly used technique often employed during FERC licensing proceedings to determine the abundance of migrating adult salmon. A counting weir has been operated annually since 2009 at RM 24.5 to estimate fall-run Chinook salmon escapement to the Tuolumne River.

<sup>&</sup>lt;sup>2</sup> NMFS has stated that data will be available in spring 2015, and a final report is currently scheduled for fall 2015.

## 8.2 Upper Tuolumne River Basin Habitat Assessment

The methods proposed for identifying and analyzing fish barriers in the upper Tuolumne River and tributaries are consistent with what is done in salmonid-bearing streams in the western United States, as evidenced by their similarity to the approach proposed by NMFS in its study request. The temperature modeling methods proposed in this study plan are consistent with those applied widely in the United States, including (i.e., using the same model as) the SWRCB's Sacramento River Temperature Modeling Project and the Klamath River Total Maximum Daily Load (TMDL) from Link River Dam to Keno Dam.

# 8.3 Habitat Assessment and Fish Stranding Observations below LGDD and Powerhouse

Measurements of physical conditions along transects are commonly made in a wide variety of fish habitat studies and can be considered routine. Habitat unit typing will be based on standard definitions of what constitutes a particular habitat (consistent with EHM, Hankin and Reeves, Frissell, etc.). Pebble counts will be performed according to commonly applied standards (e.g., Wolman), with substrate sizes as typically defined for California streams. Characterizations of substrate composition (i.e., D50 and D84 statistics) represent an approach applied universally throughout North America and were recommended by NMFS in its study request. Direct observations of fish will be conducted according to specifications provided by NMFS in its study request, and field biologists will rigorously document all observations.

## 9.0 LEVEL OF EFFORT AND COST

The implementation cost of this study plan is estimated to be \$1.6 million.

## **10.0 REFERENCES**

- CDFW (California Department of Fish and Wildlife). 2014. Comments on La Grange Hydroelectric Project Federal Energy Regulatory Commission Project No. 14581 Tuolumne River [comments submitted on the TID/MID La Grange Hydroelectric Project Preliminary Study Plan (PSP)].
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- . 2009. Public Draft Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead. Sacramento Protected Resources Division. October 2009. 273 pp.
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- Turlock Irrigation District and Modesto Irrigation (TID/MID). 2010. 2009 Report of Turlock Irrigation District and Modesto Irrigation District Pursuant to Article 58 of the License for the Don Pedro Hydroelectric Project, No. 2299. March 2010.
- . 2013a. Spawning Gravel in the Lower Tuolumne River Study Report (W&AR-04). Attachment to Don Pedro Hydroelectric Project Updated Study Report. December 2013.

- . 2013b. Salmonid Population Information Integration and Synthesis Study Report (W&AR-05). Attachment to Don Pedro Hydroelectric Project Draft License Application. December 2013.
- 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. U.S. Fish and Wildlife Service, Anadromous Fish Restoration Program (U.S.). Core Group, 100 pp.
- Zimmerman, C.E., G.W. Edwards, and K. Perry. 2009. Maternal origin and migratory history of steelhead and rainbow trout captured in rivers of the Central Valley, California. Transactions of the American Fisheries Society 138(2):280–291.

#### ATTACHMENT A

#### EXISTING UPPER TUOLUMNE RIVER TEMPERATURE MONITORING SITES

S'4. Longt' and	Source <sup>3</sup>	Tuolumne	Coordinates (Decimal °)		Period of Record	
Site Locations		River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
Tuolumne River, downstream of O'Shaughnessy Dam	CCSF	TR117.3	37.9449	-119.7911	4/29/09	1/28/13
Tuolumne River, downstream of Preston Falls	CCSF	TR109.3	37.8858	-119.8912	4/26/07	1/15/14
Tailrace of Kirkwood Powerhouse	CCSF	TR105.6	37.8771	-119.9535	4/29/09	10/4/11
Tuolumne River at Early Intake	CDFW	TR105.0	37.8751	-119.9643	7/19/05	1/28/13
Tuolumne River, downstream of Early Intake Diversion Dam	CCSF	TR104.6	37.8788	-119.9691	4/23/07	9/14/10
Upstream of Cherry Lake	CCSF	CC16.1	38.0313	-119.9012	4/24/07	9/5/08
Cherry Creek, downstream of Cherry Dam	CCSF	CC10.5	37.9618	-119.9181	4/23/07	3/29/13
Cherry Creek, downstream of Cherry Dam	CCSF	CC09.4	37.9490	-119.9253	4/23/07	11/4/09
Cherry Creek, upstream of Eleanor Creek confluence	CCSF	CC07.1	37.9362	-119.8970	4/24/07	8/5/12
Cherry Creek, downstream of confluence with Eleanor Creek	CCSF	CC07.0	37.9353	-119.8967	4/24/07	8/15/12
Cherry Creek, upstream of Dion Holm Powerhouse	CCSF	CC01.2	37.8943	-119.9630	4/23/07	6/26/12
Cherry Creek Power House	CDFW	CC00.6	37.8956	-119.9709	4/27/05	1/29/13
Eleanor Creek, upstream of Miguel Creek confluence	CCSF	EC01.8	37.9543	-119.8815	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9534	-119.8810	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9533	-119.8808	4/24/07	6/6/12
Eleanor Creek, downstream of Miguel Creek confluence	CCSF	EC01.7	37.9531	-119.8810	4/24/07	6/6/12
Eleanor Creek, upstream of Cherry Creek confluence	CCSF	EC00.0	37.9362	-119.8966	4/24/07	4/26/12
Miguel Creek, upstream of Eleanor Creek confluence	CCSF	MC00.0	37.9541	-119.8811	4/24/07	6/6/12
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.7	37.8884	-119.9752	4/23/07	9/14/10
Tuolumne River, downstream of Cherry Creek confluence	CCSF	TR103.5	37.8869	-119.9766	4/23/07	12/21/13
Tuolumne River downstream of Lumsden Bridge	NMFS	TR098.0	N 37 50.784	W 120 02.168	7/30/14	Present
Tuolumne River, upstream of South Fork	CCSF	TR097.1	37.8404	-120.0466	4/25/07	4/6/13
Tuolumne River above the South Fork	CDFW	TR097.0	37.8403	-120.0472	4/27/05	1/29/13
South Fork Tuolumne River near 1N10 Bridge	CCSF	SFT00.2	37.8375	-120.0473	4/25/07	11/5/09

Existing	Unner '	Tuolumne	River	Temnerature	Monitoring 9	Sites
Eaisting	Opper	I uoiumine	INIVUI	1 cmpci atur c	Monitor ing k	sites.

<sup>&</sup>lt;sup>3</sup> Entity that collected data. For NMFS data sites, recently placed logger locations were provided by NMFS, but data

<sup>&</sup>lt;sup>4</sup> End Date reported is based on data files that the Districts have obtained. During the course of the study, the Districts will confirm whether more recent data from any of these sites may be available.

S'4. Longt'mus	S	Tuolumne	Coor (Dec	dinates imal °)	Period of Record	
Site Locations	Source	River Mile	Latitude	Longitude	Start Date	End Date <sup>4</sup>
South Fork of the Tuolumne River near confluence	CDFW	SFT00.2	37.8376	-120.0473	4/27/05	6/15/12
South Fork Tuolumne River near confluence	NMFS	SFT00.2	N 37 50.241	W 120 02.824	7/30/14	Present
Tuolumne River below the South Fork	CDFW	TR096.5	37.8361	-120.0537	4/27/05	1/28/13
Tuolumne River Downstream of Lumsden Campground	NMFS	TR096.4	N 37 50.129	W 120 03.327	7/30/14	Present
Tuolumne River, upstream of Clavey River	UC Davis	TR091.1	37.8632	-120.1163	4/25/09	5/8/10
Tuolumne River, upstream of Clavey River	NMFS	TR091.1	N 37 51.753	W 120 06.975	7/31/14	Present
Clavey River at 1N04 Bridge	CCSF	CR16.9	37.9851	-120.0534	4/23/07	10/21/10
Clavey River, upstream of Tuolumne River confluence	UC Davis	CR00.3	37.8663	-120.1132	4/25/09	8/30/09
Clavey River upstream of Tuolumne River	NMFS	CR00.1	N 37 51.878	W 120 06.934	7/31/14	Present
Tuolumne River downstream of Grapevine Creek	NMFS	TR088.4	N 37 53.063	W 120 08.961	8/1/14	Present
Tuolumne River, downstream of Indian Creek confluence	UC Davis	TR088.1	37.8853	-120.1547	4/26/09	5/9/10
Tuolumne River at Indian Creek Trail	MID/TI D	TR083.0	37.8838	-120.1536	10/1/10	12/10/12
Tuolumne River downstream of Mohecan Bar	NMFS	TR081.9	N 37 53.728	W 120 14.567	8/1/14	Present
North Fork Tuolumne above Tuolumne River	UC Davis	NFT00.1	37.8980	-120.2540	4/26/09	8/30/09
Tuolumne River, upstream of Ward's Ferry	CCSF	TR079.4	37.8830	-120.2809	4/25/07	10/25/11
Tuolumne River upstream of Wards Ferry Bridge	CDFW	TR078.7	37.8807	-120.2918	5/24/05	11/22/11
Tuolumne River at Wards Ferry	USGS	TR078.5	37.87833 33	120.29472 22	12/5/13	Present

#### Attachment B for Forest Service SF-299 Amendment Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July 10, 2015

8. Maps of proposed additional water temperature logger locations (Figure 1 to Figure 6).



Figure 1. Approximate location of proposed temperature logger installations at the Cherry and Eleanor creeks confluence.



Figure 2. Approximate location of proposed temperature logger installations on Cherry Creek and Eleanor Creek below the dams.


Figure 3. Approximate location of proposed temperature logger installations (up to 2) on Cherry Creek at potential fish barrier location, upstream of Holm Powerhouse.



Figure 4. Approximate location of proposed temperature logger installations on Cherry Creek at large pool, downstream of Cherry Lake Rd. bridge.



Figure 5. Approximate location of proposed temperature logger installations on Tuolumne River, downstream of Lumsden Falls.



Figure 6. Approximate location of proposed temperature logger installations on Tuolumne River, at Merals Pool.

From: Stanley, Robert N -FS [mailto:rstanley@fs.fed.us]
Sent: Friday, July 10, 2015 6:50 PM
To: Vertucci, Charles
Subject: Automatic reply: Special Use Permit - Tuolumne River Temperature Monitoring

I will be out of the office and off forest until 16 July

From:	Vaughn, Gary D -FS <gdvaughn@fs.fed.us></gdvaughn@fs.fed.us>
Sent:	Friday, July 10, 2015 6:50 PM
То:	Le, Bao; Foote, Debra -FS
Cc:	Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject:	RE: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Bao,

Sorry for the delayed response. We're working with the special use permit leader, Beth Martinez, at our Forest Headquarters to try and clarify the use of the rafting companies as part of the permit and if such use impacts their allotment of days permitted to operate. Do you know the exact dates for your trip yet?

# Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us With the land and serving people

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Thursday, July 09, 2015 11:39 AM
To: Vaughn, Gary D -FS; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

# Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards,

# Bao

# Bao Le

Senior Fisheries Biologist

# HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us]
Sent: Wednesday, July 15, 2015 5:02 PM
To: Le, Bao; Vertucci, Charles
Cc: Vaughn, Gary D -FS
Subject: Amendment for permit

Please print and obtain your authorized signature for the attached amendment and return to Gary Vaughn he will obtain the Forest Service authorized signature and return a copy to you. Thank you.



Debbie Foote Resource Assistant Forest Service Groveland Ranger District

p: 209-962-7825 x533 f: 209-962-7412 <u>dfoote@fs.fed.us</u>

24545 Hwy. 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

Auth ID: GRO1122 Contact ID: 611267010602 Use Code: 422 FS-2700-23 (v. 10/09) OMB No. 0596-0082

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE AMENDMENT FOR

#### SPECIAL-USE AUTHORIZATION

#### Amendment #1

This amendment is attached to and made a part of the GRO1122 special use authorization for Research issued to TURLOCK IRRIGATION DISTRICT on 04/22/2015 which is hereby amended as follows:

Install, monitor, and maintain ten additional water temperature recorders seven locations will have Onset U20 Level loggers and three will have Onset Tidbit water temperature recorders see Attachment A (Project Description) for method of installation. The route of travel will be on Forest Roads 1N97, 1N07, 1N14, and 1N10 then by foot. Prior to any changes in installation, or access written approval must be received from the Forest Service.

This Amendment is accepted subject to the conditions set forth herein, and to conditions in Attachment A and Attachment B (Map) attached hereto and made a part of this Amendment.

Holder	Authorized Officer
Holder	Title
Date	Date

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one (1) hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

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The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Monday, July 20, 2015 2:18 PM
To: Devine, John
Subject: Re: FW: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Thanks John I will review your documents that were sent. I made it very clear to Mr. Boa that BLM will need to authorize any work including conducting research on BLM lands. If you have any further questions please contact me at 916-941-3103.

Thanks Jim

On Mon, Jul 20, 2015 at 10:26 AM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

Jim,

Thanks for getting back to me. Please find attached descriptions of the barrier assessment study plan and data collection plan. Based on the call between Bao and you of July 9, I was under the impression that providing the USFS permit application to BLM would be sufficient for permitting purposes. Please let me know if we can provide additional information.

# John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Devine, John
Sent: Thursday, July 09, 2015 4:42 PM
To: James Eicher (james eicher@blm.gov)
Cc: Le, Bao
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Good afternoon Jim,

Please find attached a request to the USFS for a permit (or amendment, subject to USFS preference) to authorize a five-day float trip on the Tuolumne to conduct the fish passage barriers study as part of the licensing of the La Grange Project. I believe Bao Le spoke with you very recently about this trip and its purposes. My understanding from Bao is that BLM also needs to authorize the 5-day float trip, and that the BLM could use a copy of the permit submitted to the USFS for this purpose. The transmitting email to the USFS is provided below as well.

We also understand that your investigation of the recent trespass issue is still ongoing. On that subject, I plan to forward to you tomorrow the emails and correspondence related to the water temperature logger installs and access that occurred on BLM lands (and on USFS lands as well) as you had requested.

To keep the fish barrier study work moving, we would greatly appreciate your consideration of this request for the 5-day float trip to occur the first week of August. The work does not include installation of any equipment or use of helicopters to access USFS or BLM lands. The team will be floating with a permitted outfitter and only use foot access otherwise. Field measurements will be taken as described in the permit request. Camping would occur at the North Fork confluence and field crews would walk up the North Fork to evaluate potential fish barriers. It is highly likely this float trip would be repeated in 2016, therefore, the permit requests such authorization.

Please let me know if we can provide any further information.

John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Le, Bao
Sent: Thursday, July 09, 2015 2:39 PM
To: Vaughn, Gary D -FS; <u>dfoote@fs.fed.us</u>
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.

2. The attachments A & B are applicable to either application.

3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards,

Bao

# Bao Le

Senior Fisheries Biologist

# HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

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Best regards,

Bao

# Bao Le

Senior Fisheries Biologist

## HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

From: Devine, John
Sent: Monday, July 20, 2015 9:38 AM
To: Eicher, James (jeicher@blm.gov)
Cc: Le, Bao
Subject: FW: Update on Upper Tuolumne Activities

Good morning Jim,

Could you provide an update of the status of your inquiries into the matter of our lack of a permit for the prior temperature work performed on BLM land on the upper Tuolumne River? We're continuing the temperature data collection and study and have received an amendment to our permit from the USFS to add locations on USFS lands. I'm happy to send the actual permit application to you; just let me know.

The USFS responded with the requested amendment and I've attached it here. We've executed it and sent it back for their signature.

Additionally, we are planning our barrier study field work in the first week of August (2<sup>nd</sup> to 6<sup>th</sup>). A licensed rafter is providing the rafting service. We've been in close communication with the USFS for our permit to conduct this study and expect issuance soon. Per your discussions with Bao Le (HDR), you requested the application (which I have provided on July 9) in order to review and provide authorization, if you deemed necessary. Please note that the work requires taking measurements and no installation of equipment. The only activity on BLM lands would be hiking the North Fork and camping one night at the confluence of the North Fork and main stem. Does this require a specific permit? Our understanding is that this is a common camping site used by the rafting guides. Please advise.

John Devine, P.E. D 207-775-4495 M 207-776-2206 From: Devine, John Sent: Monday, July 20, 2015 9:40 AM To: Eicher, James (jeicher@blm.gov) Cc: Le, Bao Subject: FW: Amendment for permit

And here is the unexecuted USFS permit I intended to attach to the last email.

**John Devine, P.E.** D 207-775-4495 M 207-776-2206 Auth ID: GRO1122 Contact ID: 611267010602 Use Code: 422 FS-2700-23 (v. 10/09) OMB No. 0596-0082

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE AMENDMENT FOR

#### SPECIAL-USE AUTHORIZATION

#### Amendment #1

This amendment is attached to and made a part of the GRO1122 special use authorization for Research issued to TURLOCK IRRIGATION DISTRICT on 04/22/2015 which is hereby amended as follows:

Install, monitor, and maintain ten additional water temperature recorders seven locations will have Onset U20 Level loggers and three will have Onset Tidbit water temperature recorders see Attachment A (Project Description) for method of installation. The route of travel will be on Forest Roads 1N97, 1N07, 1N14, and 1N10 then by foot. Prior to any changes in installation, or access written approval must be received from the Forest Service.

This Amendment is accepted subject to the conditions set forth herein, and to conditions in Attachment A and Attachment B (Map) attached hereto and made a part of this Amendment.

Holder	Authorized Officer
Holder	Title
Date	Date

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From:	Le, Bao
Sent:	Monday, July 20, 2015 2:42 PM
To:	Foote, Debra -FS
Cc:	Vaughn, Gary D -FS; Deason, Jesse
Subject:	RE: Amendment for permit
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Debbie and Dusty.

Just as an fyi that we sent out the amendment page today with signature from Steve Boyd, TID, however, after it went out in the mail, we realized that he signed on the "authorized officer" line as opposed to the "holder" line (assuming permit holder is the appropriate line). As such, we're sending another amendment page that has his signature on the "holder" line to remedy the initial oversight. I'd imagine they should arrive around the same time and just didn't want to cause any confusion.

Thanks, Bao

From: Foote, Debra -FS [mailto:dfoote@fs.fed.us]
Sent: Wednesday, July 15, 2015 5:02 PM
To: Le, Bao; Vertucci, Charles
Cc: Vaughn, Gary D -FS
Subject: Amendment for permit

Please print and obtain your authorized signature for the attached amendment and return to Gary Vaughn he will obtain the Forest Service authorized signature and return a copy to you. Thank you.



Debbie Foote Resource Assistant Forest Service Groveland Ranger District

p: 209-962-7825 x533 f: 209-962-7412 <u>dfoote@fs.fed.us</u>

24545 Hwy. 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

From: Devine, John
Sent: Tuesday, July 21, 2015 3:39 PM
To: James Hastreiter (James.Hastreiter@ferc.gov)
Subject: Licensing Schedule for La Grange

Jim,

Following our conversation regarding the current filing date for the La Grange License Application of June 2016 contained in the FERC September 2014 Scoping Document 2, you requested that the Districts identify a licensing schedule that is consistent with FERC's *Study Plan Determination* dated February 2, 2015. Therefore, please find below an overall licensing schedule, including a license application filing date, using the study schedules contained in the FERC-approved *Determination*.

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Worth noting: any PME measures related to fish passage at Don Pedro would require modifying the Don Pedro application. So we'd be looking at any required amendment to Don Pedro FLA circa February 2019.

Please let me know if you have any questions or want to discuss further.

John Devine, P.E., M.ASCE Senior Vice President, Hydropower Services

HDR 970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com From: Chris Shutes [mailto:blancapaloma@msn.com]
Sent: Wednesday, July 22, 2015 8:08 PM
To: Staples, Rose
Cc: Peter Drekmeier; Patrick Koepele; Julie Gantenbein; Steve Edmondson; John Wooster; Tim Heyne; John Shelton; Deborah Giglio
Subject: RE: La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan

Dear Ms. Staples,

Attached please find the comments of CSPA on the Upper Tuolumne Basin Barrier Study for the licensing of the La Grange Project.

Please let me know if you have any questions.

Thank you.

Chris Shutes FERC Projects Director California Sportfishing Protection Alliance 510 421-2405

From: <u>Rose.Staples@hdrinc.com</u> CC: <u>Rose.Staples@hdrinc.com</u> Subject: La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan Date: Thu, 2 Jul 2015 21:38:01 +0000

La Grange Licensing Participants,

The Districts have developed the attached Upper Tuolumne River Basin Habitat Assessment Fish Migration Barriers Component draft study plan. It is being provided to licensing participants for a 21-day review and comment period. Please provide any comments to <u>rose.staples@hdrinc.com</u> by Thursday, July 23, 2015. The final study plan will be filed with FERC.

A copy of the draft study plan has also been uploaded to the <u>www.lagrange-licensing.com</u> website in the DOCUMENTS section.

Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com hdrinc.com/follow-us



# **California Sportfishing Protection Alliance**

"An Advocate for Fisheries, Habitat and Water Quality" Chris Shutes, FERC Projects Director 1608 Francisco St., Berkeley, CA 94703 Tel: (510) 421-2405 E-mail: <u>blancapaloma@msn.com</u> Web: www.calsport.org

July 22, 2015

Ms. Rose Staples Rose.Staples@hdrinc.com Via e-mail

Re: CSPA comments on draft Upper Tuolumne Basin Barrier and Habitat Study Plan (July 2, 2015) for the La Grange Project licensing

Dear Ms. Staples:

Thank you for the opportunity to comment on the July 2, 2015 draft Upper Tuolumne Basin Barrier and Habitat Study Plan that licensees have proposed for the licensing of the La Grange Project. CSPA has one recommended modification to the study plan.

CSPA recommends that a check-in with licensing participants be added to the study plan, to occur after the consultants make the initial determinations regarding fish barriers. Of particular concern are the barriers that the consultants determine to be total passage barriers, because the study design then eliminates from consideration evaluation of barriers upstream of the downstream-most total barrier on any segment of river (per Section 3.0: Study Area). CSPA recommends that interested licensing participants be offered the opportunity to attempt to reach consensus on each total barrier before the consultants undertake additional study. While it is prudent not to evaluate barriers that are not of relevance to the overall interest, it is also wise to avoid a situation where consultants might be required to gather additional information late in the study.

The recommended check-in could be in the form of a workshop or a webinar.

Thank you for the opportunity to comment.

Respectfully submitted,

Chy n that

Chris Shutes FERC Projects Director California Sportfishing Protection Alliance

From: James Hastreiter [mailto:James.Hastreiter@ferc.gov]
Sent: Wednesday, July 22, 2015 10:18 AM
To: Devine, John
Subject: RE: Licensing Schedule for La Grange

Thanks John. Just to set the record straight on this. We had a phone discussion concerning Don Pedro and La Grange ilp schedules and I mentioned that we would be issuing a revised ilp processing schedule after we complete all of the study determinations for La Grange. You asked if the Districts could propose a revised ilp processing schedule and I said that would be fine, and you said you would provide the Districts proposed revised schedule in an email to me. That's a bit different than what your email suggests that I asked for the Districts to provide a schedule. Anyway now that the record is straight, once we issue the letter approving the study plan for monitoring anadromous fish movement into the powerhouse draft tubes, a revised ilp processing schedule will be forthcoming. As I mentioned to you on the phone, I don't have the last say on the revised schedule. A this point I'm thinking the Districts proposed date of December 2018 for the final application might be a stretch but I'll try to work with that date. Also I think any amendment for the Don Pedro application would need to be filed at the same time as the La Grange final application. We'll see what DHL management approves.

From: Devine, John [mailto:John.Devine@hdrinc.com]Sent: Tuesday, July 21, 2015 12:39 PMTo: James HastreiterSubject: Licensing Schedule for La Grange

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HDR 970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com

From:	Le, Bao
Sent:	Wednesday, July 22, 2015 3:33 PM
То:	dean.marston@wildlife.ca.gov; Shelton, John@Wildlife (John.Shelton@wildlife.ca.gov)
Cc:	Borovansky, Jenna; Deason, Jesse
Subject:	RE: La Grange Licensing: Date for Fish Passage Workshop #2

Hi all.

I am adding John Shelton to this string regarding Fish Passage Workshop date. My apologies for any inconvenience.

Thanks, Bao

From: Le, Bao
Sent: Wednesday, July 22, 2015 2:15 PM
To: dean.marston@wildlife.ca.gov
Cc: 'Borovansky, Jenna'; Deason, Jesse
Subject: La Grange Licensing: Date for Fish Passage Workshop #2

Hi Dean.

I hope you're having a good summer. We're planning to have workshop #2 for the Fish Passage Facilities Assessment on September 17<sup>th</sup>. I wanted to reach out to you to confirm that CDFW will be able to participate on this date.

Please let me know as soon as you can.

Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

From: Devine, JohnSent: Wednesday, July 22, 2015 10:34 AMTo: 'James Hastreiter'Subject: RE: Licensing Schedule for La Grange

Jim,

Sorry about the misunderstanding; I do remember it just as you say below. We completely understand it is up to FERC.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

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John Devine, P.E., M.ASCE Senior Vice President, Hydropower Services

HDR

970 Baxter Blvd, Suite 301 Portland, Maine 04103 D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com

From:	Le, Bao
Sent:	Wednesday, July 22, 2015 2:13 PM
То:	John Wooster - NOAA Federal
Cc:	Borovansky, Jenna; Deason, Jesse
Subject:	La Grange Licensing: Date for Fish Passage Workshop #2

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Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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From: Marty McDonnell On Behalf Of Sierra Mac River Trips

Sent: Wednesday, July 22, 2015 3:08 PM
To: Borovansky, Jenna
Cc: Ashenfelter, Mark
Subject: Fwd: HDR Fish Barrier Study Administrative Permit request

Jenna, Just received this note from Dusty. Marty

Begin forwarded message:

From: "Vaughn, Gary D -FS" <<u>gdvaughn@fs.fed.us</u>> Subject: RE: HDR Fish Barrier Study Administrative Permit request Date: July 22, 2015 at 3:04:16 PM PDT To: Sierra Mac River Trips

Marty,

We are in the process of approving a research special use permit for HDR/TID/MID on USFS land. They will need to coordinate with the BLM for research on their land. They will be authorized to stay 5 days in the river canyon. We are not specifying which company they use but have encouraged them to use one of our currently permitted rafting companies. It would be preferable if the trip fits within your user allocation, especially if you have unused launch dates or allocated use, but not mandatory as this is a separate permit than your commercial permit giving them authorization to float the river to complete their work.

Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

To: Vaughn, Gary D -FS Subject: Re: HDR Fish Barrier Study Administrative Permit request

# Dusty,

Please confirm that HDR has authorization to conduct a Fish Barrier Study, 5 day Tuolumne River trip from August 2 through August 6 utilizing my equipment and staff for their river transportation needs. We will ensure that the choice of campsites and other trip requirements will not conflict with other users. If the FS needs this use to be part of our user allocation, can you consider unused launch dates or the remainder of partially filled trips allocated use? The Forest Service has a MOU with the BLM for administering the Wild & Scenic corridor. Will I need to be communicating with the BLM regarding this trip? Thanks, Marty

Marty

Marty McDonnell, first outfitter on the Tuolumne River & pioneer on the Cherry Creek/Upper Tuolumne 1973 Family run, locally based, mature guides, Tuolumne River specialists for over 40 years!~~~ Sierra Mac River Trips http://www.sierramac.com

e-mail Reservations: 800 457-2580 (209) 591-8027

# On Jul 3, 2015, at 12:14 PM, Vaughn, Gary D -FS <<u>gdvaughn@fs.fed.us</u>> wrote:

Marty,

Sorry for my delayed response. HDR is authorized to install water temperature recorders at the locations in Appendix A of the attached permit. The permit does not authorize any access to these sites outside of what it available to the public – hike and drive on trails and roads open to public use, no aircraft landings in the river (except for emergencies only) and float trips require a private permit or the use of an approved commercial operator such as SierraMac. The same float permit restrictions still apply – 26 people, 6 rafts, 3 days max. Also, any activities related to research on BLM land (such as the North Fork area) will require authorization from the BLM office.

I do not know of any permits related to fish barrier studies.

Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us

USDA

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## Caring for the land and serving people

From: Marty McDonnell On B Sent: Tuesday, June 23, 2015 9:34 AM To: Vaughn, Gary D -FS Subject: HDR Fish Barrier Study Administrative Permit request

On Behalf Of Sierra Mac River Trips

Dusty Vaughn gdvaughn@fs.fed.us

Mark Ashenfelter of HDR has requested Sierra Mac River Trips to transport a Study Team to conduct a Fish Barrier Study down the Tuolumne River 8/2-6. I have requested HDR to obtain an Forest Service Administrative Permit from your office made to your attention.

Please let me know if you have any special conditions you would like me to be aware of.

Thanks,

Marty

Marty McDonnell, first outfitter on the Tuolumne River & pioneer on the Cherry Creek/Upper Tuolumne 1973 Family run, locally based, mature guides, Tuolumne River specialists for over 40 years!~~~ Sierra Mac River Trips http://www.sierramac.com e-mail

(209) 591-8027

On Behalf Of Sierra Mac River Trips

From: Marty McDonnell Sent: Wednesday, July 22, 2015 2:41 PM To: Borovansky, Jenna Subject: Re: Sierra Mac Trip Planning/Payment

Jenna,

I've checked in with Jim Eicher of the BLM and Dusty Vaughn of the Forest Service and get the sense that they will provide your request but are in no big hurry. I can only speculate that they are getting and giving "pain" with HDR's recent past helicopter/hole drillings and lack of a BLM permit. The 5 day request is outside of the Wild & Scenic Management Plan. Worst case would be to reschedule for two 3 day trips or one 3 day and one 2 day might work.

The MOU the BLM has with the FS is only for managing within the Wild & Scenic corridor. Your team will leave that area when they hike up stream a few hundred yards...

Your payments towards this trip are refundable and transferable to other options.

Jenna, FYI Note from Jim Eicher/BLM 7/20/15 Thanks Marty I am working on this proposal, and I will let you know what our decision will be in a week or so. HDR will need to get authorization with BLM before this activity is permitted. Take Care Jim Eicher/BLM

Marty

Marty McDonnell, first outfitter on the Tuolumne River & pioneer on the Cherry Creek/Upper Tuolumne 1973 Family run, locally based, mature guides, Tuolumne River specialists for over 40 years!~~~ Sierra Mac River Trips <u>http://www.sierramac.com</u> e-mail Reservations: 800 457-2580

Reservations: 800 457-258 (209) 591-8027 From: Vaughn, Gary D -FS [mailto:gdvaughn@fs.fed.us]
Sent: Wednesday, July 22, 2015 4:46 PM
To: Le, Bao
Cc: Foote, Debra -FS; Junette, Jim -FS
Subject: RE: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Bao,

Please print and obtain your authorized signature for the attached special use permit for your fish barrier study. Once we receive a signed permit, we will obtain the Forest Service authorized signature and return a copy to you. You authorized to stay 5 days within the Tuolumne Wild & Scenic River Management Plan. We encourage you to utilize one of our permitted commercial rafting companies to float the river. Let me know if you need their contact information.

Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us

Caring for the land and serving people

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Thursday, July 09, 2015 11:39 AM
To: Vaughn, Gary D -FS; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.

3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards, Bao

Bao Le

Senior Fisheries Biologist

# HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422 FS-2700-4 (V. 01/2014) OMB 0596-0082

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

#### SPECIAL USE PERMIT

#### Authority: ORGANIC ADMINISTRATION ACT June 4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers 55 miles of rivers in the T. 1 S., R. 17 E 18E, T. 1 N., 16E, 17 E., 19E. MT. DIABLO MERIDIAN, ("the permit area"), as shown on the map attached in Appendix A. This permit issued for the purpose of:

Fish barrier assessment research to be completed on the Main, North, South, and Middle Forks of the Tuolumne River, Clavey River, Cherry Creek, and Eleanor Creek. Surveys of the Main Tuolumne downstream, Clavey, and North Fork of the Tuolumne River will be conducted using whitewater boating rafts on two separate 5-day boat trips and hiking the North Fork and Clavey.

Forest Roads will be used to access the hiking routes for the Main Tuolumne to Early Intake, South Fork Tuolumne, Cherry Creek, and Eleanor Creek.

#### TERMS AND CONDITIONS

#### I. GENERAL TERMS

**A.** <u>AUTHORITY</u>. This permit is issued pursuant to **ORGANIC ADMINISTRATION ACT June 4, 1897** and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

C. TERM. This permit shall expire at midnight on 12/31/2017, 2 years and 4 months from the date of issuance.

**D.** <u>**RENEWAL</u>**. This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.</u>

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

F. <u>COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL REQUIREMENTS</u>. In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. ASSIGNABILITY. This permit is not assignable or transferable.

# I. CHANGE IN CONTROL OF THE BUSINESS ENTITY.

1. <u>Notification of Change in Control</u>. The holder shall notify the authorized officer when a change in control of the business entity that holds this permit is contemplated.

a. In the case of a corporation, control is an interest, beneficial or otherwise, of sufficient outstanding voting securities or capital of the business so as to permit the exercise of managerial authority over the actions and operations of the corporation or election of a majority of the board of directors of the corporation.

b. In the case of a partnership, limited partnership, joint venture, or individual entrepreneurship, control is a beneficial ownership of or interest in the entity or its capital so as to permit the exercise of managerial authority over the actions and operations of the entity.

c. In other circumstances, control is any arrangement under which a third party has the ability to exercise management authority over the actions or operations of the business.

2. <u>Effect of Change in Control</u>. Any change in control of the business entity as defined in paragraph 1 of this clause shall result in termination of this permit. The party acquiring control must submit an application for a special use permit. The Forest Service is not obligated to issue a new permit to the party who acquires control. The authorized officer shall determine whether the applicant meets the requirements established by applicable federal regulations.

#### II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

# III. OPERATIONS.

A. PERIOD OF USE. Use or occupancy of the permit area shall be exercised at least 5 days each year.

**B.** <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

**C.** <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for

noncompliance with any of the terms and conditions of this permit.

#### IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D.** <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS</u>**. The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.</u>

**F.** DAMAGE TO UNITED STATES PROPERTY. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

**G.** <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations,
their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

H. INDEMNIFICATION OF THE UNITED STATES. The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

**I. <u>BONDING</u>**. The authorized officer may require the holder to furnish a surety bond or other security for any of the obligations imposed by the terms and conditions of this permit or any applicable law, regulation, or order.

J. <u>INSURANCE</u>. The holder shall furnish proof of insurance, such as a certificate of insurance, to the authorized officer prior to issuance of this permit and each year thereafter that this permit is in effect. The Forest Service reserves the right to review and approve the insurance policy prior to issuance. The holder shall send an authenticated copy of any insurance policy obtained pursuant to this clause to the authorized officer immediately upon issuance of the policy. Any insurance policies obtained by the holder pursuant to this clause shall name the United States as an additional insured, and the additional insured provision shall provide for insurance coverage for the United States as required under this clause. Such policies also shall specify that the insurance company shall give 30 days prior written notice to the authorized officer of cancellation of or any modification to the policies. The certificate of insurance, the authenticated copy of the insurance policy, and written notice of cancellation or modification of insurance policies should be sent to Groveland Ranger District 24545 Hwy 120, Groveland, CA 95321. Minimum amounts of coverage and other insurance requirements are subject to change at the sole discretion of the authorized officer on the anniversary date of this permit.

#### V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

**C.** <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

**D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures

specified by the authorized officer shall be the responsibility of the holder.

**E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE SPECIES. The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

**G.** <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

#### H. CLEANUP AND REMEDIATION

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

#### VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

**B.** <u>MODIFICATION OF THE LAND USE FEE</u>. The land use fee may be revised whenever necessary to reflect the market value of the authorized use or occupancy or when the fee system used to calculate the land use fee is modified or replaced.

#### C. FEE PAYMENT ISSUES.

1. <u>Crediting of Payments</u>. Payments shall be credited on the date received by the deposit facility, except that if a payment is received on a non-workday, the payment shall not be credited until the next workday.

2. <u>Disputed Fees</u>. Fees are due and payable by the due date. Disputed fees must be paid in full. Adjustments will be made if dictated by an administrative appeal decision, a court decision, or settlement terms.

#### 3. Late Payments

(a) <u>Interest</u>. Pursuant to 31 U.S.C. 3717 et seq., interest shall be charged on any fee amount not paid within 30 days from the date it became due. The rate of interest assessed shall be the higher of the Prompt Payment Act rate or the rate of the current value of funds to the Treasury (i.e., the Treasury tax and Ioan account rate), as prescribed and published annually or quarterly by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletins. Interest on the principal shall accrue from the date the fee amount is due.

(b) <u>Administrative Costs</u>. If the account becomes delinquent, administrative costs to cover processing and handling the delinquency shall be assessed.

(c) <u>Penalties</u>. A penalty of 6% per annum shall be assessed on the total amount that is more than 90 days delinquent and shall accrue from the same date on which interest charges begin to accrue.

(d) <u>Termination for Nonpayment</u>. This permit shall terminate without the necessity of prior notice and opportunity to comply when any permit fee payment is 90 calendar days from the due date in arrears. The holder shall remain responsible for the delinquent fees.

4. <u>Administrative Offset and Credit Reporting</u>. Delinquent fees and other charges associated with the permit shall be subject to all rights and remedies afforded the United States pursuant to 31 U.S.C. 3711 et seq. and common law. Delinquencies are subject to any or all of the following:

(a) Administrative offset of payments due the holder from the Forest Service.

(b) If in excess of 60 days, referral to the Department of the Treasury for appropriate collection action as provided by 31 U.S.C. 3711(g)(1).

(c) Offset by the Secretary of the Treasury of any amount due the holder, as provided by 31 U.S.C. 3720 et seq.

(d) Disclosure to consumer or commercial credit reporting agencies.

#### VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>REVOCATION AND SUSPENSION</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.

5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

**C.** <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION**</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

#### E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION WITHOUT RENEWAL. Upon

revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

#### VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>CURRENT ADDRESSES</u>. The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.

**D.** <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

#### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

# BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

Steve Boyd, Licensing Coordinator

DATE

APPROVED:

Jim Junette, District Ranger

DATE

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

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The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

# **Appendix A: Permit Area**

Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

Appendix A – Permit Area

Authorization ID: GRO1128



Figure 1. Overview map presenting the study area with notable rivers, tributaries and features.

Appendix A – Permit AreaAuthorization ID: GRO1128

Turlock Irrigation District Modesto Irrigation District HDR, Inc.



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

# PHONE CALL MEMORANDUM

Торіс	Schedule for BLM's decision whether or not to authorize research activities on BLM land at the North Fork confluence
Date; Time	July 22, 2015 at 11:00 a.m. Pacific
From	Mr. Bao Le, HDR Inc., consultant to TID and MID
То	Mr. Jim Eicher, BLM

Mr. Le contacted Mr. Eicher this morning and inquired about whether the USFS application for the 5-day float had sufficient information for BLM to provide approval or letter of authorization to "conduct research activities" on BLM land at the North Fork confluence. As he had said during previous phone calls, Mr. Eicher reiterated that since there is an existing violation with regard to temperature loggers, he cannot provide feedback or a decision on this until the temperature issue is addressed first. Mr. Le told him the Districts were making good progress on acquiring the 5-day float permit with the USFS, expected to have that in hand for the float planned for August 2-6 with Marty McDonnell (Sierra Mac River Trips), and asked whether he had a sense of time for a decision. Mr. Eicher said that he was not sure on timing of a decision, that he had "a lot going on right now", and that this issue was not his top priority. He also said that if he has not gotten back to the Districts or HDR by August, the Districts would be in violation again if the Districts chose to conduct the research field program. Mr. Le clarified that the violation would only occur if the field crew were to camp at the North Fork confluence or utilize BLM in any way and Mr. Eicher concurred. Mr. Le ended the call by letting Mr. Eicher know that if he could let the Districts or HDR know of anything that could be done to expedite the decision making process, it would be much appreciated. Mr. Eicher acknowledged that the Districts had been very responsive and that he needs nothing more at this point.

From: Devine, John
Sent: Thursday, July 23, 2015 12:14 PM
To: Eicher, James (jeicher@blm.gov)
Cc: Le, Bao
Subject: FW: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Good morning Jim,

Just to keep you right up to date, yesterday we received the to-be-executed copy of the USFS permit for the float trip and barrier assessment on USFS lands. We understand this does not authorize similar research work on BLM lands.

John Devine, P.E. D 207-775-4495 M 207-776-2206

hdrinc.com/follow-us

From: Vaughn, Gary D -FS [mailto:gdvaughn@fs.fed.us]
Sent: Wednesday, July 22, 2015 4:46 PM
To: Le, Bao
Cc: Foote, Debra -FS; Junette, Jim -FS
Subject: RE: Permit Application(s) for Tuolumne River Fish Barrier Assessment

Bao,

Please print and obtain your authorized signature for the attached special use permit for your fish barrier study. Once we receive a signed permit, we will obtain the Forest Service authorized signature and return a copy to you. You authorized to stay 5 days within the Tuolumne Wild & Scenic River Management Plan. We encourage you to utilize one of our permitted commercial rafting companies to float the river. Let me know if you need their contact information.

Thanks,



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us Service State From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Thursday, July 09, 2015 11:39 AM
To: Vaughn, Gary D -FS; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Devine, John; Deason, Jesse; Ashenfelter, Mark
Subject: Permit Application(s) for Tuolumne River Fish Barrier Assessment

## Hi Debbie and Dusty.

Please find attached two permit applications and supporting attachments intended to cover an upcoming 5-day float trip/field work in support of a fish barriers assessment for the La Grange Project FERC licensing process. Please note a few things:

- 1. We were unable to get confirmation back on our requests as to whether we should file an amendment application (to the temperature monitoring permit) or a new application. As such, we are providing to you both applications plus attachments and defer to you to process the one that would be most applicable.
- 2. The attachments A & B are applicable to either application.
- 3. We apologize for getting this permit application to you so close to our planned trip (the first week of August). As I understand it, we were just informed that this trip could not be covered under our outfitters existing permit.

Please let me know if you have any questions. We're happy to provide any additional information or answer any questions you may have in hopes that we can get this permit issued prior to the August field work.

Best regards, Bao

Bao Le Senior Fisheries Biologist

#### HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422 FS-2700-4 (V. 01/2014) OMB 0596-0082

#### U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

#### SPECIAL USE PERMIT

#### Authority: ORGANIC ADMINISTRATION ACT June 4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers 55 miles of rivers in the T. 1 S., R. 17 E 18E, T. 1 N., 16E, 17 E., 19E. MT. DIABLO MERIDIAN, ("the permit area"), as shown on the map attached in Appendix A. This permit issued for the purpose of:

Fish barrier assessment research to be completed on the Main, North, South, and Middle Forks of the Tuolumne River, Clavey River, Cherry Creek, and Eleanor Creek. Surveys of the Main Tuolumne downstream, Clavey, and North Fork of the Tuolumne River will be conducted using whitewater boating rafts on two separate 5-day boat trips and hiking the North Fork and Clavey.

Forest Roads will be used to access the hiking routes for the Main Tuolumne to Early Intake, South Fork Tuolumne, Cherry Creek, and Eleanor Creek.

#### TERMS AND CONDITIONS

#### I. GENERAL TERMS

**A.** <u>AUTHORITY</u>. This permit is issued pursuant to **ORGANIC ADMINISTRATION ACT June 4, 1897** and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

**B.** <u>AUTHORIZED OFFICER</u>. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

C. TERM. This permit shall expire at midnight on 12/31/2017, 2 years and 4 months from the date of issuance.

**D.** <u>**RENEWAL</u>**. This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.</u>

**E.** <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

F. <u>COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL REQUIREMENTS</u>. In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

**G.** <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. ASSIGNABILITY. This permit is not assignable or transferable.

#### I. CHANGE IN CONTROL OF THE BUSINESS ENTITY.

1. <u>Notification of Change in Control</u>. The holder shall notify the authorized officer when a change in control of the business entity that holds this permit is contemplated.

a. In the case of a corporation, control is an interest, beneficial or otherwise, of sufficient outstanding voting securities or capital of the business so as to permit the exercise of managerial authority over the actions and operations of the corporation or election of a majority of the board of directors of the corporation.

b. In the case of a partnership, limited partnership, joint venture, or individual entrepreneurship, control is a beneficial ownership of or interest in the entity or its capital so as to permit the exercise of managerial authority over the actions and operations of the entity.

c. In other circumstances, control is any arrangement under which a third party has the ability to exercise management authority over the actions or operations of the business.

2. <u>Effect of Change in Control</u>. Any change in control of the business entity as defined in paragraph 1 of this clause shall result in termination of this permit. The party acquiring control must submit an application for a special use permit. The Forest Service is not obligated to issue a new permit to the party who acquires control. The authorized officer shall determine whether the applicant meets the requirements established by applicable federal regulations.

#### II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

**B.** <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. <u>CONSTRUCTION</u>. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

#### III. OPERATIONS.

A. PERIOD OF USE. Use or occupancy of the permit area shall be exercised at least 5 days each year.

**B.** <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

**C.** <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for

noncompliance with any of the terms and conditions of this permit.

#### IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

**B.** <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. <u>ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS</u>. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

**D.** <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

**E.** <u>**RISK OF LOSS</u>**. The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.</u>

**F.** DAMAGE TO UNITED STATES PROPERTY. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

**G.** <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations,

their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

H. INDEMNIFICATION OF THE UNITED STATES. The holder shall indemnify, defend, and hold harmless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

**I. <u>BONDING</u>**. The authorized officer may require the holder to furnish a surety bond or other security for any of the obligations imposed by the terms and conditions of this permit or any applicable law, regulation, or order.

J. <u>INSURANCE</u>. The holder shall furnish proof of insurance, such as a certificate of insurance, to the authorized officer prior to issuance of this permit and each year thereafter that this permit is in effect. The Forest Service reserves the right to review and approve the insurance policy prior to issuance. The holder shall send an authenticated copy of any insurance policy obtained pursuant to this clause to the authorized officer immediately upon issuance of the policy. Any insurance policies obtained by the holder pursuant to this clause shall name the United States as an additional insured, and the additional insured provision shall provide for insurance coverage for the United States as required under this clause. Such policies also shall specify that the insurance company shall give 30 days prior written notice to the authorized officer of cancellation of or any modification to the policies. The certificate of insurance, the authenticated copy of the insurance policy, and written notice of cancellation or modification of insurance policies should be sent to Groveland Ranger District 24545 Hwy 120, Groveland, CA 95321. Minimum amounts of coverage and other insurance requirements are subject to change at the sole discretion of the authorized officer on the anniversary date of this permit.

#### V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

**B.** <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

**C.** <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

**D.** <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures

specified by the authorized officer shall be the responsibility of the holder.

**E.** <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE SPECIES. The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

**G.** <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

#### H. CLEANUP AND REMEDIATION

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U.S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

#### VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

**B.** <u>MODIFICATION OF THE LAND USE FEE</u>. The land use fee may be revised whenever necessary to reflect the market value of the authorized use or occupancy or when the fee system used to calculate the land use fee is modified or replaced.

#### C. FEE PAYMENT ISSUES.

1. <u>Crediting of Payments</u>. Payments shall be credited on the date received by the deposit facility, except that if a payment is received on a non-workday, the payment shall not be credited until the next workday.

2. <u>Disputed Fees</u>. Fees are due and payable by the due date. Disputed fees must be paid in full. Adjustments will be made if dictated by an administrative appeal decision, a court decision, or settlement terms.

#### 3. Late Payments

(a) <u>Interest</u>. Pursuant to 31 U.S.C. 3717 et seq., interest shall be charged on any fee amount not paid within 30 days from the date it became due. The rate of interest assessed shall be the higher of the Prompt Payment Act rate or the rate of the current value of funds to the Treasury (i.e., the Treasury tax and Ioan account rate), as prescribed and published annually or quarterly by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletins. Interest on the principal shall accrue from the date the fee amount is due.

(b) <u>Administrative Costs</u>. If the account becomes delinquent, administrative costs to cover processing and handling the delinquency shall be assessed.

(c) <u>Penalties</u>. A penalty of 6% per annum shall be assessed on the total amount that is more than 90 days delinquent and shall accrue from the same date on which interest charges begin to accrue.

(d) <u>Termination for Nonpayment</u>. This permit shall terminate without the necessity of prior notice and opportunity to comply when any permit fee payment is 90 calendar days from the due date in arrears. The holder shall remain responsible for the delinquent fees.

4. <u>Administrative Offset and Credit Reporting</u>. Delinquent fees and other charges associated with the permit shall be subject to all rights and remedies afforded the United States pursuant to 31 U.S.C. 3711 et seq. and common law. Delinquencies are subject to any or all of the following:

(a) Administrative offset of payments due the holder from the Forest Service.

(b) If in excess of 60 days, referral to the Department of the Treasury for appropriate collection action as provided by 31 U.S.C. 3711(g)(1).

(c) Offset by the Secretary of the Treasury of any amount due the holder, as provided by 31 U.S.C. 3720 et seq.

(d) Disclosure to consumer or commercial credit reporting agencies.

#### VII. REVOCATION, SUSPENSION, AND TERMINATION

A. <u>REVOCATION AND SUSPENSION</u>. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

- 2. For noncompliance with the terms of this permit.
- 3. For abandonment or other failure of the holder to exercise the privileges granted.
- 4. With the consent of the holder.

5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

**B.** <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

**C.** <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

**D.** <u>**TERMINATION**</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

#### E. RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION WITHOUT RENEWAL. Upon

revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

#### VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

**B.** <u>CURRENT ADDRESSES</u>. The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.

**D.** <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

#### THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

# BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

Steve Boyd, Licensing Coordinator

DATE

APPROVED:

Jim Junette, District Ranger

DATE

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

# **Appendix A: Permit Area**

Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

Appendix A – Permit Area

Authorization ID: GRO1128



Figure 1. Overview map presenting the study area with notable rivers, tributaries and features.

Appendix A – Permit AreaAuthorization ID: GRO1128

Turlock Irrigation District Modesto Irrigation District HDR, Inc.



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

From:	Le, Bao
Sent:	Thursday, July 23, 2015 10:46 AM
То:	Shelton, John@Wildlife
Cc:	Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject:	RE: La Grange Licensing: Date for Fish Passage Workshop #2
Follow Up Flag:	Follow up
Flag Status:	Flagged

Thanks for the input, John.

From: Shelton, John@Wildlife [mailto:John.Shelton@wildlife.ca.gov]
Sent: Thursday, July 23, 2015 10:41 AM
To: Le, Bao
Cc: Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject: Re: La Grange Licensing: Date for Fish Passage Workshop #2

I should be able to make that date unless something outside of my control interferes.

John M. Shelton Sent from my iPhone

Cal Dept. of Fish and Wildlife Cell (559) 908-8604 Desk (559) 243-4014;233

#### On Jul 22, 2015, at 3:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi all.

I am adding John Shelton to this string regarding Fish Passage Workshop date. My apologies for any inconvenience.

Thanks, Bao

From: Le, Bao
Sent: Wednesday, July 22, 2015 2:15 PM
To: dean.marston@wildlife.ca.gov
Cc: 'Borovansky, Jenna'; Deason, Jesse
Subject: La Grange Licensing: Date for Fish Passage Workshop #2

Hi Dean.

I hope you're having a good summer. We're planning to have workshop #2 for the Fish Passage Facilities Assessment on September 17<sup>th</sup>. I wanted to reach out to you to confirm that CDFW will be able to participate on this date.

Please let me know as soon as you can.

Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

From:	Le, Bao
Sent:	Thursday, July 23, 2015 2:35 PM
То:	John Wooster - NOAA Federal; Staples, Rose; Devine, John
Cc:	Steve Edmondson - NOAA Federal; Borovansky, Jenna; Deason, Jesse
Subject:	RE: La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan

Hi John.

That would be fine if you provided comments back on July 24<sup>th</sup> COB (5pm PST). Thanks for letting us know.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Thursday, July 23, 2015 11:17 AM
To: Staples, Rose; Le, Bao; Devine, John
Cc: Steve Edmondson - NOAA Federal
Subject: Re: La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan

Bao and John:

Would it be possible to extend the comment deadline on this draft study plan until tomorrow (the 24th) COB Pacific time? I am expecting some input from our engineers that I don't have in hand at the moment, and may not be the end of today because of vacations - and I am in part to blame for this, as I had mentally thoughts this was due Friday / end of the week, but had my dates wrong.

Thanks

John

On Thu, Jul 2, 2015 at 2:38 PM, Staples, Rose <<u>Rose.Staples@hdrinc.com</u>> wrote:

La Grange Licensing Participants,

The Districts have developed the attached Upper Tuolumne River Basin Habitat Assessment Fish Migration Barriers Component draft study plan. It is being provided to licensing participants for a 21-day review and comment period. Please provide any comments to <u>rose.staples@hdrinc.com</u> by Thursday, July 23, 2015. The final study plan will be filed with FERC.

A copy of the draft study plan has also been uploaded to the <u>www.lagrange-licensing.com</u> website in the DOCUMENTS section.

Thank you.

## Rose Staples, CAP-OM, MOS

Executive Assistant

HDR

\_\_\_

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Le, Bao
Sent:	Thursday, July 23, 2015 11:26 AM
То:	John Wooster - NOAA Federal
Cc:	Borovansky, Jenna; Deason, Jesse; Devine, John
Subject:	RE: La Grange Licensing: Date for Fish Passage Workshop #2

Due to the local interest in this study, the workshops are going to be held in Modesto at the MID office (similar to first workshop). I did speak with Mike Garello, our fish passage engineer, and he has said that he does not believe agency engineer participation is required for this workshop.

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Thursday, July 23, 2015 10:40 AM
To: Le, Bao
Cc: Borovansky, Jenna; Deason, Jesse
Subject: Re: La Grange Licensing: Date for Fish Passage Workshop #2

## Do you have a location picked?

Thanks

John

On Wed, Jul 22, 2015 at 2:13 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

Hope you're having a good summer. We're planning to have workshop #2 for the Fish Passage Facilities Assessment on September 17<sup>th</sup>. I wanted to reach out to you to confirm that NMFS will be able to participate on this date.

Please let me know as soon as you can.

Thanks,

Bao

## Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134

D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

hdrinc.com/follow-us

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	John Wooster - NOAA Federal <john.wooster@noaa.gov></john.wooster@noaa.gov>
Sent:	Friday, July 24, 2015 4:39 PM
То:	Le, Bao; Staples, Rose
Cc:	Devine, John; Steve Edmondson - NOAA Federal; Borovansky, Jenna; Deason, Jesse;
	Larry Thompson - NOAA Federal; Thomas Holley - NOAA Federal; Shelton,
	John@Wildlife; Chris Shutes; Patrick Koepele; Peter Drekmeier; Heyne, Tim@Wildlife
Subject:	Re: La Grange Upper Tuolumne Basin Barrier-Habitat Draft Study Plan
Attachments:	NMFS_comments_DraftBarrierStudyPlan_24July2015.docx

Hi Bao and Rose:

Attached are NMFS's comments on the draft Barrier assessment study plan. Thank you for extending the deadline for us until today.

Please let me know if you have any questions.

Regards,

John

On Thu, Jul 2, 2015 at 2:38 PM, Staples, Rose <<u>Rose.Staples@hdrinc.com</u>> wrote:

La Grange Licensing Participants,

The Districts have developed the attached Upper Tuolumne River Basin Habitat Assessment Fish Migration Barriers Component draft study plan. It is being provided to licensing participants for a 21-day review and comment period. Please provide any comments to <u>rose.staples@hdrinc.com</u> by Thursday, July 23, 2015. The final study plan will be filed with FERC.

A copy of the draft study plan has also been uploaded to the <u>www.lagrange-licensing.com</u> website in the DOCUMENTS section.

Thank you.

#### Rose Staples, CAP-OM, MOS

Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

hdrinc.com/follow-us

--

# John Wooster

Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov

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UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE WEST COAST REGION 650 Capitol Mall Way, Suite 5-100 Sacramento, California 95814

July 24, 2015

Rose Staples <u>rose.staples@hdrinc.com</u> 970 Baxter Boulevard Suite 301 Portland ME 04103

Re: NMFS Comments on July 2, 2015 draft Upper Tuolumne Basin Barrier and Habitat Study Plan, La Grange Hydroelectric Project, P-14581-000.

Dear Ms. Staples:

Thank you for the opportunity to comment on the July 2, 2015 draft Upper Tuolumne Basin Barrier and Habitat Study Plan that the Districts have proposed for the licensing of the La Grange Hydroelectric Project. Please find NMFS' comments on the draft Study Plan below:

1. The draft Study Plan proposes to use a Cfc = 0.75 (i.e., fish in "good" condition) to characterize the condition of potential fish attempting to migrate past potential barriers. The selection of a Cfc value has direct implications for determining the maximum jump height and swimming ability of fish attempting to migrate upstream. While selecting a Cfc = 0.75 may be a reasonable approximation for what could be anticipated as the "average" condition of potential anadromous fish in the upper Tuolumne River, it will not characterize all of the fish, e.g., some will be expected to be in worse condition and others will likely be in better condition. An objective of the proposed study plan is to determine what constitutes a "total" barrier to upstream migration, which controls the upstream distance that surveys will extend. Accordingly, NMFS strongly recommends that the Study Plan evaluate potential barriers with respect to a range of fish conditions, including and up to a Cfc = 1.0, for both leaping and swimming abilities for spring-run Chinook and steelhead. This will increase the potential jump height and swimming speed of both species evaluated in the proposed study. Using a range of Cfc values (or fish conditions) also helps characterize the range in variability of individual fish with a given species, as well as address come of the uncertainty in the proposed methodology.



- 2. The draft Study Plan proposes to use flow velocity as a limiting factor in determining whether a given river feature is a total, potential, or passable barrier. The Study Plan proposes to determine velocity through estimates (presumably through visual estimates or timing floating objects over a defined distance), calculating with 1-dimensional hydraulic model, or measuring with a handheld current meter. All of these methods are quite limited in their ability to adequately represent the complete flow velocity fields that fish could encounter (i.e., a fish experiences a 3-dimensional flow field, capable of moving vertically and laterally within the river channel) over a complete range of discharges that fish could be attempting to migrate at. Some of the limitations of the proposed methods to obtain velocity information include: 1) visual estimates and current meter readings will only provide information for the discharges (anticipated to be at two levels) actually surveyed; 2) visual estimates of velocity or estimates based on timing of floating objects are extremely coarse estimates of surface velocity (typically the fastest velocity in a vertical column of water) that become even more unreliable when attempting to apply in steep, boulder dominated channels that contain plunges, cascades, and hydraulic jumps; 3) a 1-dimensional hydraulic model is highly unlikely to be able adequately capture the complex flow field that a fish experiences while attempting to ascend, steep boulder dominated reaches that will probably contain hydraulic jumps, plunges, and/or waterfalls; and 4) time and safety concerns will greatly restrict the ability of field crews to reliably collect the data necessary to produce accurate hydraulic models in a large, remote river such as the Tuolumne River. NMFS believes that the velocity collection methods proposed in the Study Plan in almost all instances will be too coarse to reliably determine whether a feature has suitable velocity conditions for passage at a full range of flows that a migrating fish might encounter. Furthermore, the effort necessary to accurately capture the velocity fields at potential barriers is likely to time intensive and/or unsafe for inclusion in a study at this level of evaluation. NMFS recommends the Districts focus their field and analytical efforts on the other metrics proposed in the Study Plan to evaluate potential fish passage. Estimates of velocity might be useful in evaluating passage at potential barriers, but will likely be too coarse to definitively determine whether a feature is passable or not.
- 3. The classification of a river feature as a "total" barrier to migration represents a critical point in the proposed Study Plan because it represents the upstream terminus of the Study Area in the Tuolumne River and the proposed study tributaries. Based on NMFS' experience, determining whether a river feature is a total barrier to fish migration is a very complex question, in large part due to the multitude of flow and migration paths that can open up as discharge increases including at high discharges that are often difficult or unsafe to witness or model in a reliable fashion. NMFS urges the Districts to take a very conservative approach in classifying river "features" as total barriers, and NMFS also requests that the Districts make this determination in a collaborative process with

other relicensing participants, including NMFS' fish passage engineers. NMFS requests that the Districts hold a collaborative workshop with interested participants at the end of the first season of data collection to determine possible total migration barriers.

- 4. The Study Area should include Reed Creek, a primary tributary to the Clavey River that joins the Clavey River about 12 miles upstream of the Clavey River's confluence with the Tuolumne River. Surveys in Reed Creek would be dependent on the presence or absence of any total migration barriers on the Clavey River downstream of the Reed Creek confluence.
- 5. NMFS requests that Section 5.0 "Reporting" include all available data used in classifying potential barriers in the Proposed Study, including any hydraulic models developed. Available data should be of sufficient resolution that other fish passage engineers can conduct an independent analysis of fish performance at the potential features.

Thank you for the opportunity to provide comments. If you have questions regarding NMFS' response, please contact Mr. John Wooster of my staff, at 916-930-3616.

Sincerely,

Steve Edmondson FERC Branch Supervisor NMFS, West Coast Region

From:	Le, Bao
Sent:	Tuesday, July 28, 2015 3:34 PM
То:	John Wooster - NOAA Federal
Cc:	Borovansky, Jenna; Deason, Jesse
Subject:	RE: Sept. 17 Date for Workshop #2?
Follow Up Flag:	Follow up
Flag Status:	Flagged

### Ok. Thanks for the prompt reply, John.

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, July 28, 2015 3:15 PM
To: Le, Bao
Cc: Borovansky, Jenna; Deason, Jesse
Subject: Re: Sept. 17 Date for Workshop #2?

At least some contingent from NMFS will make that date, I haven't heard back from everyone I hope will attend.

-John

On Tue, Jul 28, 2015 at 2:59 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

I just wanted to follow up to see if September 17 for the Fish Passage Facilities Assessment Workshop #2 would work for NMFS. We just received feedback from CDFW and they can attend. We'd like to try and get a Save the Date out as soon as we can. Please advise.

#### Thanks, Bao

#### Bao Le

Senior Fisheries Biologist

HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

hdrinc.com/follow-us

John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Anna Brathwaite <anna.brathwaite@mid.org></anna.brathwaite@mid.org>
Sent:	Tuesday, July 28, 2015 5:19 PM
То:	'jeicher@blm.gov'
Subject:	Don Pedro Relicensing
Attachments:	BLM Realty Trespass Abatement Handbook 9232-1.pdf

Hi, Jim. Thanks again for your time this morning. As we discussed, please see the attached Handbook that I hope will assist in your analysis.

Also as we discussed, I'll drop you an email on Monday, August 3<sup>rd</sup>, to see if we (MID and TID) can schedule some time to talk with you next week. Like you mentioned, we'll see each other and touch on these topics at the August 7<sup>th</sup> DPRSG anyway.

Thanks and please call if you have any questions.

Anna Brathwaite Staff Attorney Office: 209-404-9053 Mobile: 209-404-9053



## H-9232-1 - REALTY TRESPASS ABATEMENT

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#### Foreword

Realty trespass abatement as used in this Handbook includes all aspects of trespass prevention, detection, and resolution. Realty trespass abatement is not an end in itself. The real aim of the procedures outlined in this Handbook is proper legal use and management of the lands and resources under the Bureau's jurisdiction. While this Handbook seeks to give an overall view of trespass abatement from initiation of Bureau action to case closure, it should not be relied on as the final authoritative word. Particular situations may arise which are not completely treated herein. In such cases, field personnel and managers should seek the advice of appropriate Bureau specialists and/or Field or Regional Solicitors through channels established by State Directors. The user of this Handbook is also encouraged to make appropriate notations in his personal copy of the Handbook to keep it current.

The Introduction to this Handbook summarizes information important to Bureau managers charged with realty trespass abatement on the public lands.

State Directors are encouraged to issue realty trespass prevention, detection, and resolution guidance to supplement this Handbook.

NOTE: Illustrations in the Handbook should be modified to fit the circumstances of each trespass situation.

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#### Introduction/Management Summary

This section summarizes key elements of the Handbook for ready reference by Bureau managers charged with realty trespass abatement on the public lands.

Realty trespass is defined as unauthorized use, occupancy, or development of the public lands for any purpose where authorization must be obtained under regulations at Title 43 CFR 2800 or 2920. This definition is derived from section 303(g) of the Federal Land Policy and Management Act (FLPMA) which states: "The use, occupancy, or development of any portion of the public lands contrary to any regulation of the Secretary . . . , or contrary to any order issued pursuant to any such regulation, is unlawful and prohibited."

Bureau managers are responsible for carrying out an effective realty trespass abatement program and for providing subordinate personnel with guidance and training to carry out proficiently the Bureau's realty trespass abatement program in their area of responsibility.

Realty trespass abatement includes all aspects of trespass prevention, detection, and resolution. Long-term realty trespass abatement may be accomplished under financial, information, or resource planning and management options available to managers.

Realty trespass prevention requires a public that is knowledgeable of the public lands and resources and conditions for authorized use of the public lands. Prevention is best achieved through the work of Bureau information specialists and shared knowledge of all Bureau personnel in formal and informal public contacts. Public awareness and support is essential to successful trespass prevention.

Realty trespass detection requires that all field personnel be alert to possible unauthorized activities on the public lands and aware of procedures for reporting such activities to appropriate Bureau personnel for action. Detection may also involve reports by the public, data of other agencies, and inventory or survey to identify or confirm suspected trespass.

Realty trespass recordation provides a reliable data base in the Bureau's Automated Lands and Minerals Record System (ALMRS) on which the magnitude of public land trespass may be accurately and consistently portrayed to Congress as a budget justification for realty trespass abatement. Once appropriated by Congress, cost targets are allocated to the States on the basis of ALMRS data (i.e., those States with the greatest number of documented trespass and highest record of resolution receive the greatest share of any budget increases).

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Resolution of realty trespass and trespass liability are accomplished under the Bureau's realty trespass regulations and the Federal Claims Collection Act (FCCA) of 1966.

The Bureau's realty trespass regulations, in general, provide that anyone determined by the authorized officer to be in trespass on the public lands shall be notified of such trespass and shall be liable to the United States for:

1. The administrative costs incurred by the United States as a consequence of such trespass.

2. The fair market value rental of the lands (i.e., land rent) or the charge for road use, amortization and maintenance, for the current year and past years of trespass.

3. Rehabilitating and stabilizing the land or costs incurred by the United States in rehabilitating and stabilizing the land.

If a realty trespass is willful, repeated or not resolved in a timely manner, the trespasser may also be subject to trespass penalties of:

1. An amount equal to twice the fair market value rental of the land or twice the charges for road use, amortization and maintenance, for nonwillful trespass.

2. An amount equal to three times the fair market value rental of the land or three times the charges for road use, amortization and maintenance, for knowing and willful trespass.

Under the Bureau's realty trespass regulations the Bureau may also:

1. Deny a land use authorization to a trespasser.

2. Refuse to sell public land to a trespasser.

3. Refuse to enter into an exchange of lands with a trespasser.

Also, a knowing and willful trespasser may be required to appear before a designated U.S. magistrate and may be subject to a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both.

NOTE: Consult the appropriate regulations in Chapter I. <u>Realty Trespass</u> <u>Regulations</u> or at Title 43 CFR Parts 2800, 2810, 1880, 2920 and subparts 9239 and 9262 for specific guidance.

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The FLPMA at section 102(a)(9) states the policy that ". . . the United States receive fair market value of the use of the public lands and their resources . . . " This policy is implemented by various provisions of the FLPMA which require fair market value for the use of public lands and resources. Thus, a realty trespass is the basis for a liability claim by the United States against a trespasser under the FLPMA and the Bureau's realty trespass regulations for money owed the United States as a consequence of the trespass.

Liability claims of the United States for money which has been determined to be owed the United States by any person, organization, or entity, are governed by the FCCA. The Federal Claims Collection Standards (Standards), which implement the FCCA, provide the Bureau authority for initiation of collection action against a trespasser for a liability claim arising as a consequence of the trespass. BUREAU DEBT COLLECTION PROCEDURES IMPLEMENT THE STANDARDS. The Standards also provide management with several actions that may expedite trespass liability settlement. These include possible referral of delinquent debts to the following:

1. The Internal Revenue Service (IRS) as earned income or as an offset against income tax refunds.

2. The Agricultural Stabilization and Conservation Service (ASCS) for offset of trespass liability claims against ASCS program payments.

3. A debt collection contractor for collection action.

4. Consumer credit agencies.

Thus, the Bureau's realty trespass regulations and the Standards provide managers with strong, previously unavailable, tools for realty trespass resolution and negotiation of trespass liability claims. In negotiations, managers should, as an aid to timely trespass resolution, advise trespassers of the application of the regulations and Standards to public land trespass.

Realty trespass resolution is accomplished under one or more of four options available to Bureau managers. The options are explained below.

1. Informal administrative resolution involves a process of meeting with the trespasser and arriving at an amicable settlement of the trespass and trespass liability. This process works best with a cooperative trespasser. Keep all contact on an informal basis. An informal letter and/or a Notice of Trespass is used in this informal process as necessary.

2. Formal administrative resolution procedures are appropriate when an uncooperative trespasser is involved or informal resolution has failed. The formal process is initiated with a Trespass Decision and bill for payment of trespass liability. The Trespass Decision may be appealed to the Interior Board of Land Appeals (IBLA). Additional formal actions under the Bureau's debt collection procedures include payment demand letters, referral for debt collection, etc.

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3. Civil court action for resolution of realty trespass and trespass liability may be required when formal administrative resolution is unsuccessful and the trespasser clearly has the ability to pay the trespass liability, the Bureau has the evidence to support its case, trespass liability is significant, or successful court action would serve notice on other trespassers that resistance to resolution is not likely to succeed. The appropriate Solicitor should review the Bureau's case prior to initiation of court action.

4. Criminal prosecution of knowing and willful trespassers may be warranted when the trespasser is uncooperative, the act is a repeat offense, the Bureau has the necessary evidence, or the nature of the trespass is such that fines and/or imprisonment are warranted. Bureau law enforcement personnel and field or regional solicitors should be consulted on the merit of initiating criminal action.

Additional managerial information in the Handbook is summarized as follows:

1. Field investigation of trespass may be hazardous to employees if criminal activities or hazardous materials are suspected. It may be advisable to have law enforcement personnel accompany the field investigator in a preliminary investigation.

2. Impoundment or disposal of real or personal property placed on the public lands in trespass requires careful handling to protect Bureau personnel from liability suits alleging improper handling or disposal of valuable, or allegedly valuable, property of the trespasser.

3. The circumstances of each realty trespass situation must be thoroughly investigated and actions documented. The ability of the Bureau to prove its case will depend on these early stages of trespass resolution actions.

4. Mining claim occupants may have valid rights afforded by the 1872 Mining Law and the Multiple Surface Use Act of 1955. To avoid violation of these rights, resolution of mining claim occupancy trespass should be a coordinated effort of lands and minerals personnel. Resolution may be achieved under BLM Manual 3893 - Residential Occupancy on Mining Claims, or procedures in this Handbook.

5. Realty trespass regulations hold the trespasser liable for monetary recovery by the Bureau. Informal negotiations to determine the recovery due the Bureau may provide some latitude in negotiations where the Bureau's claims are disputed by the trespasser and the facts are not available to substantiate the Bureau's claims. When the Bureau's claim is firm and a bill for monetary recovery is issued to the trespasser, the Bureau is locked into collection procedures established by the Service Center, (SC-615).

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6. Administrative costs associated with a trespasser's financial liability and recovered in trespass resolution are available for use by the Bureau. Recovery of these funds may offset the actual cost to the Bureau for realty trespass abatement. Funds available to the Bureau include recovered administrative costs as well as costs for rehabilitation/ stabilization of damaged land. These recovered funds are deposited to Account 14X5017 in subactivities 5310 (O&C Lands) or 5320 (PD Lands).

7. State Directors have delegated authority to compromise or write-off trespass liability claims under certain conditions. Compromise and write-off actions are coordinated with the SC Branch of General Accounting, SC-615.

8. The Statute of Limitations does not constrain the Bureau from administrative collection of land rent liability for all previous years that proof of the trespass activity is available. In a legal action, however, the recovery period may be limited to 6 years if the defendant debtor pleads the Statute of Limitations.

9. Cooperation and coordination with State and local government entities as well as private individuals and special interest groups should be promoted to build understanding about the Bureau's realty trespass abatement program and the negative effects of trespass in terms of cost, loss of resources, and interference with legitimate uses of public lands.

10. Trespass abatement should be coordinated on a Statewide basis, by District and Area, and with adjoining States to ensure that all Field Offices are working in a coordinated manner.

11. Managers have many sources of assistance and advice available in trespass resolution. Resolution should be a coordinated effort which utilizes all available expertise. DON'T GO IT ALONE!

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### Chapter I - Realty Trespass Regulations.

Realty trespass regulations collectively include Title 43 CFR Parts 2800, 2810, 2880, 2920, 9230 (Section 9239.7). and 9260 (Subpart 9262). The regulations provide administrative, civil, and criminal authority for action on unauthorized use, occupancy, or development of public lands where authorization must be obtained under Title V or Section 302(b) of the Federal Land Policy and Management Act (FLPMA), the act of August 28, 1937 (43 U.S.C. \$1181a and \$1181b), or Section 28 of the Mineral Leasing Act of 1920 as amended. Criminal liability for realty trespass (i.e., knowing and willful trespass) is derived from the authority of Sections 303(a) through (g) of FLPMA and implemented through the regulations at Title 43 CFR Subpart 9262.

### A. Realty Trespass Regulatory Relationships.

The Title 43 CFR Group 2800 and Part 2920 regulations are similar although minor differences occur. These reflect the time periods in which each was written and not a conscious effort to differentiate the regulations. <u>Realty trespass regulations at Title 43 CFR Subpart 9262 apply</u> equally to the Title 43 CFR Group 2800 and Part 2920 regulations.

### B. Regulation Need, Use, and Implementation Guidance.

Supplemental regulatory information published with the Bureau's realty trespass regulations defined the need for regulations and guidance on use and implementation of the regulations. Portions of the regulatory information paraphrased herein may be useful in explaining the basis of the regulations to trespassers, interest groups, the public, and public land users.

<u>NOTE</u>: Title 43 CFR Part 2920 (trespass regulations) became effective on January 28, 1988. Title 43 CFR Group 2800 (trespass regulations) became effective on July 20, 1989. Prior to these dates there was no effective regulatory control of realty trespass activities on the public lands.

1. Need for Realty Trespass Regulations. Trespass on the public lands for various realty activities requiring authorization through a right-of-way, temporary use permit, road use fee, lease, permit or easement has been a long-standing problem. Trespass activities have resulted in financial loss to the United States because of the loss of rental fees, road use amortization and maintenance fees, and damage to the public land resources from misuse, abuse, fire, theft, vandalism, and negligence. The Bureau of Land Management has tried to resolve cases involving unauthorized use of the public lands, most of which are unintentional, by working with the individual and negotiating an amicable solution. In most circumstances, this has resolved the problem, but there are instances where it does not work, particularly where the trespass was knowingly and willfully committed. In these instances, a procedure is needed to allow the United States to obtain payment for the use of the land and, where appropriate, to impose civil and/or criminal penalties against those trespassing on the public lands.

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### 2. Use of Realty Trespass Regulations.

a. The regulations provide procedures for use by the Bureau of Land Management in carrying out its responsibility to protect the public lands, improvements, and resources from unauthorized use, occupancy or development. The procedures will be equally applicable to all entities, regardless of size, found making an unauthorized use, occupancy, or development of the public lands, improvements, or resources.

b. The regulations provide procedures for dealing with unauthorized use, occupancy or development of the public lands for uses and facilities that require rights-of-way, leases, permits, or easements for agricultural, industrial, residential, or commercial purposes. The regulations do not apply to authorizations under Revised Statute 2477 or 2339.

c. The provisions of the regulations are applicable only to activities which are required to be authorized under Title 43 CFR Parts 2800, 2810, 2880, and 2920 and do not apply to other types of unauthorized use such as grazing trespass, mineral trespass or timber trespass.

d. In those instances where law enforcement action is required for the prevention or abatement of an unauthorized use or development, such action will be aggressively pursued by the Bureau. When appropriate, the Bureau will cooperate with Federal, State, and local law enforcement agencies.

### 3. Implementation of Realty Trespass Regulations.

a. Before resorting to the civil or criminal procedures provided by the regulations, the Bureau of Land Management will first attempt to reach an amicable solution for nonwillful and nonrepeated cases unless, in unusual and limited circumstances, the nature and severity of the unauthorized use would result in damage to the public lands and resources that would be unacceptable without an attempt to obtain legal redress.

b. In those instances where unauthorized use, occupancy, or development of the public lands and improvements is verified, the Bureau of Land Management will consider authorizing the use, occupancy, or development provided it conforms to Bureau plans, programs, policies and objectives and is in compliance with State and local requirements. In certain situations, residential occupants may be eligible for a <u>nonassignable</u> life-time lease under the provisions of 43 CFR Part 2920 if the occupant acknowledges that the lands being occupied are owned by the United States and the site is sole residence of the occupant.

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NOTE: Termination of the occupancy may be expedited if the real property is conveyed to the United States at the death of the occupant(s). Such conveyance should be documented in the land use authorization as well as the nonassignable nature of the authorization.

#### C. Regulatory Definitions.

This section contains only definition of terms relating to realty trespass. Refer to the appropriate regulations for a complete definition of terms relating to realty actions under Title 43 CFR Parts 2800 and 2920.

#### 1. Realty Trespass Definitions at Title 43 CFR Part 2800.

a. "(u) 'Trespass' means any use, occupancy or development of the public lands or their resources without authorization where authorization is required to do so from the United States, or exceeds such authorization, or which causes unnecessary or undue degredation of the land or resources."

b. "(v) 'Willful trespass' means the voluntary or conscious performance of an act constituting a trespass as defined at §2801 of this title. The term does not include an act made by mistake or inadvertence. The term includes actions taken with criminal or malicious intent. A consistent pattern of trespass may be sufficient to establish the knowing or willful nature of the conduct, where such consistent pattern is neither the result of mistake or inadvertence. Conduct which is otherwise regarded as being knowing or willful does not become innocent through the belief that the conduct is reasonable or legal."

c. "(w) 'Nonwillful trespass' means a trespass, as defined at \$2801.3(a) of this title, committed by mistake or inadvertence."

d. "(x) 'Unnecessary or undue degradation' means surface disturbance greater than that which would normally result when the same or a similar activity is being accomplished by a prudent person in a usual, customary, and proficient manner and takes into consideration the effects of the activity on other resources and land uses, including those resources and uses outside the area of activity. This disturbance may be either nonwillful or willful as described in paragraphs 2800.0-5(v) through (w), depending upon the circumstances."

e. "(y) 'Written demand' means a request in writing for payment and/or rehabilitation in the form of a billing delivered by certified mail, return receipt requested, or personally served."

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f. "(z) 'Road use, authorization and maintenance charges' means the fees charged for commercial use of a road owned or controlled by the Bureau of Land Management. These fees normally include use fees, amortization fees and maintenance fees."

2. Realty Trespass Definitions at Title 43 CFR Part 2920. Knowing and willful is defined in these regulations as: ". . . a violation is 'knowingly and willfully' committed if it constitutes the voluntary or conscious performance of an act which is prohibited or the voluntary or conscious failure to perform an act or duty that is required. The term does not include performances or failures to perform which are honest mistakes or which are merely inadvertent. The term includes, but does not require, performances or failures to perform which result from a criminal or evil intent or from a specific intent to violate the law. The knowing or willful nature of conduct may be established by plain indifference to or reckless disregard of the requirements of law, regulations, orders, or terms of a lease. A consistent pattern of performance or failure to perform also may be sufficient to establish the knowing or willful nature of the conduct, where such consistent pattern is neither the result of honest mistake or mere inadvertency. Conduct which is otherwise regarded as being knowing or willful is rendered neither accidental nor mitigated in character by the belief that the conduct is reasonable or legal."

### D. Realty Trespass Regulations at Title 43 CFR Parts 2800, 2810 and 2880.

The regulations at Title 43 CFR 2800, 2810, and 2880 provide procedures for obtaining use authorizations in the form of a right-of-way or use permit for construction, operation, maintenance, and termination of transportation and other systems or facilities. Compensation for the authorizations is based on fair market rental for uses conforming to Bureau plans, policy, objectives, and resource management programs. The trespass abatement and resolution portion of these regulations is as follows:

1. <u>Section 2801.3 Unauthorized Use, Occupancy, or Development</u>. The regulations at this section are as follow:

"(a) Any use, occupancy, or development of the public lands that requires a right-of-way, temporary use permit, or other authorization pursuant to the regulations of this part and that has not been so authorized, or that is beyond the scope and specific limitations of such an authorization, or that causes unnecessary or undue degradation, shall constitute a trespass as defined in Section 2800.0-5."

"(b) Anyone determined by the authorized officer to be in violation of paragraph (a) of this section shall be notified in writing of such trespass and shall be liable to the United States for:

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"(1) Reimbursement of all costs incurred by the United States in the investigation and the termination of such trespass;

"(2) The rental value of the lands as provided for in §2803.1-2 of this title, for the current year and past years of trespass, or where applicable, the cumulative value of the current use fee, amortization fee, and maintenance fee as determined by the authorized officer for unauthorized use of any road administered by the BLM; and

"(3) Rehabilitating and stabilizing any lands that were harmed by such trespass. If the trespasser does not rehabilitate and stabilize the lands within the time set by the authorized officer in the notice, he/she shall be liable for the costs incurred by the United States in rehabilitating and stabilizing such lands.

"(c) In addition to the provisions of subsection (b) of this section, the following penalties shall be assessed by the authorized officer:

"(1) For all nonwillful trespass which is not resolved within 30 days of receipt of a written demand under paragraph (b) of this section--an amount equal to the rental value and for roads, an amount equal to the charges for road use, amortization or maintenance which have accrued since the inception of the trespass;

"(2) For repeated nonwillful or for willful trespass--an amount equal to 2 times the rental value and for roads, an amount equal to 2 times the charges for road use, amortization and maintenance which have accrued since the inception of the trespass.

"(d) In no event shall settlement for trespass computed pursuant to paragraphs (b) and (c) of this section be less than the processing fee for a Category I application as provided for at §2808.3-1 of this title for nonwillful trespass or less than 3 times this value for repeated nonwillful or knowing and willful trespass. In all cases the trespasser shall pay whichever is the higher of the computed penalty or minimum penalty amount.

"(e) Failure to satisfy the requirements of §2801.3(b) of this title shall result in the denial of any right-of-way, temporary land use, road use application or other lands use request but not yet granted under these parts until there has been compliance with the provisions of §9239.7-1 of this title.

"(f) Any person adversely affected by a decision of the authorized officer issued under this section may appeal that decision under the provisions of Part 4 of this title.

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"(g) In addition to the civil penalties provided for in this part, any person who knowingly and willfully violates the provisions of §2801.3(a) of this title may be tried before a United States magistrate and fined no more than \$1,000 or imprisoned for no more than 12 months, or both, as provided by section 303(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1733(a)) and §9262.1 of this title."

2. Section 2812.1-3 Unauthorized Use, Occupancy or Development. These regulations relate to the Revested Oregon and California Railroad and Reconveyed Coos Bay Wagon Road Grant Lands (O&C) tram roads as follows: "Any use, occupancy, or development of the Revested Oregon and California Railroad and Reconveyed Coos Bay Wagon Road Grant Lands (O&C) lands (as is defined in 43 CFR 2812.0-5(e)), for tram roads without an authorization pursuant to this subpart, or which is beyond the scope and specific limitations of such an authorization, or that causes unnecessary or undue degradation, is prohibited and shall constitute a trespass. Anyone determined by the authorized officer to be in violation of this section shall be notified of such trespass in writing and shall be liable to the United States for all costs and payments determined in the same manner as set forth at §2801.3, Part 2800 of this title."

### 3. Section 2881.3 Unauthorized Use, Occupancy or Development.

#### The regulations at this section state:

"Any use, occupancy, or development of the public lands that requires a right-of-way, temporary use permit, or other authorization pursuant to the regulations in this Part, and that has not been so authorized or that is beyond the scope and specific limitations of such authorization, or that causes unnecessary or undue degradation is prohibited and shall constitute a trespass as defined in Section 2800.0-5. Anyone determined by the authorized officer to be in trespass on the public lands shall be notified in writing of such trespass and shall be liable to the United States for all costs and payments determined in the same manner as set forth at §2801.3, Part 2800 of this title."

#### E. Realty Trespass Regulations at Title 43 CFR Part 2920.

The regulations at Title 43 CFR Part 2920 provide procedures for obtaining a land use authorization in the form of a lease, permit, or easement to use the public lands for agricultural, industrial, residential, or commercial purposes. The authorizations are based on a determination of the fair market rental value of the land and are issued only for those uses that are legal and conform to Bureau plans, policy, objectives, and management programs. The trespass portion of these regulations is as follows:

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#### Section 2920.1-2 Unauthorized use.

"(a) Any use, occupancy, or development of the public lands, other than casual use as defined in §2920.0-5(k) of this title, without authorization under the procedures in §2920.1-1 of this title shall be considered a trespass. Anyone determined by the authorized officer to be in trespass on the public lands shall be notified of such trespass and shall be liable to the United States for:

"(1) The administrative costs incurred by the United States as a consequence of such trespass; and

"(2) The fair market value rental of the lands for the current year and past years of trespass; and

"(3) Rehabilitating and stabilizing the lands that were the subject of such trespass, or if the person determined to be in trespass does not rehabilitate and stabilize the lands determined to be in trespass within the period set by the authorized officer in the notice, he/she shall be liable for the costs incurred by the United States in rehabilitating and stabilizing such lands.

"(b) In addition, the following penalties may be assessed by the authorized officer for a trespass not timely resolved under paragraph (a) of this section and where the trespass is determined to be:

"(1) Nonwillful, twice the fair market rental value which has accrued since the inception of the trespass, not to exceed a total of 6 years; or

"(2) Knowing and willful, three times the fair market rental value which has accrued since the inception of the trespass, not to exceed a total of 6 years.

"(c) For any person found to be in trespass on the public lands under this section, the authorized officer may take action under \$2920.9-3 of this title to terminate, revoke, or cancel any land use authorization issued to such person under this Part.

"(d) Failure to satisfy the liability and penalty requirements imposed under this section for unauthorized use of the public lands may result in denial of:

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"(1) A use authorization under this Part; and

"(2) A request to purchase or exchange public lands filed under Subparts 2711 and 2201 of this title.

"(e) Any person who knowingly and willfully violates the regulations in this Part by using the public lands without the authorization required by this part, in addition to the civil penalties provided for in this part, may be subject to a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both under Subpart 9262 of this title.

"(f) Any person adversely affected by a decision issued under this section, may appeal that decision under the provisions of Part 4 of this Title."

F. Realty Trespass Regulations at Title 43 CFR Section 9239.7.

These regulations currently apply to 43 CFR Group 2800. They have been revised to read:

#### Section 9239.7-1 Public lands

"The filing of an application under Part 2800, 2810, or 2880 of this Chapter does not authorize the applicant to use or occupy the public lands for right-of-way purposes, except as provided at §2800.0-5(m), §2802.1(d), and §2882.1 until written authorization has been issued by the authorized officer and received by the applicant. Any unauthorized occupancy or use of public lands or improvements for right-of-way purposes constitutes a trespass against the United States for which the trespasser is liable for costs, damages, and penalties as provided in §2801.3, §2812.1-3, and §2881.3 of this Title. No new permit, license, or grant of any kind shall be issued to a trespasser until:

"(a) the trespass claim is fully satisfied; or

"(b) the trespasser files a bond conditioned upon payment of the amount of damages determined to be due the United States; or

"(c) the authorized officer determines in writing that there is a legitimate dispute as to the fact of the trespasser's liability or as to the extent of his liability and the trespasser files a bond in an amount determined by the authorized officer to be sufficient to cover payment of a future court judgement in favor of the United States."

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### G. Realty Trespass Regulations at Title 43 CFR Subpart 9262.

The criminal citation provisions of realty trespass regulations are derived from Section 303(a) of the FLPMA. The regulatory provisions are as follow:

"9262.1 Penalties for unauthorized use, occupancy, or development of public lands.

"Under section 303(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1733 (a)) any person who knowingly and willfully violates the provisions of §2801.3, §2812.1-3, §2881.3 or §2920.1-2 (a) of this title, by using public lands without the requisite authorization, may be tried before a United States magistrate and fined no more than \$1,000 or imprisoned for no more than 12 months, or both."

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#### Chapter II. Employee Responsibility, Authority, Protection, and Liability

Each employee of the Bureau has certain responsibilities and authorities as a Federal official. When employees operate within the scope of their authority as Federal employees, they are afforded a level of protection by the United States from bodily harm and liability. However, if employees exceed their authority in trespass abatement efforts, they may be subject to legal action initiated by the other party. In cases where employees have clearly exceeded their authority, the employee may not be represented by the United States in the legal action.

#### A. Employee Responsibilities.

Employees of the Department of the Interior (Department) are required to carry out the policies and programs of the Department and to work to ensure the success of programs (Title 43 CFR Subtitle A). As related to realty trespass abatement these include:

#### 1. All Bureau Employees.

a. Knowing how to report, and reporting, incidents of trespass or suspected trespass observed during the performance of assigned duties or functions. For the purpose of reporting incidents of trespass, employees shall record all occupancy, use, and development as if it is unauthorized, pending a determination that the use, occupancy, or development has been authorized by the Bureau (DM 600.4.1).

b. Reporting trespass or alleged trespass without regard to their immediate area of expertise or effect on their assigned program activity (e.g., range management personnel report suspected realty trespass and lands personnel report suspected grazing trespass, etc.).

c. Being familiar with the location of the public lands and authorized uses on the lands in order to recognize unauthorized activities.

d. Being familiar with realty trespass regulations in Chapter I. <u>Realty Trespass Regulations</u>, or at Title 43 CFR Group 2800, Part 2920, and Subpart 9262, categories of realty trespass, and consequences of violation of the regulations (i.e., administrative, civil, and criminal penalties).

e. Emphasizing trespass abatement through contacts with local officials, operators, opinion makers, local press, and the public.

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#### 2. Lands and Realty Personnel.

a. Appropriate documentation and recordation of all reported realty trespass (see Chapter III. Realty Trespass Categories and Trespass Recordation, and Chapter IV. Realty Trespass Case Investigation, Documentation and Processing).

b. Preliminary trespass investigation and determination of trespass liability.

NOTE: When criminal activities are suspected or there is reason to doubt a trespasser's reaction to an on-the-ground investigation of suspected trespass, the initial investigation should be conducted by or with the assistance of Bureau law enforcement personnel.

c. Preparation of case files and records.

d. Case processing, staff assistance, technical support, and recommending a course of action for trespass resolution.

3. Authorized Officer (A0).

a. Carrying out an effective trespass abatement program.

b. Initiating trespass abatement actions.

c. Negotiating with trespassers on an informal basis to effect administrative resolution of the trespass whenever possible.

d. Initiating formal administrative resolution action when informal administrative negotiations are unsuccessful.

e. Recommending administrative resolution action or civil court action to the State Director.

f. Periodic training of employees in realty trespass detection, prevention, and resolution to increase employee awareness and proficiency in realty trespass abatement.

B. <u>Employee Authorities</u>. Bureau employees have authority to carry out the policies and programs of the Department. Bureau Special Agents and Law Enforcement Rangers have been delegated law enforcement authority that exceeds the authority of other employees. As related to realty trespass abatement, these law enforcement authorities are:

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1. <u>Criminal Investigation</u>. Criminal investigation of knowing and willful trespass and enforcement action is limited to Bureau law enforcement personnel.

2. <u>Citation Authority</u>. Issuance of citations under Title 43 CFR Subpart 9262 for knowing and willful trespass is limited to Bureau law enforcement personnel.

3. <u>Criminal Action</u>. Recommendation of criminal action to the United States (U.S.) Attorney's Office (coordinated through the State Director).

C. <u>Employee Protection</u>. Bureau employees are protected in the following instances:

1. <u>Threat or Injury</u>. Section 1114, Title 18 U.S.C., covers any officer or employee assigned to duty in the field service of the Bureau. The U.S. Attorney may prosecute if, while exercising his responsibility as a Federal official, an employee is forcibly assaulted, resisted, opposed, impeded, intimidated, or interfered with by a trespasser.

2. <u>Personal Damage Suits</u>. The U.S. Attorney may defend Bureau personnel in personal damage suits. The plaintiff must prove that the employee acted knowing that he lacked authority for the action and the action was clearly unreasonable. If the plaintiff prevails, the employee may be liable for court costs and damages.

D. Employee Liability.

1. <u>Due Process</u>. Certain administrative and legal rights must be provided the alleged trespasser to assure due process pursuant to laws and regulations.

2. <u>Employee Actions</u>. An employee may be considered as acting within the scope of Bureau employment when performing delegated duties and following and documenting proper procedures if it is necessary to destroy or impound private property located on public lands in trespass. These include:

a. Actions relating to destruction or impoundment of abandoned private property must be thoroughly documented.

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b. No Bureau employee may intentionally injure, destroy, or impound abandoned property in connection with Bureau employment without, at a minimum, the written approval of the AO in whose area the property is located. (Law enforcement personnel can, of course, take emergency action necessary in criminal cases.)

3. <u>Personal Liability</u>. Employees who destroy, damage, or impound abandoned private property with knowledge of and without following proper procedures may be held personally liable to the owner of the property and may be considered to have acted outside the scope of their employment.

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#### Chapter III. Realty Trespass Categories and Trespass Recordation

Realty trespass categories are limited to three in section 303(g) of the Federal Land Policy and Management Act (FLPMA), in the realty trespass regulations and in this Handbook. Realty trespass is recorded, tracked and case closure documented in the Automated Lands and Minerals Records System (ALMRS) on the basis of the categories discussed in Section C. <u>Realty</u> Trespass Categories.

#### A. Realty Authorization Regulations.

These include the regulations at Title 43 CFR Parts 2800, 2810, 2880, and 2920 under which use, occupancy or development of the public lands for various specified purposes must be authorized.

NOTE: The decision as to whether or not to authorize the use, occupancy or development of the public lands is discretionary with the AO.

#### B. Realty Trespass.

Realty trespass is a violation of the Bureau's realty authorization regulations and collectively includes the categories of unauthorized use, occupancy, or development of any portion of the public lands or resources for any purpose that must be authorized under the Bureau's realty authorization regulations. Realty trespass also includes unnecessary or undue degradation, as well as use of lands or resources in excess of those authorized or use occurring outside the area of an approved authorization.

NOTE: Some development and use may be authorized on valid mining claims, oil and gas leases, etc., under the authority of the Mineral Leasing Act, the 1872 Mining Law, etc.

#### C. Realty Trespass Categories.

1. <u>Unauthorized Use</u>. Unauthorized use is an activity that does not appreciably alter the physical character of the public land or vegetative resource. Unauthorized use includes but is not limited to:

a. Abandonment of property, trash, refuse, and litter.

b. Filming where set construction is not involved.

c. Harvest of hay or seed (native or introduced grass, forbs, and shrubs).

d. Storage of sand and gravel, machinery, irrigation equipment, waste rock, farm implements or products (hay, grain, beets, potatoes, etc.), or construction materials (lumber, posts, metal sheeting, etc.).

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e. Establishment of honey bee or leafcutter bee colonies.

f. Dumping of construction, agricultural, processing plant, or hazardous wastes.

g. Use of existing roads/trails for purposes which require a use fee or right-of-way.

h. Livestock feeding, enclosures, locked gates, fences, etc., when not regulated by Title 43 CFR 4140.

Where surface disturbance (clearing, blading, digging, scalping, etc.) is involved, the above activities are considered unauthorized development as described in C.3. Unauthorized Development.

2. Unauthorized Occupancy. Unauthorized occupancy is an activity which results in full or part-time human occupancy or use. Unauthorized occupancy includes but is not limited to:

a. The construction, placement, occupancy or assertion of ownership of a facility or structure (cabin, house, natural shelter, trailer, etc.) on the public lands for trade, commerce, manufacture, employment, residence, or recreational purposes.

b. Mining claim occupancy when the occupancy is not reasonably incident to the mining operation.

c. Residences, whether primary, secondary, or recreational residences.

d. Business facilities.

e. Occupancy of natural shelters, etc.

3. <u>Unauthorized Development</u>. Unauthorized development is an activity that physically alters the character of the public lands or vegetative resources. Unauthorized development includes but is not limited to:

a. Cultivation.

b. Construction of storage facilities (graineries, silage pits, barns, hay sheds, etc.).

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c. Resource development projects (wells, catchments, dikes, dams, fences, corrals, feedlots, etc.).

d. Construction of irrigation facilities (ditches, water lines, reservoirs, pump plants, etc.).

e. Construction of pipelines (gas, oil, water, slurry, etc.).

f. Construction or installation of utility lines/cables and communication repeater or relay facilities.

g. Road and trail construction/realignment.

h. Construction of advertising displays.

i. Any other activity which requires the physical alteration of the land surface for development purposes.

#### D. Multi-Trespass.

Multi-trespass results when several trespass activities such as a road, powerline, waterline, irrigation ditch, fence, hay stack, residence, littering, agricultural, etc., occur on a given land area or involve the same person or company. In these situations, the trespasses may be considered as either one trespass in a single case file and recorded under the major type of trespass, or the trespasses may be separated into multiple case files and recorded as several types of trespass. The decision may be based upon such factors as ease of settlement, timeframe in which different types of trespass may be settled, or proximity of one trespass type to another, etc.

E. Trespass Recordation.

Recordation of <u>all</u> suspected realty trespasses in ALMRS is one of the most important means available to the Bureau in obtaining the resources necessary to gain control of unauthorized realty activities on the public lands. Data derived from ALMRS provide the program base, i.e., magnitude of trespass, upon which requests for funding of realty trespass prevention, detection, and resolution can be justified. ALMRS provides the data for State funding allocations for realty trespass and provides a means of tracking trends and managing the Bureau's realty trespass abatement program. In many instances ALMRS data also will assist in preparation of standard reports. Additionally, ALMRS recordation has made some previously required realty input to trespass reports unnecessary.

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1. <u>Initial Recordation</u>. Upon receipt of an Initial Report of Unauthorized Use (Form 9230-10), serialize the case and record the trespass in AIMRS. Verification consists of checking the Master Title Plats (MTP) and other office records to determine if: (1) the location of the suspected activity is public land and (2) the suspected activity is not authorized. (See Chapter IV. <u>Realty Trespass Case Investigation</u>, Documentation and Processing.)

2. <u>Trespass Use Codes</u>. ALMRS Use Codes permit refinement of each of the three trespass categories into more specific types of trespass activities. Through the appropriate use codes, the broad category of unauthorized development, for example, may be specifically identified as agricultural, pipeline, road or other specific unauthorized development.

3. <u>Title 43 CFR Group 2800 Trespass Recordation</u>. Specific case types for Title 43 CFR 2800 trespass have been developed to integrate with the existing Data Element Dictionary (DED). Case types include roads, railroads, powerlines, communication sites, telephone and telegraph lines and facilities, water facilities, pipelines and facilities, including oil and gas, and produced water disposal facilities. While case types are specific, use codes provide a generic division of the rights-of-way program and provide additional reporting capabilities. There are only three use codes for rights-of-way: oil and gas related, other energy, and nonenergy.

4. <u>Title 43 CFR Part 2920 Trespass Recordation</u>. Case types for Title 43 CFR 2920 trespass have been developed in ALMRS to integrate with the existing DED for permits, leases, and easements. Case types include unauthorized use, unauthorized development, and unauthorized occupancy. While the case types are general, use codes provide a specific definition of the trespass case types (e.g., apiaries, filming, mining, commercial, and residential occupancy, etc.).

5. <u>Recordation Procedures for Criminal Trespass</u>. Procedures for recordation of criminal trespass are to be determined by the Law Enforcement and Resource Protection Operations staff at the Washington or State Office levels. Where criminal violation is suspected, contact the District or Area Ranger or the State Office Special Agent-in-Charge for procedural guidance.

#### F. Trespass Reports.

1. Form 1681-6. Progress reports are sent to the Service Center (SC), on a regular schedule. This report contains units of accomplishment that are entered into the Bureau's Financial Management System (FMS) for cost and workload analyses. Currently, it is necessary to use Form 1681-6 to manually perform this function.

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2. ALMRS Generated Trespass Reports. ALMRS provides data that are used by the Bureau to determine budget allocations to the States and Districts for trespass abatement. Information for statistical reports and congressional inquiry responses is also derived from ALMRS. Reports obtained from ALMRS on a regular basis in the realty trespass program are as follows:

a. <u>Serial Register Page Report (SO3)</u>. This report allows the user to request serial register pages for all trespass cases as needed to document the case file and, if agricultural trespass is involved, to inform the Agricultural Stabilization and Conservation Service (ASCS) of the trespass.

b. <u>Case Management Audit Report (M11)</u>. This report provides data for analyzing trespass workload, statistical information, and documentation of cases by category. Data selections may be by case type and action code, disposition, or use code, with or without timeframes. This report also provides basic information for responses to congressional inquiries, statistical reports, etc. This audit report also may be used to determine units of accomplishment for the Progress Report (Form 1681-6).

c. <u>Cases Pending and Authorized Report (M03)</u>. This report aggregates the number of trespass cases and trespass acres, with or without timeframes, and can be used to analyze pending workloads for justification and allocation of budget.

d. <u>Cases Aging Report (MO2)</u>. This report provides a compilation of the number of trespass actions pending (Bureauwide, by State, District, etc.) and the length of time, in months, they have been pending. This report can be used in conjunction with the MO3 report to analyze pending workloads and the effectiveness of budget allocations.

e. <u>CR User's Guide</u>. A full listing of other ALMRS reports is contained in the CR User's Guide.

3. Unused Realty Reports/Records. ALMRS recordation of realty trespass has rendered several trespass reports unnecessary for reporting realty trespass. Data from these reports/records can now be derived, as necessary, from ALMRS. FIELD OFFICES WILL NO LONGER BE REQUIRED TO COMPLETE THE REALTY RELATED PORTIONS OF THE REPORTS AND TRESPASS RECORDS LISTED BELOW.

a. Trespass Register (Form 9230-8).

b. Trespass Record (Form 9230-18).

c. Triannual Trespass Report (Form 9230-17).

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# Chapter IV. Realty Trespass Case Investigation, Documentation, and Processing.

The investigation and documentation of a realty trespass case begins with discovery and recordation of suspected unauthorized use, occupancy, or development of the public lands. Accurate and complete investigation and documentation of the trespass facts are essential to successful case processing and trespass resolution. Any given trespass may be subject to judicial or Interior Board of Land Appeals (IBLA) review in which BLM employees may be required to testify; therefore, it is essential that a complete and factual record be established and maintained. The purpose of investigation is to determine what happened and who is responsible; whereas, documentation provides a written record of the trespass facts. Case processing involves all Bureau action steps from discovery to case closure.

#### A. Initial Report.

This is the essential first step in realty trespass resolution. On receipt of an Initial Report of Unauthorized Use (Form 9230-10), the investigator must determine if the activity in question is on public lands and, if so, whether or not it has been authorized under the Bureau's realty authorization regulations or other Bureau authorization. If it is determined that the activity is on public lands and is unauthorized, a case file is established and the case is serialized and recorded in ALMRS.

NOTE: Suspected trespass, for the purposes of this Handbook, is defined as those cases where an Initial Report of Unauthorized Use has been prepared and public land status confirmed with available status data (i.e., Master Title Plats (MTP), maps, aerial photographs, etc.).

#### B. Investigation.

Trespass investigation involves field examination and information collection from all sources as necessary to complete the trespass record. DURING THE INVESTIGATION, DO NOT ACCUSE ANYONE OF TRESPASS! Trespass investigation strives to answer these questions: who, what, why, where, when, and how much? The investigation is documented in a Trespass Investigation Report (Form 9230-24) and attachments as necessary. Investigation should proceed as follows:

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1. <u>Trepass Confirmation</u>, "Where?". A field investigation should be conducted to confirm the trespass and to verify the location, land status, and nature of the trespass with:

a. Dated photographs showing the lands in trespass and the nature and condition of the trespass. Take sufficient photographs to document the trespass area and activities.

b. Sketch maps showing location of the trespass, structures, identifying features, and identification of public lands, found corners, section lines, etc.

c. Measurements as necessary to show size of trespass, location of improvements, etc.

d. Unofficial survey maps and notes as used to identify boundary lines, etc.

NOTE: Requests for cadastral surveys should be kept to a minimum but may be necessary in the case of legal challenge, lost or obliterated corners, etc.

2. <u>Trespass Category, "What?"</u> The investigation should determine the category of the unauthorized activity (i.e., unauthorized use, occupancy, or development) and all unauthorized activities that have taken or are taking place. Document the category (i.e., case type) by commodity code in ALMRS. IF KNOWING AND WILLFUL (CRIMINAL) TRESPASS ACTIVITIES ARE SUSPECTED, OR THE INVESTIGATOR'S SAFETY COULD BE JEOPARDIZED, SUSPEND THE INVESTIGATION AND REQUEST ASSISTANCE FROM BUREAU LAW ENFORCEMENT PERSONNEL. The "what?" of trespass investigation includes:

a. The nature of the trespass, regulatory violations, crops being grown, permanent or temporary improvements (building, structures, trailers), abandoned property, condition of property, etc. Document with sketch maps, notes, and photos as appropriate.

b. Photographs, notes, sketches, etc., fully documented as to the date taken or made, location(s), photograph direction, and individual responsible for the documentation.

c. Identification of unauthorized real or personal property that may require impoundment or destruction (see Chapter VI. <u>Unauthorized Real</u> and Personal Property).

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3. <u>Initial Trespass</u>, "When?" The investigator should establish, whenever possible, when the initial trespass occurred. This may be accomplished by:

a. Reviewing aerial photos of the area taken over time.

b. Interviewing adjoining landowners, authorized users, and the suspected trespasser, if possible.

c. Checking records of Agricultural Stabilization and Conservation Service (ASCS), utility companies, lumber yards, or construction contractors.

4. <u>Intent of Trespass, "Why?</u>" This step should seek to establish the intent of the trespass and whether criminal trespass or civil trespass action is advisable or whether the trespass was accidental or inadvertent and may be resolved by the Bureau administratively. The investigation should focus on:

a. Whether the trespasser knew, or had reason to know, that what he was doing was unauthorized or contrary to law or regulation.

b. Whether the trespasser had reason to believe that he had title to the land (i.e., warranty deed, quit claim deed, etc.).

c. Whether the trespasser had knowledge of the location of the public lands and authorized uses (e.g., livestock operator, large landowner, long-time resident, land posted or fenced, etc.).

d. Whether the trespass could be accidental or based on misinformation available, or provided, to the trespasser.

e. Whether a prudent individual, operating on the information available to the trespasser, would arrive at the same conclusions as the trespasser.

f. Whether knowing and willful activities are evident. If so, contact the appropriate Bureau law enforcement personnel.

5. <u>Identity of Trespasser</u>, "Who?" The identity of the trespasser may be known by adjoining landowners or identified by various means. These include:
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a. Interviews, including the person reporting the trespass, adjacent owners, and the trespasser, if appropriate. Obtain signed written statements if possible. If not, document the interview(s) with memos to the file.

NOTE: If the trespass is reported by the trespasser, delay interviews until after the basic facts of the trespass are known.

b. Vehicle registration plates and serial numbers of equipment and vehicles may be helpful in determining the person responsible for the trespass.

c. ASCS records or farm subsidy payments.

d. Additional guidance in locating debtors (i.e., trespassers) as contained in Appendix 1, Title 4 CFR, Chapter II, Federal Claims Collection Standards (Standards).

NOTE: Close the case if the trespass is inactive and the trespasser cannot be located after a diligent search. Document the case file (see Statement of Diligent Search and Inquiry, Illustration 18).

6. <u>Trespass Liability, "How much?</u>" This step of the investigation process establishes a trespasser's liability for land rent, administrative costs, and rehabilitation/stabilization costs as provided in the Bureau's realty trespass regulations. (See Chapter I. <u>Realty Trespass Regulations</u>.) Data gathered during the investigation may include:

a. Measurements to determine the area on which trespass liability claims are based.

b. Crops being grown, average yield, customary farm rent system in locale, whether trespass base acres received subsidy payments which attach to the land or whether ASCS subsidy payments were paid on Federal land.

c. Estimates of rehabilitation/stabilization needs and costs and recommended treatment.

d. Investigation information on when, what, and why, to fully calculate the trespasser's liability and intent of trespass (i.e., whether trespass or criminal penalties are warranted).

e. Appraisal of rental values.

f. Estimated cost of impoundment or destruction of unauthorized real or personal property.

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## C. Documentation.

Information documenting the facts of a realty trespass is placed in the trespass case file. Organize the case file data in chronological order on the right side of the jacket with the most recent information on top. Place accounting advices and bills on the left side of the jacket. The Reimbursable Project Log (Form 1323-1) is attached to the outside of the jacket for recording of administrative costs associated with the case.

NOTE: Administrative cost accounting begins with the completion of an Initial Report of Unauthorized Use and includes all costs associated with investigation, documentation, and case processing (i.e., case closure).

Documentation in the case file should include:

1. Initial Report of Unauthorized Use. (Form 9230-10).

2. <u>Trespass Investigation Report</u>. (Form 9230-24). Appropriate attachments to the report (dated and identified) include:

a. Field notes, sketch maps, photographs, measurements, crops, etc.

b. Interviews conducted in conjunction with the trespass investigation (i.e., county agents, utility companies, etc.).

3. <u>Recordation</u>. Copy of the computer generated serial register page.

4. <u>Reimbursable Project Log</u>. Form 1323-1 documenting the administrative costs of case processing (see Chapter VII. <u>Settlement of</u> <u>Realty Trespass Liability</u> for guidance on administrative cost). It is extremely important that this log is maintained accurately since administrative costs assessed by the Bureau are subject to review by the trespasser and may be subject to judicial and IBLA review.

5. Land Status and Location Data. Document Bureau jurisdiction with Master Title Plats, survey notes, location maps, aerial photos, as appropriate.

6. <u>Meetings</u>, Communications, and Interviews. Include in the case file:

a. Notes from meetings with the trespasser as to why the trespass occurred, offers of settlement, attitude of the trespasser (cooperative v. uncooperative), the Bureau's position on settlement, etc.

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b. Correspondence concerning the trespass.

c. Records and notes of interviews and telephone conversations.

7. <u>Real and Personal Property Actions</u>. When unauthorized real and/or personal property is involved, the documentation required in Chapter VI. Unauthorized Real and Personal Property, is included in the case file.

8. Letters - Notice of Trespass and Trespass Decision. Document informal resolution actions including Notice of Trespass (Illustration 2 or 3) and the initiation of formal administrative resolution procedures, Trespass Decision (Illustration 4 or 5), if informal administrative resolution action has not been successful or is not deemed appropriate.

9. <u>Collection Efforts.</u> Copies of bills (Form 1370-1), demand letters, bonds, etc.

10. <u>Surface Use Determination Report</u>. Prepared by Mineral Examiner for mining claim occupancy not reasonably incident to mining (see Bureau Manual Sections 3060 and 3893).

11. <u>Right-of-Appeal</u>. A copy of the trespasser's notice of appeal of adverse formal decision of the Bureau concerning the trespass to IBLA under Title 43 CFR Part 4.

12. <u>Diligent Search and Inquiry</u>. Document efforts to locate trespassers (Illustration 18).

D. Case Processing.

Each realty trespass case requires certain actions (i.e., processing steps) from initiation to case closure. Each action should be fully explained and documented in the case file in chronological order. The following is a description of the general processing steps for a typical realty trespass case and the identification of Bureau specialists or managers normally responsible for each.

Responsible Office/Official

Step

Action

All Employees

Record who made discovery, address, telephone number, what was observed, who is suspected, etc., on Form 9230-10, and attach written statements as necessary. Preserve private citizen confidentiality as appropriate.

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Responsible Office/Official	Step	Action
Realty Personnel	2.	Completes initial trespass documentation, record in Automated Lands and Minerals Records System (ALMRS) and establish case file.
	3.	Forwards case file to A0 with brief report. If criminal activity is suspected (knowing and willful trespass) forward through A0 to the Special Agent in Charge (SAC). If criminal, SAC will handle with District or Area Office assistance as requested.
Authorized Officer	4.	If not criminal, assigns employee to investigate case (i.e., responsible employee).
Responsible Employee	5.	Prepares maps; checks MTP, etc., to verify that the suspected trespass is on public land.
	6.	Obtains additional information from person reporting trespass. Gets written statement if necessary or possible.
	7,	Visits trespass area. Takes pictures, measurements and makes detailed notes. Completes Trespass Investigation Report (Form 9230-24) Requests survey and/or enforcement personnel if necessary. If no trespass, makes written report for file and closes case. Updates ALMRS and reports unit of accomplishment (Form 1681-6).
	8.	Interviews witnesses or other interested parties. Prepares written statements and obtains signatures from interviewees and otherwise documents the trespasser's identity.
	9.	Identifies the trespasser if possible. If identity of trespasser cannot be confirmed, completes Statement of Diligent Search and Inquiry (Illustration 18) and arranges for rehabilitation/stabilization of the trespass area. Closes case, updates ALMRS, and reports unit of accomplishment (Form 1681-6).

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#### Chapter IV

Office/Official	Step	Action
Authorized Officer	10.	Determines preferred resolution option. (See Chapter V. <u>Realty Trespass Resolution</u> ).
Responsible Employee	11.	Estimates trespass liability. Calculates current and past years' land rent liability (on the basis of fair market rent), resource damages, rehabilitation/stabilization costs, and administrative costs. (See Chapter VII. Settlement of Realty Trespass Liability.)
Authorized Officer	12.	Advises trespasser by letter (Illustration 1) of the trespass and requests a meeting. DO NOT BILL OR REVEAL THE ESTIMATE OF TRESPASS LIABILITY. If no response, may send Notice of Trespass (Illustration 2 or 3).
	13.	Begins negotiations. AO may negotiate informally to resolve the trespass and recover trespass liability and avoid formal administrative or civil resolution and collection processes. (See Chapter V. Section

collection processes. (See Chapter V. Section C. <u>Trespass Resolution Options</u>.) If trespasser is clearly uncooperative or unwilling to informally resolve the trespass, go to step 15.

- 14. If the trespasser presents new factual data, and/or makes settlement offer, A0 evaluates offer and any additional information presented. If acceptable, and resolution action is still at the informal level, simultaneously accepts payment and issues bill (paid) for the amount agreed upon. Payment should include administrative and rehabilitation/stabilization costs as appropriate. Documents the case file to indicate that settlement is based on a reasoned judgment on the part of the Bureau. Closes case and updates ALMRS.
- 15.

If unable to agree on trespass liability, notes case file and sends notice of trespass letter (Illustration 2 or 3).

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#### Chapter IV

Step

16.

Responsible	
<u>Office/Official</u>	

## Action

Authorized Officer

If payment of liability results, accepts payment, closes case and notes ALMRS. If no response, or negative response, sends Trespass Decision (Illustration 4) or Trespass Decision/Notice to Remove (Illustration 5) and bill for collection of trespass liability including administrative and rehabilitation/ stabilization costs (Form 1370-1).

NOTE: Assessment of trespass penalties should be considered at this point (i.e., land rent liability times two or three).

- 17. If Trespass Decision (Illustration 4) or Trespass Decision/Notice to Remove (Illustration 5) results in appeal to IBLA, suspends action on case until IBLA issues a decision. If no IBLA appeal and no payment of liability, sends appropriate demand letters (Illustrations 8, 9, and 10).
  - <u>NOTE</u>: Once a bill and three demand letters are sent, without payment, the Bureau is locked into formal administrative collection procedures established by the Service Center (SC-615).
- 18. If payment is received in full, arranges for rehabilitation/stabilization or authorization, closes case, notes ALMRS, and reports unit of accomplishment (Form 1681-6).
- 19. If no reply to the third demand letter and bill is not paid or a compromise offer is not received, sends file to SC-615 through the State Office with recommendation to write-off, demand full payment or initiate civil action. (Illustrations 11, 12, and 15.)
  - <u>NOTE</u>: Prior to sending the case file to the SC, compromise offers may be accepted by the State Director with concurrence of the appropriate Field or Regional Solicitor. (Illustrations 12 and 15).

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## Chapter IV

Responsible Office/Official	Step	Action
SC-615	20.	Turn claim over to collection agency. Agency works the claim for 6 months. If unsuccessful, agency returns claim to the SC with recommendation for write-off, compromise or civil action. The SC-615 works with the Denver Regional Solicitor in recommending final resolution action.
State Office	21.	After SC-615 action, the case file is returned to the State Director with SC/Solicitor recommendation (i.e., civil action, compromise or write-off). If recommendation is acceptable, implements; if not acceptable, consults with Solicitor to arrive at an acceptable resolution. Returns case to originating office.

Originating Office

22. Notes ALMRS, closes case, and reports as unit of accomplishment. Monitors following closure to insure satisfactory rehabilitation or stabilization, payment of liability, penalties, compliance, etc.

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## Chapter V. Realty Trespass Resolution.

A trespass is resolved when the unauthorized activity is terminated, settlement of trespass liabilities are agreed to by the Bureau and the trespasser or established by court order, liabilities have been paid, improvements removed, the land rehabilitated and stabilized, and the case closed. A trespass is also resolved when the trespasser cannot be identified, improvements are removed, land rehabilitated and stabilized, and the case closed. The Bureau has several options available for resolving trespass. This chapter provides information which may be used in selecting a course of action for resolution of individual realty trespass cases.

#### A. Trespasser Intent.

Intent plays a major role in the determination of the course of action taken to resolve a trespass (i.e., administrative, civil, or criminal). Intent affects the extent of the trespasser's liability for the trespass action. However, where a willful trespasser cooperates with the Bureau to expedite resolution of the trespass action administratively, additional trespass or criminal penalties as provided in the realty trespass regulations may not be warranted. As the proof of the willful or nonwillful intent of the trespasser in committing the unauthorized act must be made from data derived from investigation of the trespass, it is mandatory that investigations be carefully conducted and pertinent facts documented in the case file. This is especially true if civil court action or criminal prosecution of the trespasser is contemplated (see Chapter IV. <u>Realty</u> Trespass Case Investigation, Documentation, and Processing).

## B. Trespass Liability and Penalties.

All trespassers, regardless of their intent or their attitude regarding trespass resolution (i.e., cooperative or uncooperative), are <u>fully</u> responsible for the trespass liabilities set forth in the Bureau's realty trespass regulations including: land rent (i.e., for current and past years of trespass calculated on the basis of fair market rental value for the use of the public lands), administrative costs incurred by the Bureau as a consequence of the trespass, and cost of, or rehabilitation/stabilization of, the lands used in trespass. Additionally, where a nonwillful trespass is not resolved in a timely manner, a penalty equal to the fair market rental value of the land may be imposed making the total an amount that is twice the land rent liability. The penalty for knowing and willful or repeated trespass is twice the fair market rental value of the land making the total an amount that is three times the land rent liability.

NOTE: The number of past years for which penalties may be assessed is limited in the Title 43 CFR §2920.1-2 regulations but not in the Title 43 CFR 2800 regulations. A criminal penalty up to \$1,000 and/or imprisonment of up to 1 year (or both) may also be imposed for knowing and willful trespass under both cited regulations.

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## C. Trespass Resolution Options.

There are four specific options available to the Bureau for realty trespass resolution. They are (1) informal administrative resolution, (2) formal administrative resolution, (3) civil court action, and (4) criminal prosecution. If resolution is initiated at the informal administrative level and resolution efforts fail, formal administrative resolution actions may be initiated, followed by civil court action if formal administrative efforts fail and the trespasser has not appealed to the Interior Board of Land Appeals (IBLA) (see Section E. <u>Appeal Procedures</u>). Failure to win a civil action will bar criminal prosecution for the same action because of the higher level of proof required for successful criminal prosecution. Successful criminal prosecution will not bar civil action for recovery of the trespasser's liability arising from the trespass. However, the courts do not look favorably on criminal prosecution for the purpose of securing a conviction in order to condition probation upon payment of a civil debt (i.e., trespass liability).

1. Informal Administrative Resolution. Realty trespass may be resolved administratively on an informal basis. Resolution action may be initiated with an informal letter (Illustration 1) or may progress to the issuance of a Notice of Trespass (Illustration 2 or 3). Informal resolution involves an agreed upon settlement of the trespass and trespass liability by the Bureau and the trespasser without resorting to legal action or formal administrative procedures (e.g., formal trespass decision, billings, demand letters, etc). Informal resolution is the recommended course of action unless circumstances warrant more stringent measures. The goal is timely resolution of the trespass. Informal administrative resolution may be successful when:

a. The trespasser is willing to cooperate with the Bureau in the timely resolution of the trespass.

b. The trespass is clearly unintentional, accidental, a minor infraction of the Bureau's regulations, or a technical violation.

c. The trespass is minor in terms of size and impact and informal resolution would serve the best interests of all parties involved.

d. The evidence does not exist or is not available to prove the full extent of the trespass liability in terms of previous use, time, and size (i.e., the Bureau cannot prove the full amount due the United States as a consequence of the trespass).

#### Chapter V

e. Acceptance of trespass liability payment and closing the case can be substantiated as a "reasoned judgment" on the part of the Bureau. Document the case file accordingly.

<u>NOTE</u>: Acceptance of a negotiated trespass liability payment based on a reasoned judgement is subject to the write-off and compromise procedures and dollar limits specified in Section B, Chapter VII. Settlement of Trespass Liability.

f. The Bureau's trespass abatement policy in terms of deterrence and securing compliance (both present and future) would be adequately served by informal resolution.

g. A suspected trespass cannot be confirmed as an actual trespass or the trespasser cannot be identified. Close the case and monitor the area.

2. Formal Administrative Resolution. Formal administrative resolution procedures must be initiated when informal resolution is unsuccessful, the trespasser is clearly uncooperative, or for other reason including where the benefits of enforced collection of trespass liability will demonstrate to other trespassers in the area that resistance to liability payment is not likely to succeed. Formal administrative resolution actions are subject to appeal to IBLA and are initiated with a formal trespass decision (Illustrations 4 or 5) and a bill (Form 1370-1) for payment of trespass liability. (Section E, Appeal Procedures, provides further guidance on formal administrative resolution actions and IBLA appeal procedures.) Formal administrative resolution actions (e.g., collection of trespass liability) may also include appropriate demand letters and referral to the Internal Revenue Service (IRS), debt collection contractors, and consummer credit agencies when the liability is not paid or not paid in full. (Illustrations 8, 9, 10, 11, 12 and 15.) Formal administrative procedures may be necessary when:

a. The trespasser is clearly uncooperative.

b. The trespasser disputes the Bureau's trespass liability claim and the Bureau has evidence to substantiate its claim.

c. The size and nature of the trespass cannot be excused as unintentional even though the Bureau cannot prove knowing and willful intent.

d. Formal collection action would enhance the Bureau's trespass abatement program in terms of deterrence and resolution of other public land trespass in the area.

e. The trespass cannot be proven as knowing and willful trespass.

f. The Bureau has expended significant sums of money (administrative costs) as a consequence of the trespass, and enforced collection action is necessary for full recovery.

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g. The trespasser has been positively identified, and evidence exists to support the identification.

h. Offers to settle trespass liability, if any, by the trespasser cannot be justified as reasonable.

NOTE: It is extremely important that trespass liability be accurately calculated prior to formal billing and represents the minimum amount that the Bureau will accept in satisfaction of the trespasser's liability. Later downward adjustments, after billing, involve claim compromise or write-off. (See Chapter VII. Settlement of Trespass Liability.)

3. Resolution via Civil Court Action. Civil court action may be initiated where formal administrative resolution has been unproductive. Court action may also be initiated where successful outcome and follow-up publicity would assist the Bureau in eliminating other trespass in a geographic region and deterring trespass in the future. Civil actions are reviewed for adequacy by the appropriate Solicitor and initiated by the U.S. Attorney in U.S. district courts. U.S. Magistrates, if designated, may hear pretrial matters. Upon consent of the parties, a designated U.S. Magistrate may conduct all proceedings in a civil matter and order the entry of judgment in the case. A U.S. magistrate's jurisdiction to hear a civil case depends on designation to do so from a U.S. district court judge. Whether prosecution will be brought in a given case is determined by the U.S. Attorney. Finally, the U.S. Government can pursue both civil and criminal remedies concurrently for the same offense. The fact that a trespasser is convicted of knowing and willful trespass does not preclude the Bureau from recovering monetary liability and court costs from the trespasser due to the unauthorized activity. Circumstances that may merit civil action on the part of the Bureau to resolve a trespass and trespass liability include, but are not limited to, the following:

a. The Bureau has cause to believe that rehabilitation/stabilization of the lands in trespass would not be accomplished without a court order.

b. Attempts at informal and formal administrative resolution have been unsuccessful.

c. The Bureau has adequate evidence (i.e., a preponderance of evidence) to substantiate its case.

d. Criminal trespass cannot be substantiated (i.e., proof beyond a reasonable doubt).

e. The Bureau's trespass abatement program in terms of prevention, deterrence, and resolution would be enhanced by successful civil court action.

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f. Termination and/or eviction are required to resolve the trespass and a court order is required for these actions.

g. Personal and/or real property is involved in the trespass and a court order will assist in legally removing and/or disposing of the involved property.

h. The trespasser's liability for the trespass is significant and successful court action and monetary recovery would serve as a deterrent to present and future trespass.

i. Circumstances are such that the Bureau cannot accept a trespasser's liability settlement offer (if any) within the requirements of its debt collection procedures.

4. Resolution via Criminal Prosecution. As a practical matter, criminal prosecution will result in quicker resolution of trespass than civil action because of the Constitutional requirement for a speedy trial for criminal offenses. Successful criminal prosecution may not, however, result in recovery of trespass liability. However, a criminal case does not bar the Bureau from recovery action under civil law. Criminal action requires proof of knowing and willful trespass beyond a reasonable doubt whereas civil action requires a preponderance of evidence. Citations for criminal trespass may be issued by Bureau law enforcement personnel under Title 43 CFR §9262.1. When criminal prosecution or citation are contemplated, the appropriate Bureau law enforcement personnel must be involved in the decision process and initiate the appropriate criminal action. Input from Bureau law enforcement personnel will help to keep criminal resolution a viable option since premature administrative or civil action could jeopardize criminal prosecution. Situations where criminal citation or prosecution may be appropriate include those listed below:

a. The trespass is clearly knowing and willful.

b. Successful prosecution would serve as a warning and deterrent to other criminal trespassers.

c. The Bureau has probable cause to believe that a trespass of a criminal nature has occured.

d. Fines and/or imprisonment of the trespasser is warranted and will serve to prevent and deter present and future criminal trespass.

e. The trespass is continuing, or repeated, after appropriate notification of the illegal nature of the act.

NOTE: Injunctive relief may be required where the trespass activities are resulting in unnecessary or undue degradation of the public land and resources (see Section F, Injunctions).

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# D. Cancellation or Revocation of Use Authorizations.

Under Title 4 CFR (Appendix 1, §102.6), agencies seeking collection of liability claims (i.e., trespass liability) are instructed to ". . . give serious consideration to the suspension of licenses or other privileges for any inexcusable, prolonged, or repeated failure of a debtor to pay such a claim and the debtor will be so advised." As an aid to resolving trespass claims, consideration may be given to cancellation of contract negotiations, leases, permits (including grazing), or other Bureau authorizations that are held by a trespasser.

#### E. Appeal Procedures.

Any person adversely affected by a decision to resolve a realty trespass (e.g., termination, eviction, settlement of liability, etc.) may appeal that decision to the IBLA under the provisions of 43 CFR Part 4. In order to preserve a trespasser's right of due process and the Bureau's options for resolution, including addition of penalties, the following procedure should be closely adhered to in cases where formal administrative resolution procedures are required.

1. <u>Trespass Notice</u>. Issue a letter notice of trespass. These notices (Illustrations 1, 2 and 3) are interlocutory and, therefore, are not subject to IBLA appeal during the compliance period. Following the compliance period the Bureau, based on lack of response or evidence and information provided by the trespasser, may:

a. Reconsider the validity of the trespass.

- b. Adjust the rent liability based on information provided by the trespasser (i.e., area, duration of trespass, etc.).
- c. Accept payment of trespass liability.
- d. Decide whether trespass penalties are warrented (i.e., one or two times rent liability).
- e. Close the case for lack of evidence.

2. <u>Trespass Decision</u>. If following the compliance period and evaluation of any information or evidence provided by the trespasser the trespass remains unresolved, a trespass decision (Illustration 4 or 5) is issued. The decision must include a bill for trespass liability (i.e., rent, administrative and rehabilitation/stabilization costs), and trespass penalties, if warrented. The decision must also inform the trespasser of the right of appeal to IBLA. At the end of the appeal period, if the trespasser has not appealed to IBLA and has not made payment in the amount of the bill for collection, issue Demand Letter No. 1. (See Section L., Chapter VII. Settlement of Realty Trespass Liability).

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3. <u>Right of Appeal</u>. Notification of a trespasser's right of appeal to IBLA is mandatory. The standard appeal paragraph to be used to notify trespassers of appeal rights is as follows:

"Within 30 days of receipt of this decision, you have the right of appeal to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations at 43 CFR 4.400. If an appeal is taken, you must follow the procedures outlined in the enclosed Form 1842-1, Information on Taking Appeals to the Interior Board of Land Appeals. The appellant has the burden of showing that the decision appealed from is in error."

4. Effect of Appeal. When an appeal has been filed, IBLA has exclusive jurisdiction over the matter and BLM can take no action on the case.

5. <u>Civil Action</u>. If a trespasser does not appeal to IBLA and does not respond to liability collection action (i.e., three demand letters and collection by a debt collection contractor), civil action may be appropriate.

6. Criminal Action. Criminal prosecution actions are not subject to IBLA appeal.

F. Injunctions.

Injunctions cannot be used to resolve realty trespass. Injunctions will not be issued by the courts to restrain a trespasser merely because he is a trespasser; there must be irrepairable harm occurring or of immediate threat. If a situation arises where lands administered by the Bureau are being subjected to, or threatened with, resource damage from trespass of such a nature as to require preventive action by the Bureau, the facts of the case should be presented to the appropriate Regional or Field Solicitor for advice as to whether injunctive relief should be sought. Injunctive relief will restrain a trespasser from continuing a trespass or initiating an action that would constitute trespass. It will not satisfy the trespasser's liability for trespass. Injunctions are not required to restrain a <u>criminal</u> trespass. Bureau law enforcement personnel have the authority to arrest or otherwise restrain a criminal trespasser. Normally, an injunction should be sought for the following reasons:

1. Existing Trespass. A trespass is continued after service of a notice of trespass letter (Illustrations 1, 2, and 3) or a trespass decision (Illustrations 4 and 5) and irreparable resource damage is occurring or life or property is threatened.

2. <u>Expected Trespass</u>. A trespass is anticipated in spite of warnings issued to the persons involved that their action would cause irreparable harm and would constitute trespass on the public lands.

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# G. Statute of Limitations.

Title 28 U.S.C. §2415 provides: "That an action to recover damages resulting from trespass on lands of the United States . . . may be brought within six years after the right of action accrues . . . " As used in the statute, "damages" means court awarded money to compensate for an actual loss or to punish and/or deter future trespass. Under the Bureau's realty trespass regulations, compensation for damages may include: land rent liability and trespass penalties (both calculated on the basis of fair market rental value of the land), administrative costs, and rehabilitation/stabilization costs. The Bureau's "right of action" under the statute pertains to the right to remedy and relief (i.e., termination and recovery of damages) from trespass through judicial procedure. This right of action occurs each day a trespass is continuing and does not necessarily rely on the date the trespass was initiated for purposes of calculating the 6-year limitation on initiating the Bureau's right of In the recovery of money damages for trespass, there are situations action. which must be considered prior to writing off trespass liability by invoking the Statute of Limitations. These include:

1. Effect on Administrative Recovery. The Statute of Limitations is a defense which an alleged trespasser can only invoke in <u>civil court</u>. The Statute of Limitations does not bar the Bureau from informal or formal administrative action for collection of money owed the United States for <u>all</u> years, or portions thereof, where the trespass can be substantiated. Also, the Federal Land Policy and Management Act (FLPMA) requires that the United States receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute [\$102(a),(9)]. THUS, THE BUREAU IS REQUIRED BY THE FLPMA, AND ITS REALTY TRESPASS REGULATIONS, TO RECOVER FAIR MARKET VALUE FOR ALL YEARS OF TRESPASS, UNLESS THE BUREAU IS LIMITED BY THE COURT IN A CIVIL ACTION TO RECOVERY UNDER THE STATUTE OF LIMITATIONS.

2. <u>Right-of-Action</u>. The trespass activities covered by the Bureau's realty trespass regulations normally are continuous over time. Therefore, each ensuing day that a trespass continues reestablishes the Bureau's right of action under the Statute of Limitations to recover money damages resulting from trespass. However, on a 10-year continuous trespass on which the Bureau initiates its right of action at the end of the 10-year period, the Bureau may be limited by the courts to recovery of money damages for only the last 6 years of trespass.

3. <u>Computation of Limitation Period</u>. Title 28 U.S.C. §2416 provides that for the purpose of computing statute limitation periods, time may be excluded from the limitation period for those periods in which ". . . facts material to the right of action are not known and reasonably could not be known by an official of the United States charged with the responsibility to act . . . "Thus, the Bureau's "right-of-action" on a trespass that has gone undetected (for good cause) for a number of years may not be constrained by the 6-year Statute of Limitations.

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## H. Land Use Authorization/Title Transfer.

The Authorized Officer (AO) may consider legalizing a trespass activity under a land use authorization or title transfer (i.e., sale, exchange, color of title, etc.) under the following circumstances.

1. <u>Liability Settlement</u>. Liability for previous unauthorized use, occupancy, or development of the land has been or is being settled to the satisfaction of the AO.

2. <u>Conformance</u>. The activity to be legalized conforms to Bureau plans, programs, policies, and management objectives for the land and land in the vicinity.

3. <u>Compliance</u>. The use, occupancy, or development to be legalized is in, or can be brought into, compliance with Federal, State, and local planning and zoning as well as applicable laws.

4. <u>Temporary Authorization</u>. The AO may issue a short-term land use authorization to:

a. Prevent undue economic loss (e.g., crop harvest).

b. Authorize continued use while the trespasser is settling liability for the trespass.

c. Arrive at a decision to either terminate the trespass or legalize it under long-term authorization or title transfer.

5. <u>Residential Occupancy</u>. In certain situations residential trespass occupants may be eligible for a nonassignable term or life-time lease under the provisions of Title 43 CFR Part 2920 if one or more of the following conditions is met:

a. The dwelling is the sole residence of the occupant and relocation would create an economic hardship.

b. The occupant acknowledges (in writing) the nonassignable nature of the authorization.

c. The dwelling is in, or can be brought into, compliance with State and local requirements for residential occupancy.

d. The occupancy resulted from misinformation available to the occupant (e.g., survey error), was unintentional, and/or was not known to be on public land.

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## Chapter VI. Unauthorized Real and Personal Property.

It is extremely important that proper procedures be followed to protect the interest of the United States and Bureau employees in the handling of unauthorized real or personal property to be disposed of or removed from the public lands. Bureau Manual Sections 1527 and 1533 provide guidance on the possession, removal, care, or disposal of unauthorized real and personal property before and after title or ownership vests to the United States. Trespass cases involving real and personal property are processed in accordance with the general procedures in this Handbook and the specific guidance in this Chapter.

#### A. Real Property.

Unauthorized real property (for purposes of this chapter) consists of structures, improvements, and facilities more or less attached to the land. Typically these consist of shacks, cabins, corrals, fences, shelters, etc., of little or no useable, historic, or commercial value. Occasionally unauthorized real property with significant commercial value may be discovered on the public lands. Where this occurs the cause may be traced to erroneous information concerning property lines and land ownership. Such trespass normally falls into the category of nonwillful trespass under the Bureau's realty trespass regulations. Real property does not lend itself to impoundment and is normally removed or destroyed on site, after title vests to the United States. Where appropriate to the circumstances of the trespass, continued use of the unauthorized real property may be authorized following settlement of trespass liability.

1. <u>Personal Notice</u>. If the real property owner or occupant, if any, are known, personally notify (Illustrations 1 and 3) and attempt to effect informal administrative resolution of the trespass including removal of the property, rehabilitation/ stabilization of the site, and recovery of liability for administrative costs and previous use (see Section C. 1, Chapter V, <u>Informal Administrative Resolution</u>). Negotiate a use authorization if appropriate (see Section H, Chapter V, <u>Land Use Authorization/Title Transfer</u>). If informal resolution efforts are unsuccessful:

a. Serve a formal Trespass Decision/Notice to Remove (Illustration 5) on the trespasser by certified mail, return receipt requested, or personal service (service by Bureau law enforcement personnel is recommended). Document the service in the case file (Illustration 17).

b. If the owner responds in an appropriate manner settle the trespass liability and close the case.

c. The property owner may relinquish the real property (and associated personal property) to the United States (see Section D. <u>Relinquishment</u>). Document the relinquishment in the case file (Illustration 16).

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d. If the owner fails to respond, remove, relinquish, or reimburse the Bureau for removal of the unauthorized property follow the guidance in Section E. <u>Failure to Remove</u>, F. <u>Possession by the United States</u>, and G. Destruction and Removal.

2. Legal Notice. If the real property owner is unknown:

a. Securely attach the Legal Notice (Illustration 6) to the unauthorized property in a conspicuous location. Provide protection of the notice from the weather as appropriate. Maintain the posted notice concurrent with the removal period specified in the notice.

b. Photograph the property to clearly show the posted notice. A minimum of two photographs are necessary; a close-up to show the notice in detail and a second to clearly identify the property and the posted notice. Include recognizable physical features of the land in the photos if possible.

c. Post copies of the Legal Notice at appropriate locations in the nearest post office, county courthouse, and local Bureau office.

d. Publish the Legal Notice in a local newspaper having general circulation in the vicinity.

e. Periodically examine the posted notices, and re-post if vandalized, damaged, or removed.

f. If there is no response to the Legal Notice, proceed to Section E. Failure to Remove.

B. Personal Property.

Unauthorized personal property (for purposes of this Chapter) includes machinery, trailers, vehicles, irrigation and mining equipment, construction debris and other worthless, discarded personal items such as household trash, appliances, etc., that collectively can be classified as litter, garbage or rubbish. Other personal property items may consist of rocks, rubble, and vegetative materials removed from private land and deposited on public land. These items are usually dumped with the full knowledge that the owner does not own the land or have the right to deposit the unwanted, discarded items on the land. THUS, THE ACTION USUALLY CONSTITUTES KNOWING AND WILLFULL TRESPASS.

On occasion unauthorized personal property of value (i.e. vehicles, camping equipment, etc.) may be abandoned on the public lands. Since there may be valid mitigating reasons for abandonment (i.e., sickness, breakdown, weather, etc.), such abandonment may be treated as NONWILLFUL TRESPASS unless willful intent can be substantiated. Personal property items may not lend themselves to posting and where valuable items are involved immediate impoundment may be necessary to protect the property.

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1. <u>Vehicles</u>. In certain States the local Sheriff's Office or the State Police are authorized to effect impoundment or disposal of abandoned trailers and vehicles. Consult with Bureau law enforcement personnel for guidance or assistance.

2. <u>Property With No Value - Ownership Established</u>. In some cases the identity and culpability of persons disposing of worthless personal property on the public lands can be identified by witnesses, addresses, or serial numbers on the discarded items. Where the personal property clearly has no value (i.e. trash, rubble, garbage, etc.) and the individual responsible has been positively identified:

a. Immediately serve a Notice to Cease and Desist (Illustration 3) on the trespasser by certified mail, return receipt requested, or personal service (service by Bureau law enforcement personnel is recommended). Include copies of the appropriate realty trespass regulations with the notice (normally Title 43 CFR §2920 1-2 and §9262.1). Document the service in the case file (Illustration 17).

b. If no response to the Notice to Cease and Desist is received, a Trespass Decision/Notice to Remove (Illustration 5) may be issued or Bureau law enforcement personnel may serve a citation to appear before a United States magistrate as provided in Title 43 CFR §9262.1.

NOTE: Notification of the trespasser by Notice to Cease and Desist prior to citation is recommended since the notice establishes the trespasser's liability for rental penalty and administrative and rehabilitation/stabilization costs incurred by the Bureau. These costs may not be directly recovered under Title 43 CFR §9262.1.

3. <u>Property With No Value - Ownership Not Established</u>. When unauthorized dumping and discarding of worthless items takes place on one site over a period of time, numerous trespassers may be involved and reponsibility may be difficult to establish. In these situations:

a. Post the site (sign) as government property.

b. Monitor the site for evidence as to persons responsible.

c. As funds permit, or as volunteers are available, rehabilitate/ stabilize (clean-up) the site.

d. Monitor to prevent, or detect, renewed violations.

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4. <u>Valuable Property - Owner Known</u>. Notify the personal property owner by informal letter (i.e. certified mail, return receipt requested) explaining that the property must be removed from the public lands or, if the Bureau has removed the property, where the property may be reclaimed. Allow a reasonable time for the owner to remove, or reclaim, the property considering the nature and value of the property, location of the owner, weather, accessibility of the site and other mitigating factors. The removal/claim period will usually not exceed 30 days. If the property is not claimed or removed:

NOTE: If the property is readily movable, except vehicles, and could be subject to theft or vandalism, obtain permission and remove the property for safekeeping (see Section B. <u>Personal Property</u>, and G. Destruction and Removal).

a. Serve a Trespass Decision/Notice to Remove on the property owner (Illustration 5) by certified mail, return receipt requested, or personal service. Document the service in the case file (Illustration 17).

b. If the property owner fails to respond satisfactorily or to file an appeal, the United States may take possession (see Section F. Possession by the United States).

c. If the property is unusable or the expense of its care and the handling is so great that its retention is clearly not economical, treat it as scrap/junk and dispose of it in accordance with Section G. <u>Destruction</u> and <u>Removal</u>. Case files must be maintained for 3 years from the date of disposing of such property.

d. If the property warrants impoundment, and the time of possession exceeds 30 days from the date of notification, title vests in the United States. However, the property may revert to the owner when a proper claim is filed by the owner prior to transfer for official use or sale of the property (see Bureau Manual Section 1527 - Disposal).

e. If the property is unclaimed and usable by the Bureau it may be added to the Bureau's inventory by entering it on a Receiving Report (Form DI-102) or it may be entered on an Available Property Report (Form 1520-34) for disposal action. Refer to Bureau Manual Section 1527 - Disposal, for specific guidance.

5. <u>Valuable Property - Owner Unknown</u>. If the owner of abandoned personal property is unknown:

a. If valuable personal property is readily removable (i.e. subject to theft), get approval to remove (see Section G. <u>Destruction and</u> <u>Removal</u>). If removed to a Bureau facility for safekeeping or allowed to remain on the public lands, proceed as follows.

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b. Photograph the item(s) for identification and valuation purposes.

c. Post the Legal Notice (Illustration 6) on the property (if appropriate) and photograph. Also post copies of the Legal Notice in one or more local county courthouses, post offices, local Bureau office, or other public places as appropriate. Document the posting in the case file.

d. Publish the Legal Notice in a local newspaper having general circulation in the vicinity.

e. Maintain the posting concurrently with the publication and removal period specified in the Legal Notice.

f. If the legal notice evokes no response and other attempts to locate the owner are unsuccessful, complete affidavit of diligent search (Illustration 18) and place in case file. Take possession and dispose of as in Section B. <u>Personal Property</u>.

C. Documentation.

All real or personal property associated with unauthorized use, occupancy, or development should be photographed and inventoried to document and support Bureau and employee actions to remove, take possession, or otherwise dispose of the property. Other documentation includes postings, notices, correspondence, certification, diligent search, etc. All actions, inventory, photographs, etc., should be placed in the case file.

1. <u>Inventory</u>. Note the condition of each item or structure and its estimated value. A broken, useless piece of furniture, for example, with no commercial value would not be regarded as an item of value. Nor would a shack, shed, etc., constructed of tin, discarded lumber, or other improvised building materials. Note items or structures of historic or cultural value.

2. <u>Photographs</u>. Photograph the property and structures, etc., to support value judgments and decisions to remove or destroy. Photograph posted notices as appropriate. Mount, date, and describe all photos as appropriate.

D. Relinquishment.

The owner of unauthorized real and/or personal property may relinquish said property to the United States (Illustration 16). Acceptance of relinquished property may be appropriate when:

1. <u>Satisfactory Settlement</u>. The owner has satisfied all trespass liability including cost of removing the relinquished property and site rehabilitation/stabilization.

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2. <u>Site Rehabilitation/Stabilization</u>. Relinquishment will expedite removal and disposal of unauthorized/unwanted real property and site rehabilitation/stabilization of the public lands.

3. <u>Mitigating Factors</u>. The trespasser clearly does not have the ability (financial, age, equipment, etc.) to effect removal/disposal of the unwanted property. Document the case file to support acceptance of the relinquished property as a "reasoned judgment" on the part of the Bureau.

4. <u>Valuable Property</u>. The property has commercial or historic value or is useable by the Bureau.

E. Failure to Remove.

Failure of the trespasser to remove real or personal property after due notice may result in one or more of the following actions:

1. United States Possession. Title may vest to the United States (see Section F. Possession by the United States).

2. <u>Penalty</u>. When the trespass is repeated, willful or not resolved in a timely manner, a penalty of 2 times fair market value rent may be assessed in addition to rental liability making the total an amount equal to 3 times the rental liability.

3. <u>Citation</u>. After proper notification, and failure to act, a trespass is held to be knowingly and willfully committed. A citation under Title 43 CFR §9262.1 may be served requiring an appearance before a designated United States magistrate.

4. <u>Court Action</u>. The Bureau, with Solicitor's concurrence, may seek U.S. Attorney assistance in resolution of the trespass through the civil or criminal courts as appropriate.

F. Possession by the United States.

Upon relinquishment or expiration of the removal period specified in the appropriate notices, the property may be considered abandoned for purposes of possession by the United States (see Bureau Manual Sections 1527 and 1533). Post the property as Property of the United States (Illustration 7). The property may revert to the owner when a proper claim is filed by the owner prior to disposal, sale or transfer for official use.

1. <u>Disposal</u>. Property with no value, or little value, or property where the expense of its care and handling is so great that its retention is clearly not economical may be destroyed or sold (see Section G. <u>Destruction</u> and <u>Removal</u>). Photograph as appropriate to support value judgments.

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2. <u>Sale</u>. Proceeds from sale are retained in a suspense account for a period of 3 years from the date title vests in the United States in order that a former owner, upon filing a proper claim, may claim this amount, less the actual costs for the care and handling. Costs incurred by the Bureau as a consequence of the trespass and trespass liability penalties may be offset by the sale proceeds if the owner agrees in writing.

3. Official Use. Useable personal and real property may be added to the Bureau's inventory. For example a cabin or structure with historic significance may merit retention for interpretative value. Evaluate all items recovered through trespass abatement actions for potential utility.

# G. Destruction and Removal.

Obtain written approval from the AO prior to destruction, removal, or sale of unclaimed, or relinquished real or personal property to verify that proper procedures have been followed. Document the case file accordingly.

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# Chapter VII. Settlement of Realty Trespass Liability.

The Federal Land Policy and Management Act (FLPMA) at section 102(a)(9) states the policy that ". . . the United States receive fair market value of the use of the public lands and their resources . . . . " The FLPMA's implementing regulations at Title 43 CFR 2920, 2800, 2810 and 2880 (i.e., realty trespass regulations) establish liability for use of public lands without appropriate authorization. Thus, a realty trespass establishes a liability claim by the United States against a trespasser under FLPMA and the Bureau's realty trespass regulations for money owed the United States as a consequence of the trespass. Liability claims by the United States for money that has been determined to be owed to the United States from any person, organization, or entity are governed by the Federal Claims Collection Act of 1966, as amended and supplemented. The Federal Claims Collection Standards (Standards) of the General Accounting Office and of the Department of Justice (DOJ) [Title 4 CFR, Chapter II (January 1, 1986 ed.)], which implement the Federal Claims Collection Act, provide the Bureau authority for initiation of collection action against a trespasser for a claim arising as a consequence of the trespass. Bureau debt collection procedures implement the Standards.

NOTE: The Bureau will not accept property or performance of services in lieu of full cash settlement of trespass liability.

A. Trespass Liability.

Trespass liability includes land rent liability, all costs of trespass resolution, (i.e., administrative costs), restitution for damage to the land or resource(s) and rehabilitation/stabilization costs. This Chapter provides information on calculating trespasser liability. It also provides guidance on alternative methods of determining land rent liability (calculated on the basis of fair market rental value), negotiations, trespass penalties, bonding, rehabilitation/stabilization, general billing procedures, and referral to the Service Center (SC) for collection action.

1. <u>Satisfactory Settlement</u>. Settlement of trespass liability is met when the appropriate following steps are accomplished.

a. Payment of all monetary liabilities is made or a promissory note for payment is executed and approved.

b. Rehabilitation/stabilization is successfully accomplished by the trespasser or payment or performance bond received to cover Bureau costs for rehabilitation/stabilization.

c. Buildings, structures, personal property, etc., are removed voluntarily or by the Bureau under impoundment and disposal proceedings (see Chapter VI. <u>Unauthorized Real and Personal Property</u>) or authorized by permit, lease, right-of-way, etc.

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2. Other Settlement. Trespass liability may also be settled in the following ways:

a. Liabilities are compromised, the amount paid, and the case closed.

b. The case is referred to DOJ for resolution.

c. Court-ordered settlement has resolved trespass liabilities.

B. Authority to Compromise or Write-off Trespass Liability Claims.

State Directors have delegated authority to accept compromise trespass liability settlement offers for claims up to \$20,000, exclusive of interest. Acceptance of compromise settlement offers must be based on concurrence of Field or Regional Solicitors (Illustration 14). State Directors may write off (i.e., suspend collection action) uncollectible trespass liability claims up to \$600 without Solicitor concurrence. Write-offs in the amounts of \$601 up to \$20,000 need the concurrence of Field or Regional Solicitors (Illustration 12). The effect of compromise and write-off is as follows.

NOTE: Write-off amounts and concurrence levels may increase over time. Check with the Service Center, Branch of General Accounting (SC-615), for current write-off and concurrence levels as well as write-off procedures.

1. Compromise. Compromise differs from write-off in that it extinguishes the trespasser's liability for the unpaid portion of the debt. The amount accepted is a compromise between full liability payment to the Bureau and a reduced payment by the trespasser. Accordingly, collection action terminates with the acceptance of the compromise by the Bureau and payment of the reduced amount by the trespasser. However, the difference between full payment and the compromise settlement may be reported by SC-615 as earned income to the Internal Revenue Service (IRS) if the compromise involves extinguishing a legitimate debt. However, if there is real doubt as to the Bureau's ability to prove the full amount of trespass liablity due, a compromise offer may be accepted and difference not reported to the IRS (Illustration 15). Trespass liabilities are normally compromised after referral, through SC-615, to a debt collection contractor (Illustration 11) and a subsequent recommendation by SC-615 to the State Director for compromise. When a compromise offer is accepted and paid, the trespass case is closed.

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2. Write-off. Collection activity is not terminated with write-off of a trespasser's liability, nor is the liability for the debt extinguished by a write-off. Writing off a debt is the accounting recognition that a debt is unlikely to be collected. Debts are normally written off only after referral, through SC-615, to a debt collection contractor and a subsequent recommendation to the State Director by the SC-615. When a trespasser's liability has been written off and the public land vacated, the case may be closed even though collection action has been suspended. Notify SC-615 of the write-off (Illustration 12). Monitor the trespass area to prevent recocurrence of the trespass.

NOTE: When a claim, exclusive of interest, penalties and administrative costs, exceeds \$20,000 the authority to compromise the claim, suspend or terminate collection action rests solely with the DOJ.

# C. <u>Standards for Collection, Compromise, and Write-Off of Trespass</u> Liability Claims.

The Standards and their application to trespass claims are interpreted, and instructions issued, by the Washington Office (WO) Division of Finance through SC-615. A brief discussion of the Standards is presented herein for the information of the Handbook user. Specific questions on implementation should be directed to the District or State Office Accounts Clerk or SC-615. The Standards are provided in their entirety in Appendix 1. Sections of the Standards herein summarized are referenced in parentheses. Refer to the specific section in Appendix 1 for the precise regulatory language.

# 1. <u>Referral of Trespass Liability Claims to Field or Regional</u> Solicitors and the Department of Justice.

a. Any trespass in which there is an indication of fraud, the presentation of a false claim, or misrepresentation on the part of a trespasser, or any other party having liability in the trespass action, must be referred to the Field or Regional Solicitor for possible litigation (§101.3). They, in turn may refer the case to the DOJ.

b. When a claim against a trespasser, exclusive of interest, penalties and administrative costs, exceeds \$20,000, the decision to accept a compromise offer, suspend or terminate collection action rests solely with the DOJ (\$103.1 and \$104.1).

c. Any claim over \$600 on which aggressive collection action has been taken by the Bureau and which cannot be compromised or terminated, must be referred promptly to the Field or Regional Solicitor. If referred by the Solicitor to the DOJ, the Bureau must refrain from having any contact with the trespasser. The trespasser should be directed to the appropriate DOJ office (\$105.1).

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d. Claims against trespassers of less than \$600, exclusive of interest, penalties and administrative costs, are not referred to the DOJ (through the Field or Regional Solicitor) unless referral is important to a significant enforcement policy or the trespasser clearly has the ability to pay the claim (\$105.4).

2. Administrative Actions to Settle Trespass Liability Claims. The following are actions the Bureau may initiate to resolve liability claims as prescribed by the Standards. Also see Chapter V. Realty Trespass Resolution.

a. The Bureau should attempt to reach a mutually acceptable agreement with a trespasser prior to initiation of formal claim collection procedures. Such agreement should be discussed in personal interviews (§102.7 and §102.12). Document the settlement agreement in the case file (Illustration 13).

b. The Bureau shall add interest and administrative costs of collection to claims arising from public land trespass. Before assessing these charges (costs), the Bureau must send by certified mail, return receipt requested, or hand-deliver with service, a written notice to the trespasser explaining the charges and requirements for payment. (See Illustrations 4, 5, 8, 9 and 10). Such notice must be dated and mailed, return receipt requested, or hand-delivered, with service, on the same day, (§102.13).

c. Appropriate written demands for payment (Illustrations 8, 9 and 10) may be made upon a trespasser in terms which inform the trespasser of the consequences of failure to cooperate. Demand letters should be mailed, return receipt requested, or hand-delivered, with service, on the same day that they are actually dated (§102.2). Document personal service in the case file (Illustration 17).

d. The Bureau is required to give serious consideration to suspension or revocation of licenses or other privileges authorized by the Bureau to a trespasser for any inexcusable, prolonged, or repeated failure to pay a claim arising from the trespass (§102.9).

e. Whenever feasible, trespass liability payments should be collected in full, in one lump sum. However, if the trespasser is financially unable to pay the Bureau's claim in one lump sum, payment may be accepted by promissory note (Form 1372-1) or in regular installments, under certain conditions (§102.11).

f. The Bureau has the authority to contract with collection agencies for collection of trespass claims (§102.6).

g. Delinquent trespass claims may be reported to consumer credit agencies (§102.5).

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h. All administrative collection action shall be documented and the basis for compromise or for write-off (i.e., termination or suspension of collection action) explained in detail (Illustrations 12 and 15). Such documentation shall be retained in the trespass case file (§102.17).

3. <u>Compromise of Trespass Liability Claims</u>. The Bureau may consider a compromise of a trespass liability claim under the following criteria of the Standards. (See Illustration 15 for sample write off of trespass liability resulting from a compromise offer.)

a. A trespass claim may be compromised (reduced) if the Bureau cannot collect the full amount because of the trespasser's inability to pay or refusal to pay the claim in full and the Bureau is unable to collect in full within a reasonable time by enforced collection proceedings. Factors that may be considered in determining a trespasser's ability to pay include, but are not limited to, age, health, present and potential income, assets, and inheritance prospects, etc. (§103.2).

b. A trespass claim may be compromised if there is real doubt concerning the Bureau's ability to prove its case in court for the full amount claimed, either because of the legal issues involved or a <u>bona fide</u> dispute as to the facts. Factors that may be considered include court costs if the Bureau loses the case, availability of witnesses, evidence, and probability of full or partial recovery (§103.3).

c. A trespass claim may be compromised if the cost of collection does not justify the enforced collection of the full amount. The amount accepted may reflect a discount for the probable administrative and litigative costs of collection and time involved in collection. However, the cost of collection does not necessarily mean that a claim should be compromised. Enforced collection may demonstrate to other trespassers that resistance to payment is not likely to succeed (§103.4).

d. Land rent liability, rehabilitation/stabilization and administrative costs incurred by the Bureau may be compromised if the Bureau's policy in terms of deterrence and securing compliance, both present and future, will be adequately served by acceptance of a compromise offer. Accidental or technical trespass may be dealt with less severely than willful and substantial trespass (§103.5).

e. When two or more trespassers are jointly and severally liable to the Bureau for costs arising from the same trespass, collection action will not be withheld against one until the other(s) pay their proportionate share. Care should be taken that a compromise agreement does not release the Bureau's claim against the remaining parties (§103.6).

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f. If the Bureau has a firm written offer of compromise, which is substantial in amount, and the Bureau is uncertain as to whether the offer should be accepted, it may refer the offer, the supporting data, and particulars concerning the claim through the Field or Regional Solicitor to the DOJ. The DOJ may act upon the offer or return it to the Bureau with instructions or advice (\$103.8).

4. <u>Suspension or Termination of Trespass Liability Claims</u>. The Bureau may suspend or terminate collection activity on a trespass liability claim under various criteria of Part 104 of the Standards. Suspension is a temporary measure, whereas termination permits the Bureau to close the trespass case. Criteria in the Standards for both suspension and termination are very similar. The following generally relate to both suspension or termination of claims under the Standards. Specific criteria for each may be determined by referring to Part 104 in Appendix 1.

a. The Bureau cannot collect a significant sum from the trespasser because of age, lack of assets, etc. [§104.3(a)].

b. The Bureau has identified, but is unable to locate the trespasser. Suggested sources of assistance in locating trespassers include telephone directories, city directories, postmasters, drivers license records, automobile title and registration records, State and local government agencies, the IRS, employers, relatives, credit agency skip locate reports, and credit bureaus [§104.2(a) and §104.3(b)]. Bureau law enforcement personnel may be helpful in locating trespassers.

c. Collection action should be terminated on a trespass liability claim when it is likely that the cost of further collection action will exceed the amount recoverable [\$104.3(c)].

<u>NOTE</u>: The Bureau's realty trespass regulations provide for recovery of administrative costs, including cost of collection. Therefore, the cost of collection should not exceed the amount recovered; however, there will be situations where the trespasser may not have sufficient assets to cover his trespass liability (i.e., land rent, administrative costs, restoration/rehabilitation costs, etc.). In these situations, the Bureau may terminate collection actions since the cost of recovery would exceed the amount that can be recovered. The rationale for termination should be well documented as a reasoned judgment on the part of the Bureau.

d. Collection action on a trespass liability claim should be terminated immediately whenever it is determined that the claim is legally without merit [§104.3(d)].

e. Collection action should be terminated when it is determined that the evidence necessary to prove the trespass cannot be produced or the necessary witnesses are unavailable and efforts to induce voluntary liability payment are unsuccessful [\$104.3(e)].

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# D. Negotiation of Realty Trespass Liability Claims.

When the trespass investigation and documentation are complete and before a notice of trespass letter or a trespass decision and bill for trespass liability is sent, a meeting with the trespasser is recommended. The meeting time and place may be established by an informal letter (Illustration 1), telephone, or direct contact. The purpose of the meeting is to inform the trespasser of the Bureau's information concerning the trespass activity (i.e., suspected trespass), regulatory provisions for trespass resolution, and trespass liability claim collection procedures. The meeting should also be directed toward gathering new information from the trespasser and refining existing Bureau information. Factual, proven data are not subject to negotiation, but many items such as acreage, year-to-year use, type and value of improvements, crops, production units. prices received, etc., can vary and the trespasser should be given the opportunity to present information on his behalf prior to any demands for settlement. The tone of the meeting should be cordial, while attempting to effect an informal administrative resolution of the trespass. In the meeting (negotiations) avoid threats, but explain the following to the trespasser.

1. Administrative Costs. Liability for costs incurred by the Bureau as a consequence of the trespass and how these costs can increase if settlement is delayed.

2. Land Rent Liability. Liability for the current and past years of trespass (based on the fair market value rental of the land) and the regulatory provision for trespass penalties if the trespass is not resolved in a timely manner. Land rent liability may be doubled for nonwillful or tripled for repeated or knowing and willful trespass, as a penalty, where warranted (See Section I. Trespass Penalties).

3. <u>Resolution Options</u>. The options available to the Bureau for trespass resolution action if informal procedures break down, i.e., formal administrative action, civil court action, and criminal prosecution for willful trespass. (See Chapter V. Realty Trespass Resolution.)

4. <u>Referral</u>. The Bureau's formal administrative resolution process (i.e., debt collection procedures) including billing, demand letters, and referral of delinquent accounts to debt collection contractors, the IRS, and consumer credit agencies.

5. Administrative Offset. The Bureau may collect the trespass liability by administrative offset against IRS tax refunds or farm subsidy payments of the ASCS. (See Section L. 5. <u>Collection by Administrative</u> Offset.)

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6. <u>Reports to IRS</u>. Debts owed to the United States (i.e., trespass liability) and not paid, are income to the debtor (i.e., trespasser) and may be reported as income earned to the IRS. Also explain that the difference between an accepted compromise and the Bureau's bill for payment in full may also be reported to the IRS as earned income. Trespass liability may also be reported to IRS as addition to income.

7. Doing Business with Trespassers. The Standards suggest that the Bureau consider cancellation of any use authorization held by the trespasser if trespass liability is not paid and that, under the Bureau's realty trespass regulations, a land use authorization may be denied or canceled and sale or exchange of lands denied if the trespass is not resolved.

8. <u>Fines and/or Imprisonment</u>. The Bureau has the authority to bring the trespasser before a U.S. magistrate (for a trespass knowingly and willfully committed) and the magistrate may impose a fine (in addition to trespass liability) of up to \$1,000 and imprisonment of not more than 12 months, or both.

NOTE: If the meeting(s) result in mutual agreement on trespass resolution, complete a Trespass Settlement Agreement (Illustration 13).

# E. Administrative Cost - Liability and Calculation.

The trespasser's liability is for the <u>actual</u> costs incurred by the Bureau (United States) in resolving the trespass (i.e., salary and benefits, travel, materials, equipment and facilities, and utility costs). These costs begin with the confirmation of trespass and are categorized according to labor costs, operation costs, and indirect administrative costs. The definitions of each and the calculations for determining the total administrative costs are provided in Chapter II of the Annual Work Plan (AWP) Handbook (H-1681-1). Administrative costs assessed to individual trespassers may be subject to various levels of administrative and judicial review; therefore, it is extremely important that all costs and collections are properly deposited and documented. Form 1323-1 (Reimbursable Project Log) must be used to track these costs. Administrative costs and the log cover the period from case file establishment to the point the Bureau no longer controls the resolution action. Administrative costs are calculated according to the following formula:

Total		Total		Indirect		Total
	Plus		Plus		=	Administrative
Labor Costs		Operation Costs		Cost		Cost

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1. Labor Costs. When determining Bureau labor costs to resolve a realty trespass calculate the <u>full</u> cost of personnel salaries and benefits, including the cost of leave. Leave costs are a legitimate Bureau incurred labor cost. Although there are three common methods available to calculate full labor costs in the AWP Handbook (H-1681-1, Chapter II), the hourly rate method will be sufficient to calculate liability for most realty trespasses. Hourly rate is calculated as follows: From the GS/WG salary schedules, use the hourly rate for the proper grade level and step of the employee(s) who work on the trespass. Then determine the number of hours spent in performing the work. Remember, this is direct time and must be adjusted to account for leave surcharge because leave has not been included in the hourly calculations. This method also requires an adjustment to add employee benefits. The formula for total labor costs using this method is:

Hourly Rate	<b>X</b> .	Benefit Adjustment	x	Hours	x	Leave Surcharge Adjustment	e. =	Total Labor
<u>Example</u> <b>\$14.76</b>	x.	1.20*	x	200	x	1.18*		\$4,180

\*Current rates are provided by the WO, Division of Budget.

2. <u>Operation Costs</u>. In addition to full labor costs, operation costs incurred as a consequence of the trespass must be calculated. All direct costs such as travel, appraisals, transportation, and contracts must be included. Equipment purchase costs should not be included in the calculation unless the equipment purchase is necessary to resolve the specific trespass case.

3. Indirect Administrative Costs. After the labor costs and direct operation costs have been calculated, add the Bureauwide indirect cost rate. This rate covers the Bureau's cost of providing administrative support services (including those which cannot be identified as a direct cost) incurred as a consequence of the trespass. This rate is calculated and provided to Field Offices each year by the Bureau's WO Division of Finance. As with leave costs, these are legitimate administrative costs attributable to each trespass resolution action. The total administrative cost is arrived at by multiplying the sum of the total labor costs and operation costs by one plus the indirect cost rate.

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4. <u>Administrative Cost Documentation</u>. The Interior Board of Land Appeals (IBLA) has upheld the Bureau's recovery of administrative costs for trespass settlement in <u>Henry Deaton</u>, 101 IBLA 177, February 17, 1988. However, in this decision the IBLA closely examined the fairness of the administrative costs claimed by the Bureau. Therefore, it is very important that a record of administrative costs (e.g., Form 1323-1, Reimbursable Project Log) specific to each trespass be maintained. This record will also be valuable in the future for the development of administrative cost recovery schedules specific to realty trespass abatement.

# F. Deposit and Use of Administrative Costs.

Administrative costs received in trespass liability settlements are deposited to account 14X5017, Service Charges, Deposits, and Forfeitures within subactivity 5310 (O&C Lands) or 5320 (PD Lands). These collections are available to the Bureau to offset the administrative costs of trespass resolution consistent with their availability in the Financial Management System (FMS). The ongoing costs of trespass resolution, however, are appropriately charged to the subactivity program area in which the trespass occurs as recorded in the Reimbursable Project Log (Form 1323-1). Amounts collected for administrative costs should relate directly to the cost of resolving a specific trespass.

# G. Recovery of Land Rent Liability.

The United States is entitled to recover land rent for the current and all past years, and portions thereof, for which the unauthorized activities can be substantiated. There are several methods that may be used to determine land rent liability for realty trespass. Whatever method is used, the values should reflect the value in the local market for similar lands for the same or similar purposes as the trespassed public lands. In each case, exercise judgment in the method used for determining the amount of land rent due. Land rent liability may be determined or calculated on the basis of the following:

1. <u>Rent or Fee Schedules</u>. Schedules that reduce the Bureau administrative cost of land rent liability determination may be developed. For example, if the schedule(s) will give a reasonable estimate of market rent in the area and a more precise determination would require unreasonable amounts of time and money that would be passed on to the trespasser as administrative costs, fee schedules are acceptable, unless the trespasser objects.

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2. <u>Appraisal</u>. The standard method of determining fair market rental value for Bureau purposes is through an appraisal. Appraisals are conducted in accordance with the BLM Manual 9310 - Real Property Appraisal. The value of improvements to, or on, the public lands is not included in the appraisal of market rent unless the improvements are owned by the United States and their value/use is a legitimate appraisal consideration. It should not be assumed that appraisals are always required to determine land rent liability. In fact, appraisals should only be considered if no other value determination method is satisfactory for the specific situation or if the trespasser insists on an appraisal. THE COST OF APPRAISAL IS AN ADMINISTRATIVE COST THAT IS PASSED ON TO THE TRESPASSER. The potential of this added cost should be explained to the trespasser at the negotiation stage. Appraisals should be requested if there is a strong likelihood for litigation.

3. Agricultural Cropshare. Rental liability for unauthorized agricultural development may be based upon a share of income realized from crop production. The landlord's share is normally one-third of the NET income. However, since the rent is based on unauthorized cropping, in which the United States is an unwilling landlord, the trespasser shall not be given credit for expenses relating to crop production (i.e., seed, fertilizer, land improvement, etc.). Therefore, the landlord's share due the United States shall normally be one-third of the GROSS value of crops produced. Also, land rent liability should reflect the average gross value of crops produced in the area, over the years of trespass, without reduction for years of crop failure or poor farm management. If reliable information on actual yields is unavailable, crop yield and crop value may be determined by using county averages contained in annual State agricultural reports as well as information from county extension agents and the Agriculture Stabilization and Conservation Service (ASCS). Application of the cropshare method of determining value may require a local market comparison since cropshare agreements may vary from area to area. Where local market cropshare agreements are different than the one-third landlord's share, rent liability may be calculated on the basis of the local agreements.
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4. Agricultural Land Rent. Farmers Home Administration (FHA) and private banks are a good source for farm rental information. However, much of their information is confidential and should be used only to support information that is verifiable and available to anyone involved. For dryland farming, the particular State agency administering State land leases may be the best source for lease/rent comparison. State lands normally are the most similar to public lands in terms of improvements, tax status, legal liability, and public use. In some States, counties have developed a system for classifying and rating farm lands according to their agricultural productivity potential and value in relation to crops produced. Where this or similar systems occur, the land rent liability may reflect the county method of determining fair market rental value. Under this method the land is rated for its highest agricultural productivity potential (e.g., grain, alfalfa, row crops). A per-acre value is then put on the land based on that potential. This rate is charged no matter what crop is raised and simplifies the establishment of fair market rental values for multi-year trespass situations where crop rotation may occur. A simple method of determining a rental value uses crop acres times yield times crop price times rate of return. The return rate used is the Current Value of Funds Rate (CVFR) which is the 5-year rate used in calculating interest charges for outstanding debts or claims owed the U.S. Government. This rate is published in the Federal Register before October 31 each year and is used for the subsequent calendar year.

Example: Alfalfa Hay, 1988 CVFR. 3 (acres) X 5 (tons/ac) x \$55 (price/ton) x 0.085 (CVFR) = \$70 This gives total rental, not per acre value.

5. <u>Rights-of-Way Rent</u>. Fair market value rental penalties for unauthorized linear rights-of-way are computed in accordance with the schedule in Title 43 CFR Part 2803.1-2, unless the exception applies. Fair market rental values for unauthorized site rights-of-way (e.g., communication sites) are determined through standard appraisal procedures.

6. Occupancy Rent. Residential, commercial, and/or industrial trespass rental liability may be determined by appraisal, established fee schedules, or rental rates common in the area.

NOTE: The cost of making an appraisal is an administrative cost charged to the trespasser.

7. <u>Road Use-Maintenance Fees</u>. When Bureau roads are used for commercial purposes (e.g., log hauling, leasable mineral development, etc.) under a Road Use-Maintenance Agreement, the agreements normally allow for nonexclusive use and include a fee, or a service, to provide for road improvement and/or maintenance. For violations (i.e., trespass) when this type agreement is involved, rental liability should be commensurate with the fee schedules common to the appropriate use plus any other costs deemed appropriate.

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## H. Deposit of Rental Liability Collections and Trespass Penalties.

Realty trespass rental liability fulls and trespass penalties are deposited to account 141099, Fines, Penalties, and Forfeitures. THESE FUNDS ARE NOT AVAILABLE TO THE BUREAU.

### I. Trespass Penalties.

When a trespass is willful, repeated or not resolved in a timely manner, a trespass penalty may be assessed in addition to the trespassers land rent liability. If the trespass is nonwillful, a penalty equal to the fair market rental rate may be added making the total amount twice the land rent liability. If the trespass is knowing and willful, a penalty equal to twice the rental liability may be added making the total amount three times the land rent liability.

NOTE: THE REALTY TRESPASS REGULATIONS AT TITLE 43 CFR PART 2920 LIMIT THE TIME A TRESPASS PENALTY MAY BE ADDED TO 6 YEARS. There are no time limitations in the other realty trespass regulations and trespass penalties under these regulations should be assessed for the entire period that the trespass can be substantiated.

# J. Rehabilitation/Stabilization of Trespass Lands.

Rehabilitation/stabilization liability includes all costs associated with restoring the trespass lands to their previous condition (i.e., landform and vegetative cover) or stabilizing the land to allow natural recovery to occur. Rehabilitation/stabilization liability also includes all costs associated with planning for and monitoring restoration/stabilization results.

1. <u>Rehabilitation/Stabilization Plan</u>. A rehabilitation/ stabilization plan should be prepared for each site where rehabilitation/ stabilization at the expense of the trespasser is appropriate. The plan should provide for monitoring and accounting of monies provided by the trespasser for rehabilitation/stabilization. The plan may cover nothing more than removal of litter using one individual and vehicle. It may, however, be a major document requiring extensive environmental considerations (EA/EIS), especially if hazardous materials or waste is involved. The timeframe covered by the plan is important. Long-term monitoring may be required where revegetation, stabilization, and long-term health hazards are involved. The plan should define satisfactory rehabilitation/stabilization in terms of when a trespasser may be released from rehabilitation/stabilization liability.

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2. Substance Removal. When realty trespass involves dumping of residential, commercial, or industrial waste, violation of local, county, or State laws or ordinances may also have occurred (see Chapter VI. B. Personal Property and Chapter VIII. A. 8. State and Local Law Enforcement Officials). Requiring the removal of the dumped materials may be sufficient. In some cases, however, toxic, flammable, or other health or safety endangering materials may be present which require extensive cleanup and sanitizing measures. There may be a need to keep the public away from the contaminated area, as well as surrounding areas. Long-term monitoring of the site and off site areas may be necessary. When land has been rendered useless or cannot be rehabilitated, the penalty (requested in a legal action) should be no less than the fair market value of the land for the time period over which the unauthorized activity can be substantiated as well as the time in the future that the land is rendered useless. Where criminal intent can be established, a fine and/or imprisonment under Title 43 CFR Subpart 9262 may also be appropriate. Refer hazardous waste trespass matters to the Hazardous Waste Coordinator and Bureau law enforcement personnel.

3. Rehabilitation/Stabilization by the Trespasser. The trespasser may perform the rehabilitation/stabilization requirements instead of paying such costs if it is determined by the Authorized Officer (AO) to be to the advantage of the U.S. Government. Consideration by the AO will include the difficulty and extent of rehabilitation needs, financial and technical capability of the trespasser to accomplish the job, equipment and manpower availability, and overall reliability of the trespasser. These considerations should be measured against the Bureau's ability to accomplish the same job within personnel, time, and budget constraints. A performance bond for the amount of the rehabilitation/stabilization cost estimate is required if the AO determines the trespasser may do the work (see the discussion of performance bonds at Items 5. Surety Bonds, and 6. Personal Bonds, of this Section). The mere act of initially performing rehabilitation/stabilization work (e.g., seeding or planting) does not necessarily fulfill the trespasser's rehabilitation/stabilization liability. Several treatments may be required before success is achieved and an acceptable vegetative stand is established. The case file is not closed nor is the trespasser relieved of rehabilitation/stabilization liability until successful rehabilitation/stabilization has been achieved.

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4. <u>Rehabilitation/Stabilization by the Bureau</u>. The trespasser may, at the option of the AO, provide the Bureau with the funds necessary for rehabilitation/stabilization of the public lands damaged as a consequence of the trespass. The decision to accept rehabilitation/stabilization funds, and thereby, the responsibility for successful rehabilitation/stabilization, must be carefully weighed. The disadvantage of this option is that the Bureau absolves the trespasser of liability for rehabilitation/stabilization of the damaged lands. Advantages may include cost effectiveness or savings which may be utilized on other public lands or the Bureau may have expertise in rehabilitation (i.e, archaeologic, cultural, endangered species, etc.) that are requried for successful rehabilitation/stabilization K. Deposit and Use of Rehabilitation/Stabilization Funds).

5. <u>Surety Bonds</u>. A surety bond consists of a promise to the United States by the holder (trespasser) and a guarantee by the surety corporation that the surety will correct any failure by the holder to meet his obligations (i.e., under a rehabilitation/stabilization plan) or pay the United States the amount of the bond. For all Federal bonds, the surety corporation must be approved by the Department of the Treasury as an acceptable surety. The acceptance of the surety bond by the AO on behalf of the United States completes the cycle. The bond is a three-way contract between the holder, the surety, and the United States that can be enforced should the holder fail to complete the rehabilitation/stabilization, or provide rehabilitation/ stabilization funds to the Bureau, as required. The money paid by the holder to obtain the surety's entry into the arrangement is normally called the premium and is solely a matter between the holder and the surety.

6. <u>Personal Bonds</u>. With a personal bond, the holder (trespasser) may furnish cash to the United States to ensure adherence to rehabilitation/ stabilization requirements. A personal bond can also be a deposit of a treasury bond or note (book entry deposit). This latter form of personal bond allows the holder to collect interest on the notes or bonds during the time required to complete obligations to the United States. Personal bond limitations are as follow:

a. The only acceptable forms of security for personal bonds are cash and book entry deposits. Certified or cashier's checks, negotiable bonds, notes issued by the United States, Certificates of Deposit, U.S. Savings Bonds, and notes of bonds issued by State or local governments or private companies are not acceptable forms of security. These instruments cannot be transferred to the Federal Reserve System and therefore would need to be physically stored in a Bureau facility. Fire, theft, and loss all pose unacceptable risks. THEREFORE, THE AO WILL NOT ACCEPT THESE INSTRUMENTS AS PERSONAL BONDS.

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b. Book entry deposits must be accompanied by a Power of Attorney authorizing the Secretary to collect the proceeds in the event the holder fails to adhere to the requirements covered by the bond. Under procedures of the Department of the Treasury, the notes or bonds are in a book entry form on deposit in the Federal Reserve System and no actual handling of the securities by the Bureau is involved. A charge is assessed by the Federal Reserve System for security safekeeping and transfer services. This charge is paid by the holder. Book entry deposits are acceptable as personal bonds.

# K. Deposit and Use of Rehabilitation/Stabilization Funds.

Money received by the Bureau for rehabilitation/stabilization of lands damaged as a result of trespass settlement or bond forfeiture are deposited to account 14X5017, Service Charges, Deposits and Forfeitures within the subactivity 5310 (O&C Lands) or 5320 (PD Lands). THE MONIES RECEIVED ARE AVAILABLE FOR IN-STATE REHABILITATION AND STABILIZATION WORK ON THE LANDS DAMAGED BY THE TRESPASS. Reimbursable Projects, upon approval, allow charging costs to subactivity 5320 or 5310 within the approved limits. Cost accounting is accomplished by using individual project codes for specific rehabilitation projects. If there are funds in excess to those needed for repair of the trespass area, these monies may be used to repair or protect other damaged public lands.

## L. Liability Collection.

Liability billing procedures are found in Bureau Manual Section 1371, collections in 1372, and delinquent accounts in 1375. The following is provided for the general information of this Handbook user. Refer to the Accounts Clerk and referenced Manuals for specific guidance.

1. <u>Request for Payment</u>. When total trespass liability (administrative costs, land rent, restitution for land or resources used or damaged, rehabilitation/stabilization costs) has been determined and informal administrative resolution is unsuccessful, a trespass decision (Illustration 4 or 5) and request for payment is made (Form 1371-22). (See Chapter V, Section E. <u>Appeal Procedures</u>). This request should be made only when the AO has completed all negotiations and liability values are firm. Consult with the District or State Office Accounts Clerk for payment procedures.

2. <u>Settlement Offer</u>. After initiation of formal administrative action, the AO can accept offers of settlement for <u>full</u> liability only. If the trespasser offers to pay the full amount of liability, acceptance is by the AO. All payments should be held until cleared (if by check) before closing the case file. If there are unmet liabilities and a third demand letter (Illustration 16) is ignored, the claim is referred to SC-615, through the State Director, for collection action (Illustration 11).

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3. <u>Promissory Notes</u>. In cases where the trespasser is willing to meet full liability, but is not able to pay the obligation in full, a promissory note, not to exceed 3 years, may be executed (Form 1372-1). The note may provide for a single payment or payment in installments. When payment schedules are not met, reissue the third demand letter. If the debt remains unpaid, send a case file summary (Illustration 11) to SC-615 for action (i.e., referral to a collection agency, the Denver Regional Solicitor, and/or the IRS).

4. Delinquent Accounts. Prior to referring delinquent trespass claims to SC-615 the following sequence of events must be accomplished by the Accounts Clerk in the originating office:

# a. Demand Letters.

(1) Issue the first Demand Letter 31 days from the receipt (service of the Trespass Decision) of the original bill (Illustration 8).

(2) If payment has not been received within 15 days of the issuance of Demand Letter No. 1, issue the second Demand Letter (Illustration 9).

(3) If payment has not been received within 15 days of the issuance of Demand Letter No. 2, then issue a final Demand Letter (Illustration 10). This final demand letter is signed by the State Director or delegated official.

b. <u>Referral for Collection</u>. If debt is still outstanding after the third demand letter (91 days from the receipt (service of the Trespass Decision) of the original bill), the delinquent account file is forwarded to SC-615 (Illustration 11 or 12) for appropriate collection action (i.e., possible referral to a Debt Collection Contractor, the Denver Regional Solicitor for litigation, or the IRS).

5. <u>Collection by Administrative Offset</u>. Collection of trespass liability claims by administrative offset may be accomplished under regulations of the IRS and the ASCS. Recovery under the IRS regulations is offset against income tax refunds. Under the ASCS regulations, offset is against agricultural payment programs such as the Conservation Reserve Program. Collection by administrative offset is handled by the Service Center Debt Collection Coordinator (SC-615). Action to collect trespass liability by administrative offset is initiated by State Directors through the Service Center. The essential requirements to be met in administrative offset are:

a. A statement that the Bureau has, before requesting offset, first attempted to collect trespass liability and that all collection resources available to it have been exhausted.

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b. The specific debtors' names, address, and the county in which the offset should be taken (ASCS offset), a brief statement as to the basis for the debt, and the appropriate claim number used to identify the debt.

c. The amount of the debt set forth separately as to principal and interest. Interest, if any, shall be computed to a date shown on the offset request. If interest continues to accrue after this date, the annual rate of interest and the amount of interest accruing on a daily basis shall be provided.

d. Certification that the debtor owes the debt and that the Bureau has complied with the administrative offset requirements of the Debt Collection Act (31 U.S.C. 3716) and the Federal Claims Collection Standards (4 CFR Part 102).

e. Whether or not the debtors, for whom offset is requested, have filed for bankruptcy. If so, the Bureau MUST enclose with its offset request a copy of the bankruptcy court order relieving the Bureau from the automatic stay provisions of the bankruptcy code.

NOTE: The cited statute and regulations require that an Agency, before collection by offset, provide a debtor with a written notice that provides: The nature and amount of the debt and the Agency's intention to collect by offset; an opportunity to inspect and copy Agency records pertaining to the debt; an opportunity to obtain review within the Agency of the determination of indebtedness; and an opportunity to enter into a written agreement with the Agency to repay the debt.

6. <u>Compromise Offers and Liability Write-Off</u>. Any offer less than the amount identified in the demand letter is a compromise offer and must be settled under procedures established by SC-615. Under these procedures State Directors at certain authorized levels may either accept compromise offers or write off liabilities (Illustrations 12 and 15). The District Accounts Clerk and/or SC-615 must be consulted for established settlement procedures. Also see Section B, Item 1. <u>Compromise</u>, and 2. <u>Write-off</u>.

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# Chapter VIII - Assistance in Realty Trespass Abatement and Coordination of Abatement Actions.

Bureau realty personnel and Authorized Officers (AO) have access to various Bureau specialists and legal and law enforcement personnel who can provide direct assistance in trespass abatement. Additionally, some public and private entities may provide indirect assistance in deterring, preventing, and resolving realty trespass and trespass liability. Coordination with, and utilization of, these various resources will enable the Bureau to establish an effective realty trespass abatement program. This chapter provides information on assistance that may be available in realty trespass abatement and coordination of realty trespass abatement efforts.

<u>NOTE</u>: In most cases State Directors or the Service Center have established formal contact procedures with many of the individuals and entities discussed herein. These procedures should be adhered to at all times.

## A. Legal and Law Enforcement Assistance.

1. Special Agent-in-Charge and Special Agents. The Special Agent-in-Charge (SAC), located at the State Office, is responsible for the overall law enforcement program within that respective State. Depending on the program size, the law enforcement staff may consist of additional Special Agents and District and Area Rangers. One of the major responsibilities of Special Agents is to investigate known or suspected violations of law that pertain to the management, occupancy, development, and use of the public lands and protection of natural resources. In order to accomplish this the SAC and Special Agents are authorized by law to exercise "police powers." This means they have the authority to carry firearms and have the powers of arrest, search, and seizure. Bureau Special Agents can participate in trespass abatement actions in various ways, including those listed below:

a. Review realty trespass situations prior to formal trespass notice to determine the following:

- If sufficient evidence exists.
- If criminal action is warranted.
- b. Conduct investigations relative to trespass.
- c. Assist District and Area personnel with trespass investigations.
- d. Offer advice and support concerning the following:
  - Trespass investigations.
  - Collection and protection of evidence.
  - Willful or innocent intent of trespass (i.e., criminal or civil).
  - Options to pursue in trespass resolution.

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2. Law Enforcement Rangers. The Bureau Law Enforcement Rangers are the uniformed division of the Bureau's law enforcement program. They have identical law enforcement authority as the Special Agents and can perform the same actions as those listed above. However, they are utilized differently than Special Agents to assist in accomplishing the overall objective of the Bureau's law enforcement and resource protection program. By design, these uniformed Rangers provide high visibility on the public lands through constant patrol in marked vehicles. Their overall purpose is to protect the public lands and natural resources through deterrence. Rangers can assist in realty trespass abatement actions in the following manner:

a. Provide personal service of letters, notices of trespass, trespass decisions, etc.

b. Provide security for District and Area personnel during trespass investigation or contact with trespassers.

3. <u>Field or Regional Solicitor</u>. The Field or Regional Solicitor's Office may provide assistance in realty trespass abatement in the following ways:

a. Concur in State Director decisions to compromise or write off trespass liability claims (Illustrations 12 and 15).

b. Review information relating to a realty trespass case and advise on the legal sufficiency of the Bureau's case.

c. Represent the Bureau before the Interior Board of Land Appeals (IBLA) and Hearing Examiners of the Office of Hearings and Appeals.

d. Provide advice on appropriate action by the Bureau when appeal of a trespass action is before the IBLA.

e. Advise on injunctive action to restrain a trespasser or prevent expected trespass.

f. Serve as primary contact with the U.S. Attorney on civil trespass cases of the Bureau. Assists the U.S. Attorney if a Bureau trespass case goes to court.

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4. U.S. Attorney/Assistant U.S. Attorney. The U.S. Attorney's Office, Department of Justice, must be associated with any action, criminal or civil, involving the Federal court system. The U.S. Attorney prosecutes criminal violations for the U.S. Government. Civil actions initiated by the Bureau, through the Solicitor, are prosecuted in Federal court by the U.S. Attorney. The Office of the U.S. Attorney may also defend the United States or its employees from civil or criminal complaints filed by other parties. The U.S. Attorney also has the responsibility to review for legal sufficiency any criminal investigations conducted by other Federal agencies; represent the Bureau in civil and criminal matters in U.S. district court, determine the type of case (civil or criminal) the Government will initiate and makes the decision as to whether or not a trespasser will be prosecuted by the United States.

5. U.S. Magistrate. The U.S. magistrate is a Federal judicial officer. In the Federal court system, magistrates may conduct many of the preliminary or pretrial proceedings in both civil and criminal cases. Magistrates will try most criminal trespass violations according to regulations promulgated under Section 303(a) of the FLPMA. If arrest, search, or seizure warrants are needed to conduct criminal investigations, they are normally secured through the U.S. magistrate. Bureau Special Agents and Law Enforcement Rangers may appear before U.S. magistrates acting on behalf of the U.S. Attorney.

6. <u>U.S. District Court</u>. Normally, the U.S. district court will try the civil complaints filed with the district court on behalf of, or against, the United States. The U.S. district court judge will also try the more serious criminal violations resulting from criminal investigations conducted by Bureau Special Agents. Upon request of the defendant, misdemeanor violations also can be heard by the U.S. district court judge.

7. U.S. Parole and Probation Officers. These officials may also become involved with realty trespass abatement. If the Bureau initiates criminal action and the defendant is convicted, normally a pre-sentence investigation will be conducted by the parole and probation officer. During the course of that investigation, key BLM personnel may be contacted concerning the trespass or other violation. Their input may become part of the presentence investigation which is the basis for recommending an appropriate sentence to the court.

8. <u>State and Local Law Enforcement Officials</u>. Various State and local law enforcement officials may become involved in trespass abatement actions. It is appropriate to involve those officials as cooperative or participating parties in resolving trespass that violates State or local law or permitting or authorizing authority. These same officials can be valuable sources of information in investigations of trespass cases and also can be utilized as witnesses where appropriate.

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# B. Indirect Trespass Abatement Assistance.

The Bureau has assistance available which, while not directly related to realty trespass on the public lands, can aid in the prevention and deterrence of trespass and the settlement of trespass liability claims. This assistance derives from the Federal Debt Collection Act and implementing Standards (see Appendix 1). Any trespass liability claim that is not properly resolved may be referred to tax, credit, or collection entities under the Standards and the Bureau's debt collection procedures. The potential of such referral should help prevent new trespass, deter existing trespass, and expedite resolution of trespass liability claims. The possibility of such referral should be well publicized in the local area of trespass occurrence and explained to trespassers in the early stages of trespass resolution negotations. The referral entities and actions on unpaid trespass liability claims are discussed below:

1. <u>Internal Revenue Service (IRS)</u>. Any unpaid trespass liability claim of the Bureau may be reported to the IRS as possible additions to the trespasser's income for Federal income tax reporting and payment purposes. Also the difference between the Bureau's trespass liability claim and compromise offer of the trespasser accepted by the Bureau may be reported by the Service Center (SC-615) to the IRS as earned income. Where these monies (additions to income) are not reported by the trespasser to the IRS, the trespasser may be subject to income tax penalties. Further, the Bureau may ask the IRS to recover trespass liability by offset against any income tax refunds due the trespasser. Requests for offset are initiated by the State Director through SC 615. (See Chapter VII. <u>Settlement of Realty Trespass</u> Liability)

2. Agricultural Stabilization and Conservation Service (ASCS). The ASCS may assist the Bureau in the settlement of trespass Liability claims by offset of the amount of the claim against any ASCS program payments being received by the trespasser. The program payments to be offset need not be directly related to the land in trespass. The primary criteria are that the trespasser is receiving ASCS payments and is financially liable to the Bureau for public land trespass. (See Chapter VII. Settlement of Realty Trespass Liability.)

3. <u>Debt Collection Contractors</u>. A trespass liability claim which remains unpaid after three required demand letters is referred to SC-615. The SC may refer this claim to a debt collection contractor who has 6 months to attempt to collect the debt.

4. <u>Consumer Credit Agencies</u>. Any uncollected realty trespass liability claim may be reported to consumer credit agencies. This unpaid liability may adversely affect a trespasser's credit rating.

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## C. Coordination of Trespass Abatement Actions.

Whenever civil or criminal action to resolve a trespass is considered, close coordination with the Bureau's law enforcement personnel and legal counsel is mandatory. In criminal cases, the SAC will coordinate actions with the State Director. In civil actions, direct contact with Field and Regional Solicitors may be limited to the State Director and delegated officials. In all instances, the State Director or other authorized official must be informed prior to initiating civil or criminal action on the part of the Bureau. Coordination with minerals personnel is mandatory in the resolution of mining claim occupancy trespass. Collection action on trespass liability claims is initiated by Bureau Accounts Clerks. Other Bureau specialists should be consulted as appropriate to each individual trespass case. Key coordination points are listed below:

1. Accounts Clerk. Close coordination must be maintained with State and District Office Account Clerks for current procedures and guidance on billing and collection of realty trespass claims. The Accounts Clerk initiates trespass claim collection action (billing and demand letters) and may request guidance on specific billing/collection action from the Bureau's Debt Collection Coordinator, Branch of General Accounting, SC-615.

2. <u>Minerals Examiners</u>. Bureau Manual Section 3893 provides guidance on determining when residential occupancy is not a valid mining activity and the occupancy is "not reasonably incident to" mining. Mineral examiners make the "reasonably incident to" determinations. Where residential occupancy is not reasonably incident to mining, the occupancy constitutes trespass. Resolution of mining claim occupancy trespass must be a coordinated effort by Lands and Minerals personnel. The trespass may be resolved under procedures contained in Manual Section 3893 or in this Handbook. The goal should be prompt and efficient resolution of the trespass and restitution to the United States for past use and occupancy.

3. <u>Range</u>, Forestry, and Minerals Specialists. The use, destruction, or disposition of mineral and vegetative materials, including timber, without appropriate authorization, also constitutes trespass. Where unauthorized activities involve such resources, coordinate resolution efforts accordingly. The value and damages for mineral and vegetative materials used, destroyed, or disposed of will be recovered under trespass regulations appropriate to the unauthorized vegetative or mineral use, destruction, or disposal (e.g., timber, minerals, etc).

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4. <u>Cultural and Historic Resource Specialists</u>. If historic, cultural, or archeologic resources are damaged or destroyed as a consequence of a realty trespass, alert the appropriate Bureau Cultural Resource Specialist and/or Bureau law enforcement personnel. Penalties may be assessed under the Archaeological Resources Protection Act of 1979 or Section 106 of the National Historical Preservation Act of 1966.

> Rel. 9-300 8/14/89

# Chapter IX. Planning for Realty Trespass Prevention, Detection, and Resolution.

Realty trespass prevention may be initiated through the Bureau Planning System (BPS), Annual Work Plan (AWP), and State, District, or Area Public Affairs Plans (PAP's). Planned actions for realty trespass detection and resolution are identified through the BPS or in the AWP. Trespass prevention relies on a fully informed public and Bureau personnel to spread the word. Trespass prevention may be facilitated through actions included in PAP's although some preventive measures may be prescribed through the BPS or in the AWP. Detection relies on knowledge of the location and authorized use of public lands and an alert staff to detect unauthorized activities. Resolution of realty trespass may be accomplished through termination of the trespass, authorization of the activity under realty authorization regulations, or arrangements for the trespasser to acquire the public lands on which the trespass has occurred through sale or exchange. Decisions for long-term land use authorizations and public land disposal (i.e., sale or exchange) must be made through the BPS. Such decisions cannot be implemented until after the trespass itself has been resolved. Plans and planned actions that may be taken to prevent, detect, and resolve realty trespass are as follow:

# A. Statewide Realty Trespass Prevention, Detection, and Resolution Plans.

In 1987 each State, based on recommendations of the Inspector General, was directed to prepare and implement Statewide plans for realty trespass prevention, detection, and resolution. Data from these plans should be incorporated into AWP's, Resource Management Plans (RMP's), or PAP updates as appropriate. Plan implementation is achieved through the AWP process.

# B. <u>Maintenance of Statewide Realty Trespass Prevention</u>, Detection, and Resolution Plans.

Statewide plans for realty trespass prevention, detection, and resolution must be maintained and updated as new realty trespass information becomes available. However, those plans do not replace formal established Bureau planning processes. As data from the Statewide plans are incorporated into the AWP, RMP, or PAP, the Statewide plans may be phased out.

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# C. Bureau Planning System.

1. <u>Pre-Planning</u>. Realty trespass must always be evaluated to determine whether or not it is a planning issue. This evaluation must take place for all new planning starts or plan amendments.

2. <u>Planning Scope</u>. Districts where realty trespass is not a major problem may only need to evaluate realty trespass as a management concern in the lands planning element of the RMP process. Where realty trespass activities are not under control, it may be an issue and actions may be defined in the RMP to address the trespass problem. Implementation of RMP decisions may require activity plans for realty trespass prevention, detection, and resolution.

D. <u>Planning Considerations</u>. The following are suggested actions for realty trespass prevention, detection, and resolution that should be evaluated as input to the AWP, RMP, or PAP as appropriate.

1. <u>Trespass Prevention</u>. Planned actions to prevent realty trespass may include these steps:

a. Signing or fencing of public land boundaries.

b. Brochures to inform the public of prohibitions against realty trespass and requirements for authorized use of the public lands. Distribution may include Bureau Offices, courthouses, post offices, and other appropriate public places.

c. Establishment and posting of surveillance maps in Bureau offices and establishment of scheduled patrol by Bureau personnel.

d. Cadastral survey of boundaries of trespass problem areas.

e. Preparation of topographic maps, aerial photos, or orthophotoquads showing common private/public land boundaries for distribution to adjacent owners.

f. Media releases to publicize successful trespass resolution efforts.

g. Dissemination of realty trespass information to the public, District Advisory Boards, users and operators, etc. Provide information on the public costs of trespass, requirements for use authorizations, the Bureau's desire to work with trespassers, etc.

IX-2

#### Chapter IX

h. Inclusion of a summary of realty authorization and mining claim occupancy regulations (trespass and authorized use) with grazing bills, right-of-way grants, land use authorizations, approved plans of operations for mining claims, etc. Make summaries available to the public in District and Area Offices.

## 2. Trespass Detection.

a. Plan for a systematic inventory to identify realty trespass activities. Utilize orthophotoquads, aerial flights and photography, remote sensing, field investigation, staff knowledge, ASCS data, and other data as available.

b. Concentrate inventory/detection efforts on areas particularly susceptible to trespass, such as private/public land areas with common boundaries, springs and streams, productive soils, developing rural subdivisions, areas of mineral activity, inactive and abandoned buildings, etc.

c. Inventory on a logical geographic or township, range and section basis. Areas with a history of low realty trespass activities may be excluded.

d. Record all areas of suspected trespass on planning map overlays.

3. <u>Trespass Resolution</u>. Trespass may be resolved by terminating the use, settling of trespass liability and legalizing the use under a land use authorization or transferring the land in trespass from public ownership. Termination of the trespass may be accomplished by informal or formal administrative action, by citation under Title 43 CFR 9262, or by civil or criminal action in the courts (see Chapter V. <u>Realty Trespass Resolution</u>). By regulation, a land use authorization or disposal of public lands (i.e., sale or exchange) may not be accomplished until the trespass is resolved. In practice, the trespass liability may be resolved and authorized use or land disposal action processed concurrently. Planned actions for trespass resolution may include:

a. Termination.

(1) When the trespass violates State or local law(s), it may be appropriate to plan for the involvement of State or local law enforcement officials in the termination action.

(2) Plan immediate posting, restoration, and rehabilitation of trespass sites to discourage new or repeat trespass.

BLM MANUAL Supersedes Rel.

#### Chapter IX

(3) Plan for the involvement of Bureau law enforcement personnel in trespasses which are, or may be, criminal in nature.

(4) Plan a course of action for termination(s) prior to initiating termination/eviction actions. This may include contacting local news media, Congressional staffs, local government officials, etc.

b. Use Authorizations. Unauthorized use, occupancy, and development may be legalized, following resolution of the trespass, under a land use authorization if the use is consistent with or does not conflict with Bureau plans and management programs. (Also see Section H, Chapter V. <u>Realty Trespass Resolution</u>.) Consistency determinations of use authorizations are made through, and documented in, the RMP or Activity Plans. Trespass liability must be satisfactorily resolved prior to authorizing use. Consideration of use authorizations may include:

(1) Short-term land use authorizations may be granted on an interim basis, following liability payment, to provide the Bureau time to arrive at a decision, through the RMP process, to terminate, authorize, or dispose of the lands in trespass.

(2) In certain situations, residential occupants may be eligible for a nonassignable life time lease under the provisions of Title 43 CFR §2920.1 if the occupant acknowledges in writing that the lands being occupied are owned by the United States and the site is the sole residence of the occupant.

(3) Where the authorized use is short-term and the use is the same or similar to the trespass use, the authorization action will qualify for a categorical exclusion under the National Environmental Policy Act (516 DM 6, Appendix 5).

(4) Where a significant number of post trespass, short-term authorizations are anticipated, the Bureau's intention to consider authorization of the trespass activities should be included in the draft RMP/EIS for public comment. The RMP should stress "consider" and avoid making a commitment to authorize.

(5) Short-term authorizations via Minimum Impact Permits, under Title 43 CFR §2920.2-2, may be used to legalize trespasses in the absence of specific plans, if the legalized activity will not cause appreciable damage or adversely impact the land.

#### Chapter IX

c. Land Disposal. Decisions on sale or exchange of public lands on which a trespass has been resolved must be made through the Bureau Planning System. If a parcel of land found to be in trespass has not been identified for disposal in the applicable land use plan, then a plan amendment is required in order to proceed with a disposal action. (See Title 43 CFR Subparts 2711 and 2201 as well as appropriate Manual sections for guidance on sales, color-of-title, and exchanges.)

# E. Planning for Site Rehabilitation/Stabilization.

Rehabilitation/stabilization of lands following termination of a trespass could involve removal of buildings and structures and in some cases significant earth movement. (Also see Section J, Chapter VII. <u>Settlement of</u> <u>Realty Trespass Liability</u>.) The following should be considered as part of the NEPA process prior to the initiation of rehabilitation/stabilization efforts:

1. <u>Historic Resources</u>. In some instances buildings or structures with potential historic significance may remain after a trespass is resolved. The historic significance of such buildings and structures should be evaluated by appropriate Bureau personnel prior to removal or destruction. (Also see Chapter VI. <u>Unauthorized Real and Personal</u> <u>Property</u>). Planned actions for protection, rehabilitation/stabilization, and interpretation of historic buildings or structures acquired by the Bureau may be developed in the RMP.

2. <u>Cultural Resources</u>. In some cases rehabilitation/stabilization could adversely affect cultural resources on or adjacent to the trespass site. Cultural clearance by appropriate Bureau specialists is advisable in areas of known cultural resource values.

3. <u>Threatened and Endangered Species</u>. Rehabilitation/stabilization impacts on known habitats of threatened and endangered plant and animal species should be evaluated and rehabilitation/stabilization directed to enhance species recovery whenever possible.

4. <u>Modification of Landforms</u>. Where rehabilitation/stabilization involves removal of artificial landforms (e.g., dikes, earthen dams, etc.), the relocation and distribution of the earth must be properly "engineered" to avoid adverse physical and environmental effects at the new location and on plant and animal species (e.g., plugged water channels, erosion, gullies, etc.).

BLM MANUAL Supersedes Rel.

## Chapter IX

# F. Plan Maintenance and Utilization.

1. <u>Review</u>. Review planned trespass prevention, detection, and resolution actions at least annually to assure that current Bureau policy, procedures, and realty trespass abatement directives are being followed.

## 2. Coordination.

a. Coordinate plans on a Statewide basis, by District, and with adjoining States to assure that all Field Offices are working in a coordinated effort to detect, prevent, and resolve realty trespass.

b. Coordinate plan implementation and maintenance efforts with other affected subactivities.

## Glossary of Terms

-A-

- <u>abate</u>: to reduce in amount, intensity, to put an end to or to suppress something (a nuisance).
- administrative costs: all costs incurred by the Bureau as a consequence of a realty trespass. Administrative costs include labor, operation, and indirect administrative costs.
- administrative resolution: the resolution of a realty trespass utilizing informal or formal administrative procedures available to the Bureau without resorting to civil or criminal resolution procedures.

-C-

- civil resolution: resolution of a trespass in the civil court. Civil resolution is initiated when administrative resolution efforts are unsuccessful.
- civil trespass: any realty trespass where knowing and willful trespass cannot be substantiated. Civil trespass may be resolved administratively on an informal or formal basis; or, by civil court action.
- criminal penalty: a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both, that may be imposed upon persons convicted of knowing and willful trespass. A trespass penalty may also be applied.
- criminal resolution: prosecution in criminal court. Criminal prosecution is initiated where the nature or severity of the trespass warrants criminal action. Successful criminal prosecution may result in a fine up to \$1,000 and imprisonment up to one year, or both.

-D-

damages: includes trespass liability, trespass penalties and any court ordered monetary award to punish or deter future trespass--a legal term.

-F-

formal administrative resolution: settlement of trespass and trespass liability under formal administrative procedures available to the Bureau (i.e., termination, debt collection, citation, and other manualized or regulatory processes).

BLM MANUAL Supersedes Rel.

-I-

informal administrative resolution: settlement of trespass and trespass liability without resorting to formal procedures available to the Bureau (i.e., formal administrative resolution).

-K-

knowing and willful trespass: violation of the Bureau's realty trespass regulations committed deliberately, not accidently, repeatedly, or with prior knowledge or intent.

-L-

- land rent liability: the fair market rental value of public lands used in trespass (also land rent or rental liability). Land rent is calculated on the basis of the current and past years, or portions thereof, that the public lands were used in trespass.
- land use authorization: authorization by lease, permit, easement, or rightof-way grant for non-Bureau use of the public lands as provided in Title 43 CFR Part 2800, 2810, 2880 or 2920.
- liability: see trespass liability.
- <u>liability compromise</u>: an agreed upon settlement of a trespass liability claim for less than the Bureau's total liability claim against a realty trespasser.
- liability write-off: suspension or termination of trespass liability claim collection action, generally in recognition that the collection of the claim is unlikely. Write-off does not extinguish a trespasser's liability.

-N-

nonwillful trespass: unintentional or unknowing violation of the Bureau's realty trespass regulations or violation where knowing and willful intent cannot be substantiated.

-P-

penalty: see trespass penalty and/or criminal penalty.

-R-

realty authorization regulations: the regulations at Title 43 CFR Parts 2800, 2810, 2880, and 2920 under which use, occupancy, or development of the public lands for various specified purposes may be authorized.

> Re1. 9-300 8/14/89

- realty trespass: the use, occupancy or development of the public lands or resources without a valid land use authorization issued under 43 CFR Parts 2800, 2810, 2880, or 2920. Also includes use of additional lands or resources not specifically authorized in a valid land use authorization and unnecessary and undue degradation of lands in a valid land use authorization.
- realty trespass abatement: all actions to prevent, detect, and resolve realty trespass on the public lands.
- realty trespass activities: use, occupancy, or development of the public lands without authorization and where the use, occupancy, or development could be authorized under the Bureau's realty authorization regulations (also realty trespass).
- realty trespass regulations: the Bureau's realty trespass regulations collectively include the regulations at 43 CFR Parts 2800, 2810, 2880, 2920, and subparts 9239 and 9262.
- reasoned judgement: a decision, based on documented facts, that would be arrived at by a majority of knowledgable individuals when presented with the same factual information.
- rehabilitation/stabilization costs: all costs of returning lands damaged as a consequence of the trespass to their original productive capability; or, measures designed to halt damage to the land in order to permit natural processes to restore the land to its condition prior to the trespass activity.

-<u>S</u>-

- Standards: the Federal Claim Collection Standards (Title 4 CFR, Chapter II) which implement the Federal Claims Collection Act of 1966.
- suspected trespass: any realty activity where public land status is
  reasonably confirmed, the activity requires use authorization, and the
  use authorization has not been confirmed.

-T-

- term or life time lease: authorization via a lease for a fixed time period or the life time of the holder(s).
- timely manner: prompt efficient resolution of a trespass without unnecessary delaying actions on the part of the trespasser.
- title transfer: change in land status accomplished by sale, exchange, color of title, etc.

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- trespass decision: initiation of formal action to administratively resolve a trespass. Trespass decisions are accompanied by a bill for collection of total trespass liability and constitutes a written demand. Trespass decisions may be appealed to the Interior Board of Land Appeals. Administrative actions following a trespass decision may include appropriate demand letters and referal to the Bureau's Debt Collection Coordinator.
- trespass detection: includes public land inventory utilizing available information, field examination, aerial photography, orthophoto quads, etc., to locate and identify trespass on the public lands.
- trespass liability: includes land rent, administrative costs incurred as a consequence of trespass and responsibility for rehabilitation/stabilization of public land altered as a consequence of trespass activities (also liability).
- trespass liability claim: a monetary debt (i.e., liability claim) incurred as a consequence of realty trespass on the public lands. Trespass liability claims are collected under the authority of the Federal Claims Collection Act and its implementing Standards.
- trespass notice: a notice that the Bureau has initiated trespass proceedings against a trespasser. Trespass notices provide a compliance period and are not appealable to the Interior Board of Land Appeals (see trespass decision).
- trespass penalty: two or three times land rent liability (also penalty). Trespass penalties may be imposed for a trespass which is not resolved in a timely manner. For nonwillful trespass the penalty is equal to the land rent liability making the total an amount that is twice the land rent liability. For knowing and willful trespass a penalty equal to two times the land rent liability may be imposed making the total an amount that is three times the land rent liability.
- trespass prevention: those actions designed to inform the public of the requirements for legal use, occupancy, or development of the public lands. Trespass prevention seeks to eliminate potential trespass prior to its establishment.
- trespass recordation: the documentation of a suspected realty trespass in the Bureau's Automated Land and Minerals Record System.
- trespass resolution: includes termination or legalization of the trespass activity and settlement of trespass liability incurred by a trespasser.
- trespass settlement: an agreed upon payment of trespass liability or termination of a trespass liability claim. Settlement may include payment in full, compromise, or write-off.

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trespass termination: may include termination of the unauthorized activity or legalizing the activity under an appropriate land use authorization or title transfer.

-U-

- <u>unauthorized activities</u>: use, occupancy, or development of the public lands without authorization under the Bureau's realty authorization regulations (also realty trespass).
- <u>unauthorized occupancy</u>: those activities which result in full or part time human occupancy of the public lands. Unauthorized occupancy may include occupancy of natural shelters, placement or construction of dwellings, cabins, and other structures or vehicles on the public lands for trade, commercial, manufacture, residential, or recreational purposes (includes mining claim occupancy when the occupancy is not reasonably incident to mining).
- unauthorized use: those activities that do not appreciably alter the physical character of the land or resources. Unauthorized use includes: abandonment of property, trash, refuse, litter, and filming where set construction is not involved; harvest of hay and seed (native or introduced); storage of machinery, sand and gravel, farm implements and products, fences, corrals, etc., on the public lands.
- unauthorized development: those activities that physically alter the character of the public lands. Unauthorized development includes cultivation, resource development (wells, catchments, dams, etc.,) irrigation, and other land alteration for development purposes.
- unnecessary or undue degradation: surface disturbance greater than that which would normally result when the same or a similar activity is being accomplished by a prudent person in a usual, customary, and proficient manner and takes into consideration the effects of the activity on other resources and land uses, including those resources and uses outside the area of activity.

-W-

written demand: a request in writing for payment and/or rehabilation/stabilization in the form of a billing delivered by certified mail, return receipt requested, or personally served (also see trespass decision).

BLM MANUAL Supersedes Rel.

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Sample Letter - Informal Administrative Resolution

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Billings Resource Area 810 E. Main Street Billings, Montana 59105

> In Reply Refer To: 9232 (Case Number)

#### CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Lynn Blizzard P.O. Box 0070 Billings, Montana 59105

Dear Ms. Blizzard:

A recent examination of the public land located near (describe the area using local landmarks) indicates that you may be using public land without authorization. It appears that you are (describe unauthorized activity). This activity is unauthorized and is in violation of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1732) and Title 43 CFR §2920.  $1-2.\frac{1}{2}$ 

I would appreciate meeting with you to discuss this situation. Please let me know within (no.) days of receipt of this letter when you can meet with me. If you have any questions concerning this letter, please contact (name) in this office at (phone number) . I am confident we can work together in arriving at an agreeable solution in this matter. Thank you.

Sincerely,

(Area Manager)

1/ For right-of-way trespass cite Title 43 CFR Part 2800 and FLPMA or Title 43 CFR Part 2880 and the Mineral Leasing Act as appropriate.

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#### Sample Letter - Notice of Trespass

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Folsom Resource Area 63 Natoma Street Folsom, California 95630-2679

> In Reply Refer To: 9232 (Case Number)

#### NOTICE OF TRESPASS

CERTIFIED MAIL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE 1/

Mr. Fred Hixon 6130 Holbrook Road Ione, California 95640

Dear Mr. Hixon:

The United States of America, through the Bureau of Land Management, has instituted trespass proceedings against you for unauthorized use of public lands pursuant to Title 43 CFR 2920.1-2 under the authority of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.). 2/

(Describe the trespass activity)

If you have evidence or information which tends to show you are not a trespasser as we have alleged, you are allowed (no.) days from receipt of this notice to present such evidence or information at the Bureau of Land Management office at (address) . Failure to respond to this notice in a timely manner may result in trespass penalties and a citation for your appearance before a designated United States magistrate who may impose a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both, under Title 43 CFR §9262.1.

Dated this day of , 19 .

(Name and title of authorized officer)

1/ If by personal service, complete Certificate of Service, Illustration 17.
2/ For right-of-way trespass cite 43 CFR Part 2800 and FLPMA or 43 CFR Part 2880 and the Mineral Leasing Act as appropriate.

BLM MANUAL Supersedes Rel.

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Sample Letter-Notice to Cease and Desist

## UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Folsom Resource Area 63 Natoma Street Folsom, California 95630-2679

In Reply Refer To: 9232 (Case Number)

#### NOTICE TO CEASE AND DESIST

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

PERSONAL SERVICE1/

OR

Mr. Fred Hixon 6130 Holbrook Road Ione, California 95640

Dear Mr. Hixon:

You are hereby notified that the Bureau of Land Management has made an investigation and evidence tends to show that you are in trespass. We allege that you (maybe, have, or are) (violated, violating) the law(s) specified below and the regulation(s) approved by the Secretary of the Interior pursuant to the authority vested in him by said law. Therefore, it is our opinion that you: Fred Hixon

Have: (Describe trespass act such as: discarded personal property items consisting of household trash, litter, appliances, and construction refuse on the public lands described herein.)

Are in violation of: The Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.).

And are in violation of the following regulations: Title 43 CFR §2920.1-2 and §9262.1 (copies attached).

On the following described land: (describe by legal subdivision, or if unsurveyed by concise reference to natural or manmade features):

As a consequence of this act you are liable for fair market value rent of the public lands, rehabilitation/stabilization of the lands damaged by your act, and administrative costs incurred by the Bureau as a consequence of your act.

1/ If by Personal Service, complete Certificate of Service, Illustration 17.

BLM MANUAL Supersedes Rei.

If allegations we have made are correct you must permanently cease and desist from the violations charged. You are allowed (no.) days to arrange settlement of trespass liability, or to present evidence to show that you are not a trespasser as we have alleged, at (address of District or Area Office).

Failure to comply with this notice and resolve your trespass liability may result in trespass penalties and a citation for your appearance before a designated United States magistrate who may impose a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both, under Title 43 CFR §9262.1.

Sincerely,

(Name and title of authorized officer)

Illustration 4

### H-9232-1 - REALTY TRESPASS ABATEMENT

## Sample Letter - Formal Trespass Decision

## UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Address)

In Reply Refer To: 9232 (Case Number)

#### TRESPASS DECISION

(Date)

CERTIFIED MALL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE <u>1</u>/

Mr. Fred Hixon 6130 Holbrook Road Ione, California 95640

Dear Mr. Hixon:

On (date of letter - Notice of Trespass) you were advised, by certified mail, that the United States of America, through the Bureau of Land Management, had instituted trespass proceedings against you for the unauthorized use of public land pursuant to Title 43 CFR 2920.1-2 under the authority of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) 2/

The purpose of our letter was to provide you time in which to make restitution for your trespass [payment of your trespass liability] or provide information or evidence to assist in the equitable adjudication of the Bureau's trespass claim against you. (Based on your response we have determined your trespass liability to date) or (Based on your failure to comply or respond we have determined your trespass liability, including a trespass penalty, to date) or (Appropriate Statement of trespasser's response and Bureau action following the letter notice of trespass) . Your liability is summarized on the enclosed bill.

Within 30 days of receipt of this decision, you have the right of appeal to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations at 43 CFR 4.400. If an appeal is taken, you must follow the procedures outlined in the enclosed Form 1842-1, Information on Taking Appeals to the Interior Board of Land Appeals. The appellant has the burden of showing that the decision appealed from is in error.

Dated this \_\_\_\_\_day of \_\_\_\_\_, 19\_\_\_\_.

#### Enclosures

# (Name and title of authorized officer)

 $\frac{1}{1}$  If by personal service, complete Certificate of Service, Illustration 17.

 $\overline{2}$ / For right-of-way trespass cite 43 CFR Part 2800 and FLPMA or 43 CFR Part 2880 and the Mineral Leasing Act as appropriate.

BLM MANUAL Supersedes Rel.

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#### Sample Letter - Formal Trespass Decision/Notice to Remove

## TRESPASS DECISION/NOTICE TO REMOVE

Sample Letter - Formal Trespass Decision

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Folsom Resource Area 63 Natoma Street Folsom, California 95630-2679

> In Reply Refer To: 9232 (Case Number)

CERTIFIED MAIL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE <u>1</u>/

Mr. Fred Hixon 6130 Holbrook Road Ione, California 95640

Dear Mr. Hixon:

On (date of letter - Notice of Trespass) you were advised, by certified mail, that the United States of America, through the Bureau of Land Management, had initiated trespass proceedings against you pursuant to Title 43 CFR §2920.1-2 under the authority of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) 2/ for certain unauthorized property generally described as (one 12' X 18' wood frame cabin, outbuildings, and personal property in the cabin and outbuildings) which our investigation discloses that you own located on the following described lands under the jurisdiction of the Bureau of Land Management:

(Land Description)

WHEREAS, the existence of said property upon said lands constitutes unlawful trespass for which you are liable in the amount shown on the enclosed bill.

NOW, THEREFORE, PLEASE TAKE NOTICE that all said trespass liability is required to be paid and said property is hereby required to be removed on or prior to  $(date) \frac{3}{}$ , and, in the absence of such payment and removal by such time, the United States, in order to prevent further trespass upon said land, will without further or any additional notice of any kind whatsoever and without liability, take possession, destroy, or remove said property at your expense.

1/ If by personal service, complete Certificate of Service, Illustration 17.

 $\frac{2}{2}$ / For right-of-way trespass cite 43 CFR Part 2800 and FLPMA or 43 CFR Part 2880 and the Mineral Leasing Act as appropriate.

3/ Correlate the date with the 30 day appeal period as appropriate.

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Also, the United States will take possession of and remove any personal property of value that may be found on the premises, and the land, by the removal date given in this notice, and will store said personal property, all at the owner's expense, at (<u>name and address of District Office or other storage facility</u>). Such property may be claimed within 30 days after removal, upon payment of trespass liability including expenses as may accrue. Failure to claim said property within the specified time will constitute abandonment and said property shall become the property of the United States.

Failure to remove said property and resolve your trespass liability by the removal date may result in trespass penalties and a citation for your appearance before a designated United States magistrate who may impose fine of not more than \$1,000 or imprisonment of not more than 12 months, or both, under Title 43 CFR §9262.1.

Within 30 days of receipt of this decision, you have the right of appeal to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations at 43 CFR 4.400. If an appeal is taken, you must follow the procedures outlined in the enclosed Form 1842-1, Information on Taking Appeals to the Interior Board of Land Appeals. The appellant has the burden of showing that the decision appealed from is in error.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

(Name and title of authorized officer)

Enclosures

Rel, 9-300 8/14/89

#### Sample Legal Notice

## UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT Billings Resource Area 810 E. Main Street Billings, Montana 59105

## 9232 (Case Number)

## LEGAL NOTICE

## TO WHOM IT MAY CONCERN:

The United States of America, through the Bureau of Land Management, (name) District Office, (address), has instituted trespass proceedings pursuant to Title 43 CFR 2920.1-2 under the authority of the Federal Land Policy and Management Act 1/ against certain unauthorized property generally described as (one  $12' \times 18'$  wood frame cabin, outbuildings, and personal property in the cabin and outbuildings) located on the following described lands under the jurisdiction of the Bureau of Land Management:

# (Description of Land)

WHEREAS, the existence of said property upon said lands constitutes unlawful trespass and interferes with the proper and efficient administration and management of said lands, and in addition thereto establishes liability to the United States for the unauthorized use and occupancy of said lands.

NOW, THEREFORE, PLEASE TAKE NOTICE that all said property is hereby required to be removed from said land on or prior to (Date) , and, in the absence of such removal by such time, the United States, in order to eliminate public hazard and prevent further trespass upon said land, will without further or any additional notice of any kind whatsoever and without liability take possession, destroy, or remove said property at the owner's expense.

The United States will also take possession of and remove any personal property of value that may be found on the premises, and the land, by the removal date given in this notice, and will store said personal property, all at the owner's expense, at (name and address of District Office and/ or other storage place) . Such property may be claimed within 30 days after removal, upon payment of trespass liability including storage expenses as may accrue. Failure to claim said property within the specified time will consititute abandonment, and said property shall become the property of the United States.

1/ For right-of-way trespass cite Title 43 CFR Part 2800 and FLPMA or Title 43 CFR Part 2880 and the Mineral Leasing Act as appropriate.

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Failure to remove said property by the removal date and resolve trespass liability may result in trespass penalties and a citation for the owners appearance before a designated United States magistrate who may impose a fine of not more than \$1,000 or imprisonment of not more than 12 months, or both, under Title 43 CFR §9262.1.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_.

(Name and title of authorized officer)

Rel. 9-300 8/14/89

BLM MANUAL Supersedes Rel.

Illustration 7

# H-9232-1 - REALTY TRESPASS ABATEMENT

Sample Warning Notice - Property of the United States

# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

# PROPERTY OF THE UNITED STATES

THIS PROPERTY IS ON PUBLIC LAND AND IN THE POSSESSION OF THE UNITED STATES. ALL PERSONS ARE PROHIBITED UNDER PENALTY OF THE LAW FROM USING, MOLESTING, DESTROYING, OR REMOVING THIS PROPERTY, EXCEPT BY ORDER OF THE UNITED STATES. ALL VIOLATORS WILL BE PROSECUTED TO THE FULL EXTENT OF THEIR CIVIL OR CRIMINAL LIABILITY.

# WARNING

DO NOT DESTROY THIS NOTICE. THE LAW PRESCRIBES PUNISHMENT FOR ANY PERSON REMOVING OR DEFACING THIS NOTICE.

SECRETARY OF THE INTERIOR

By:

(Name and title of authorized officer)

(Date)

Re1. 9-300 8/14/89

BLM MANUAL Supersedes Rel.

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#### Sample Demand Letter No. 1

# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

In Reply Refer To: 9232 (Case Number)

(Date)

CERTIFIED MAIL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE <u>1</u>/

Mr. John Doe 123 Main Street Anywhere, USA 20000

Dear Mr. Doe:

Payment has not been received on our Bill for Collection (number), in the amount of \$ (amount) . This bill, issued for trespass liability incurred as a consequence of trespass upon the public lands of the United States, has now become delinquent.

As indicated in our original bill, additional charges have been incurred due to your failure to pay on time. The amount of your indebtedness, as of (date) , is as follows:

Principal:	\$	
Interest at (no.) % per year:	\$	
Administrative Handling Charge		
(at \$5 per billing notice):	\$	
Administrative Penalty at		-
(no.) % per year $\frac{2}{:}$	\$	
Total Now Due:	. \$	
	*	-

Interest at the above indicated rate will continue to accrue for each day until this bill is paid. For each additional billing necessitated by your failure to remit payment, a \$5 administrative handling charge will be added.

If you have any questions concerning this bill, please contact (name) in this office at (phone number).

Sincerely,

Enclosure: 3/

(Name and title of authorized officer)

- 1/ If by personal service, complete Certificate of Service, Illustration 17
  2/ Add this line and current percentage rate only if the bill is more than 90 days delinguent.
- 3/ Enclose a copy of Notice of Actions in Event of Delinquency (back of Form 1371-22).

Rel. 9-300 8/14/89

BLM MANUAL Supersedes Rel.

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C.

# Sample Demand Letter No. 2

# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

In Reply Refer To: 9232 (Case Number)

# CERTIFIED MAIL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE <u>1</u>/

(Date)

John Doe 123 Main Street Anywhere, USA 20000

Dear Mr. Doe:

On (date) this office (personally served or sent you a letter by Certified Mail) requesting that you either pay our Bill for Collection (number) , or advise us if you had any questions regarding your liability.

Since we have not heard from you, we assume you acknowledge this liability and have allowed it to become even further delinquent. Interest will continue to accrue until payment is received.

The amount of your indebtedness as of (date) is as follows:

Principal:	\$ •
Interest at (no.) % per year:	\$ •
Administrative Handling Charge	
(at \$5 per billing notice):	\$ •
Administrative Penalty at	
(no.) % peryear <u>2</u> /:	\$
Total Now Due	\$

If you have any questions concerning this bill, please contact (name) in this office at (phone number) .

Sincerely,

(Name and title of authorized officer)

Enclosure:  $\frac{3}{}$ 

- 1/ If by personal service, complete Certificate of Service, Illustration 17.
- $\frac{2}{2}$  Add this line and current percentage rate only if the bill is more than 90 days delinquent.
- 3/ Enclose a copy of Notice of Actions in Event of Delinquency (back of Form 1371-22).

Re1. 9-300 8/14/89

BLM MANUAL Supersedes Rel.

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#### Sample Demand Letter No. 3

# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office Address)

In Reply Refer To: 9232 (Case Number)

(Date)

CERTIFIED MAIL - RETURN RECEIPT REQUESTED OR PERSONAL SERVICE <u>1</u>/

Mr. John Doe 123 Main Street Anywhere, USA 20000

Dear Mr. Doe:

Our records indicate that payment has not been received on our Bill for Collection (number) . This bill is now seriously past due. If payment is not received within 30 days of the date of this notice, this account will be referred to a debt collection agency and to a credit reporting agency (credit bureau).

In accordance with Department of Interior collection procedures, this account may also be referred to legal counsel for legal action and to the Internal Revenue Service for inclusion as income to you, as well as possible refund off-set. Assessment of interest and penalty charges will continue to accrue until the debt is liquidated.

The amount of your indebtedness as of (

(date) is as follows:

\$

\$

\$

\$

Principal: Interest at % per year: Administrative Handling Charge (at \$5 per billing notice): Administrative Penalty at (no.) % per year: Total Now Due:

If you have any questions concerning this bill, please contact (name) in this office at (phone number) .

Sincerely,

Enclosure:  $\frac{2}{}$ 

(State Director)

1/ If by personal service, complete Certificate of Service, Illustration 17.

 $\frac{2}{2}$ / Enclose a copy of Notice of Actions in Event of Delinquency. (back of Form 1371-22).

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Sample Memorandum - Case File Summary-Delinquent Account

# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

In Reply Refer To: 9232 (Case Number)

MEMORANDUM

To: Service Center Director (SC-615)

From: State Director,

Subject: Case File Summary of Final Bill

All delinquent account procedures have been executed for this case. The case file is being transmitted for referral to a Debt Collection Agency.

CASE FILE SUMMARY OF FINAL BILL

Date:	Referring Office Code
Debtor	Contact in Office
Name:	Phone No. (FTS)
Address:	Bill Number
Bill for Collection No	is summarized as follows:
Principal Balance:	\$
Interest at% per Year:	\$
Administrative Handling Charges: (at \$5 per billing notice)	\$
Administrative Penalty Charges @% per year (if more than 90 days delinquent):	\$
Total Due:	\$
Attachment: Case File	

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Sample Memorandum - Uncollectible Claim/Referral Recommendation

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

> In Reply Refer To: 9232 (Case Number)

### MEMORANDUM

To: Service Center Director (SC-615)

From: State Director,

Subject: Write-off of Uncollectible Trespass Liability Claim

The following claim has been written off by a Journal Voucher (Form 1370-39).

JV No.\_\_\_\_\_ Dated \_\_\_\_\_(copy attached):

Amount \$\_\_\_\_\_ Bill for Collection No.\_\_\_\_\_

This claim has been written off for the following reason:

We recommend that this write-off amount be referred to a credit reporting agency and to the Internal Revenue Service. Attached for your use is a completed cover sheet for write-offs (Form 1370-45).

(To be completed by Field or Regional Solicitor for amounts of \$601 to \$2,500. The Solicitor must approve amounts of \$2,501 to \$20,000.)

This write-off action meets the Standards for suspending or terminating claims contained in 4 CFR Part 104.

(Solicitor)

(Date)

Attachments

cc: DM

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Sample Trespass Settlement Agreement

9232 (Case Number)

#### AGREEMENT

I hereby agree to the following terms to resolve trespass liability on the described public lands.

I. Legal Description:

II. <u>Settlement</u>: <u>\$</u> (Land rent, administrative costs, and rehabilitation/stabilization.)

- a. | Payment in full, receipt of which is hereby acknowledged. Personal check no.
- b. |\_\_\_\_| Promissory Note: completed Form 1372-1 attached.

# III. Resolution:

a. | Termination.

b. Authorization by permit.

c. | Other (specify).

# IV. Rehabilitation/Stabilization:

- a. [\_\_\_] I agree to rehabilitate and/or stabilize the described land in accordance with the attached rehabilitation plan. Bond in the amount of \$\_\_\_\_\_\_ will be provided to ensure compliance.
- b. \_\_\_\_ Settlement in II above, includes funding for the necessary rehabilitation/stabilization by the Bureau of Land Management.

V. Further action required of the undersigned: (permit application, exchange proposal, etc.) explain.

(Name, Please Print)

(Signature)

(Address)

(Date)

(City, State, Zip Code)

Attachments:

(Name and title of authorized officer)

Promissory Note (Form 1372-1).

\_\_ | Rehabilitation Plan.

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Illustration 14

# H-9232-1 - REALTY TRESPASS ABATEMENT

Sample Liability Compromise Offer

9232 (Case Number)

#### TRESPASS SETTLEMENT OFFER

(To be completed by offeror)

I hereby submit a compromise offer of \$ to

settle \_\_\_\_\_\_ Trespass No. \_\_\_\_\_ which was

originally assessed at \$

By signing below, I agree that deposit by the United States into a holding (suspense) account of the money offered will not constitute a release, satisfaction, or discharge of trespass liability unless and until the offer has been accepted by the proper authority. I understand that if the offer is rejected, a refund will be issued to me by Government check.

(Name, Please Print)

(Address)

(City, State, Zip Code)

(Date)

(Signature)

(To be completed by Field or Regional Solicitor)

Per BLM Manual 1372.33A3b, I hereby advise that trespass liability will not be discharged by depositing the above specified remittance.

(Solicitor)

(Date)

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Sample Memorandum - Write-Off Based on Compromise Offer

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

> In Reply Refer To: 9232 (Case Number)

MEMORANDUM

To: Service Center Director (SC-615)

From: State Director,

Subject: Write-off Of Debt Due To Compromise Offer

The following debt balance has been written off by a Collection Data Sheet (Form 1370-35) dated \_\_\_\_\_\_ (copy attached):

Amount \$ Bill for Collection No. (write off amount) (Form 1371-22)

The amount to be written off is the difference between the Bill for Collection and the accepted compromise offer of settlement.

The Bill for Collection amount has been negotiated, adjusted, and compromised because there is real doubt as to the Government's ability to prove its case in court for the full amount claimed. Therefore, we recommend that this write-off amount (be or not be) reported to the Internal Revenue Service. Attached for your use is a completed cover sheet for write-offs (Form 1370-45).

This write-off action meets the Standards for compromise of claims contained in 4 CFR Part 103.

(Solicitor)

(Date)

Attachments

cc: DM

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Sample Statement of Relinquishment

# RELINQUISHMEMT

This is to advise you that I (we)

# (Names(s) of Persons Executing Relinquishment)

have no further interest in the property located on the following described public land:

(land description)

The property which I (we) wish to relinquish is generally described as follows:

(Description of property: e.g. one 12' x 18' wood frame cabin, outbuildings, and personal property in the cabin and outbuildings.)

By this document, all my (our) right, title, or interest in and to the above described property on the above described land, is hereby quitclaimed and relinquished to the United States by the undersigned, and disposition may be made in any manner that is in the interest of the United States, free and clear of any liability for damages accruing to the disposal of said property.

I (we) understand that this relinquishment does not satisfy any trespass liability incurred as a consequence of placing the relinquished property on public lands administered by the Bureau of Land Management.

Date:

(Name)

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Sample Certificate of Personal Service

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# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

9232 (Case Number)

# CERTIFICATE OF PERSONAL SERVICE

L,	, CERTIFY that on	
the	day of,	
19	, I served written notice on, o	f
(address)		

the party's address of record, by a true copy of the within notice by Personal Service.

(Signature)

(Title)

Rel. 9-300 8/14/89

BLM MANUAL Supersedes Rel. .

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### Illustration 18

# H-9232-1 - REALTY TRESPASS ABATEMENT

Sample Statement Of Diligent Search & Inquiry

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# UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (Office address)

# 9232 (Case Number)

# STATEMENT OF DILIGENT SEARCH AND INQUIRY

I, \_\_\_\_\_, an employee of the Bureau of Land Management, (District Office and State) , certify that I began a diligent search and inquiry on (date) to locate the owner of the following property:

(Describe Property)

Located on public land in:

(Legal Description)

I was unable to locate the property owner after diligent search and inquiry which I completed on (date)

(Signature)

(Date)

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# CHAPTER II—FEDERAL CLAIMS COLLECTION STANDARDS (GENERAL ACCOUNTING OFFICE—DEPARTMENT OF JUSTICE)

Part		Page
101	Scope of standards	82
102	Standards for the administrative collection of claims	83
103	Standards for the compromise of claims.	92
104	Standards for suspending or terminating collec- tion action	94
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#### § 101.1

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# PART 101-SCOPE OF STANDARDS

Sec.

101.1 Prescription of standards.

101.2 Definitions.

101.3 Antitrust, fraud, tax, and interagency claims excluded.

101.4 Compromise, waiver, or disposition under other statutes not precluded.

101.5 Conversion claims.

- 101.6 Subdivision of claims not authorized. 101.7 Required administrative proceedings.
- 101.8 Omissions not a defense.

AUTHORITY: 31 U.S.C. 3711.

SOURCE: 49 FR 8896, Mar. 9, 1984, unless otherwise noted.

#### § 101.1 Prescription of standards.

The regulations in this chapter, issued jointly by the Comptroller General of the United States and the Attorney General of the United States under 31 U.S.C. 3711(e)(2), prescribe standards for the administrative collection, compromise, termination of agency collection, and the referral to the General Accounting Office, and to the Department of Justice for litigation, of civil claims as defined by 31 U.S.C. 3701(b), by the Federal Government for money or property. Additional guidance is contained in Title 4 of the General Accounting Office Policy and Procedures Manual for Guidance of Federal Agencies. Regulations prescribed by the head of an agency pursuant to 31 U.S.C. 3711(e)(1) will be reviewed by the General Accounting Office as a part of its audit of the agency's activities.

#### § 101.2 Definitions.

(a) Claim and debt. For the purposes of these standards, the terms "claim" and "debt" are deemed synonymous and interchangeable. They refer to an amount of money or property which has been determined by an appropriate agency official to be owed to the United States from any person, organization, or entity, except another Federal agency.

(b) A debt is considered "delinquent" if it has not been paid by the date specified in the agency's initial written notification (§ 102.2 of this chapter) or applicable contractual agreement, unless other satisfactory payment arrangements have been made by that date, or if, at any time thereafter, the debtor fails to satisfy obligations under a payment agreement with the creditor agency.

(c) As used in this chapter, "referral for litigation" means referral to the Department of Justice for appropriate legal proceedings, unless the agency concerned has statutory authority for handling its own litigation.

(d) In this chapter, words in the plural form shall include the singular and vice versa; and words importing the masculine gender shall include the feminine and vice versa. The terms "includes" and "including" do not exclude matters not listed but which are in the same general class.

#### § 101.3 Antitrust, fraud, tax, and interagency claims excluded.

(a) The standards in this chapter relating to compromise, suspension, and termination of collection action (Parts 103 and 104) do not apply to any claim based in whole or in part on conduct in violation of the antitrust laws, or to any claim as to which there is an indication of fraud, the presentation of a false claim, or misrepresentation on the part of the debtor or any other party having an interest in the claim. Only the Department of Justice has authority to compromise, suspend, or terminate collection action on such claims. The standards in this chapter relating to the administrative collection of claims (Part 102) do apply, but only to the extent authorized by the Department of Justice in a particular case. Upon identification of a claim of any of the types described in the first sentence of this paragraph, the agency involved should refer the matter promptly to the Department of Justice. At its discretion, the Department of Justice may return the claim to the forwarding agency for further handling in accordance with the regulations in this chapter.

(b) Tax claims, as to which differing exemptions, administrative considerations, enforcement considerations, and statutes apply, are also excluded from the coverage of this chapter.

(c) This chapter does not apply to claims between Federal agencies. Federal agencies should attempt to resolve

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#### Federal Claims Collection Standards

interagency claims by negotiation. If the claim cannot be resolved by the agencies involved, it should be referred to the General Accounting Office.

#### § 101.4 Compromise, waiver, or disposition under other statutes not precluded.

Nothing contained in this chapter is intended to preclude agency disposition of any claim under statutes and implementing regulations other than Subchapter II of Chapter 37 of Title 31 of the United States Code and these Standards, providing for the collection, compromise, termination of collection action, or waiver in whole or in part of such a claim. See, for example, the Federal Medical Care Recovery Act, 76 Stat. 593, 42 U.S.C. 2651 et seq., and applicable regulations, 28 CFR 43.1 et seq. In such cases, the laws and regulations which are specifically applicable to claims collection activities of a particular agency take precedence over this chapter. Except as provided in § 102.19 of this chapter (Exemptions), the standards set forth in this chapter should be followed in the disposition of civil claims by the Federal Government by collection, compromise, or termination of collection action (other than by waiver pursuant to other statutory authority) where neither the specific statute nor its implementing regulations establish standards governing such matters.

#### \$ 101.5 Conversion claims.

The instructions contained in this chapter are directed primarily at the recovery of money on behalf of the United States and the circumstances in which Government claims may be disposed of for less than the full amount claimed. Nothing contained in this chapter is intended, however, to deter an agency from demanding the return of specific property or from demanding, in the alternative, either the return of the property or the payment of its value.

#### § 101.6 Subdivision of claims not authorized.

Claims may not be subdivided to avoid the monetary ceiling established by 31 U.S.C. 3711(a)(2). A debtor's liability arising from a particular transaction or contract shall be considered

§ 101.8

a single claim in determining whether the claim is one of less than \$20,000, exclusive of interest, penalties, and administrative costs, for purposes of compromise (§ 103.1 of this chapter) or suspension or termination of collection action (§ 104.1 of this chapter).

#### \$ 101.7 Required administrative proceedings.

Nothing contained in this chapter is intended to require an agency to omit, foreclose, or duplicate administrative proceedings required by contract or other laws or regulations.

#### 9 101.8 Omissions not a defense.

The standards set forth in this chapter shall apply to the administrative handling of civil claims of the Federal Government for money or property but the failure of an agency to comply with any provision of this chapter shall not be available as a defense to any debtor.

#### PART 102—STANDARDS FOR THE ADMINISTRATIVE COLLECTION OF CLAIMS

Sec.

- 102.1 Aggressive agency collection action.
- 102.2 Demand for payment.
- 102.3 Collection by administrative offset.
- 102.4 Administrative offset against amounts payable from Civil Service Re-
- tirement and Disability Fund.
- 102.5 Use of consumer reporting agencies. 102.6 Contracting for collection services,
- 102.7 Personal interview with debtor.
- 102.8 Contact with debtor's employing
- ASCDCY. 102.9 Suspension or revocation of license
- or eligibility.
- 102.10 Liquidation of collateral.
- 102.11 Collection in installments.
- 102.12 Exploration of compromise.
- 102.13 Interest, penalties, and administrative costs.
- 102.14 Analysis of costs.
- 102.15 Documentation of administrative collection action,
- 102.16 Automation. 102.17 Prevention of overpayments, delinquencies, and defaults.
- 102.18 Use and disclosure of mailing addresses.
- 102.19 Exemptions.

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# § 102.1

Sec.

102.20 Additional administrative collection action.

AUTHORITY: Subchapter II of Chapter 37 of Title 31, U. S. C. .

SOURCE: 49 FR 8897, Mar. 9, 1984, unless otherwise noted.

# § 102.1 Aggressive agency collection action.

(a) Each Federal agency shall take aggressive action, on a timely basis with effective followup, to collect all claims of the United States for money or property arising out of the activities of, or referred to, that agency in accordance with the standards set forth in this chapter. However, nothing contained in this chapter is intended to require the General Accounting Office or the Department of Justice to duplicate collection actions previously undertaken by any other agency, or to perform collection actions which should have been undertaken by any other agency in accordance with the standards set forth in this chapter.

(b) All agencies are expected to cooperate with one another in their debt collection activities.

#### § 102.2 Demand for payment.

(a) Appropriate written demands shail be made promptly upon a debtor of the United States in terms which inform the debtor of the consequences of failure to cooperate. A total of three progressively stronger written demands at not more than 30-day intervals will normally be made unless a response to the first or second demand indicates that a further demand would be futlle and the debtor's response does not require rebuttal. In determining the timing of demand letters, agencies should give due regard to the need to act promptly so that, as a general rule, if necessary to refer the debt to the Department of Justice for litigation, such referral can be made within one year of the agency's final determination of the fact and the amount of the debt. When necessary to protect the Government's interests (for example, to prevent the statute of limita-tions, 28 U.S.C. 2415, from expiring), written demand may be preceded by other appropriate actions under this

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chapter, including immediate referral for litigation.

(b) The initial demand letter should inform the debtor of: (1) The basis for the indebtedness and whatever rights the debtor may have to seek review within the agency; (2) the applicable standards for assessing interest, penalties. and administrative costs (§ 102.13); and (3) the date by which payment is to be made, which normally should be not more than 30 days from the date that the initial demand letter was mailed or hand-delivered, Agencies should exercise care to insure that demand letters are mailed or hand-dellvered on the same day that they are actually dated. Apart from this, there is no prescribed format for the demand letters. Agencies should utilize demand letters and procedures that will lead to the earliest practicable determination of whether the debt can be resolved administratively or must be referred for litigation.

(c) As appropriate to the circumstances, agencies may consider including, either in the initial demand letter or in subsequent letters, such items as the agency's willingness to discuss alternative methods of payment, policies with respect to use of consumer reporting agencies ( $\S$  102.5) and collection services ( $\S$  102.6), the agency's intentions with respect to referral of the debt to the Department of Justice for litigation, and, depending on applicable statutory authority, the debtor's entitlement to consideration of waiver.

(d) Agencies should respond promptly to communications from the debtor, within 30 days whenever feasible, and should advise debtors who dispute the debt to furnish available evidence to support their contentions.

(e) If, either prior to the initiation of, at any time during, or after completion of the demand cycle, an agency determines to pursue offset, then the procedures specified in §§ 102.3, 102.4, or 5 U.S.C. 5514, as applicable, should be followed. The availability of funds for offset and the agency's determination to pursue it release the agency from the necessity of further compliance with paragraphs (a), (b), and (c) of this section. If the agency has not already sent the first demand letter, the agency's written notification of its

#### Federal Claims Collection Standards

intent to offset must give the debtor the opportunity to make voluntary payment, a requirement which will be satisfied by compliance with the notice requirements of §§ 102.3, 102.4, or 5 U.S.C. 5514.

§ 102.3 Collection by administrative offset.

(a) Collection by administrative offset will be undertaken in accordance with these standards and implementing regulations established by each agency on all claims which are liquidated or certain in amount in every instance in which such collection is determined to be feasible and not otherwise prohibited.

(1) For purposes of this section, the term "administrative offset" has the meaning provided in 31 U.S.C. 3716(a)(1).

(2) Whether collection by administrative offset is feasible is a determination to be made by the creditor agency on a case-by-case basis, in the exercise of sound discretion. Agencies should consider not only whether administrative offset can be accomplished, both practically and legally, but also whether offset is best suited to further and protect all of the Government's interests. In appropriate circumstances, agencies may give due consideration to the debtor's financial condition, and are not required to use offset in every instance in which there is an available source of funds. Agencies may also consider whether offset would tend to substantially interfere with or defeat the purposes of the program authorizing the payments against which offset is contemplated. For example, under a grant program in which payments are made in advance of the grantee's performance, offset will normally be inappropriate. This concept generally does not apply, however, where payment is in the form of reimbursement.

(b) Except as provided in § 101.4, this paragraph or § 102.4, the standards in this paragraph shall apply to the collection of debts by administrative offset under 31 U.S.C. 3716, some other statutory authority, or the common law.

(1) Agencies shall prescribe regulations for the exercise of administrative offset. (2) Agency regulations required by paragraph (b)(1) of this section shall establish procedures for providing a debtor, before the offset is made, with

§ 102.3

debtor, before the offset is made, with appropriate procedural rights. Except as otherwise required by law, those regulations shall provide for: Written notice of the nature and amount of the debt, and the agency's intention to collect by offset; opportunity to inspect and copy agency records pertaining to the debt; opportunity to obtain review within the agency of the determination of indebtedness; and opportunity to enter into a written agreement with the agency to repay the debt. Agency regulations shall also establish procedures for making requests for offset to other agencies holding funds payable to the debtor, and for processing requests for offset that are received from other agencies.

(1) Agencies have discretion and should exercise sound judgment in determining whether to accept a repayment agreement in lieu of offset. The determination should balance the Government's interest in collecting the debt against fairness to the debtor. If the debt is delinquent and the debtor has not disputed its existence or amount, an agency should accept a repayment agreement in lieu of offset only if the debtor is able to establish that offset would result in undue financial hardship or would be against equity and good conscience.

(ii) In cases where the procedural requirements specified in paragraph (b)(2) of this section have previously been provided to the debtor in connection with the same debt under some other statutory or regulatory anthority, such as pursuant to a notice of audit disallowance, the agency is not required to duplicate those requirements before taking administrative offset.

(3) Agencies may not initiate administrative offset to collect a debt under 31 U.S.C. 3716 more than 10 years after the Government's right to collect the debt first accrued, unless facts material to the Government's right to collect the debt were not known and could not reasonably have been known by the official or officials of the Government who were charged with the responsibility to discover and collect

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# § 102.3

such debts. When the debt first accrued is to be determined according to existing law regarding the accrual of debts, such as under 28 U.S.C. 2415.

(4) Agencies are not authorized by 31 U.S.C. 3716 to use administrative offset with respect to: (i) Debts owed by any State or local Government; (ii) debts arising under or payments made under the Social Security Act, the In-ternal Revenue Code of 1954, or the tariff laws of the United States; or (iii) any case in which collection of the type of debt involved by administrative offset is explicitly provided for or prohibited by another statute. However, unless otherwise provided by contract or law, debts or payments which are not subject to administrative offset under 31 U.S.C. 3716 may be collected by administrative offset under the common law or other applicable statutory authority.

(5) Agencies may effect administrative offset against a payment to be made to a debtor prior to the completion of the procedures required by paragraph (b)(2) of this section if: (i) Failure to take the offset would substantially prejudice the Government's ability to collect the debt, and (ii) the time before the payment is to be made does not reasonably permit the completion of those procedures. Such prior offset must be promptly followed by the completion of those procedures. Amounts recovered by offset but later found not to be owed to the Government shall be promptly refunded.

(c) Type of hearing or review: (1) For purposes of this section, whenever an agency is required to afford a debtor with a hearing or review within the agency, the agency shall provide the debtor with a reasonable opportunity for an oral hearing when: (i) An applicable statute authorizes or requires the agency to consider waiver of the indebtedness involved, the debtor requests waiver of the indebtedness, and the waiver determination turns on an issue of credibility or veracity; or (ii) the debtor requests reconsideration of the debt and the agency determines that the question of the indebtedness cannot be resolved by review of the documentary evidence, for example, when the validity of the debt turns on an issue of credibility or

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veracity. Unless otherwise required by law, an oral hearing under this section is not required to be a formal evidentiary-type hearing, although the agency should always carefully document all significant matters discussed at the hearing.

(2) This section does not require an oral hearing with respect to debt collection systems in which determinations of indebtedness or waiver rarely involve issues of credibility or veracity and the agency has determined that review of the written record is ordinarily an adequate means to correct prior mistakes. In administering such a system, the agency is not required to sift through all of the requests received in order to accord oral hearings in those few cases which may involve issues of credibility or veracity.

(3) In those cases where an oral hearing is not required by this section, the agency shall nevertheless accord the debtor a "paper hearing," that is, the agency will make its determination on the request for waiver or reconsideration based upon a review of the written record.

(d) Appropriate use should be made of the cooperative efforts of other agencies in effecting collection by administrative offset, including use of the Army Holdup List. Generally, agencies should not refuse to comply with requests from other agencies to initiate administrative offset to collect debts owed to the United States, unless the requesting agency has not complied with the applicable provisions of these standards or the offset would be otherwise contrary to law.

(e) Collection by offset against a judgment obtained by a debtor against the United States shall be accomplished in accordance with 31 U.S.C. 3728.

(f) Whenever the creditor agency is not the agency which is responsible for making the payment against which administrative offset is sought, the latter agency shall not initiate the requested offset until it has been provided by the creditor agency with an appropriate written certification that the debtor owes a debt (including the amount) and that the provisions of this section have been fully complied with.

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# Federal Claims Collection Standards

(g) When collecting multiple debts by administrative offset, agencies should apply the recovered amounts to those debts in accordance with the best interests of the United States, as determined by the facts and circumstances of the particular case, paying special attention to applicable statutes of limitations.

#### § 102.4 Administrative offset against amounts payable from Civil Service Retirement and Disability Fund.

(a) Unless otherwise prohibited by law, agencies may request that moneys which are due and payable to a debtor from the Civil Service Retirement and Disability Fund be administratively offset in reasonable amounts in order to collect in one full payment or a minimal number of payments debts owed to the United States by the debtor. Such requests shall be made to the appropriate officials of the Office of Personnel Management in accordance with such regulations as may be prescribed by the Director of that Office.

(b) When making a request for administrative offset under paragraph (a) of this section, an agency shall include a written certification that:

(1) The debtor owes the United States a debt, including the amount of the debt;

(2) The requesting agency has complied with the applicable statutes, regulations, and procedures of the Office of Personnel Management; and

(3) The requesting agency has complied with the requirements of § 102.3 of this part, including any required hearing or review.

(c) Once an agency decides to request administrative offset under paragraph (a) of this section, it should make the request as soon as practical after completion of the applicable procedures in order that the Office of Personnel Management may identify and "flag" the debtor's account in anticipation of the time when the debtor requests or becomes eligible to receive payments from the Fund. This will satisfy any requirement that offset be initiated prior to expiration of the applicable statute of limitations. At such time as the debtor makes a claim for payments from the Fund, if at least a

year has elapsed since the offset request was originally made, the debtor should be permitted to offer a satisfactory repayment plan in lieu of offset upon establishing that changed financial circumstances would render the offset unjust.

(d) If the requesting agency collects part or all of the debt by other means before deductions are made or completed pursuant to paragraph (a) of this section, the agency shall act promptly to modify or terminate its request for offset under paragraph (a) of this section.

(e) This section does not require or authorize the Office of Personnel Management to review the merits of the requesting agency's determination with respect to the amount and validity of the debt, its determination as to waiver under an applicable statute, or its determination to provide or not provide an oral hearing.

#### § 102.5 Use of consumer reporting agencies.

(a) Agencies shall develop and implement procedures for reporting delinquent debts to consumer reporting agencies. For purposes of this section, the term "consumer reporting agency" has the meaning provided in 31 U.S.C. 3701(a)(3).

(b) In developing procedures under paragraph (a) of this section, agencies must have due regard for compliance with the Privacy Act of 1974, as amended, 5 U.S.C. 552a. However, consumer reporting agencies themselves are not subject to the Privacy Act.

(c) Agency procedures developed under paragraph (a) of this section shall be consistent with the requirements of 31 U.S.C. 3711(f) and \$102.3(c) of this part.

#### § 102.6 Contracting for collection services.

(a) All agencies have authority to contract for collection services to recover delinquent debts, provided that the following conditions are satisfied:

(1) The authority to resolve disputes, compromise claims, suspend or terminate collection action, and refer the matter for litigation ( $\S$  105.1) must be retained by the agency;

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(2) The contractor shall be subject to the Privacy Act of 1974, as amended, to the extent specified in 5 U.S.C. 552a(m), and to applicable Federal and State laws and regulations pertaining to debt collection practices, such as the Fair Debt Collection Practices Act, 15 U.S.C. 1692;

(3) The contractor must be required to account strictly for all amounts collected; and

(4) The contractor must agree to provide any data contained in its files relating to paragraphs (a) (1), (2), and (3) of § 105.2 of this chapter upon returning an account to the creditor agency for subsequent referral to the Department of Justice for litigation.

(b) Funding of collection service contracts:

(1) An agency may fund a collection service contract on a fixed-fee basis, that is, payment of a fixed fee determined without regard to the amount actually collected under the contract. Payment of the fee under this type of contract must be charged to available agency appropriations.

(2) An agency may also fund a collection service contract on a contingent-fee basis, that is, by including a provision in the contract permitting the contractor to deduct its fee from amounts collected under the contract. The fee should be based on a percentage of the amount collected, consistent with prevailing commercial practice.

(3) An agency may enter into a contract under paragraph (b)(1) of this section only if and to the extent provided in advance in its appropriation act or other legislation, except that this requirement does not apply to the use of a revolving fund authorized by statute.

(4) Except as authorized under pargraph (b)(2) of this section, or unless otherwise specifically provided by law, agencies must deposit all amounts recovered under collection service contracts (or by agency employees on behalf of the agency) in the Treasury as miscellaneous receipts pursuant to 31 U.S.C. 3302.

#### \$ 192.7 Personal interview with debtor.

Agencies will undertake personal interviews with their debtors when-

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ever this is feasible, having regard for the amounts involved and the proximity of agency representatives to such debtors.

# § 102.8 Contact with debtor's employing agency.

When a debtor is employed by the Federal Government or is a member of the military establishment or the Coast Guard, and collection by offset cannot be accomplished in accordance with 5 U.S.C. 5514, the employing agency will be contacted for the purpose of arranging with the debtor for payment of the indebtedness by allotment or otherwise in accordance with section 206 of Executive Order No. 11222, May 8, 1965, 30 FR 6469.

#### § 102.9 Suspension or revocation of Ilcense or eligibility.

Agencies seeking the collection of statutory penalties, forfeitures, or debts provided for as an enforcement aid or for compelling compliance should give serious consideration to the suspension or revocation of 11censes or other privileges for any inexcusable, prolonged or repeated failure of a debtor to pay such a claim, and the debtor should be so advised. Any agency making, guaranteeing, insuring, acquiring, or participating in loans should give serious consideration to disqualifying any suspending or lender, contractor, broker, borrower or other debtor from doing further business with it or engaging in programs sponsored by it if such a debtor fails to pay its debts to the Government within a reasonable time, and the debtor should be so advised. The failure of any surety to honor its obligations in accordance with 31 U.S.C. 9305 is to be reported to the Treasury Department at once. Notification that a surety's certificate of authority to do business with the Federal Government has been revoked or forfeited by the Treasury Department will be forwarded by that Department to all interested agencies.

#### § 102.10 Liquidation of collateral.

An agency holding security or collateral which may be liquidated and the proceeds applied on debts due it

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through the exercise of a power of sale in the security instrument or a nonjudicial foreclosure should do so by such procedures if the debtor fails to pay the debt within a reasonable time after demand, unless the cost of disposing of the collateral will be disproportionate to its value or special circumstances require judicial foreclosure. The agency should provide the debtor with reasonable notice of the sale, an accounting of any surplus proceeds, and any other procedures required by contract or law. Collection from other sources, including liquidation of security or collateral, is not a prerequisite to requiring payment by a surety or insurance concern unless such action is expressly required by statute or contract.

# § 102.11 Collection in installments.

(a) Whenever feasible, and except as otherwise provided by law, debts owed to the United States, together with interest, penalties, and administrative costs as required by § 102.13 of this part, should be collected in full in one lump sum. This is true whether the debt is being collected by administrative offset or by another method, including voluntary payment. However, if the debtor is financially unable to pay the indebtedness in one lump sum, payment may be accepted in regular installments. Agencies should obtain financial statements from debtors who represent that they are unable to pay the debt in one lump sum. Agencies which agree to accept payment in regular installments should obtain a legally enforceable written agreement from the debtor which specifies all of the terms of the arrangement and which contains a provision accelerating the debt in the event the debtor defaults. The size and frequency of installment payments should bear a reasonable relation to the size of the debt and the debtor's ability to pay. If possible, the installment payments should be sufficient in size and frequency to liquidate the Government's claim in not more than 3 years. Installment payments of less than \$50 per month should be accepted only if justifiable on the grounds of financial hardship or for some other reasonable cause. An agency holding an unsecured claim for

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administrative collection should attempt to obtain an executed confessjudgment note, comparable to the Department of Justice Form USA-70a, from a debtor when the total amount of the deferred installments will exceed \$750. Such notes may be sought when an unsecured obligation of a lesser amount is involved. When attempting to obtain confess-judgment notes, agencies should provide their debtors with written explanation of the consequences of signing the note, and should maintain documentation sufficient to demonstrate that the debtor has signed the note knowingly and voluntarily. Security for deferred payments other than a confess-judgment note may be accepted in appropriate cases. An agency may accept installment payments notwithstanding the refusal of a debtor to execute a confess-judgment note or to give other security, at the agency's option.

(b) If the debtor owes more than one debt and designates how a voluntary installment payment is to be applied as among those debts, that designation must be followed. If the debtor does not designate the application of the payment, agencies should apply payments to the various debts in accordance with the best interests of the United States, as determined by the facts and circumstances of the particular case, paying special attention to applicable statues of limitations.

#### § 102.12 Exploration of compromise.

Agencies may attempt to effect compromise, preferably during the course of personal interviews, in accordance with the standards set forth in Part 103 of this chapter.

#### § 102.13 Interest, penalties, and administrative costs.

(a) Except as provided in paragraphs (h) and (i) of this section, agencies shall assess interest, penalties, and administrative costs on debts owed to the United States pursuant to 31 U.S.C. 3717. Before assessing these charges, an agency must mail or hand-deliver a written notice to the debtor explaining the agency's requirements concerning the charges. (See  $\S$  102.2 of this part.)

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(b) Interest shall accrue from the date on which notice of the debt and the interest requirements is first mailed or hand-delivered to the debtor (on or after October 25, 1982), using the most current address that is available to the agency. If an agency uses an "advance billing" procedure-that is, if it mails a bill before the debt is actually owed-it can include the required interest notification in the advance billing, but interest may not start to accrue before the debt is actually owed. Agencies should exercise care to insure that the notices required by this section are dated and mailed or hand-delivered on the same day.

(c) The rate of interest assessed shall be the rate of the current value of funds to the United States Treasury (i.e., the Treasury tax and loan account rate), as prescribed and published by the Secretary of the Treasury in the FEDERAL REGISTER and the Treasury Fiscal Requirements Manual Bulletins annually or quarterly, in accordance with 31 U.S.C. 3717. An agency may assess a higher rate of interest if it reasonably determines that a higher rate is necessary to protect the interests of the United States. The rate of interest, as initially assessed. shall remain fixed for the duration of the indebtedness, except that where a debtor has defaulted on a repayment agreement and seeks to enter into a new agreement, the agency may set a new interest rate which reflects the current value of funds to the Treasury at the time the new agreement is executed. Interest should not be assessed on interest, penalties, or administrative costs required by this section. However, if the debtor defaults on a previous repayment agreement, charges which accrued but were not collected under the defaulted agreement shall be added to the principal to be paid under a new repayment agreement.

(d) An agency shall assess against a debtor charges to cover administrative costs incurred as a result of a delinquent debt,—that is, the additional costs incurred in processing and handling the debt because it became delinquent as defined in § 101.2(b) of this chapter. Calculation of administrative

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costs should be based upon actual costs incurred or upon cost analyses establishing an average of actual additional costs incurred by the agency in processing and handling claims against other debtors in similar stages of delinquency. Administrative costs may include costs incurred in obtaining a credit report or in using a private debt collector, to the extent they are attributable to delinquency.

(e) An agency shall assess a penalty charge, not to exceed 6 percent a year, on any portion of a debt that is delinquent as defined in § 101.2(b) of this chapter for more than 90 days. This charge need not be calculated until the 91st day of delinquency, but shall accrue from the date that the debt became delinquent.

(f) When a debt is paid in partial or installment payments, amounts received by the agency shall be applied first to outstanding penalty and administrative cost charges, second to accrued interest, and third to outstanding principal.

(g) An agency shall waive the collection of interest on the debt or any portion of the debt which is paid within 30 days after the date on which interest began to accrue. An agency may extend this 30-day period, on a caseby-case basis, if it reasonably determines that such action is appropriate. Also, an agency may waive, in whole or in part, the collection of interest. penalties, and/or administrative costs assessed under this section under the criteria specified in Part 103 of this chapter relating to the compromise of claims (without regard to the amount of the debt), or if the agency determines that collection of these charges would be against equity and good conscience or not in the best interests of the United States. Walver under the first sentence of this paragraph (g) is mandatory. Under the second and third sentences, it may be exercised only in accordance with regulations issued by the agency identifying the standards and appropriate circumstances for waiver. Examples of situations which agencies may consider including in their interest waiver regulations are: (1) Waiver of interest pending consideration of a request for reconsideration, administrative review.

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or waiver of the underlying debt under a permissive statute, and (2) waiver of interest where the agency has accepted an installment plan under § 102.11 of this Part, there is no indication of fault or lack of good faith on the part of the debtor, and the amount of interest is large enough in relation to the size of the installments that the debtor can reasonably afford to pay that the debt will never be repaid.

(h) Where a mandatory waiver or review statute applies, interest and related charges may not be assessed for those periods during which collection action must be suspended under § 104.2(c)(1) of this chapter.

(i) Exemptions. (1) The provisions of 31 U.S.C. 3717 do not apply: (i) To debts owed by any State or local government; (ii) to debts arising under contracts which were executed prior to, and were in effect on (i.e., were not completed as of), October 25, 1982; (iii) to debts where an applicable statute. regulation required by statute, loan agreement, or contract either prohibits such charges or explicitly fixes the charges that apply to the debts involved; or (iv) to debts arising under the Social Security Act, the Internal Revenue Code of 1954, or the tariff laws of the United States.

(2) However, agencies are authorized to assess interest and related charges on debts which are not subject to 31 U.S.C. 3717 to the extent authorized under the common law or other applicable statutory authority.

#### § 102.14 Analysis of costs.

Agency collection procedures should provide for periodic comparison of costs incurred and amounts collected. Data on costs and corresponding recovery rates for debts of different types and in various dollar ranges should be used to compare the cost effectiveness of alternative collection techniques, establish guidelines with respect to points at which costs of further collection efforts are likely to exceed recoveries, assist in evaluating offers in compromise, and establish minimum debt amounts below which collection efforts need not be taken. Cost and recovery data should also be useful in justifying adequate resources for an effective collection program,

evaluating the feasibility and cost effectiveness of contracting for debt collection services under § 102.6, and determining appropriate charges for administrative costs under § 102.13(d).

# § 102.15 Documentation of administrative collection action.

All administrative collection action shall be documented and the bases for compromise, or for termination or suspension of collection action, should be set out in detail. Such documentation shall be retained in the appropriate claims file.

#### § 102.16 Automation.

Agencies should automate their debt collection operations to the extent it is cost effective and feasible.

#### § 102.17 Prevention of overpayments, delinguencies, and defaults.

Agencies should establish procedures to identify the causes of overpayments, delinquencies, and defaults and the corrective actions needed.

#### 8 102.18 Use and disclosure of mailing addresses.

(a) When attempting to locate a debtor in order to collect or compromise a debt under this chapter, an agency may send a written request to the Secretary of the Treasury (or designee) in order to obtain a debtor's mailing address from the records of the Internal Revenue Service.

(b) An agency may disclose a mailing address obtained under paragraph (a) of this section to other agents, including collection service contractors, in order to facilitate the collection or compromise of debts under this chapter, except that a mailing address may be disclosed to a consumer reporting agency only for the limited purpose of obtaining a commercial credit report on the particular taxpayer.

(c) Each agency shall ensure, by appropriate regulations and contract administration, that the agency and its agents, including consumer reporting agencies and collection service contractors, comply with the provisions of 26 U.S.C. 6103(p)(4) and applicable regulations of the Internal Revenue Service.

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§ 102.19 Exemptions.

(a) The preceding sections of this part, to the extent they reflect remedies or procedures prescribed by the Debt Collection Act of 1982, such as administrative offset (§§ 102.3 and 102.4), use of consumer reporting agencies (§ 102.5), contracting for collection services (§ 102.6), and interest and related charges (§ 102.13), do not apply to debts arising under or payments made under the Internal Revenue Code of 1954, as amended (26 U.S.C. 1 et seq.), the Social Security Act (42 U.S.C. 301 et seq.), or the tariff laws of the United States. However, these remedies and procedures may still be authorized with respect to debts which are exempt from the purview of the Debt Collection Act of 1982, to the extent that they are authorized under some other statute or the common law.

(b) This section should not be construed as prohibiting use of these authorities or requirements when collecting debts owed by persons employed by agencies administering the laws cited in the preceding paragraph unless the debt "arose under" those laws.

§ 102.20 Additional administrative collection action.

Nothing contained in this chapter is intended to preclude the utilization of any other administrative remedy which may be available.

### PART 103—STANDARDS FOR THE COMPROMISE OF CLAIMS

Sec.

- 103.1 Scope and application.
- 103.2 Inability to pay.
- 103.3 Litigative probabilities.
- 103.4 Cost of collecting claim.
- 103.5 Enforcement pollcy.
- 103.6 Joint and several liability.
- 103.7 Compromise for a combination of reasons.
- 103.8 Further review of compromise offers. 103.9 Restrictions.

AUTHORITY: 31 U.S.C. 3711.

Source: 49 FR 8902, Mar. 9, 1984, unless otherwise noted.

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§ 103.1 Scope and application.

(a) The standards set forth in this part apply to the compromise of claims pursuant to 31 U.S.C. 3711. The head of an agency may exercise such compromise authority with respect to claims for money or property arising out of the activities of that agency where the claim, exclusive of interest, penalties, and administrative costs, does not exceed \$20,000, prior to the referral of such claims to the General Accounting Office, or to the Department of Justice for litigation. The Comptroller General may exercise such compromise authority with respect to claims referred to the General Accounting Office prior to their further referral for litigation. Only the Comptroller General may effect the compromise of a claim that arises out of an exception made by the General Accounting Office in the account of an accountable officer, including a claim against the payee, prior to its referral by that Office for litigation. Agency heads, including the Comptroller General, may designate officials within their respective agencies to exercise the authorities referred to in this section.

(b) When the claim, exclusive of interest. penalties, and administrative costs, exceeds \$20,000, the authority to accept the compromise rests solely with the Department of Justice. The agency should evaluate the offer, using the factors set forth in this part. If the agency then wishes to accept the compromise, it must refer the matter to the Department of Justice. using the Claims Collection Litigation Report. See 4 CFR 105.2(b). Claims for which the gross amount is over \$100,000 shall be referred to the Commercial Litigation Branch, Civil Division, Department of Justice, Washington, D.C. 20530. Claims for which the gross original amount is \$100,000 or less shall be referred to the United States Attorney in whose judicial district the debtor can be found. The referral should specify the reasons for the agency's recommendation. Justice Department approval is not required if the agency wishes to reject the compromise offer.

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§ 103.2 Inability to pay.

(a) A claim may be compromised pursuant to this Part if the Government cannot collect the full amount because of: (1) The debtor's inability to pay the full amount within a reasonable time, or (2) the refusal of the debtor to pay the claim in full and the Government's inability to enforce collection in full within a reasonable time by enforced collection proceedings.

(b) In determining the debtor's inability to pay, the following factors, among others, may be considered:

(1) Age and health of the debtor;

(2) Present and potential income:

(3) Inheritance prospects;

(4) The possibility that assets have been concealed or improperly transferred by the debtor; and

(5) The availability of assets or income which may be realized by enforced collection proceedings.

(c) The agency should give consideration to the applicable exemptions available to the debtor under State and Federal law in determining the Government's ability to enforce collection. Uncertainty as to the price which collateral or other property will bring at forced sale may properly be considered in determining the Government's ability to enforce collection. A compromise effected under this section should be for an amount which bears a reasonable relation to the amount which can be recovered by enforced collection procedures, having regard for the exemptions available to the debtor and the time which collection will take.

(d) Compromises payable in installments are to be discouraged. However, if payment of a compromise by installments is necessary, a legally enforceable agreement for the reinstatement of the prior indebtedness less sums paid thereon and acceleration of the balance due upon default in the payment of any installment should be obtained, together with security in the manner set forth in § 102.11 of this chapter, in every case in which this is possible.

(e) If the agency's files do not contain reasonably up-to-date credit information as a basis for assessing a compromise proposal, such information may be obtained from the individual debtor by obtaining a statement executed under penalty of perjury showing the debtor's assets and liabilities, income and expenses. Forms such as Department of Justice Form OBD-500 or OBD-500B may be used for this purpose. Similar data may be obtained from corporate debtors using a form such as Department of Justice Form OBD-500C or by resort to balance sheets and such additional data as seems required.

## \$ 103.3 Litigative probabilities.

A claim may be compromised pursuant to this Part if there is a real doubt concerning the Government's ability to prove its case in court for the full amount claimed, either because of the legal issues involved or a bona fide dispute as to the facts. The amount accepted in compromise in such cases should fairly reflect the probability of prevailing on the legal question involved, the probabilities with respect to full or partial recovery of a judgment, paying due regard to the availability of witnesses and other evidentiary support for the Government claim, and related pragmatic considerations. In determining the litigative risks involved, proportionate weight should be given to the probable amount of court costs and attorney fees pursuant to the Equal Access to Justice Act which may be assessed against the Government if it is unsuccessful in litigation. See 28 U.S.C. 2412.

### \$ 103.4 Cost of collecting claim.

A claim may be compromised pursuant to this part if the cost of collecting the claim does not justify the enforced collection of the full amount. The amount accepted in compromise in such cases may reflect an appropriate discount for the administrative and litigative costs of collection, paying heed to the time which it will take to effect collection. Costs of collecting may be a substantial factor in the settlement of small claims, but normally will not carry great weight in the settlement of large claims. In determining whether the cost of collecting justifies enforced collection of the full amount, it is legitimate to consider the

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positive effect that enforced collection of some claims may have on the collection of other claims. Since debtors are more likely to pay when first requested to do so if an agency has a policy of vigorous collection of all claims, the fact that the cost of collection of any one claim may exceed the amount of the claim does not necessarily mean that the claim should be compromised. The practical benefits of vigorous collection of a small claim may include a demonstration to other debtors that resistance to payment is not likely to succeed.

#### § 103.5 Enforcement policy.

Statutory penalties, forfeitures, or debts established as an ald to enforcement and to compel compliance may be compromised pursuant to this part if the agency's enforcement policy in terms of deterrence and securing compliance, both present and future, will be adequately served by acceptance of the sum to be agreed upon. Mere accidential or technical violations may be dealt with less severely than willful and substantial violations.

## § 103.6 Joint and several liability.

When two or more debtors are jointand severally liable, collection ly action will not be withheid against one such debtor until the other or others pay their proportionate shares. The agency should not attempt to allocate the burden of paying such claims as between the debtors but should proceed to liquidate the indebtedness as quickly as possible. Care should be taken that a compromise agreement with one such debtor does not release the agency's claim against the remaining debtors. The amount of a compromise with one such debtor shall not be considered a precedent or as morally binding in determining the amount which will be required from other deptors jointly and severally liable on the claim.

# § 103.7 Compromise for a combination of reasons.

A claim may be compromised for one or for more than one of the reasons authorized in this part.

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§ 103.8 Further review of compromise offers.

If an agency holds a debtor's firm written offer of compromise which is substantial in amount and the agency is uncertain as to whether the offer should be accepted, it may refer the offer, the supporting data, and particulars concerning the claim to the General Accounting Office or to the Department of Justice. The General Accounting Office or the Department of Justice may act upon such an offer or return it to the agency with instructions or advice.

### § 103.9 Restrictions.

Neither a percentage of a debtor's profits nor stock in a debtor corporation will be accepted in compromise of a claim. In negotiating a compromise with a business concern, consideration should be given to requiring a waiver of the tax-loss-carry-forward and taxloss-carry-back rights of the debtor.

### PART 104—STANDARDS FOR SUS-PENDING OR TERMINATING COL-LECTION ACTION

Sec.

- 104.1 Scope and application.
- 104.2 Suspension of collection activity.
- 104.3 Termination of collection activity.
- 104.4 Transfer of claims.
- AUTHORITY: 31 U.S.C. 3711(a)(3).

Source: 49 FR 8903, Mar. 9, 1984, unless otherwise noted.

#### § 104.1 Scope and application.

(a) The standards set forth in this part apply to the suspension or termination of collection action pursuant to 31 U.S.C. 3711(a)(3) on claims which do not exceed \$20,000, exclusive of interest, penalties, and administrative costs, after deducting the amount of partial payments or collections, if any. The head of an agency (or designee) may suspend or terminate collection action under this part with respect to claims for money or property arising out of activities of that agency prior to the referral of such claims to the General Accounting Office or to the Department of Justice for litigation. The Comptroller General (or designee) may exercise such authority with re-

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spect to claims referred to the General Accounting Office prior to their further referral for litigation.

(b) If. after deducting the amount of partial payments or collections, if any, a claim exceeds \$20,000, exclusive of interest, penalties, and administrative costs, the authority to suspend or terminate rests solely with the Department of Justice. If the agency thinks suspension or termination may be appropriate, it should evaluate the matter, using the factors set forth in this part. if the agency then concludes that suspension or termination is appropriate, it must refer the matter to the Department of Justice, using the Claims Collection Litigation Report. See 4 CFR § 105.2(b). The referral should specify the reasons for the agency's recommendation. If the agency decides not to suspend or terminate collection action on the claim. Justice Department approval is not required. If an agency determines that, its claim is plainly erroneous or clearly without legal merit, it may terminate collection action regardless of the amount involved, without the need for Department of Justice concurrence.

### § 104.2 Suspension of collection activity.

(a) Inability to locate debtor. Collection action may be suspended temporarily on a claim when the debtor cannot be located after diligent effort and there is reason to believe that future collection action may be sufficiently productive to justify periodic review and action on the claim, with due consideration for the size and amount which may be realized thereon. The following sources may be of assistance in locating missing debtors: Telephone directories; city directories; postmasters; drivers' license records; automobile title and registration records; state and local governmental agencies; the Internal Revenue Service (§ 102.18 of this chapter); other Federai agencies; employers, relatives, friends; credit agency skip locate reports, and credit bureaus. Suspension as to a particular debtor should not defer the early liquidation of security for the debt. Every reasonable effort should be made to locate missing debtors sufficiently in advance of the bar of the applicable statute of limitations, such as 28 U.S.C. 2415, to permit the timely filing of suit if such action is warranted. If the missing debtor has signed a confess-judgment note and is in default, referral of the note for the entry of judgment should not be delayed because of the debtor's missing status.

(b) Financial condition of debtor. Collection action may also be suspended temporarily on a claim when the debtor owns no substantial equity in realty or personal property and is unable to make payments on the Government's claim or effect a compromise at the time but the debtor's future prospects justify retention of the claim for periodic review and action, and:

(1) The applicable statute of limitations has been tolled or started running anew; or

(2) Future collection can be effected by offset, notwithstanding the statute of limitations, with due regard to the 10-year limitation prescribed by 31 U.S.C. 3716(c)(1); or

(3) The debtor agrees to pay interest on the amount of the debt on which collection action will be temporarily suspended, and such temporary suspension is likely to enhance the debtor's ability to fully pay the principal amount of the debt with interest at a later date.

(c) Request for waiver or administralive review. (1) If the statute under which waiver or administrative review is sought is "mandatory," that is, if it prohibits the agency from collecting the debt prior to the agency's consideration of the request for waiver or review (see Califano v. Yamasaki, 422 U.S. 682 (1979)), then collection action must be suspended until either: (i) The agency has considered the request for waiver/review, or (il) the applicable time limit for making the waiver/ review request, as prescribed in the agency's regulations, has expired and the debtor, upon proper notice, has not made such a request.

(2) If the applicable waiver/review statute is "permissive," that is, if it does not require all requests for waiver/review to be considered, and if it does not prohibit collection action pending consideration of a waiver/ review request (for example, 5 U.S.C.

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5584), collection action may be suspended pending agency action on a waiver/review request based upon appropriate consideration, on a case-bycase basis, as to whether:

(i) There is a reasonable possibility that waiver will be granted, or that the debt (in whole or in part) will be found not owing from the debtor;

(ii) The Government's interests would be protected, if suspension were granted, by reasonable assurance that the debt could be recovered if the debtor does not prevail; and

(iii) Collection of the debt will cause undue hardship.

(3) If the applicable statutes and regulations would not authorize refund by the agency to the debtor of amounts collected prior to agency consideration of the debtor's waiver/ review request in the event the agency acts favorably on it, collection action should ordinarily be suspended, without regard to the factors specified in paragraph (c)(2) of this section, unless it appears clear, based on the request and the surrounding circumstances, that the request is frivolous and was made primarily to delay collection.

#### § 104.3 Termination of collection activity.

The head of an agency (or designee) may terminate collection activity and consider the agency's file on the claim closed under the following standards:

(a) Inability to collect any substantial amount. Collection action may be terminated on a claim when it becomes clear that the Government cannot collect or enforce collection of any significant sum from the debtor. having due regard for the judicial remedies available to the Government, the debtor's future financial prospects, and the exemptions available to the debtor under State and Federal law. In determining the debtor's inability to pay, the following factors, among others, may be considered: Age and health of the debtor; present and potential income; inheritance prospects; the possibility that assets have been concealed or improperly transferred by the debtor; the availability of assets or income which may be realized by enforced collection proceedings.

(b) Inability to locate debtor. Collection action may be terminated on a

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claim when the debtor cannot be located, and either: (1) There is no security remaining to be liquidated, or (2) the applicable statute of limitations has run and the prospects of collecting by offset, notwithstanding the bar of the statute of limitations, are too remote to justify retention of the claim.

(c) Cost will exceed recovery. Collection action may be terminated on a claim when it is likely that the cost of further collection action will exceed the amount recoverable thereby.

(d) Claim legally without merit. Collection action should be terminated immediately on a claim whenever it is determined that the claim is legally without merit.

(e) Claim cannot be substantiated by evidence. Collection action should be terminated when it is determined that the evidence necessary to prove the claim cannot be produced or the necessary witnesses are unavailable and efforts to induce voluntary payment are unavailing.

### § 104.4 Transfer of claims.

When an agency has doubt as to whether collection action should be suspended or terminated on a claim, it may refer the claim to the General Accounting Office for advice. When a significant enforcement policy is involved in reducing a statutory penalty or forfeiture to judgment, or recovery of a judgment is a prerequisite to the imposition of administrative sanctions. such as the suspension or revocation of a license or the privilege of participating in a Government sponsored program, an agency may refer such a claim for litigation even though termination of collection activity might otherwise be given consideration under § 104.3 (a) or (c). Claims on which an agency holds a judgment by assignment or otherwise will be referred to the Department of Justice for further action if renewal of the judgment lien or enforced collection proceedings are justified under the criteria discussed in this part, unless the agency concerned has statutory authority for handling its own litigation.

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### PART 105-REFERRALS TO DEPARTMENT OF JUSTICE OR GAO

Sec.

105.1 Prompt referral.105.2 Claims collection litigation report.

105.3 Preservation of evidence.

105.4 Minimum amount of referrals to De-

partment of Justice. 105.5 Preliminary referrals to GAO.

AUTHORITY: 31 U.S.C. 3711.

SOURCE: 49 FR 8904, Mar. 9, 1984, unless otherwise noted.

### § 105.1 Prompt referral.

(a) Except as provided in paragraphs (b) and (c) of this section, claims on which aggressive collection action has been taken in accordance with Part 102 of this chapter and which cannot be compromised, or on which collection action cannot be suspended or terminated, in accordance with Parts 103 and 104 of this chapter, shall be promptly referred to the Department of Justice for litigation. Claims for which the gross original amount is over \$100,000 shall be referred to the Commercial Litigation Branch, Civil Division, Department of Justice, Washington, D.C. 20530. Claims for which the gross original amount is \$100,000 or less shall be referred to the United States Attorney in whose judicial district the debtor can be found. Referrals should be made as early as possible, consistent with aggressive agency collection action and the observance of the regulations contained in this chapter, and in any event, well within the period for bringing a timely suit against the debtor. Ordinarily, referrals should be made within one year of the agency's final determination of the fact and the amount of the debt.

(b) Claims arising from audit exceptions taken by the General Accounting Office to payments made by agencies must be referred to the General Accounting Office for review and approval prior to referral to the Department of Justice for litigation, unless the agency concerned has been granted an exception by the General Accounting Office.

(c) When the merits of the Government's claim, the amount owed on the claim, or the propriety of acceptance of a proposed compromise, suspension, or termination are in doubt, the agency concerned should refer the matter to the General Accounting Office for resolution and instructions prior to proceeding with collection action and/or referral to the Department of Justice for litigation.

(d) Once a claim has been referred to GAO or to the Department of Justice pursuant to this section, the referring agency shall refrain from having any contact with the debtor and shall direct the debtor to GAO or the Department of Justice, as appropriate, when questions concerning the claim are raised by the debtor. GAO or the Department of Justice, as appropriate, shall be immediately notified by the referring agency of any payments which are received from the debtor subsequent to referral of a claim under this section.

## # 105.2 Claims collection litigation report.

(a) Unless an exception has been granted by the Department of Justice in consultation with the General Accounting Office, the Claims Collection Litigation Report (CCLR), which was officially implemented by the General Accounting Office on January 20, 1983, shall be used with all referrals of administratively uncollectible claims made pursuant to § 105.1. As required by the CCLR, the following information shall be included.

(1) Report of prior collection actions. A checklist or brief summary of the actions previously taken to collect or compromise the claim will be forwarded with the claim upon its referral. If any of the administrative collection actions enumerated in Part 102 of this chapter have been omitted, the reason for their omission must be provided. GAO, the United States Attorney, or the Civil Division of the Department of Justice may return claims at their option when there is insufficient justification for the omission of one or more of the administrative collection actions enumerated in Part 102 of this chapter.

(2) Current address of debtor. The current address of the debtor, or the name and address of the agent for a corporation upon whom service may

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## § 1**05.3**

be made shall be provided. Reasonable and appropriate steps will be taken to locate missing parties in all cases. Referrals to the Department of Justice for the institution of foreclosure or other proceedings, in which the current address of any party is unknown, will be accompanied by a listing of the prior known addresses of such party and a statement of the steps taken to locate that party.

(3) Credit data. Reasonably current credit data indicating that there is a reasonable prospect of effecting enforced collection from the debtor, having due regard for the exemptions available to the debtor under State and Federal law and the judicial remedles available to the Government, shall be included.

(1) Such credit data may take the form of: (A) A commercial credit report; (B) an agency investigative report showing the debtor's assets, liabilities, income, and expenses; (C) the individual debtor's own financial statement executed under penalty of perjury reflecting the debtor's assets, liabilities, income, and expenses; or (D) an audited balance sheet of a corporate debtor.

(li) Such credit data may be omitted if: (A) A surety bond is available in an amount sufficient to satisfy the claim in full: (B) the forced sale value of the security available for application to the Government's claim is sufficient to satisfy the claim in full; (C) the referring agency wishes to liquidate loan collateral through judicial foreclosure but does not desire a deficiency judgment; (D) the debtor is in bankruptcy or receivership; (E) the debtor's liability to the Government is fully covered by insurance, in which case the agency will furnish such information as it can develop concerning the identity and address of the insurer and the type and amount of insurance coverage; or (F) the nature of the debtor is such that credit data is not normally avail-

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able or cannot reasonably be obtained, for example, a unit of State or local government.

(b) Agencies shall also use the CCLR when referring claims to the Department of Justice in order to obtain the approval of that Department with respect to compromise, suspension, or termination, as required by §§ 103.1(b) and 104.1(b).

### § 105.3 Preservation of evidence.

Care will be taken to preserve all files, records, and exhibits on claims referred or to be referred to the Department of Justice for litigation. Under no circumstances should original documents be sent to the Department of Justice or to the United States Attorney without specific prior approval to do so. Copies of relevant documents should be sent whenever necessary.

### 8.105.4 Minimum amount of referrals to Department of Justice.

Agencies will not refer claims of less than \$600, exclusive of interest, penaities, and administrative costs, for litigation unless: (a) Referral is important to a significant enforcement policy, or (b) the debtor not only has the clear ability to pay the claim but the Government can effectively enforce payment, having due regard for the exemptions available to the debtor under State and Federal law and the judicial remedies available to the Government.

### § 105.5 Preliminary referrals to GAO.

Preliminary referrals of claims to the General Accounting Office, as required by § 105.1(b) and (c), will be in accordance with instructions, including monetary limitations, contained in the General Accounting Office Policy and Procedures Manual for Guidance of Federal Agencies, and the provisions of §§ 105.2 and 105.3 of this part.

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# PHONE CALL MEMORANDUM

Торіс	<ul> <li>Ms. Anna Brathwaite called Mr. Jim Eicher to discuss three topics:</li> <li>The Districts' unauthorized installation of thermal loggers on BLM land,</li> <li>The Districts' upcoming research float trip, scheduled to begin August 2, where BLM authorization had been requested but not yet received, and</li> <li>Scheduling a meet-and-greet with BLM staff and Districts staff</li> </ul>
Date	July 28, 2015
From	Anna Brathwaite, Modesto Irrigation District
То	Jim Eicher, Bureau of Land Management
Summary of Discussion	<ul> <li>During the conversation, Mr. Eicher said that there are outstanding violations and these violations are really important to resolve. Mr. Eicher said he had concerns about the safety of the thermal logger placement and that the Districts might have to move them or take them out. At this time, he had not made a decision on this issue. Mr. Eicher confirmed that HDR had provided him all the information that he had requested in a timely manner.</li> <li>Mr. Eicher said he would like to resolve/address the trespass issue after he completes his work on the Merced Project licensing and that he does not want to address the August 2 float trip until after he resolves the trespass issue. Mr. Eicher said that he had received a lot of inquiries about these issues already and he would try to get the Districts a response by this Friday, July 31. Mr. Eicher acknowledged that the Districts have USFS permits for both the thermal logger installations on USFS land and the float trip but noted that doing the studies or research work on BLM land without authorization was off limits. Mr. Eicher replied that the Districts are allowed to float down the river but would not be allowed to walk on BLM land and take measurements or make observations.</li> <li>Ms. Brathwaite offered to send Mr. Eicher the BLM Realty Trespass Manual. Mr. Eicher said yes, please send him the Manual. Following the phone call, Ms. Brathwaite emailed the BLM Realty Trespass Manual to Mr. Eicher.</li> </ul>
	Eicher since they had not had such a meeting previously. Mr. Eicher replied that he and the Districts could try for a meeting on or around the August 7 <sup>th</sup> Don Pedro Relicensing Settlement Group meeting. Ms. Brathwaite and Mr. Eicher agreed that Ms. Brathwaite would send him an email before August 7 <sup>th</sup> to try and schedule a meeting.

From: Vaughn, Gary D -FS [mailto:gdvaughn@fs.fed.us]
Sent: Wednesday, July 29, 2015 10:45 AM
To: Le, Bao
Subject: RE: Notification of Float Trip for Barrier Study - August 2nd

## Thanks for the notice!



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us image for the land and serving people

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Tuesday, July 28, 2015 1:58 PM
To: Vaughn, Gary D -FS; Foote, Debra -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Deason, Jesse; Ashenfelter, Mark
Subject: Notification of Float Trip for Barrier Study - August 2nd

Hi Dusty and Debbie.

I wanted to let you know that per our most recent USFS permit allowing a 5-day float trip for research purposes, a field crew of 4 biologists will be floating the river with Sierra Mac Outfitters beginning on Sunday, August 2<sup>nd</sup>. At this time, we have not received authorization from the BLM to camp at the NF Tuolumne River confluence and as such, are not certain as to whether this will be our originally planned 5-day trip or a reduced 3-day trip. Our hope is to get BLM's approval from Jim Eicher by week's end but are uncertain as to whether this will occur.

Please let me know if you have any questions.

Thank you, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134

D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

hdrinc.com/follow-us

From: Devine, John
Sent: Thursday, July 30, 2015 5:23 PM
To: Eicher, James
Cc: Le, Bao; Steve E. Boyd (<u>seboyd@tid.org</u>); <u>anna.brathwaite@mid.org</u>
Subject: RE: FW: permit for Tuolumne River

Hi Jim,

We will not do any work on BLM lands on this trip without your expess authorization. We are planning another trip during higher flows next year. We hope to include work on BLM lands but that completely depends on whether we are able to get BLM authorization. I'll respond to all your questions first thing tomorrow morning.

Sent from my Verizon Wireless 4G LTE smartphone

------ Original message ------From: "Eicher, James" <<u>jeicher@blm.gov</u>> Date: 07/30/2015 8:01 PM (GMT-05:00) To: "Devine, John" <<u>John.Devine@hdrinc.com</u>> Cc: "Le, Bao" <<u>ChiBao.Le@hdrinc.com</u>>, "Steve E. Boyd (<u>seboyd@tid.org</u>)" <<u>seboyd@tid.org</u>>, <u>anna.brathwaite@mid.org</u> Subject: Re: FW: permit for Tuolumne River

Thanks John I appreciate the heads up on this. I have a few up front questions. The USFS permit authorizes you to:

"Surveys of the Main Tuolumne downstream, Clavey, and North Fork of the Tuolumne River will be conducted using whitewater boating on two separate 5-day boat trips and hiking North Fork and Clavey". 1. Are you planning two separate trips on BLM lands?

The permit is good for 2 years and 4 months.

2. Are you expecting to repeat this evaluation? Why is it for that length of time?

3. BLM has not authorized this request as of yet, how will you conduct the studies on USFS lands up on the North Fork Tuolumne without getting authorization from BLM?

4. Other than this standard OMB FORM for Special Use Permits did the USFS attach any other stipulations to this Permit?

On Thu, Jul 30, 2015 at 9:37 AM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

Good morning Jim,

To keep you up to date, and for your information, please find attached the USFS permit for the barrier assessment and float trip scheduled for next week. We understand this does not authorize the related work on BLM lands.

John Devine, P.E.

D 207-775-4495 M 207-776-2206

From: Devine, John
Sent: Thursday, July 30, 2015 12:36 PM
To: Eicher, James (jeicher@blm.gov)
Cc: Le, Bao; Steve E. Boyd (seboyd@tid.org); anna.brathwaite@mid.org
Subject: FW: permit for Tuolumne River

Good morning Jim,

To keep you up to date, and for your information, please find attached the USFS permit for the barrier assessment and float trip scheduled for next week. We understand this does not authorize the related work on BLM lands.

**John Devine, P.E.** D 207-775-4495 M 207-776-2206

FS-2700-4 (V. 01/2014) OMB 0596-0082

Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

## U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE

## SPECIAL USE PERMIT

# Authority: ORGANIC ADMINISTRATION ACT June 4, 1897

TURLOCK IRRIGATION DISTRICT of 333 EAST CANAL DRIVE TURLOCK CA 95380 (hereinafter "the holder") is authorized to use or occupy National Forest System lands in the Stanislaus National Forest, subject to the terms and conditions of this special use permit (the permit).

This permit covers 55 miles of rivers in the T. 1 S., R. 17 E 18E, T. 1 N., 16E, 17 E., 19E. MT. DIABLO MERIDIAN, ("the permit area"), as shown on the map attached in Appendix A. This permit issued for the purpose of:

Fish barrier assessment research to be completed on the Main, North, South, and Middle Forks of the Tuolumne River, Clavey River, Cherry Creek, and Eleanor Creek. Surveys of the Main Tuolumne downstream, Clavey, and North Fork of the Tuolumne River will be conducted using whitewater boating rafts on two separate 5-day boat trips and hiking the North Fork and Clavey.

Forest Roads will be used to access the hiking routes for the Main Tuolumne to Early Intake, South Fork Tuolumne, Cherry Creek, and Eleanor Creek.

## TERMS AND CONDITIONS

### I. GENERAL TERMS

A. <u>AUTHORITY</u>. This permit is issued pursuant to ORGANIC ADMINISTRATION ACT June 4, 1897 and 36 CFR Part 251, Subpart B, as amended, and is subject to their provisions.

B. AUTHORIZED OFFICER. The authorized officer is the Forest or Grassland Supervisor or a subordinate officer with delegated authority.

C. TERM. This permit shall expire at midnight on 12/31/2017, 2 years and 4 months from the date of issuance.

**D.** <u>RENEWAL</u>. This permit is not renewable. Prior to expiration of this permit, the holder may apply for a new permit that would renew the use and occupancy authorized by this permit. Applications for a new permit must be submitted at least 6 months prior to expiration of this permit. Renewal of the use and occupancy authorized by this permit shall be at the sole discretion of the authorized officer. At a minimum, before renewing the use and occupancy authorized by this permit, the authorized officer shall require that (1) the use and occupancy to be authorized by the new permit is consistent with the standards and guidelines in the applicable land management plan; (2) the type of use and occupancy to be authorized by the holder is in compliance with all the terms of this permit. The authorized officer may prescribe new terms and conditions when a new permit is issued.

E. <u>AMENDMENT</u>. This permit may be amended in whole or in part by the Forest Service when, at the discretion of the authorized officer, such action is deemed necessary or desirable to incorporate new terms that may be required by law, regulation, directive, the applicable forest land and resource management plan, or projects and activities implementing a land management plan pursuant to 36 CFR Part 215.

F. <u>COMPLIANCE WITH LAWS, REGULATIONS, AND OTHER LEGAL REQUIREMENTS</u>. In exercising the rights and privileges granted by this permit, the holder shall comply with all present and future federal laws and regulations and all present and future state, county, and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent they do not conflict with federal law, regulation, or policy. The Forest Service assumes no responsibility for enforcing laws, regulations, and other legal requirements that fall under the jurisdiction of other governmental entities.

G. <u>NON-EXCLUSIVE USE</u>. The use or occupancy authorized by this permit is not exclusive. The Forest Service reserves the right of access to the permit area, including a continuing right of physical entry to the permit area for inspection, monitoring, or any other purpose consistent with any right or obligation of the United States under any law or regulation. The Forest Service reserves the right to allow others to use the permit area in any way that is not inconsistent with the holder's rights and privileges under this permit, after consultation with all parties involved. Except for any restrictions that the holder and the authorized officer agree are necessary to protect the installation and operation of authorized temporary improvements, the lands and waters covered by this permit shall remain open to the public for all lawful purposes.

H. ASSIGNABILITY. This permit is not assignable or transferable.

### I. CHANGE IN CONTROL OF THE BUSINESS ENTITY.

1. <u>Notification of Change in Control</u>. The holder shall notify the authorized officer when a change in control of the business entity that holds this permit is contemplated.

a. In the case of a corporation, control is an interest, beneficial or otherwise, of sufficient outstanding voting securities or capital of the business so as to permit the exercise of managerial authority over the actions and operations of the corporation or election of a majority of the board of directors of the corporation.

b. In the case of a partnership, limited partnership, joint venture, or individual entrepreneurship, control is a beneficial ownership of or interest in the entity or its capital so as to permit the exercise of managerial authority over the actions and operations of the entity.

c. In other circumstances, control is any arrangement under which a third party has the ability to exercise management authority over the actions or operations of the business.

2. <u>Effect of Change in Control</u>. Any change in control of the business entity as defined in paragraph 1 of this clause shall result in termination of this permit. The party acquiring control must submit an application for a special use permit. The Forest Service is not obligated to issue a new permit to the party who acquires control. The authorized officer shall determine whether the applicant meets the requirements established by applicable federal regulations.

## II.IMPROVEMENTS

A. <u>LIMITATIONS ON USE</u>. Nothing in this permit gives or implies permission to build or maintain any structure or facility or to conduct any activity, unless specifically authorized by this permit. Any use not specifically authorized by this permit must be proposed in accordance with 36 CFR 251.54. Approval of such a proposal through issuance of a new permit or permit amendment is at the sole discretion of the authorized officer.

B. <u>PLANS</u>. All plans for development, layout, construction, reconstruction, or alteration of improvements in the permit area, as well as revisions to those plans must be prepared by a professional engineer, architect, landscape architect, or other qualified professional based on federal employment standards acceptable to the authorized officer. These plans and plan revisions must have written approval from the authorized officer before they are implemented. The authorized officer may require the holder to furnish as-built plans, maps, or surveys upon completion of the work.

C. CONSTRUCTION. Any construction authorized by this permit shall commence by NA and shall be completed by NA.

### III. OPERATIONS.

A. PERIOD OF USE. Use or occupancy of the permit area shall be exercised at least 5 days each year.

B. <u>CONDITION OF OPERATIONS</u>. The holder shall maintain the authorized improvements and permit area to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the authorized officer and consistent with other provisions of this permit. Standards are subject to periodic change by the authorized officer when deemed necessary to meet statutory, regulatory, or policy requirements or to protect national forest resources. The holder shall comply with inspection requirements deemed appropriate by the authorized officer.

C. <u>INSPECTION BY THE FOREST SERVICE</u>. The Forest Service shall monitor the holder's operations and reserves the right to inspect the permit area and transmission facilities at any time for compliance with the terms of this permit. The holder's obligations under this permit are not contingent upon any duty of the Forest Service to inspect the permit area or transmission facilities. A failure by the Forest Service or other governmental officials to inspect is not a justification for

noncompliance with any of the terms and conditions of this permit.

## IV. RIGHTS AND LIABILITIES

A. <u>LEGAL EFFECT OF THE PERMIT</u>. This permit, which is revocable and terminable, is not a contract or a lease, but rather a federal license. The benefits and requirements conferred by this authorization are reviewable solely under the procedures set forth in 36 CFR 251, Subpart C and 5 U.S.C. 704. This permit does not constitute a contract for purposes of the Contract Disputes Act, 41 U.S.C. 601. The permit is not real property, does not convey any interest in real property, and may not be used as collateral for a loan.

B. <u>VALID OUTSTANDING RIGHTS</u>. This permit is subject to all valid outstanding rights. Valid outstanding rights include those derived under mining and mineral leasing laws of the United States. The United States is not liable to the holder for the exercise of any such right.

C. ABSENCE OF THIRD-PARTY BENEFICIARY RIGHTS. The parties to this permit do not intend to confer any rights on any third party as a beneficiary under this permit.

D. <u>SERVICES NOT PROVIDED</u>. This permit does not provide for the furnishing of road or trail maintenance, water, fire protection, search and rescue, or any other such service by a government agency, utility, association, or individual.

E. <u>RISK OF LOSS</u>. The holder assumes all risk of loss associated with use or occupancy of the permit area, including but not limited to theft, vandalism, fire and any fire-fighting activities (including prescribed burns), avalanches, rising waters, winds, falling limbs or trees, and other forces of nature. If authorized temporary improvements in the permit area are destroyed or substantially damaged, the authorized officer shall conduct an analysis to determine whether the improvements can be safely occupied in the future and whether rebuilding should be allowed. If rebuilding is not allowed, the permit shall terminate.

F. <u>DAMAGE TO UNITED STATES PROPERTY</u>. The holder has an affirmative duty to protect from damage the land, property, and other interests of the United States. Damage includes but is not limited to fire suppression costs, damage to government-owned improvements covered by this permit, and all costs and damages associated with or resulting from the release or threatened release of a hazardous material occurring during or as a result of activities of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees on, or related to, the lands, property, and other interests covered by this permit. For purposes of clause IV.F and section V, "hazardous material" shall mean (a) any hazardous substance under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14); (b) any pollutant or contaminant under section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (c) any petroleum product or its derivative, including fuel oil, and waste oils; and (d) any hazardous substance, extremely hazardous substance, toxic substance, hazardous waste, ignitable, reactive or corrosive materials, pollutant, contaminant, element, compound, mixture, solution or substance that may pose a present or potential hazard to human health or the environment under any applicable environmental laws.

1. The holder shall avoid damaging or contaminating the environment, including but not limited to the soil, vegetation (such as trees, shrubs, and grass), surface water, and groundwater, during the holder's use or occupancy of the permit area. If the environment or any government property covered by this permit becomes damaged during the holder's use or occupancy of the permit area, the holder shall immediately repair the damage or replace the damaged items to the satisfaction of the authorized officer and at no expense to the United States.

2. The holder shall be liable for all injury, loss, or damage, including fire suppression, prevention and control of the spread of invasive species, or other costs in connection with rehabilitation or restoration of natural resources associated with the use or occupancy authorized by this permit. Compensation shall include but not be limited to the value of resources damaged or destroyed, the costs of restoration, cleanup, or other mitigation, fire suppression or other types of abatement costs, and all administrative, legal (including attorney's fees), and other costs. Such costs may be deducted from a performance bond required under clause IV.I.

3. The holder shall be liable for damage caused by use of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees to all roads and trails of the United States to the same extent as provided under clause IV.F.1, except that liability shall not include reasonable and ordinary wear and tear.

G. <u>HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION</u>. The holder shall promptly abate as completely as possible and in compliance with all applicable laws and regulations any activity or condition arising out of or relating to the authorized use or occupancy that causes or threatens to cause a hazard to public health or the safety of the holder's employees or agents or harm to the environment (including areas of vegetation or timber, fish or other wildlife populations,

their habitats, or any other natural resources). The holder shall prevent impacts to the environment and cultural resources by implementing actions identified in the operating plan to prevent establishment and spread of invasive species. The holder shall immediately notify the authorized officer of all serious accidents that occur in connection with such activities. The responsibility to protect the health and safety of all persons affected by the use or occupancy authorized by this permit is solely that of the holder. The Forest Service has no duty under the terms of this permit to inspect the permit area or operations and activities of the holder for hazardous conditions or compliance with health and safety standards.

H. INDEMNIFICATION OF THE UNITED STATES. The holder shall indemnify, defend, and hold hamless the United States for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the holder in connection with the use or occupancy authorized by this permit. This indemnification provision includes but is not limited to acts and omissions of the holder or the holder's heirs, assigns, agents, employees, contractors, or lessees in connection with the use or occupancy authorized by this permit which result in (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to those environmental laws listed in clause V.A of this permit; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous waste, hazardous materials, pollutant, contaminant, oil in any form, or petroleum product into the environment. The authorized officer may prescribe terms that allow the holder to replace, repair, restore, or otherwise undertake necessary curative actions to mitigate damages in addition to or as an alternative to monetary indemnification.

I. <u>BONDING</u>. The authorized officer may require the holder to furnish a surety bond or other security for any of the obligations imposed by the terms and conditions of this permit or any applicable law, regulation, or order.

J. INSURANCE. The holder shall furnish proof of insurance, such as a certificate of insurance, to the authorized officer prior to issuance of this permit and each year thereafter that this permit is in effect. The Forest Service reserves the right to review and approve the insurance policy prior to issuance. The holder shall send an authenticated copy of any insurance policy obtained pursuant to this clause to the authorized officer immediately upon issuance of the policy. Any insurance policies obtained by the holder pursuant to this clause shall name the United States as an additional insured, and the additional insured provision shall provide for insurance coverage for the United States as required under this clause. Such policies also shall specify that the insurance company shall give 30 days prior written notice to the authorized officer of cancellation of or any modification to the policies. The certificate of insurance, the authenticated copy of the insurance policy, and written notice of cancellation or modification of insurance policies should be sent to Groveland Ranger District 24545 Hwy 120, Groveland, CA 95321. Minimum amounts of coverage and other insurance requirements are subject to change at the sole discretion of the authorized officer on the anniversary date of this permit.

## V. RESOURCE PROTECTION

A. <u>COMPLIANCE WITH ENVIRONMENTAL LAWS</u>. The holder shall in connection with the use or occupancy authorized by this permit comply with all applicable federal, state, and local environmental laws and regulations, including but not limited to those established pursuant to the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6901 et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq., the Oil Pollution Act, as amended, 33 U.S.C. 2701 et seq., the Clean Air Act, as amended, 42 U.S.C. 7401 et seq., CERCLA, as amended, 42 U.S.C. 9601 et seq., the Toxic Substances Control Act, as amended, 15 U.S.C. 2601 et seq., the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 136 et seq., and the Safe Drinking Water Act, as amended, 42 U.S.C. 300f et seq.

B. <u>VANDALISM</u>. The holder shall take reasonable measures to prevent and discourage vandalism and disorderly conduct and when necessary shall contact the appropriate law enforcement officer.

**C.** <u>PESTICIDE USE</u>. Pesticides may not be used outside of buildings to control undesirable woody and herbaceous vegetation (including aquatic plants), insects, rodents, fish, and other pests and weeds without prior written approval from the authorized officer. A request for approval of planned uses of pesticides shall be submitted annually by the holder on the due date established by the authorized officer. The report shall cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review shall be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests or weeds require control measures that were not anticipated at the time an annual report was submitted. Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned shall be considered for use on National Forest System lands. Label instructions and all applicable laws and regulations shall be strictly followed in the application of pesticides and disposal of excess materials and containers.

D. <u>ARCHAEOLOGICAL-PALEONTOLOGICAL DISCOVERIES</u>. The holder shall immediately notify the authorized officer of all antiquities or other objects of historic or scientific interest, including but not limited to historic or prehistoric ruins, fossils, or artifacts discovered in connection with the use and occupancy authorized by this permit. The holder shall leave these discoveries intact and in place until directed otherwise by the authorized officer. Protective and mitigative measures

specified by the authorized officer shall be the responsibility of the holder.

E. <u>NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION</u>. In accordance with 25 U.S.C. 3002(d) and 43 CFR 10.4, if the holder inadvertently discovers human remains, funerary objects, sacred objects, or objects of cultural patrimony on National Forest System lands, the holder shall immediately cease work in the area of the discovery and shall make a reasonable effort to protect and secure the items. The holder shall immediately notify the authorized officer by telephone of the discovery and shall follow up with written confirmation of the discovery. The activity that resulted in the inadvertent discovery may not resume until 30 days after the authorized officer certifies receipt of the written confirmation, if resumption of the activity is otherwise lawful, or at any time if a binding written agreement has been executed between the Forest Service and the affiliated Indian tribes that adopts a recovery plan for the human remains and objects.

F. PROTECTION OF HABITAT OF THREATENED, ENDANGERED, AND SENSITIVE SPECIES. The location of sites within the permit area needing special measures for protection of plants or animals listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, 16 U.S.C. 1531 et seq., as amended, or identified as sensitive or otherwise requiring special protection by the Regional Forester under Forest Service Manual (FSM) 2670, pursuant to consultation conducted under section 7 of the ESA, may be shown on the ground or on a separate map. The map shall be attached to this permit as an appendix. The holder shall take any protective and mitigative measures specified by the authorized officer. If protective and mitigative measures prove inadequate, if other sites within the permit area containing threatened, endangered, or sensitive species or species otherwise requiring special protection are discovered, or if new species are listed as threatened or endangered under the ESA or identified as sensitive or otherwise requiring special protection by the Regional Forester under the FSM, the authorized officer may specify additional protective and mitigative measures. Discovery of these sites by the holder or the Forest Service shall be promptly reported to the other party.

G. <u>CONSENT TO STORE HAZARDOUS MATERIALS</u>. The holder shall not store any hazardous materials at the site without prior written approval from the authorized officer. This approval shall not be unreasonably withheld. If the authorized officer provides approval, this permit shall include, or in the case of approval provided after this permit is issued, shall be amended to include specific terms addressing the storage of hazardous materials, including the specific type of materials to be stored, the volume, the type of storage, and a spill plan. Such terms shall be proposed by the holder and are subject to approval by the authorized officer.

## H. CLEANUP AND REMEDIATION

1. The holder shall immediately notify all appropriate response authorities, including the National Response Center and the authorized officer or the authorized officer's designated representative, of any oil discharge or of the release of a hazardous material in the permit area in an amount greater than or equal to its reportable quantity, in accordance with 33 CFR Part 153, Subpart B, and 40 CFR Part 302. For the purposes of this requirement, "oil" is as defined by section 311(a)(1) of the Clean Water Act, 33 U,S.C. 1321(a)(1). The holder shall immediately notify the authorized officer or the authorized officer's designated representative of any release or threatened release of any hazardous material in or near the permit area which may be harmful to public health or welfare or which may adversely affect natural resources on federal lands.

2. Except with respect to any federally permitted release as that term is defined under Section 101(10) of CERCLA, 42 U.S.C. 9601(10), the holder shall clean up or otherwise remediate any release, threat of release, or discharge of hazardous materials that occurs either in the permit area or in connection with the holder's activities in the permit area, regardless of whether those activities are authorized under this permit. The holder shall perform cleanup or remediation immediately upon discovery of the release, threat of release, or discharge of hazardous materials. The holder shall perform the cleanup or remediation to the satisfaction of the authorized officer and at no expense to the United States. Upon revocation or termination of this permit, the holder shall deliver the site to the Forest Service free and clear of contamination.

I. <u>CERTIFICATION UPON REVOCATION OR TERMINATION</u>. If the holder uses or stores hazardous materials at the site, upon revocation or termination of this permit the holder shall provide the Forest Service with a report certified by a professional or professionals acceptable to the Forest Service that the permit area is uncontaminated by the presence of hazardous materials and that there has not been a release or discharge of hazardous materials upon the permit area, into surface water at or near the permit area, or into groundwater below the permit area during the term of the permit. This certification requirement may be waived by the authorized officer when the Forest Service determines that the risks posed by the hazardous material are minimal. If a release or discharge has occurred, the professional or professionals shall document and certify that the release or discharge has been fully remediated and that the permit area is in compliance with all federal, state, and local laws and regulations.

### VI. LAND USE FEE AND ACCOUNTING ISSUES

A. <u>LAND USE FEES</u>. The use or occupancy authorized by this permit is exempt from a land use fee or the land use fee has been waived in full pursuant to 36 CFR 251.57 and Forest Service Handbook 2709.11, Chapter 30.

B. <u>MODIFICATION OF THE LAND USE FEE</u>. The land use fee may be revised whenever necessary to reflect the market value of the authorized use or occupancy or when the fee system used to calculate the land use fee is modified or replaced.

## C. FEE PAYMENT ISSUES.

1. <u>Crediting of Payments</u>. Payments shall be credited on the date received by the deposit facility, except that if a payment is received on a non-workday, the payment shall not be credited until the next workday.

2. <u>Disputed Fees</u>. Fees are due and payable by the due date. Disputed fees must be paid in full. Adjustments will be made if dictated by an administrative appeal decision, a court decision, or settlement terms.

## 3. Late Payments

(a) <u>Interest</u>. Pursuant to 31 U.S.C. 3717 et seq., interest shall be charged on any fee amount not paid within 30 days from the date it became due. The rate of interest assessed shall be the higher of the Prompt Payment Act rate or the rate of the current value of funds to the Treasury (i.e., the Treasury tax and Ioan account rate), as prescribed and published annually or quarterly by the Secretary of the Treasury in the Federal Register and the Treasury Fiscal Requirements Manual Bulletins. Interest on the principal shall accrue from the date the fee amount is due.

(b) Administrative Costs. If the account becomes delinquent, administrative costs to cover processing and handling the delinquency shall be assessed.

(c) <u>Penalties</u>. A penalty of 6% per annum shall be assessed on the total amount that is more than 90 days delinquent and shall accrue from the same date on which interest charges begin to accrue.

(d) <u>Termination for Nonpayment</u>. This permit shall terminate without the necessity of prior notice and opportunity to comply when any permit fee payment is 90 calendar days from the due date in arrears. The holder shall remain responsible for the delinquent fees.

4. <u>Administrative Offset and Credit Reporting</u>. Delinquent fees and other charges associated with the permit shall be subject to all rights and remedies afforded the United States pursuant to 31 U.S.C. 3711 et seq. and common law. Delinquencies are subject to any or all of the following:

(a) Administrative offset of payments due the holder from the Forest Service.

(b) If in excess of 60 days, referral to the Department of the Treasury for appropriate collection action as provided by 31 U.S.C. 3711(g)(1).

(c) Offset by the Secretary of the Treasury of any amount due the holder, as provided by 31 U.S.C. 3720 et seq.

(d) Disclosure to consumer or commercial credit reporting agencies.

### VII. REVOCATION, SUSPENSION, AND TERMINATION

A. REVOCATION AND SUSPENSION. The authorized officer may revoke or suspend this permit in whole or in part:

1. For noncompliance with federal, state, or local law.

2. For noncompliance with the terms of this permit.

3. For abandonment or other failure of the holder to exercise the privileges granted.

4. With the consent of the holder

5. For specific and compelling reasons in the public interest.

Prior to revocation or suspension, other than immediate suspension under clause VII.B, the authorized officer shall give the holder written notice of the grounds for revocation or suspension. In the case of revocation or suspension based on clause VII.A.1, 2, or 3, the authorized officer shall give the holder a reasonable time, typically not to exceed 90 days, to cure any noncompliance.

B. <u>IMMEDIATE SUSPENSION</u>. The authorized officer may immediately suspend this permit in whole or in part when necessary to protect public health or safety or the environment. The suspension decision shall be in writing. The holder may request an on-site review with the authorized officer's supervisor of the adverse conditions prompting the suspension. The authorized officer's supervisor shall grant this request within 48 hours. Following the on-site review, the authorized officer's supervisor shall promptly affirm, modify, or cancel the suspension.

C. <u>APPEALS AND REMEDIES</u>. Written decisions by the authorized officer relating to administration of this permit are subject to administrative appeal pursuant to 36 CFR Part 214 as amended. Revocation or suspension of this permit shall not give rise to any claim for damages by the holder against the Forest Service.

D. <u>TERMINATION</u>. This permit shall terminate when by its terms a fixed or agreed upon condition, event, or time occurs without any action by the authorized officer. Examples include but are not limited to expiration of the permit by its terms on a specified date and termination upon change of control of the business entity. Termination of this permit shall not require notice, a decision document, or any environmental analysis or other documentation. Termination of this permit is not subject to administrative appeal and shall not give rise to any claim for damages by the holder against the Forest Service.

E. <u>RIGHTS AND RESPONSIBILITIES UPON REVOCATION OR TERMINATION WITHOUT RENEWAL</u>. Upon revocation or termination of this permit without renewal of the authorized use, the holder shall remove all structures and improvements, except those owned by the United States, within a reasonable period prescribed by the authorized officer and shall restore the site to the satisfaction of the authorized officer. If the holder fails to remove all structures and improvements within the prescribed period, they shall become the property of the United States and may be sold, destroyed, or otherwise disposed of without any liability to the United States. However, the holder shall remain liable for all costs associated with their removal, including costs of sale and impoundment, cleanup, and restoration of the site.

### VIII. MISCELLANEOUS PROVISIONS

A. <u>MEMBERS OF CONGRESS</u>. No member of or delegate to Congress or resident commissioner shall benefit from this permit either directly or indirectly, except to the extent the authorized use provides a general benefit to a corporation.

B. <u>CURRENT ADDRESSES</u>. The holder and the Forest Service shall keep each other informed of current mailing addresses, including those necessary for billing and payment of land use fees.

D. <u>SUPERIOR CLAUSES</u>. If there is a conflict between any of the preceding printed clauses and any of the following clauses, the preceding printed clauses shall control.

THIS PERMIT IS ACCEPTED SUBJECT TO ALL ITS TERMS AND CONDITIONS.

BEFORE ANY PERMIT IS ISSUED TO AN ENTITY, DOCUMENTATION MUST BE PROVIDED TO THE AUTHORIZED OFFICER OF THE AUTHORITY OF THE SIGNATORY FOR THE ENTITY TO BIND IT TO THE TERMS AND CONDITIONS OF THE PERMIT.

ACCEPTED:

Steve Boyd, Licensing Coordinator

July 23, 2015

DATE

APPROVED

Jim Junette, District Ranger

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082. The time required to complete this information collection is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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Authorization ID: GRO1128 Contact Name: TURLOCK IRRIGATION DISTRICT Expiration Date: 12/31/2017 Use Code: 422

> Appendix A: Permit Area Filed by Turlock and Modesto Irrigation Districts and HDR, Inc. July, 2015

Turlock Irrigation District Modesto Irrigation District HDR, Inc. Appendix A - Permit Area

Authorization ID: GRO1128

July, 2015





Appendix A – Permit AreaAuthorization ID: GR01128

Modesto Irrigation District **Turlock Irrigation District** HDR, Inc.

July, 2015



Figure 2. Overview map presenting the 5-day float trip itinerary with overnight stops at or near the Clavey and North Fork Tuolumne Rivers.

Turlock Irrigation District Modesto Irrigation District HDR, Inc. Appendix A – Permit Area

From:	Staples, Rose
Sent:	Thursday, July 30, 2015 11:49 AM
Cc:	Staples, Rose
Subject:	La Grange Fish Passage Facilities Assessment Workshop No 2 - Sep 17 - SAVE THE DATE

La Grange Licensing Participants,

The Districts will be holding a second *Fish Passage Assessment Workshop* in Modesto, at the MID Offices, on Thursday, *September 17, 2015*. Please hold this date. Further details, including the workshop agenda, will be provided closer to the workshop date.

We look forward to your participation.

Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103

D 207-239-3857 rose.staples@hdrinc.com

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From: Vaughn, Gary D -FS [mailto:gdvaughn@fs.fed.us]
Sent: Thursday, July 30, 2015 9:17 AM
To: Le, Bao
Subject: RE: Fieldwork Notification - Water Temperature Monitoring - August 11-13

Thanks!



Dusty Vaughn Public Service Program Leader Forest Service Stanislaus National Forest, Groveland Ranger District p: 209-962-7825 x525 f: 209-962-7412 gdvaughn@fs.fed.us 24545 State Highway 120 Groveland, CA 95321 www.fs.fed.us Service State Service Servic

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Thursday, July 30, 2015 8:29 AM
To: Foote, Debra -FS; Vaughn, Gary D -FS
Cc: Stanley, Robert N -FS; Borovansky, Jenna; Deason, Jesse; Vertucci, Charles
Subject: Fieldwork Notification - Water Temperature Monitoring - August 11-13

Hi Dusty and Debbie.

Per our USFS permit and recent amendment, 2 HDR staff plan on installing new water temperature and stage equipment as well as servicing existing equipment on August 11 – 13 on USFS lands. Staff will be traveling in an SUV (with HDR logo) and accessing all sites on foot. Staff will be working in the South Fork, Tuolumne and Clavey rivers as well as Cherry Creek.

If you have any questions please let us know.

Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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From: Devine, John
Sent: Friday, July 31, 2015 8:33 AM
To: 'Eicher, James'
Cc: Le, Bao; Steve E. Boyd (<u>seboyd@tid.org</u>); <u>anna.brathwaite@mid.org</u>
Subject: RE: FW: permit for Tuolumne River

Good morning Jim,

## To follow up on my responses last evening, please see full responses below.

John Devine, P.E. D 207-775-4495 M 207-776-2206

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From: Eicher, James [mailto:jeicher@blm.gov]
Sent: Thursday, July 30, 2015 8:01 PM
To: Devine, John
Cc: Le, Bao; Steve E. Boyd (seboyd@tid.org); <u>anna.brathwaite@mid.org</u>
Subject: Re: FW: permit for Tuolumne River

Thanks John I appreciate the heads up on this. I have a few up front questions. The USFS permit authorizes you to:

"Surveys of the Main Tuolumne downstream, Clavey, and North Fork of the Tuolumne River will be conducted using whitewater boating on two separate 5-day boat trips and hiking North Fork and Clavey".

1. Are you planning two separate trips on BLM lands? [Yes, the plan is to observe and measure potential barriers during both a low flow and higher flow period. We are planning a repeat trip next spring during a higher, as yet unspecified, flow. For this year, if we are authorized to proceed, we would be conducting only one trip to BLM lands this year for the barrier work. We would also want to revisit logger sites, if permitted, for downloading data. I believe this was to be in September/October time frame. **Bao can add to this**.]

The permit is good for 2 years and 4 months.

2. Are you expecting to repeat this evaluation? Why is it for that length of time? [*Yes, see the explanation above*]

3. BLM has not authorized this request as of yet, how will you conduct the studies on USFS lands up on the North Fork Tuolumne without getting authorization from BLM? [I believe we are seeking other routes to those lands **Bao – please confirm**, but now that you mention this, could we not simply traverse BLM lands on the North Fork to get to USFS lands?]

4. Other than this standard OMB FORM for Special Use Permits did the USFS attach any other stipulations to this Permit? [No, I don't believe there are any other stipulations. **Bao – please confirm**.]

On Thu, Jul 30, 2015 at 9:37 AM, Devine, John <<u>John.Devine@hdrinc.com</u>> wrote:

Good morning Jim,

To keep you up to date, and for your information, please find attached the USFS permit for the barrier assessment and float trip scheduled for next week. We understand this does not authorize the related work on BLM lands.

## John Devine, P.E.

This letter was sent by the Bureau of Land Management (BLM) to Mr. Steve Boyd of Turlock Irrigation District via FedEx 2Day shipping. Mr. Boyd received the letter on Tuesday, August 4, 2015.



# **United States Department of the Interior**

BUREAU OF LAND MANAGEMENT Mother Lode Field Office 5152 Hillsdale Circle El Dorado Hills, CA 95762 www.blm.gov/ca/motherlode



7/31/2015

Mr. Steven Boyd Turlock Irrigation District 333 East Canal Drive Turlock, CA 95380

FERC No. 14581 CA018.14

Re: Letter of Authorization to Conduct Fish Barrier Assessment on the Tuolumne and North Fork American Rivers

Dear Mr. Boyd:

A request has been made by your authorized agent John Devine from HDR Inc., Senior Vice President Hydropower Services to seek authorization from BLM Mother Lode Field Office to conduct a fish barrier assessment along the North Fork Tuolumne River, and main stem of the Tuolumne River on BLM lands. Mr. Devine explained to Jim Eicher of my staff that the fish barrier assessment portion of the Fish Passage Assessment Study is for the La Grange Hydroelectric Project FERC No. 14581.

After reviewing the documents you sent, including the Revised Study Plan Fish Passage Assessment, the signed U.S. Department of Agriculture Forest Service Special Use Permit, and the signed Application For Transportation and Utility Systems and Facilities On Federal Lands, I will permit the Turlock Irrigation District and Modesto Irrigation District (collectively "Districts") to conduct a fish barriers assessment and camp on BLM lands located near the North Fork Tuolumne River. This Letter of Authorization allows the Districts and your agent HDR to conduct your fish barrier assessment for two different rafting trips ending on 12/31/2017.

Please inform Jim Eicher when you are going to utilize the BLM lands for the fish barrier assessments. Currently BLM is in Stage 1 Fire Restrictions, which does not allow for any fires on BLM lands in the Tuolumne River Canyon. BLM understands that HDR has hired Sierra Mac River Trips to escort your scientists down the river so they will need to abide by the USFS commercial rafting permit and stipulations.

If you have any questions concerning this Letter of Authorization please contact Jim Eicher Associate Field Manager at 916-941-3103.

Sincerely,

William S. Haigh Field Manager

From:	Staples, Rose
Sent:	Saturday, August 01, 2015 1:23 PM
Cc:	Staples, Rose
Subject:	La Grange Fish Migration Barriers Component Final Study Plan

La Grange Licensing Participants,

The Districts have e-filed with FERC the final study plan for the La Grange *Fish Migration Barriers Component Study*. A copy of the final study plan is available on the La Grange Licensing Website at <u>www.lagrange-licensing.com</u> under the DOCUMENTS tab. It is also available on FERC's E-LIBRARY at <u>www.FERC.gov</u>. If you have any difficulty locating or accessing this document, please let me know at <u>rose.staples@hdrinc.com</u>. Thank you.

Rose Staples, CAP-OM, MOS Executive Assistant

HDR 970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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# PHONE CALL MEMORANDUM

Торіс	Permit authorization
Date	August 18, 2015
From	John Devine, HDR
То	John Eicher, BLM
Summary of Discussion	<ul> <li>Mr. Devine left a voicemail with Mr. Eicher. Mr. Devine explained he would like to discuss: <ul> <li>The scope of the recent permit authorizing float trips and barrier-related work and,</li> <li>The status of the trespass and temp logger permits as it is coming up on time to download the loggers as described in the study plan.</li> </ul> </li> <li>Mr. Devine requested that Mr. Eicher call back or send an email when he became available.</li> </ul>

From:	Le, Bao
Sent:	Monday, August 24, 2015 11:32 AM
To:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Upcoming Fish Passage Workshop #2 - engineering participation
Follow Up Flag:	Follow up
Flag Status:	Completed

Thanks, John. Anything that can be done would be much appreciated.

While I have your attention, I wanted to circle back about the availability of the LIDAR assessment NMFS is conducting. Last we spoke, the availability of this information for review had been revised from this fall to next spring (2016). If you recall, we have an element in our Revised Study Plan that includes review this information. I wanted to circle back to double check on its status of availability so we can characterize this element appropriately when it comes time for reporting in the Initial Study Report.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, August 24, 2015 11:18 AM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Upcoming Fish Passage Workshop #2 - engineering participation

At a minimum I will get review of your materials that you provide. I will look into getting an engineer to be present, but it is probably an uphill battle because we are on travel restrictions until the end of the federal fiscal year (September 30), and all travel requests for the remainder of the year were due awhile ago for approval.

-John

On Mon, Aug 24, 2015 at 8:06 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

As we complete the development of materials (i.e., Technical Memorandum #1) for the upcoming fish passage workshop #2, it appears that it would be valuable to have a fish passage engineer participate by phone or in person given the number of items that may require input from NMFS, as the lead entity. This would ensure a more productive discussion at the workshop. I apologize for this change of course and hope someone can be available. If this is not possible, at the very minimum I'd strongly encourage an agency fish passage engineer review the materials and provide you with feedback that you can present for discussion at the meeting. We are targeting September 3<sup>rd</sup> for distribution of workshop materials (i.e., 2 weeks in advance of the meeting).

Please let me know if you have any questions.

## Bao Le

Senior Fisheries Biologist

HDR

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1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov



From:	Le, Bao
Sent:	Tuesday, August 25, 2015 4:18 PM
To:	Shelton, John@Wildlife
Cc:	Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject:	RE: La Grange Licensing: Date for Fish Passage Workshop #2
Follow Up Flag:	Follow up
Flag Status:	Completed

Excellent. Thanks, John.

Your participation is greatly appreciated. See you on the 17<sup>th</sup>.

From: Shelton, John@Wildlife [mailto:John.Shelton@wildlife.ca.gov]
Sent: Tuesday, August 25, 2015 4:00 PM
To: Le, Bao
Cc: Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange Licensing: Date for Fish Passage Workshop #2

Hi Bao,

I have it on my calendar and expect to be there. I do have funding support issues that may change my priorities, but so far, I'm still working on this process.

# John M. Shelton

Cal. Department of Fish and Wildlife

Leadership is getting people to work for you when they are not obligated. Fred Smith

From: Le, Bao [mailto:ChiBao.Le@hdrinc.com]
Sent: Tuesday, August 25, 2015 3:29 PM
To: Shelton, John@Wildlife
Cc: Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject: RE: La Grange Licensing: Date for Fish Passage Workshop #2

Hi John.

We're continuing our planning for the upcoming La Grange Fish Passage Workshop #2 on September 17. We hope to have materials and agenda available for distribution to participants on September 3<sup>rd</sup>. I just wanted to check in to make sure you're able to attend the meeting.

Thank you, Bao

From: Shelton, John@Wildlife [mailto:John.Shelton@wildlife.ca.gov]
Sent: Thursday, July 23, 2015 10:41 AM
To: Le, Bao
Cc: Marston, Dean@Wildlife; Borovansky, Jenna; Deason, Jesse
Subject: Re: La Grange Licensing: Date for Fish Passage Workshop #2

I should be able to make that date unless something outside of my control interferes.

John M. Shelton Sent from my iPhone

Cal Dept. of Fish and Wildlife Cell (559) 908-8604 Desk (559) 243-4014;233

On Jul 22, 2015, at 3:32 PM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi all.

I am adding John Shelton to this string regarding Fish Passage Workshop date. My apologies for any inconvenience.

Thanks, Bao

From: Le, Bao
Sent: Wednesday, July 22, 2015 2:15 PM
To: dean.marston@wildlife.ca.gov
Cc: 'Borovansky, Jenna'; Deason, Jesse
Subject: La Grange Licensing: Date for Fish Passage Workshop #2

Hi Dean.

I hope you're having a good summer. We're planning to have workshop #2 for the Fish Passage Facilities Assessment on September 17<sup>th</sup>. I wanted to reach out to you to confirm that CDFW will be able to participate on this date.

Please let me know as soon as you can.

Thanks, Bao

Bao Le Senior Fisheries Biologist

HDR 1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D 971.202.1722 M 503.309.9423 bao.le@hdrinc.com

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# PHONE CALL MEMORANDUM

Торіс	Temperature logger trespass issue
Date	August 25, 2015
From	Steve Boyd, TID
То	Jim Eicher, BLM
Summary of Discussion	<ul> <li>Mr. Eicher said he had been working on the trespass issue and hopes to devote most of today to it as well. He apologized for the delay but has had several pressing emergencies come up. He is working on the Section 7 Determination but does not believe the loggers will need to be removed and said he understands the value of the data. He said there was one site, but couldn't remember the location offhand, where a brace or stake was installed with the logger. He said it is sticking up above the water and would have to moved or modified so it wasn't a problem for boaters.</li> <li>Mr. Eicher said that he understands it was an oversight on the Districts' part not to talk to BLM, but that the Districts would need to work on communication with him going forward. He indicated the Districts will need to complete some administrative paperwork and pay some fees, the same paperwork and fees that the Districts would have needed to provide initially. Mr. Eicher said he hopes the issue will be wrapped up very soon and with plenty of time to spare so that the Districts can get back in the field in October to retrieve the data.</li> </ul>

From:	Le, Bao
Sent:	Tuesday, September 01, 2015 2:13 PM
То:	John Wooster - NOAA Federal
Cc:	Devine, John; Borovansky, Jenna; Deason, Jesse
Subject:	RE: Upcoming Fish Passage Workshop #2 - engineering participation
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John.

We would be asking for the latter. That is, the Tuolumne River habitat suitability evaluation you're conducting with the LiDAR as the basis. The Revised Study Plan requires we use this information to complement our barriers and temperature work and report it in the Initial Study Report (ISR). If it's not available prior to the reporting of the ISR, we'll want to note this and provide any additional detail as to its current status and when we might be able to complete this task (either as an amendment or part of the USR). So any information you can provide when it becomes available would be great. With regards to timing, if you receive new information on status and timing of availability by say December that would help us to include a characterization of the current status and propose an alternative in the ISR.

Thanks, Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Tuesday, September 01, 2015 1:22 PM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Upcoming Fish Passage Workshop #2 - engineering participation

Hi Bao:

In regards to your question below, are you asking about the availability of the LIDAR data itself, or about the analyses being conducted with the LIDAR being used as a basis for habitat input?

The LIDAR data itself should be ready by 2016, if not sooner. The actual habitat analyses being completed is a moving target, and has a temperature component to it, so I don't expect that to be finalized until temperature data / models are completed to provide a thermal suitability overlay....

John

On Mon, Aug 24, 2015 at 11:31 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Thanks, John. Anything that can be done would be much appreciated.

While I have your attention, I wanted to circle back about the availability of the LIDAR assessment NMFS is conducting. Last we spoke, the availability of this information for review had been revised from this fall to next spring (2016). If you recall, we have an element in our Revised Study Plan that includes review this information. I wanted to circle back to double check on its status of availability so we can characterize this element appropriately when it comes time for reporting in the Initial Study Report.

Bao

From: John Wooster - NOAA Federal [mailto:john.wooster@noaa.gov]
Sent: Monday, August 24, 2015 11:18 AM
To: Le, Bao
Cc: Devine, John; Borovansky, Jenna; Deason, Jesse
Subject: Re: Upcoming Fish Passage Workshop #2 - engineering participation

At a minimum I will get review of your materials that you provide. I will look into getting an engineer to be present, but it is probably an uphill battle because we are on travel restrictions until the end of the federal fiscal

year (September 30), and all travel requests for the remainder of the year were due awhile ago for approval.

-John

On Mon, Aug 24, 2015 at 8:06 AM, Le, Bao <<u>ChiBao.Le@hdrinc.com</u>> wrote:

Hi John.

As we complete the development of materials (i.e., Technical Memorandum #1) for the upcoming fish passage workshop #2, it appears that it would be valuable to have a fish passage engineer participate by phone or in person given the number of items that may require input from NMFS, as the lead entity. This would ensure a more productive discussion at the workshop. I apologize for this change of course and hope someone can be available. If this is not possible, at the very minimum I'd strongly encourage an agency fish passage engineer review the materials and provide you with feedback that you can present for discussion at the meeting. We are targeting September 3<sup>rd</sup> for distribution of workshop materials (i.e., 2 weeks in advance of the meeting).

Please let me know if you have any questions.

Thanks, Bao

## Bao Le

Senior Fisheries Biologist

## HDR

1001 SW 5<sup>th</sup> Avenue, Suite 1800 Portland, OR 97204-1134 D <u>971.202.1722</u> M <u>503.309.9423</u> bao.le@hdrinc.com

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John Wooster Hydrologist NOAA Fisheries West Coast Region U.S. Department of Commerce john.wooster@noaa.gov


From: Devine, John Sent: Tuesday, September 01, 2015 4:30 PM To: 'Steve Edmondson' Subject: RE: Genetics Study

Steve,

Thank you for moving this along. I should have mentioned that we would probably prefer to have a face-to-face meeting on this subject and would be happy to travel to the Science Center offices. This subject is complex and a conference call may not be the best way to have an effective meeting. I hope we can make this work. Thanks for the efforts

John Devine, P.E. D 207-775-4495 M 207-776-2206

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From: Steve Edmondson [mailto:steve.edmondson@noaa.gov]
Sent: Tuesday, September 01, 2015 4:11 PM
To: Devine, John; <u>Rachel.Johnson@noaa.gov</u>; Charlotte Ambrose; John Wooster; Larry Thompson
Subject: Re: Genetics Study

Rachel:

John Devine, contractor for the applicants in the Don Pedro (Tuolumne River) FERC relicensing, would like to schedule a phone call with the Science Center to discuss and ask questions about the materials and methods and elucidating power of the genetics study being conducted on the Tuolumne River. If you do schedule a meeting, please keep John and I in the loop as we would like to participate. Thanks.----Steve.

On 9/1/2015 12:03 PM, Devine, John wrote:

Hi Steve,

I called earlier today and left a message using the 707-575-6052 number. I hope that's the right number. I have a couple of questions about the genetics study on Don Pedro/La Grange and a request that I hope you can help me with. If you get a chance please give me a call at either number below.

Thank you.

John Devine, P.E., M.ASCE Senior Vice President, Hydropower Services

HDR 970 Baxter Blvd, Suite 301 Portland, Maine 04103

D 207-775-4495 M 207-776-2206 john.devine@hdrinc.com

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#### PHONE CALL MEMORANDUM

Торіс	Meeting with NMFS Science Center
Date	September 1, 2015
From	John Devine, HDR
То	Steve Edmondson, NMFS
Summary of Discussion	<ul> <li>Mr. Devine called Mr. Edmondson to ask his help in arranging a meeting with the Districts, Mr. Edmondson, and the NMFS Science Center staff to discuss the genetics study NMFS is undertaking. Mr. Devine said the Districts are very interested in learning more about the genetics study, the current status of the study, and how the information will be evaluated. Mr. Devine recalled the discussion about the use of and need for the information in the Dispute Resolution Meeting and that the information could possibly indicate a "no-go" decision by NMFS in terms of fish passage. Mr. Devine referenced Mr. John Wooster's statements in the Dispute Transcript and his direct reference therein as to the "folks at the Science Center" making this call.</li> <li>Mr. Edmondson said the researchers have now collected over 600 samples of fish tissue. Mr. Devine asked whether samples were taken from both upstream and downstream of Don Pedro. Mr. Edmonson replied that he said he wasn't sure, but he thought just upstream, but he would check. Mr. Edmondson said that the Science Center staff is under a different management structure and can be a little difficult to communicate with at times. But, he would send out a note right away to try to get something set up.</li> <li>Mr. Edmonson said he was planning to be at the Sept 17 Workshop. Mr. Devine said the Districts are planning to release meeting materials by the end of this week.</li> </ul>

From: Sent: Cc: Subject: Attachments:	Staples, Rose Friday, September 04, 2015 2:44 PM Staples, Rose La Grange Fish Passage Workshop No 2 Read Ahead Materials LG_Sep17 WorkshopNo2Agenda_20150904.pdf; TMNo 1_LaGrange_Fish Passage Alternatives Assessment_20150904.pdf; LG_Decision-Making_Framework_Overview_ 20150904.pdf
Follow Up Flag:	Follow up
Flag Status:	Completed

La Grange Licensing Participants,

The next Fish Passage Assessment Workshop is scheduled to take place on Thursday, September 17, 2015 from 9:00 am to 12:00 pm at the Modesto Irrigation District office in Modesto.

Please find attached three documents for your review prior to the workshop (if unable to open, the documents will also be uploaded to <u>www.lagrange-licensing.com</u> as attachments to the meeting date announcement on the website CALENDAR tab):

- 1. Workshop Agenda
- 2. The Fish Passage Facilities Alternatives Assessment Technical Memorandum (TM) No. 1, Existing Site Considerations and Design Criteria
- 3. Fish Reintroduction Decision-Making Framework

The purpose of TM No. 1 is to identify the information, analysis, and design criteria necessary to characterize site-specific fish passage considerations and objectives. Where needed information is not available, data gaps have been identified.

The Fish Reintroduction Decision-Making Framework depicts a conceptual framework for a structured decision-making process related to fish passage/reintroduction on the Tuolumne River. The framework identifies a broad range of resource issues to be considered when evaluating fish reintroduction. Frameworks such as this are being implemented elsewhere and additional key considerations have been identified in the fish recovery/reintroduction literature. Each of the major resource headings have a number of subcategories of information that must be weighed in the overall decision-making process. These factors will be further explored at the Workshop.

To help facilitate a collaborative and successful second Workshop, the Districts request that attendees take the time to review these materials in advance and come ready to actively participate. The Districts seek to encourage a collaborative discussion regarding information needed to further the fish passage/reintroduction assessment.

An item to be covered at this Workshop is the status of action items from Workshop No. 1 held on May 20, 2015. Please review the Workshop No. 1 meeting summary to find a list of action items (on page 13). The meeting summary is available online by clicking <u>here</u> – or by accessing the

La Grange Project Licensing website at <u>www.lagrange-licensing.com</u> (see the July 2, 2015 posting under the DOCUMENTS tab).

We hope to see you on September 17.

Rose Staples, CAP-OM, MOS Executive Assistant

#### HDR

970 Baxter Boulevard Suite 301 Portland ME 04103 D 207-239-3857 rose.staples@hdrinc.com

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#### La Grange Hydroelectric Project Fish Passage Assessment Workshop No. 2 Thursday, September 17, 9:00 am to 12:00 pm MID Office, 1231 11<sup>th</sup> Street, Modesto, California Conference Line: 1-866-583-7984, Passcode: 814-0607 Join Lync Meeting https://meet.hdrinc.com/jesse.deason/8DZ4VNVN

#### Workshop Objectives:

- 1. Discuss and receive feedback on the fish passage/reintroduction decision-making framework concept.
- 2. Review Technical Memorandum No. 1 and address information needs.
- 3. Confirm schedule/tasks, subsequent workshop date, and opportunities for collaboration.

TIME	TOPIC			
9:00 am – 9:10 am	Introduction of Participants (All)			
9:10 am – 9:30 am	Opening Statements (Districts) Brief review of Tuolumne River Anadromous Fish Passage Facilities Assessment Collaborative (Districts) Review agenda, workshop objectives, and action items from previous workshop (Districts)			
9:30 am – 10:30 am	Overview of Conceptual Tuolumne River Fish Passage/Reintroduction Decision-Making Framework (All) a. Review and discuss fish passage/reintroduction decision-making framework b. Information needs, key resource considerations, linkages to design process c. Available data, data gaps, and potential data sources related to fish passage/reintroduction decision-making			
10:30 am – 11:30 am	<ul> <li>Fish Passage Facility Assessment - Technical Memorandum #1 (All)</li> <li>a. Key physical and biological design criteria</li> <li>b. Fish passage design and operations criteria</li> <li>c. Links between information needs and design concept</li> <li>d. Discussion of information needs and input from Licensing Participants</li> </ul>			
11:30 am – 12:00 pm	<ul> <li>Tuolumne River Passage Assessment Schedule and Next Steps (All)</li> <li>a. Schedule: Opportunities for collaboration and incorporation of feedback</li> <li>b. Workshop No. 3 – confirm date and content</li> </ul>			

### FISH PASSAGE FACILITIES ALTERNATIVES ASSESSMENT TECHNICAL MEMORANDUM NO. 1 EXISTING SITE CONSIDERATIONS AND DESIGN CRITERIA

### LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581







Prepared for: Turlock Irrigation District – Turlock, California Modesto Irrigation District – Modesto, California

> Prepared by: HDR, Inc.

September 2015

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#### List of Acronyms and Abbreviations

ACOE	U.S. Army Corps of Engineers
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
Districts	Modesto Irrigation District and Turlock Irrigation District
EDF	energy dissipation factor
ESA	Endangered Species Act
ESU	evolutionary significant unit
FERC	Federal Energy Regulatory Commission
ft	feet
ft/s	feet/second
ILP	Integrated Licensing Process
LGDD	La Grange Diversion Dam
LP	licensing participant
M&I	municipal and industrial
MID	Modesto Irrigation District
mm	millimeters
MW	megawatt
NGVD 29	1929 National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
O&M	operations and maintenance
RM	river mile
SFPUC	San Francisco Public Utilities Commission
TID	Turlock Irrigation District
ТМ	Technical Memorandum
TRTAC	Tuolumne River Technical Advisory Committee
USGS	Unite State Geological Survey

#### **1.0 INTRODUCTION**

This Technical Memorandum (TM) No. 1 is the first of three interim work products developed for the Fish Passage Alternatives Facilities Assessment for the La Grange Hydroelectric Project (La Grange Project or Project; Federal Energy Regulatory Commission [FERC] No. 14581). This TM No. 1 provides information and analysis necessary to characterize site-specific considerations and anticipated fish passage criteria which may influence the formulation, evaluation, and conceptual design of fish passage facilities alternatives which may be determined viable for the Project. Upon receipt of feedback from licensing participants (LP), future versions of the TM will be prepared and released for review. The release of multiple interim work products is intended to facilitate a collaborative process where feedback and consensus can be obtained prior to initiating next steps in the study.

#### 1.1 Background

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figure 1.1-1). LGDD was constructed from 1891 to 1893 to replace Wheaton Dam, which was built by other parties in the early 1870s. The LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts (MW). The La Grange Project operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the La Grange Project or the La Grange pool.

LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level above the diversion dam is between elevation<sup>1</sup> 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four upstream reservoirs: Hetch Hetchy, Lake Eleanor, Cherry Lake, and Don Pedro. The Don Pedro Hydroelectric Project (FERC No. 2299) is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project, located 2.6 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

<sup>&</sup>lt;sup>1</sup> All elevations in this document are referenced to 1929 National Geodetic Vertical Datum (NGVD 29).



Figure 1.1-1. Site and vicinity of La Grange Diversion Dam.

#### 1.2 Fish Passage Facilities Alternatives Assessment

As part of the Integrated Licensing Process (ILP) for the La Grange Project, the Districts are completing a phased, two-year Fish Passage Facilities Alternatives Assessment to identify and develop potentially viable, concept-level alternatives for upstream and downstream passage of Chinook salmon and steelhead at the La Grange and Don Pedro dams. The study area for the Fish Passage Facilities Alternatives Assessment is the Tuolumne River immediately downstream of the LGDD (at the confluence of the main river channel and the powerhouse tailrace channel) upstream to the upper Tuolumne River at the upper most extent of the Don Pedro Reservoir. For the purposes of the Fish Passage Facilities Alternatives Assessment, all facilities are assumed to occur within the designated study area in control of the Project owners TID and MID. The overall study area for the assessment is presented in Figure 1.2-1.

Specific objectives of the Fish Passage Facilities Alternatives Assessment are to:

- Obtain available information to establish existing baseline conditions relevant to impoundment operations and siting passage facilities,
- Obtain and evaluate available hydrologic data and biological information for the Tuolumne River to identify potential types and locations of facilities, run size, fish periodicity, and the anticipated range of flows that correspond to fish migration,
- Formulate and develop preliminary sizing and functional design for select, alternative potential upstream and downstream fish passage facilities, and
- Develop Class-V opinions of probable construction cost and annual operations and maintenance (O&M) costs for select fish passage concept(s).

The Fish Passage Facilities Alternatives Assessment will occur in two phases. Phase 1 (conducted in 2015) will involve collaborative information gathering and evaluation of facility siting, sizing, general biological and engineering design parameters, and operational considerations. Phase 2 (conducted in 2016) will involve the development of preliminary functional layouts and site plans, estimation of preliminary capital and O&M costs, and identification of any additional significant information needs for select passage alternatives.

To facilitate a collaborative process, the Districts will produce two TMs during Phase 1, each summarizing key results to date. Both TMs will be provided to LPs for review and comment, with the goal of soliciting feedback on the overall approach and findings and reaching a consensus prior to initiating next steps in the study.



Figure 1.2-1 Overall study area for the Fish Passage Facilities Alternatives Assessment.

#### 1.3 Goal of Technical Memorandum No. 1

The goal of this TM No. 1 is to provide the information, analysis, and design criteria necessary to characterize site-specific fish passage considerations and objectives. Where needed information is not available, data gaps have been identified. It is the Districts' hope that LPs review this document and come to the La Grange Fish Passage Facilities Alternatives Assessment Workshop No. 2 (scheduled for Thursday, September 17) prepared to discuss its contents. Information relative to future expected fish species occurrence, population sizes, run timing, and facility performance will require input from others. Input received from LPs during review and discussion of the TM No. 1 contents will be incorporated into future work being performed to complete this assessment.

### 2.0 FISH PASSAGE FACILITIES CONSIDERATIONS

The following sections include existing, site-specific information that characterizes the biological and physical setting of the proposed study area which influences the applicability and selection of fish passage facilities alternatives.

#### 2.1 Anadromous Fisheries Resources

The intent of the Fish Passage Facilities Alternatives Assessment was formulated based upon information provided by LPs in their study requests and considers passage of three anadromous fish species: fall-run Chinook, spring-run Chinook, and steelhead. Historically, both fall- and spring-run Chinook salmon occurred in the Tuolumne River basin. Currently, only a fall-run Chinook salmon population is present, while spring-run have been extirpated from the Tuolumne and San Joaquin River watershed for decades. A population of *O. mykiss* occur within the Tuolumne River but there is no evidence that a self-sustaining population of anadromous steelhead currently exists within the Tuolumne River watershed. The habitat suitability and future occurrence and numbers of these species is therefore unknown as all three candidate species would require reintroduction into the Tuolumne River above Don Pedro Reservoir. The viability of reintroduction is unknown at this time and therefore the inclusion of these three target species into the Fish Passage Facilities Alternatives Assessment process may be revised as input from LPs is obtained. A more detailed description of each species and their occurrence in the Tuolumne River is provided in the following sections.

#### 2.1.1 Fall-run Chinook

Adult fall-run Chinook salmon migration in the Tuolumne River extends upstream to the vicinity of the LGDD and occurs from September through December, with peak migration activity occurring in October and November (TID/MID 2013c). Spawning occurs in late October to early January, soon after fish enter the river. Spawning occurs in the gravel-bedded reach (upstream of RM 24) where suitable spawning substrates exist. Egg incubation and fry emergence occur from October through early February. Juvenile fall-run Chinook have a relatively short freshwater rearing period before smolt emigrate to the ocean during the spring months.

Since completion of Don Pedro Dam in 1971, spawner estimates have ranged from 40,300 in 1985 to 77 in 1991 (TID/MID 2010, Report 2009-2). From 1971 to 2013, the date of the peak weekly live spawner count has ranged from October 31 (1996) to November 27 (1972), with a median date of November 12 (TID/MID 2010, Report 2009-2). Since fall 2009, escapement monitoring has been conducted at a counting weir established at RM 24.5, near the downstream end of the gravel-bedded reach (TID/MID 2010, Report 2009-8). Since 1971, California Department of Fish and Wildlife (CDFW; formerly known as the California Department of Fish and Game [CDFG]) has conducted annual salmon spawning surveys. In addition to CDFW's work, the Districts have studied fall-run Chinook salmon on the lower Tuolumne River through annual seine surveys conducted since 1986, annual snorkel surveys since 1982, fish weir counts since 2009, and more recently as part of the Don Pedro Project relicensing process.

#### 2.1.2 Spring-Run Chinook

Currently, spring-run Chinook salmon do not occur within Tuolumne River. Central Valley spring-run Chinook salmon, were listed by the National Marine Fisheries Service (NMFS) as threatened under the Endangered Species Act (ESA) on September 16, 1999 (64 FR 50394). NMFS (1999) concluded that the Central Valley spring-run Chinook salmon evolutionary significant unit (ESU) was in danger of extinction and native spring-run Chinook salmon were extirpated from the San Joaquin River Basin. NMFS has acknowledged that information is limited regarding the historical adult escapement for Chinook salmon in the Tuolumne River and review of available literature did not reveal readily available estimates of historical escapement estimates (NMFS 2014). Spring-run Chinook escapement estimates have been described more broadly to the San Joaquin River but tributary-specific escapement estimates are not available. Moyle (2002) suggested that spring-run Chinook salmon in the upper San Joaquin River probably exceeded 200,000 fish at times, and further stated that "it is likely that an equal number of fish were once produced by the combined spring runs in Merced, Tuolumne, and Stanislaus *Rivers.* However, early historical population levels were never measured." Reintroduction of an experimental population of spring-run Chinook salmon to the San Joaquin River downstream of Friant Dam is currently being developed.

#### 2.1.3 Oncorhynchus mykiss

*Oncorhynchus mykiss* exhibits two life history forms: a resident form commonly known as rainbow trout, and an anadromous form commonly known as steelhead. Central Valley steelhead begin to enter fresh water in August and peak spawning occurs from December through April. After spawning, adults may survive and return to the ocean. Steelhead progeny rear for one to three years in fresh water before they emigrate to the ocean where most of their growth occurs. Spawning by resident rainbow trout in the Central Valley coincides with steelhead and interbreeding is possible. Although low numbers of anadromous *O. mykiss* have been documented in the Tuolumne River, there is no empirical scientific evidence of a self-sustaining "run" or population of steelhead currently in the Tuolumne River. Existing fish monitoring data indicate that smaller *O. mykiss* exhibiting a resident life history are common in the Tuolumne River below LGDD.

#### 2.2 Potential Targeted Species and Life Stages for Fish Passage Under Consideration

Selection of targeted fish species and life stages for fish passage design drives the overall selection of potential fish passage alternatives. This TM No. 1 focuses on the development of fish passage alternatives which facilitates the upstream migration of adult spring-run Chinook salmon and adult steelhead as well as the downstream migration of juvenile life history stages for these species. At this time, fall-run Chinook salmon are considered a target species for fish passage however historical distribution of fall-Chinook was generally believed to be confined to lower elevations (i.e., below the reach of the Tuolumne River identified for possible reintroduction). As such, agreement among LPs regarding assumed target species and exclusion of fall-run Chinook will be required. Recognized, general characteristics for the adult life stage

of each fish species are presented in Table 2.2-1. These characteristics vary based upon population genetics, return age, and other watershed specific factors not discussed here.

Target Fish Species	General Characteristics
Chinook Salmon (fall and spring run)	<ul> <li>Typical weight range 10 to 30 lbs</li> <li>Spend 2 to 5 years in the ocean (most fall-run return to the Tuolumne at 3 years)</li> <li>Reach maturity at 3 to 6 years</li> <li>Adults exhibit burst swimming speeds of 11 to 21.5 ft/s, prolonged speeds of 4 to 11 ft/s, and sustained speeds of 0 to 4 ft/s</li> </ul>
Steelhead (winter run)	<ul> <li>Typical weight range 5 to 20 lbs</li> <li>Spend 1 to 4 years in the ocean</li> <li>Reach maturity at 3 to 6 years</li> <li>Adults exhibit burst swimming speeds of 14.5 to 26.5 ft/s, prolonged speeds of 5 to 14.5 ft/s, and sustained speeds of 0 to 5 ft/s</li> </ul>

Table 2.2-1.General characteristics of select species (Bell 1991; TRTAC 2000).

Monitoring of juvenile fall-run Chinook currently occurs within the lower Tuolumne River at the Waterford (RM 30) and Grayson (RM 5) rotary screw trap locations. Much of the data collected relative to numbers, fork lengths, and weights are published in FISHBIO's monthly San Joaquin Basin Update. Published data suggests that the juvenile Chinook fork lengths range from 34 to 120 millimeters (mm) with the majority of fish falling into sub-smolt categories (68 mm or less) (FISHBIO 2008 through 2010) during the outmigration period (i.e., January through June). This range of values may provide some insight on required capture velocities and need for pumped fish collection systems and the lifestage/size that may be considered feasible for collection and/or passage; but it is recognized that over 150 studies have been conducted on the Tuolumne River since 1992 and ultimately complete data sets should be reviewed as part of further design concept development.

Data supporting the determination of age-class, size, maturation, and migration timing of springrun Chinook and steelhead life-stages occurring within the Tuolumne River watershed does not currently exist. In addition, emigrating juvenile spring-run Chinook salmon and steelhead, if introduced into the upper watershed, would be expected to vary in size and seasonal run timing from fall-run Chinook that are currently monitored downstream of LGDD. For the purposes of this TM No. 1, several regional sources of information originating from the San Joaquin and Sacramento rivers were reviewed to generate potential estimates of migration timing. Potential migration timing for target species under consideration in the Tuolumne River is presented in Table 2.2-2. Results of fish monitoring in the Sacramento River tributaries, such as Mill and Butte creeks and the Feather River, show variation in the seasonal timing of juvenile migration among watersheds and in response to variation in environmental conditions such as spring freshets. Information on seasonal run timing presented in this TM No. 1 has been generalized to classify typical species tendencies with regard to upstream and downstream migration but does not reflect the detailed estimates of fish periodicity that are required to move forward with an accurate assessment of fish passage facilities needs. Future phases of the Fish Passage Facilities Alternatives Assessment will require input from the LPs and agreement on the period of migration for both adult and juvenile fish life stages. Data presented in Table 2.2-2 suggest that migration of adult target species may occur from October through June with the possibility of spring-run Chinook arrival in March. Downstream migration of juveniles may occur from

October through the end of June. The months of July through September are anticipated to exhibit relatively little activity with regard to adult upstream migration of targeted species, while the months of July through December are anticipated to exhibit relatively little activity with regard to juvenile downstream migration.

Species	Jan Feb March	April May	June	July E M L	August E M L	Sept E M L	Oct E M L	Nov EML	Dec EML
Fall-Run Chinook <sup>1</sup>		Smolt Outn	nigration				Adult	Arrival at F Spawning	acility
Spring-Run Chinook <sup>2</sup>	Smolt Outmig	Adult Arrival at Fai ration	cility		222	1112	Smo	it Outmigra	tion
Steelhead <sup>1,3</sup>	Adult Arrival at Facility Spawning Smolt O	utmigration					Adult	Acriving at F	Facility

#### Table 2.2-2.Anticipated life history timing of potential targeted species.

<sup>1</sup> TID/MID 2013c

<sup>2</sup> NMFS 2014 Central Valley salmonid recovery plan

In addition to migration timing, the relative ages-class, fish size, population abundance, and migration timing of target fish species has a significant influence on the applicability and selection of potentially viable fish passage facilities alternatives. Currently, information regarding these factors are only available through other regional data sources where populations of these species currently exist. Input from the LPs is required to finalize the design basis regarding these potential future populations and their various characteristics for use in the future phases of the Fish Passage Facilities Alternatives Assessment.

#### 2.3 Physical Characteristics of Don Pedro and La Grange Dams

Don Pedro Dam stands at a total height of approximately 580 feet tall with a normal maximum pool elevation of 830 feet. LGDD, located 2.6 miles downstream of Don Pedro Dam, is 131 feet tall with an approximate minimum tailwater elevation of 175 feet at the TID powerhouse. The total vertical differential between the tailwater at LGDD and the full pool elevation of Don Pedro Reservoir is therefore about 650 feet. Additional characteristics for each structure are provided in Table 2.3-1.

Item	Don Pedro Dam	La Grange Diversion Dam
Date Completed	1971	1893, Modified in 1923 and 1930
River Mile	54.8 mi	52.2 mi
Gross Storage	2,030,000 acre-feet	200 acre-feet
Drainage Area	1,533 mi <sup>2</sup>	1,548 mi <sup>2</sup>
Dam Height	580 ft	131 ft
Top of Dam Elevation	855 ft	N/A
Maximum/Full Pool Elevation	830 ft	N/A
Gated Spillway Crest Elevation	800 ft	N/A
Ungated Spillway Crest Elevation	830 ft	296.5 ft
Minimum Power Pool Elevation	600 ft	-
Minimum Tailwater Elevation	$300 \text{ ft}^1$	175 ft

Table 2.3-1.Summary of general physical characteristics of Don Pedro and La Grange<br/>dams.

<sup>1</sup> Approximated from available data sources

#### 2.4 Site Accessibility

Accessibility to the LGDD and to the head of Don Pedro Reservoir is an important factor in siting fish passage facilities and fish release locations. Fish passage operations may occur on a daily basis throughout each migration season. The ability to access each location, travel time between facilities, and road conditions has a direct effect on construction cost as well as on long term operation costs. Trap and haul facilities require daily transport of fish and therefore the safety of drivers, route reliability, and transport duration should also be factors in site selection.

#### 2.4.1 Access to La Grange Diversion Dam

LGDD is accessible from the north via La Grange Road (J-59) and from the south via Yosemite Boulevard (CA-132) and La Grange Road (J-59). A short 1.4 mile section of La Grange Dam Road leads from the intersection of Yosemite Boulevard (CA-132) to the LGDD outlet and diversion facilities. The presence of publicly owned paved roads and only a short section of a TID/MID maintained road make LGDD accessible nearly 365 days a year. Severe weather and flood events have been known to limit access for short periods of time, but those events are rare and episodic.

#### 2.4.2 Access to Don Pedro Dam

Don Pedro Dam is accessible from the east and west via Bonds Flat Road. Bonds Flat Road intersects J-59 approximately 5 miles and CA-132 approximately 12 miles north of La Grange. All roads are publicly owned and well maintained for travel by larger vehicles.

#### 2.4.3 Access to Upper Extent of Don Pedro Reservoir

The head (i.e., upstream end) of Don Pedro Reservoir can be accessed at three primary locations: Wards Ferry Bridge, Jacksonville Road Bridge, and at the CA-120/49 Bridge.

• Wards Ferry Bridge is accessed from the east and west via Wards Ferry Road. From the west, the access route requires travel to CA 120/108, then through the City of Jamestown, then

through several smaller County roads, and eventually to Wards Ferry Road. One alternative would be to travel to CA 120/108, then to CA 120/49, then to Jacksonville Road, then to Twist Road, and then to Wards Ferry Road. From the east, the access route requires travel to CA 120/49, then to the City of Big Oak Flat up New Priest Grade, and then to Wards Ferry Road. Each potential route requires travel on smaller low-volume County maintained roads which exhibit one-lane widths and switch-backs in some locations. The eastern route through Big Oak Flat requires travel to higher elevations where snow and ice can impede travel on a seasonal basis.

- Jacksonville Road Bridge is accessed directly from LGDD by traveling north to CA 120/49, then east to Jacksonville Road. A narrower part of the reservoir can then be accessed by traveling further north on a gravel road named River Road. With the exception of River Road, all roads are publicly owned and well maintained for travel by larger vehicles. The short 1.3 mile portion of River Road is privately owned and maintained with gravel surfacing. Existing parcels owned by BLM in the general area are also accessed via River Road. Despite the occasional rock fall, land slide, or ice, this route is likely travelable 365 days a year.
- The CA-120/49 Bridge can be accessed from LGDD by traveling north to CA 120/49 and then east to the bridge. All roads are publicly owned and well maintained for travel by larger vehicles. Despite the occasional rock fall, land slide, or ice, this route is likely travelable 365 days a year.

#### 2.5 **Project Operations**

The following sections provide information on related to pertinent operational considerations of the Don Pedro and La Grange project facilities.

#### 2.5.1 La Grange Pool Operations

LGDD is a 131-foot tall run-of-river structure that is used to split flows between irrigation, municipal, and environmental water uses managed by TID, MID, and others. Under normal river flows, the pool formed by LGDD extends for approximately one mile upstream. When not spilling, the water level above the diversion dam is typically between elevation 294 feet and 296 feet which occurs approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water. Inflow to the La Grange pool is the sum of releases from the Don Pedro Project, located 2.6 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam. Water spilling over the LGDD structure continues down the lower Tuolumne River.

#### 2.5.2 Don Pedro Reservoir Operations

The Don Pedro Project is managed consistent with providing for reliable water supply for irrigation and municipal and industrial (M&I) purposes, providing flood flow management, hydropower generation, recreation, and protection of downstream aquatic resources.

Annual operations create substantial fluctuations in the Don Pedro Reservoir pool elevations. The reservoir is generally at its greatest storage volume in June, July, and August. Then each year, Don Pedro Reservoir is lowered to at least elevation 801.9 feet in October to provide required flood control benefits. During the typical course of each water year, Don Pedro Reservoir is lowered further as water releases are made to accommodate water deliveries and environmental flow objectives.

Historical and potential future pool elevations are described with two available data sets: Historical observations and "Base Case" predicted estimations. The Historical dataset includes mean daily pool elevations observed at Don Pedro Reservoir for the period of record beginning in October 1, 1974 and ending in April 30, 2013 (n=40). The Base Case data set represents predicted values of mean daily pool elevations calculated with the Tuolumne River Daily Operations Model (TID/MID 2013a). The Base Case dataset includes mean daily pool elevations for the period of record beginning in October 1, 1970 and ending in September 30, 2012 (n=43). The Base Case results depict the anticipated operation of the Don Pedro Project in accordance with the current FERC license, U.S. Army Corps of Engineers (ACOE) flood management guidelines, and the TID and MID irrigation and M&I water management practices using historic watershed inputs. Given that operational changes have been made to the Don Pedro Project over the Historical record, the Base Case scenario provides estimated values of pool elevation for current operations over a longer period of record. The Base Case data therefore takes into consideration more climactic variability and provides a better estimate of future pool conditions when considering the potential for implementation of future fish passage facilities. Figure 2.5-1 illustrates pool elevation trends and variation for Historical and Base Case data sets for their respective periods of record.



Figure 2.5-1 Mean daily pool elevation for the Historical (top) and Base Case (bottom) Don Pedro Dam operational scenarios.

Table 2.5-1 provides the percent exceedance of mean daily pool elevation over an annual basis for Historical observations. The data shows that the median pool elevation on an annual basis is approximately 788.2 feet. Observed elevations which accounts for 80 percent of Historical conditions from a probability of 10 to 90 percent of time exceeded would range from 726.0 to 812.4 feet. From 5 to 95 percent exceedance, which accounts for 90 percent of Historical conditions – the range of elevations would be from 702.7 to 820.3 feet. From 1 to 99 percent, which accounts for 98 percent of Historical conditions – the range of elevations would be from 702.7 to 820.3 feet. From 1 to 99 percent, which accounts for 98 percent of Historical conditions – the range of elevations would be from 613.7 to 828.2 feet. Using these exceedance values, Historical mean daily pool fluctuations of 86.4 feet were exceeded 20 percent of the time, 117.6 feet were exceeded 10 percent of the time, and 214.5 feet were exceeded 2 percent of the time.

Historical observations (Oct 1, 1974 to Apr 30, 2013).			
Percent of Time Exceeded	Pool Elevation, ft		
99.9%	598.5		
99.0%	613.7		
95.0%	702.7		
90.0%	726.0		
80.0%	749.7		
50.0%	788.2		
20.0%	802.7		
10.0%	812.4		
5.0%	820.3		
1.0%	828.2		
0.1%	829.5		

Table 2.5-1.Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for<br/>Historical observations (Oct 1, 1974 to Apr 30, 2013).

Data for the anticipated migration periods of fall-run Chinook, spring-run Chinook, and steelhead were further evaluated to identify the potential requirements of target fish species given Historical observations. Table 2.5-2 provides the Historical percent exceedance of mean daily pool elevation for anticipated outmigration periods while Table 2.5-3 provides results of the same analysis on anticipated upstream migration periods. The annual exceedance elevation data is also provided in each table for comparative purposes.

# Table 2.5-2.Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for<br/>outmigrating juvenile salmonids using Historical observations (Oct 1, 1974 to<br/>Apr 30, 2013).

	Historical Reservoir Elevations (ft)			
Percent of Time Exceeded	Annual	Outmigration Fall-Run Chinook 01Apr – 30Jun	Outmigration Spring-Run Chinook 01Jan – 31May	Outmigration Steelhead 01Jan – 30Jun
99.9%	598.5	639.3	620.6	621.9
99.0%	613.7	651.6	652.7	652.1
95.0%	702.7	727.3	717.6	720.3
90.0%	726.0	744.2	734.4	735.5
50.0%	788.2	794.9	788.0	790.1
10.0%	812.4	815.6	804.8	809.2
5.0%	820.3	820.5	809.1	816.1
1.0%	828.2	827.0	817.6	825.1
0.1%	829.5	828.6	821.0	828.5

	Historical Reservoir Elevations (ft)			
Percent of Time Exceeded	Annual	Arriving Adult Fall-Run Chinook 01Oct – 31Dec	Arriving Adult Spring-Run Chinook 01Mar – 30Jun	Arriving Adult Steelhead 01Oct – 31Mar
99.9%	598.5	598.3	640.0	598.3
99.0%	613.7	599.4	652.2	604.6
95.0%	702.7	680.3	725.6	691.8
90.0%	726.0	717.3	742.9	722.8
50.0%	788.2	779.4	794.0	784.5
10.0%	812.4	798.6	813.8	800.3
5.0%	820.3	800.8	818.4	803.6
1.0%	828.2	805.7	826.3	812.3
0.1%	829.5	808.9	828.5	819.4

Table 2.5-3.	Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for
	arriving adult salmonids using Historical observations (Oct 1, 1974 to Apr 30,
	2013).

Table 2.5-4 provides the percent exceedance of mean daily pool elevation for the Base Case operational scenario over an annual basis. The data shows that the median pool elevation on an annual basis is approximately 797.4 feet which is 9.2 feet higher than Historical observations. Observed elevations which accounts for 80 percent of Historical conditions from a probability of 10 to 90 percent of time exceeded would range from 698.5 to 818.5 feet. From 5 to 95 percent - which accounts for 90 percent of historical conditions - the range of elevations would be from 654.8 to 825.3 feet. From 1 to 99 percent - which accounts for 98 percent of Historical conditions - the range of elevations would be from 622.9 to 830.0 feet. Given these observations, Base Case mean daily pool fluctuations of 120.0 feet may be exceeded 20 percent of the time, 170.5 feet may be exceeded 10 percent of the time, and 207.1 feet were exceeded 2 percent of the time.

Dase Case operational scenario (Oct 1, 1976 to Sept 50, 2012).			
Percent of Time Exceeded	Pool Elevation, ft		
99.9%	616.3		
99.0%	622.9		
95.0%	654.8		
90.0%	698.5		
80.0%	739.4		
50.0%	797.4		
20.0%	809.2		
10.0%	818.5		
5.0%	825.3		
1.0%	830.0		
0.1%	830.0		

Table 2.5-4.	Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for the	
	Base Case operational scenario (Oct 1, 1970 to Sept 30, 2012).	

Data occurring within the anticipated migration periods of fall-run Chinook, spring-run Chinook, and steelhead were further evaluated to identify the potential requirements of target fish species for the Base Case operational scenario. Table 2.5-5 provides the percent exceedance of mean daily pool elevation for anticipated outmigration periods while Table 2.5-6 provides results of the same analysis on anticipated upstream migration periods, each for the Base Case operational scenario.

	1, 1970 to Sept	t <b>3</b> 0, 2012).			
		Base Case Reservoir Elevations (ft)			
Percent		Outmigration	Outmigration	Outmigration	
of Time		Fall-Run Chinook	Spring-Run Chinook	Steelhead	
Exceeded	Annual	01Apr – 30Jun	01Jan – 31May	01Jan – 30Jun	
99.9%	616.3	652.3	622.0	622.0	
99%	622.9	660.5	632.0	636.0	
95%	654.8	682.4	667.2	673.8	
90%	698.5	715.5	705.9	707.2	
50%	797.4	804.4	801.0	802.1	
10%	818.5	826.3	812.5	819.7	
5%	825.3	829.6	818.1	826.6	
1%	830.0	830.0	824.3	830.0	
0.1%	830.0	830.0	830.0	830.0	

Table 2.5-5.Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for<br/>outmigrating juvenile salmonids using the Base Case operational scenario (Oct<br/>1, 1970 to Sept 30, 2012).

Table 2.5-6.	Percent exceedance of mean daily pool elevations of Don Pedro Reservoir for
	arriving adult salmonids using the Base Case operational scenario (Oct 1, 1970
	to Sept 30, 2012).

	Base Case Reservoir Elevations (ft)			
Percent of Time Exceeded	Annual	Arriving Adult Fall-Run Chinook 01Oct – 31Dec	Arriving Adult Spring-Run Chinook 01Mar – 30Jun	Arriving Adult Steelhead 01Oct – 31Mar
99.9%	616.3	616.1	640.3	616.1
99%	622.9	617.5	652.6	621.5
95%	654.8	625.1	682.5	639.1
90%	698.5	667.3	710.5	678.9
50%	797.4	792.9	804.1	794.7
10%	818.5	801.4	823.3	807.1
5%	825.3	803.1	828.6	810.6
1%	830.0	810.1	830.0	821.0
0.1%	830.0	815.6	830.0	829.3

#### 2.6 Hydrologic Conditions Relative to Fish Passage

The objective for fish passage design is to provide suitable hydraulic conditions over a range of reasonable streamflows under which the targeted fish species and life stages are expected to migrate, either upstream or downstream. Understanding the recurrence and magnitude of such stream flows is an important component in establishing the anticipated range of flows which directly influences the sizing and complexity of fish passage facilities. Available hydrologic data were obtained and preliminary analyses were performed in order to define the anticipated range of flows that coincide with fish migration for each target species. A summary of the available data and results of the analysis are provided in the following paragraphs.

Two different hydrologic conditions need to be addressed to accommodate upstream and downstream fish passage goals. Adult upstream fish passage design will be influenced by the flows occurring downstream of the La Grange Project. These flows are regulated by Don Pedro Reservoir operations. Downstream collection of out-migrating juvenile fish that originate above

Don Pedro Reservoir will be influenced by the combination of seasonal flows from unregulated portions of the upper watershed and flows from the portion of the watershed regulated by the CCSF Hetch Hetchy Project. Depending on the water year type, the natural hydrograph may dominate during juvenile outmigration in wetter years; however, regulated flows may dominate in dry water years. In winter, summer and fall months, the hydrograph upstream of the study area will be dominated by operational flows regulated by CCSF facilities. The timing, complexity, and downstream migration triggers of juvenile life stages of the target species are unknown and may vary from what is currently observed in the lower Tuolumne River below LGDD or in other Central Valley rivers where target species are present.

#### 2.6.1 River Flow Data

Flow data collected by the United States Geological Survey (USGS) is available on the Tuolumne River approximately 0.5 miles downstream of the LGDD (USGS Gage 11289650). At LGDD, diversions are also made into the adjacent Modesto and Turlock main canals. USGS Gage 11289650 is active and has current data available, while USGS Gage 11289651 has daily flow data available through September 30, 2012.

Flows upstream of the Don Pedro Reservoir at Wards Ferry Bridge are collected by USGS Gage 11285500 which began collecting mean daily flow data on December 5, 2013 and is currently active. In combination, the available flow data obtained from gaging stations does not adequately characterize the potential frequency, magnitude, and duration of flow needed to evaluate potential fish passage alternatives.

For the purposes of this assessment the flow simulations resulting from the Tuolumne River Daily Operations Model were used to assess the potential frequency, magnitude, and duration of flow into Don Pedro Reservoir, reservoir stage, and flow measured at La Grange Bridge downstream of the LGDD. The resulting simulated data provides a continuous set of mean daily values for all required locations sufficient to assess factors that may influence development of fish passage facilities concepts. The Historical data set reflects the combination of both the regulated and unregulated portions of the upper watershed while the calculated Base Case data set is referred to as the Base Case project operational scenario. The Base Case operational scenario depicts the operation of the Don Pedro Project in accordance with its current FERC license, ACOE flood management guidelines, and the Districts' irrigation and M&I water management practices. Detailed summaries of simulation development and the resulting data are presented in Appendix B-2 of the Don Pedro Hydroelectric Project Final License Application (TID/MID 2013b).

#### 2.6.2 Inflow to Don Pedro Reservoir

Inflow into Don Pedro Reservoir is characterized in the following section using a combination of historical data sources and the future casted predictions from the Base Case operational model results. The percent exceedance of flows into Don Pedro Reservoir based upon the Historical data set is summarized in Table 2.6-1. The calculated values show that the median inflow (50 percent exceeded) to Don Pedro is 1,240 cubic feet per second (cfs) on an annual basis and ranges from 2,319 to 3,213 cfs during the anticipated migration periods of target fish species.

The percent exceedance of flows into Don Pedro Reservoir using the Base Case operational scenario is summarized in Table 2.6-2. The median inflow for this scenario to Don Pedro is anticipated to be 860 cfs on an annual basis and ranges from 2,701 to 4,024 cfs during the anticipated migration periods of target fish species.

Table 2.6-1.	. Historical exceedance Tuolumne River flows into Don Pedro Reservoir for
	outmigrating juveniles using a period of record of Oct 1, 1970 to Sept 30, 2012

	Historic	Historical Tuolumne River Flows into Don Pedro Reservoir (cfs)			
Percent		Outmigration	Outmigration	Outmigration	
of Time		Fall-Run Chinook	Spring-Run Chinook	Steelhead	
Exceeded	Annual	01Apr – 30Jun	01Jan – 31May	01Jan – 30Jun	
99%	84	184	120	122	
95%	194	467	372	366	
90%	308	873	654	628	
50%	1,240	3,213	2,319	2,415	
10%	5,141	7,934	5,927	6,727	
5%	7,018	10,044	7,670	8,507	
1%	12,037	14,021	12,767	13,332	

Table 2.6-2.	Base Case exceedance Tuolumne River flows into Don Pedro Reservoir for
	outmigrating juveniles using a period of record of Oct 1, 1970 to Sept 30, 2012.

	Base Case Tuolumne River Flows into Don Pedro Reservoir (cfs)			
Percent		Outmigration	Outmigration	Outmigration
of Time		Fall-Run Chinook	Spring-Run Chinook	Steelhead
Exceeded	Annual	01Apr – 30Jun	01Jan – 31May	01Jan – 30Jun
99%	101	367	154	162
95%	164	577	309	356
90%	235	859	559	555
50%	860	4,024	2,701	2,781
10%	5,828	8,208	6,854	7,337
5%	7,547	9,489	8,114	8,634
1%	11,449	14,277	11,210	13,568

#### 2.6.3 River Flow below LGDD

River discharge immediately downstream of the La Grange Project is characterized in the following section using a combination of historical data sources and the future casted predicted predictions from the Base Case operational model results. The percent exceedance of flows based upon Historical data set is summarized in Table 2.6-3. The calculated values show that the median discharge (50 percent exceeded) downstream of the La Grange Project is 257 cfs on an annual basis and ranges from 306 to 337 cfs during the anticipated migration periods of target fish species. The percent exceedance of flows below the La Grange Project based upon the Base Case operational scenario is summarized in Table 2.6-4. The median inflow for this scenario is 250 cfs on an annual basis and ranges from 300 to 767 cfs during the anticipated migration periods of target fish species.

	Historical Tuolumne River Flows below LGDD (cfs)			
Percent of Time Exceeded	Annual	Arriving Adult Fall-Run Chinook 01Oct – 31Dec	Arriving Adult Spring-Run Chinook 01Mar – 30Jun	Arriving Adult Steelhead 01Oct – 31Mar
99%	6	2	8	8
95%	11	61	11	92
90%	18	119	17	120
50%	257	306	321	337
10%	3,290	1,460	5,110	3,790
5%	5,000	2,750	7,130	4,930
1%	8,340	4,902	8,830	7,717

Table 2.6-3.	Historical exceedance Tuolumne River flows below LGDD for arriving adults
	using a period of record of Oct 1, 1970 – Dec 31, 2013.

<sup>1</sup> The minimum flow release below LGDD was 3 cfs prior to the 1996 settlement agreement. After 1996, operations of the Don Pedro Project were modified to provide no less than 50 cfs even in critical years as shown in Table 2.7-4.

Table 2.6-4.Base Case exceedance Tuolumne River flows below LGDD for arriving adults<br/>using a period of record of Oct 1, 1970 to Sept 30, 2012.

	Base Case Tuolumne River Flows below LGDD (cfs)			
Percent of Time Exceeded	Annual	Arriving Adult Fall-Run Chinook 01Oct – 31Dec	Arriving Adult Spring-Run Chinook 01Mar – 30Jun	Arriving Adult Steelhead 01Oct – 31Mar
99%	50	126	50	126
95%	50	126	50	150
90%	50	126	75	150
50%	250	300	767	300
10%	3,884	300	5,955	3,572
5%	5,979	1,800	7,499	5,675
1%	8,747	5,310	8,845	8,784

## 2.6.4 Minimum Releases to Support Existing Fisheries Resources on the Tuolumne River

In accordance with an agreement with the U.S. Department of the Interior, the San Francisco Public Utilities Commission (SFPUC) releases a minimum stream flow from Hetch Hetchy Reservoir. Once made, releases cannot be diverted below O'Shaughnessy Dam (i.e., at Early Intake); they flow down the Tuolumne River, are supplemented by releases at Kirkwood and Homm powerhouse and tributary flows, and enter Don Pedro Reservoir. A detailed summary of minimum releases required for normal, dry, and critical years is provided in Table 5.3.1-2 of the CCSF Program Environmental Impact Report (CCSF 2008). For normal years, minimum flow releases downstream of Early Intake range from a minimum of 50 cfs in December and January to 125 cfs in June through August. For dry years, minimum flow releases are a minimum of 35 cfs in December and January to 75 cfs in June through August.

Under its FERC license, the Don Pedro Project is required to provide minimum stream flows in the lower Tuolumne River. As of October 1 of each year, flows are adjusted to meet minimum flow and pulse flow requirements to benefit upstream migrating adult Chinook salmon. Minimum flows are adjusted on October 16 to benefit spawning, egg incubation, emergence, fry

and juvenile development, and smolt outmigration. Another adjustment is made on June 1 and continues through September 30. The schedule of flow releases to the lower Tuolumne River by water year type are contained in FERC's 1996 order (TID/MID 2013b). Minimum flow requirements ranging from "Median Dry" years to "Median Above Normal" years occur approximately 50.8 percent of the observed annual water years. Typical minimum flows during these periods range from 150 to 300 cfs from October 1 to October 16, 150 to 300 cfs from October 16 to May 31, and 75 to 250 cfs from June 1 to September 30. In critical years, instream flow requirements are as low as 50 cfs.

## 3.0 DESIGN CRITERIA AND GUIDELINES FOR FISH PASSAGE DESIGN

There are numerous guidelines and design criteria established by the CDFW and NMFS which provide a framework for fish passage design. Other literature sources are available which provide design guidance and biological criteria for the collection, handling, and transport of fish. Although not explicitly referenced, applicable criteria are used in this TM No. 1 throughout the passage alternatives formulation process. Some are specifically outlined in the alterative descriptions. Such reference documentation includes the following:

- California Salmonid Stream Habitat Restoration Manual Part XII Fish Passage Design and Implementation. CDFG 2009.
- Fish Screening Criteria. CDFG 2000.
- Fish Screening Criteria for Anadromous Salmonids. NMFS Southwest Region, 1997.
- Anadromous Salmonid Passage Facility Design. NMFS Northwest Region, 2011.
- Fisheries Handbook of Engineering Requirements and Biological Criteria. U.S. Army Corps of Engineers (Milo Bell), 1991.

#### 3.1 Selection of Range of Reservoir Pool Elevations Coincident with Target Fish Species Migration

Reservoir pool fluctuation is a significant factor in determining the type, size, and complexity of upstream and downstream fish passage facilities. Upstream fish passage technologies may require safe release or exit of fish to the reservoir pool. Downstream fish passage technologies occurring in the reservoir either float or possess multiple inlets to maintain a hydraulic connection with the reservoir surface. Each type of fish technology must accommodate some form of continuous hydraulic connection throughout the anticipated range of pool elevations. As the pool fluctuations become larger, so does the facility. In many cases, certain fish passage technologies can be dismissed due to pool fluctuation alone.

The overall fish passage performance of downstream passage facilities is measured and regulated based upon reservoir passage efficiency, collection efficiency, passage efficiency to a downstream release point, and percent mortality. Typical expectations for facilities of this type are in the range of 85 to 95 percent overall with a minimum compliance of 75 percent. The overall fish passage performance expectations of upstream passage facilities are similar in nature but based upon different evaluation factors such as migration delay, collection efficiency at the facility entrance, fall back, rate at which fish are passed, and stress and mortality considerations.

As introduced in the data presented Section 2.5 of this document Don Pedro Reservoir experiences a high level of seasonal fluctuation. In reference to the Historical data set, results indicate that 98 percent of potential reservoir conditions may be accommodated with a downstream passage facility designed for an overall range of reservoir pool elevations from 651.6 feet to 827.0 feet which is a total of 175.4 feet. Ninety-eight percent of potential conditions may be accommodated with an upstream fish passage facility designed for an overall

range of reservoir pool elevations from 599.4 feet to 826.3 feet which is a total of 226.9 feet. Predicted Base Case conditions indicate that 98 percent of anticipated reservoir conditions would be accommodated with a downstream fish passage facility designed for an overall range of reservoir pool elevations from 632.0 feet to 830.0 feet which is a total of 198.0 feet. Ninety-eight percent of potential conditions may be accommodated with an upstream fish passage facility designed for an overall range of reservoir elevations from 617.5 feet to 830.0 feet which is a total of 212.5 feet. This information suggests that downstream facilities may be required to accommodate on the order of 200 feet.

The expectations for facility performance are currently unknown at this point in the process and the above information is presented as a generalization based upon the operational requirements of other known facilities. These requirements are typically set through consultation with fisheries agencies and are necessary to proceed further into the related assessment of engineering and economic feasibility. Further input from the LPs is required to determine performance criteria and expectations for this study. After the performance criteria and operation expectations are identified, several key factors can be selected by the assessment team such as the target range of reservoir elevations that would require accommodation of downstream fish passage.

#### 3.2 Selection of River Flow Design Guidelines Coincident with Target Fish Species Migration

Fish passage design flow criteria also influences a number of factors associated with fish passage facilities size and complexity. Guidelines presented by NMFS are based on exceedance calculations of daily mean flows but can be modified to suit site-specific requirements. The exceedance flows statistically represent the flow equaled or exceeded during certain percentages of the time when migrating fish may be present or collected at a facility. The established guidelines are used to set instream flow depths, flow velocities, debris and bedload conditions, fish attraction requirements, tailwater fluctuations, and numerous other factors which a facility may experience during anticipated operational periods.

NMFS (2011) states that the high fish passage design flow shall be the mean daily average streamflow that is exceeded 5 percent of the time during periods when migrating fish may be present. NMFS (2011) also states that low fish passage design flow shall equal the mean daily average streamflow that is exceeded 95 percent of the time during periods when migrating fish may be present. These criteria are generally applied to facilities which are designed to collect adult anadromous salmon and steelhead migrating upstream. Currently, there are no full scale downstream in-river collection facilities for outmigrating juvenile fish and post-spawn adult fish. As such, there are no associated guidelines with such a facility. The anticipated operational range will largely be a function of the stipulated performance requirements if such a facility is to be permitted and constructed. Therefore, for the purposes of this TM No. 1 the same 5 to 95 percent guidelines are assumed for downstream collection facilities as well.

Design flow criteria for downstream in-river collection facilities would rely on records and corresponding percent exceedance values for river flows entering at the head of Don Pedro Reservoir. These values are presented in Section 2.6.2. Design flow criteria for upstream

collection facilities would rely on the records and corresponding percent exceedance values for river flows passing downstream of the La Grange Project. These values are presented previously in Section 2.6.3. The anticipated low (exceeded 95 percent of the time) and high (exceeded 5 percent of the time) fish passage design flows for upstream and downstream collection facilities are summarized in Table 3.2-1.

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Facility Type	Low Design Flow (cfs)	High Design Flow (cfs)
(nydrologic scenario)	NMFS (95% Exceedance)	NMFS (5% Exceedance)
Upstream (Historical)	11	7,130
Upstream (Base Case)	50	7,499
Downstream (Historical)	366	10,044
Downstream (Base Case)	309	9,489

Table 3.2-1.	Fish passage facility flows calculated for the anticipated period of migration for
	target fish species.

Concept level designs for upstream fish passage facilities will be formulated to facilitate conditions which promote passage throughout the range of anticipated migration flows: the lowest of the low fish passage design flows through the highest of the high fish passage design flows which represents the range of targeted fish species and life stages. The resulting low fish passage design flow is 11 cfs and the high fish passage design flows is 50 to 7,499 cfs using Base Case operational scenario data. In summary, any proposed upstream passage facility will need to meet fish passage design flow or are below the low fish passage design flow, compliance with fish passage criteria is not assured and is typically not expected by regulatory agencies.

It should be noted that although the statistical calculations identify a low fish passage design flow of 11 cfs, this low flow value will likely be regulated by the minimum flow release schedule (refer to Table 2.5-2 in TID/MID 2013a). The flow release schedule suggests that minimum river flows will likely be on the order of 150 to 300 cfs for most of the primary migration period between October 1 and May 31 and may only reach a low flow of 50 cfs during the worst of drought years. Therefore, the selected range of flows to be used for concept upstream fish passage facility development is 50 to 7,499 cfs.

Concept level designs for downstream fish passage facilities that are to be constructed in-river will also be formulated to facilitate conditions which promote passage throughout a similar range of anticipated migration flows. The resulting low fish passage design flow for downstream facilities is 366 cfs and the high fish passage design flow is approximately 10,044 cfs using Historical observations. The resulting range of flows is 309 to 9,489 cfs using Base Case operational scenario data.

Contrary to the upstream fish passage facilities which correspond with flows occurring downstream of the La Grange Project, the downstream fish passage facility will rely on flows being conveyed into Don Pedro Reservoir. Low flow values will similarly be regulated by the minimum flow release schedule adhered to by CCSF. Therefore, the selected range of flows to be used for concept downstream fish passage facility development is 50 to 9,489 cfs.

## **3.3 Other Criteria and Guidelines Influencing Potential Fish Passage Facilities Configuration and Size**

Many other design criteria and guidelines are applicable to upstream and downstream fish passage facilities beyond the pool elevation and instream design flows. For brevity, applicable criteria which have significant influence on fish passage facilities size, configuration, and complexity are summarized by category in the following sections.

#### **3.3.1** Fish Screen Criteria

Any water diversions that could capture fish and introduce them into areas or flow paths that they cannot escape must include fish screens. The exception is both low- and high-head hydropower facilities where other means are implemented to reduce harm to outmigrating fish such as Eicher screens and/or fish friendly turbine technologies. Specific criteria relative to adequate screen area, maintenance features, and facility hydraulics must be met to assure compliance with regulatory requirements. Fish screens are designed using the Screening Criteria Guidelines provided by CDFW (2000) and the NMFS Northwest Region's Anadromous Salmonid Passage Facility Design (NMFS 2011). The intent of the fish screening criteria is to provide design guidelines and criteria that protect juvenile fish from entrainment or impingement and to guide juveniles to a collection and/or bypass system.

The following is a summary of the fish screen criteria for the design of a screening system:

- Structure Orientation In a river, the screen must be oriented parallel to river flow. Upstream and downstream transitions must minimize eddies. In a reservoir, the screening and bypass system must be designed to withdraw water from the appropriate elevation for best fish attraction and providing appropriate water temperature control downstream. The design must accommodate the entire range of forebay fluctuations (NMFS 2011).
- Screen Size The minimum screen area required is determined by dividing the maximum screened flow by the allowable approach velocity (NMFS 2011).
- Approach Velocity Uniform approach velocity must be provided across the face of the screen. Approach velocity for the listed target species must be less than 0.33 feet/second (ft/s) for actively cleaned systems and measures to adjust flow patterns across the face of the screen to assure uniformity is maintained must be provided (CDFW 2000). Approach velocities of 0.4 or 0.2 ft/s are allowed for diversions less than 40 cfs (CDFW 2000). For passively cleaned screens, approach velocity must not exceed 0.2 ft/s (NMFS 2011 and CDFW 2000).
- Sweeping Velocity –The sweeping velocity should be greater than the approach velocity. Sweeping velocity must be maintained or gradually increase for the entire length of screen (NMFS 2011; CDFW 2000).
- Travel Time Fish can only be exposed to a screen face for a maximum of 60 seconds, assuming fish are moving at rate equal to the sweeping velocity (NMFS 2011; CDFW 2000).
- Screen Openings For salmonid fry, screen opening size must not exceed 1.75 mm, with a
  minimum open area of 27 percent. If the screen is made from wire mesh or perforated plate,

the screen opening size must not exceed 3/32 inches, with a minimum open area of 27 percent (NMFS 2011; CDFW 2000).

- Screen Materials The screens must be constructed of rigid, corrosion-resistant material with no sharp edges or projections (e.g., stainless steel, plastic) (NMFS 2011).
- Screen Cleaning Automatically cleaned screens are referred to as active screens. Cleaning systems should provide complete debris removal at least every 5 minutes and operated as required to prevent debris accumulation. The cleaning system should be automatically triggered if the head differential across the screen exceeds 0.1 feet or as agreed to by NMFS (NMFS 2011).
- Redundancy Although not required by fisheries regulatory agencies, it is common design
  practice to oversize screen area for maximum diversion by a factor of 1.2 to 1.3.

#### **3.3.2** Fish Bypass Criteria

Bypass systems are designed to facilitate both juvenile and adult fish downstream passage back to the river system, typically around a diversion or fish screen system, in a manner that minimizes risk of injury and delay. Fish bypass systems typically contain three major components; the bypass entrance, conduit, and exit.

- 3.3.2.1 Bypass Entrance Criteria
- Flow Control Independent flow control should be provided at each bypass entrance (NMFS 2011).
- Travel Time Fish are to enter a bypass within 60 seconds of exposure to any length of screen (NMFS 2011).
- Velocity Bypass entrance velocity must be greater than 110 percent of the maximum screen-sweeping velocity. Velocity should not decrease between the screen terminus and bypass entrance and should accelerate gradually (NMFS 2011).
- Acceleration The flow should not decelerate and should not exceed an acceleration rate of 0.2 ft/s per foot of travel (NMFS 2011).
- Lighting Ambient lighting is required at the entrance to the bypass flow control (NMFS 2011).
- Dimensions Bypass entrance should be a minimum of 18 inches wide, and its height must extend from floor of the screen to water surface (NMFS 2011). For weirs used in bypass systems that have diversions greater than 25 cfs, a minimum weir depth of 1 foot should be maintained throughout the smolt out-migration period (NMFS 2011).
- Juvenile Capture Velocity A minimum velocity of 8 ft/s is a common design threshold used in situations that require the capture of juvenile salmonids. Experience with current projects will be considered if a bypass system becomes part of the facility design.

#### 3.3.2.2 Bypass Conduit Criteria

- Materials and fittings Smooth pipes, joints, and other interior surfaces are required to minimize turbulence and the potential for fish injury. Closure valves should not be used within the bypass pipe (NMFS 2011).
- Flow Transitions Pumping if fish are within the bypass system is not allowed. If site conditions permit, bypass flows should be open channel (NMFS 2011). Where site conditions don't permit open channel bypass flows, a bypass pipe may be used. NMFS criteria state that pressures within bypass pipes must be equal to or above atmospheric pressure. NMFS criteria also state that transitions from pressurized to non-pressurized (or vice-versa) should be avoided within the pipe. Free-fall of fish within a pipe or enclosed conduit within the bypass system is not allowed (NFMS 2011).
- Bypass Flow Bypass flow should be approximately 5 percent of the total screened flow (NMFS 2011). Based on professional judgment, this proportion may be considered a minimum. Higher bypass flow proportions will be considered if a bypass is included in the design.
- Velocity NMFS criteria state the bypass pipe should be designed to have velocities between 6 and 12 ft/s; however, higher velocities can be approved with special attention to pipe and joint smoothness (NMFS 2011).
- Geometry NMFS requires the open channel or pipe diameter to be sized based on bypass flow and slope in order to meet other bypass conduit criteria.
- Bends The ratio of bypass centerline to pipe diameter must be 5 or greater, and larger ratios may be required for super-critical velocities (NMFS 2011).
- Depth NMFS criteria requires a minimum depth of at least 40 percent of the bypass pipe diameter, unless otherwise approved (NMFS 2011).
- Hydraulic Jump Hydraulic jumps should not occur within the pipe (NMFS 2011).

#### 3.3.2.3 Bypass Exit Criteria

- Velocity The outfall impact velocity, the velocity of the bypass flow entering the river, should not exceed 25 ft/s (NFMS 2011).
- Location The outfall should be located in an area with strong downstream currents, at least 4 ft/s, free of eddies, reverse flow, or likely predator habitat. The outfall should also be located in an area with sufficient depth to avoid fish injuries (NMFS 2011).
- Adult Attraction The bypass outfall must be designed to avoid the attraction of upstream migrants. Upstream migrants might leap at the outfall; therefore, provisions for minimizing risk to injury or stranding on the bank must be included in the outfall design (NMFS 2011). It should be noted that this criteria is only applicable where upstream and downstream passage facilities are separate.
#### 3.3.2.4 Velocity Barrier Criteria

Velocity barriers create a combination of shallow depth and high velocity conditions that restrict a fish's ability to swim and leap into oncoming flow. Barriers are commonly used to help guide upstream migrating fish to the entrance of a fish passage facility. A velocity barrier typically consists of a full-spanning concrete apron that distributes streamflow evenly across the width of the channel, and a vertical weir that is higher than the leaping ability of the target fish species. Velocity barrier design guidelines for anadromous salmonids have been developed by NMFS (NMFS 2011) and include the following:

- The minimum weir height relative to the maximum apron elevation is 3.5 feet.
- The minimum apron length (extending downstream from base of weir) is 16 feet.
- The minimum apron downstream slope is 16:1 (horizontal:vertical).
- The maximum head over the weir crest is two feet.
- The elevation of the downstream end of the apron shall be greater than the tailrace water surface elevation corresponding to the high design flow.
- Other combinations of weir height and weir crest head may be approved by NMFS Hydro Program staff on a site-specific basis.
- The flow over the weir must be fully and continuously vented along its entire length, to allow a fully aerated nappe to develop between the weir crest and the apron.

## **3.3.3** Fishway Criteria

Upstream fish passage designs at dams use widely recognized fishway design guidelines and references and are traditionally designed for the adult fish life stage. There are three major components to a fishway: the fishway entrance, fish ladder, and fishway exit. The fishway entrance's primary objective is to maximize fish attraction. The fish ladder's primary objective is to provide hydraulic conditions that promote fish passage up and around a passage barrier. The fishway exit's primary function is to maintain hydraulic conditions suitable for fish passage for the range of forebay or reservoir water surface elevations. The design criteria specific to each component is presented below.

## 3.3.3.1 Fishway Entrance

- Entrance Location The entrance located should be based on site-specific operations and stream flow characteristics. Entrances must be placed in locations where fish can easily locate the attraction flow. Multiple entrances may be required if the site has multiple locations where fish hold (NMFS 2011).
- Entrance Geometry The entrance should have a minimum width of 4 feet and depth of 6 feet (NMFS 2011).
- Entrance Head Differential– The head differential at the entrance should be maintained between 1.0 and 1.5 feet (NMFS 2011).

 Attraction Flow – Minimum 5 to 10 percent of high fish passage design flow (NMFS 2011). Fishway attraction flow must be adequate to compete with spillway or powerhouse flows for attraction of fish. Auxiliary water systems may be used to increase the fishway entrance attraction flow.

# 3.3.3.2 Fish Ladder Design

- Head Differential The hydraulic drop between each pool within the fish ladder must be a maximum of 1 foot (NMFS 2011).
- Minimum Pool Dimensions Minimum of 8 feet long, 6 feet wide, and 5 feet deep (NMFS 2011).
- Energy Dissipation Factor (EDF) Each pool volume should be sized to have a maximum energy dissipation factor of 4 ft-lb/sec/ft3. Only the volume of the pool having active flow and contributing to energy dissipation should be included in the energy dissipation calculation (NMFS 2011).
- Minimum Depth Over Weirs Overflow weirs in fishways should have 1 foot of flow depth over weirs (NMFS 2011).
- Turning pools Turning pools are required at each location where the fishway bends more than 90°. Turning pools should be at least double the length of the designed standard pool measured along the centerline (NMFS 2011).
- Orifice Dimensions NMFS criteria state orifices should be a minimum of 15 inches high and 12 inches wide (NMFS 2011).
- Freeboard Freeboard must be a minimum of 3 feet within the fish ladder at the high design flow (NMFS 2011).
- Lighting The use of ambient lighting throughout the entire fishway is preferred. Abrupt lighting changes within the fishway are not allowed (NMFS 2011).

#### 3.3.3.3 Fishway Exit

- Head Differential The fishway exit head differential should range from 0.25 to 1.0 feet (NMFS 2011). In order to accommodate forebay fluctuations this may require the use of adjustable weirs, multiple exits at different elevations, or other engineered solutions that accommodate forebay fluctuations.
- Length A minimum channel length of two standard ladder pools should be incorporated upstream of the exit control (NMFS 2011).
- Location The exit should be located along the shoreline at a location with similar depths to those within the fishway and with velocities less than 4.0 ft/s. Exits should be located well upstream of spillways, sluiceways, and powerhouses to minimize the risk of being swept downstream.
- Debris Rack Coarse trash racks should be installed at the fishway exit and must be oriented at a deflection angle greater than 45° relative to the river flow (NMFS 2011).