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GOVERNOR



MATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

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## State Water Resources Control Board

**MAR 03 2014**

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

Dear Secretary Bose:

### COMMENTS ON DRAFT LICENSE APPLICATION FOR DON PEDRO HYDROELECTRIC PROJECT, FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2299; TUOLUMNE COUNTY

Modesto Irrigation District and Turlock Irrigation District (Districts<sup>1</sup>) own and operate the Don Pedro Hydroelectric Project (Project), also known as Federal Energy Regulatory Commission (FERC or Commission) Project No. 2299. On November 26, 2013, the Districts filed the Project's Draft License Application (DLA) with FERC. The DLA contains the Districts' Project proposal for their new FERC license. Please note that State Water Resources Control Board (State Water Board) staff provided comments on the District's January 6, 2014, Updated Study Report in a separate letter dated February 26, 2014. State Water Board staff's comments on the District's DLA are provided in Attachment A. Additional information in support of State Water Board staff's comments is provided in Attachment B.

In accordance with Item 5 under the Pre-Application Filing Activities Under the Integrated Licensing Process section of the memorandum of understanding executed between the Commission and State Water Board on November 19, 2013, State Water Board staff will work with Commission staff to set up a time to discuss the needs of our respective agencies related to the Commission's issuance of the license and the State Water Board's issuance of water quality certification.

If you have any questions regarding this letter, please contact me at (916) 445-9989 or by email at [Peter.Barnes@waterboards.ca.gov](mailto:Peter.Barnes@waterboards.ca.gov). Written correspondence should be directed to:

State Water Resources Control Board  
Division of Water Rights  
Water Quality Certification Program  
Attn: Peter Barnes  
P.O. Box 2000  
Sacramento, CA 95812

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<sup>1</sup> Districts also refers to the consultants that represent them.

**MAR 03 2014**

Sincerely,



Peter Barnes  
Engineering Geologist  
Water Quality Certification Program

Enclosures: Attachment A – Comments on the Draft License Application for the New Don Pedro Hydroelectric Project  
Attachment B – Final 2008 California 303(d)/303(b) Integrated Report Supporting Information – Tuolumne River, Temperature

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The following comments are provided by the State Water Resources Control Board (State Water Board) staff on the Draft License Application (DLA) for the New Don Pedro Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC or Commission) Project No. 2299. The Project is owned and operated by Modesto Irrigation District and Turlock Irrigation District (Districts).

**Regulatory Authority**

The Districts must obtain water quality certification from the State Water Board, pursuant to Section 401(a)(1) of the Federal Clean Water Act (CWA) (33 U.S.C. §1341(a)(1)). Section 401 of the CWA requires any applicant for a federal license or permit, which may result in any discharge to navigable waters, to obtain water quality certification from the state in which the discharge originates that the discharge will comply with the state's water quality standards and other appropriate requirements of state or federal law. The State Water Board is the certifying agency under Section 401 for the Project. Accordingly, the State Water Board may set conditions implementing Clean Water Act requirements, including the requirements of Section 303 of the Clean Water Act for water quality standards and implementation plans, or to implement "any other appropriate requirement of State law." (33 U.S.C. § 1341(d).)

Under section 303 of the CWA and under the state's Porter-Cologne Water Quality Control Act, the Central Valley Regional Water Quality Control Board adopted, and the State Water Board and United States Environmental Protection Agency (USEPA) approved, the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan). The Basin Plan designates the beneficial uses of waters to be protected along with the water quality objectives necessary to protect those uses. The Basin Plan lists power, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat as beneficial uses of the Don Pedro Reservoir. Municipal and domestic supply is listed as a potential use. The Basin Plan identifies the following beneficial uses for the Tuolumne River from the Don Pedro Reservoir to the San Joaquin River: irrigation, stock watering, contact recreation, canoeing and rafting, non-contact recreation, warm freshwater habitat, cold freshwater habitat, cold migration (salmon and steelhead), warm spawning (striped bass, sturgeon, and shad), cold spawning (salmon and steelhead), and wildlife habitat. Municipal and domestic supply is listed as a potential use.

The beneficial uses together with the water quality objectives that are established to reasonably protect the beneficial uses constitute water quality standards under the terminology of the federal CWA. The Districts must evaluate the impacts of the Project on the Tuolumne River to determine whether the Project complies with both the Basin Plan and amendments to the *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, if adopted. The Districts must also address issues involving the alteration of water quality as a result of project operations, including loss of habitat from low flow conditions. The water quality certification analysis is based not only on proposed modifications to Project operations from the existing condition, but also on whether past, existing, or future operations may impair or degrade water quality.

The Districts must file an application for water quality certification once the Commission issues the Notice of Ready for Environmental Analysis. A complete application for a water quality certification must include a description of any steps that have been, or will be taken to avoid, minimize, or compensate for loss of, or significant adverse impacts to beneficial uses of water. (Cal. Code Regs. tit. 23, § 3856, subd. (h)(6)). If the Project will adversely affect water quality,

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then the Districts must describe the actions that the Districts will take to bring the Project into compliance with applicable water quality requirements, including water quality objectives established in order to protect and maintain the beneficial uses of the State's waters. During the licensing process, State Water Board staff will act in an advisory role to inform the Districts of the information necessary for a complete application for water quality certification. State Water Board staff cannot prejudge the outcome of any proceeding before the State Water Board on an application for water quality certification.

**Updated Integrated Licensing Process Schedule**

During the January 16, 2014 Updated Study Report (USR) meeting the Districts indicated that some studies such as the Chinook Salmon Otolith Study and the Tuolumne River Instream Flow Study are still ongoing. Some of the ongoing studies will not be completed until late 2014 and some information will not be filed with the Commission until early 2015. Additionally, on February 14, 2014 the Districts filed a letter with the Commission requesting an extension of time to implement the 2014 Predation Study Plan due to ongoing discussions with permitting agencies. If the extension is approved and the Predation Study Plan is carried out, the results would not be available until late 2014 at the earliest.

It is a statutory requirement that the Districts file their Final License Application (FLA) by April 30, 2014. If this relicensing is to follow the Integrated Licensing Process (ILP), FERC will tender notice of a FLA within 14 days of its filing. It is State Water Board staff's understanding that the tendering notice will include target dates for the following: the issuance of the acceptance for filing and ready for ready environmental analysis; filing of recommendations, preliminary terms and conditions, and fishway prescriptions; issuance of a draft National Environmental Policy Act (NEPA) document; filing of modified recommendations, mandatory terms and conditions and fishway prescriptions in response to a draft NEPA document; issuance of a final NEPA document; a deadline of submission of final amendments to the application; and readiness for a Commission decision.

State Water Board staff requests that the Commission take the ongoing studies and request for time extension into consideration when developing these deadlines. The notice of ready for environmental analysis is of particular importance to the State Water Board as it requires the Districts to submit their application for water quality certification under Section 401 of the Clean Water Act (CWA). Understanding when this is to occur is essential in allowing State Water Board staff to fulfill the commitments of the *Memorandum of Understanding Between the Federal Energy Regulatory Commission and the California State Water Resources Control Board Concerning Coordination of Pre-Application Activities for Non-Federal Hydropower Proposals in California* (MOU). The Communications section of the MOU states that the State Water Board will provide projected dates for a final decision of the merits of water quality certification for each project. State Water Board staff can better predict the projected date for a final decision on the Project based on a better understanding of other Project-related target dates, including when the Districts will file an application for water quality certification.

**Temperature**

The Tuolumne River from the Don Pedro Reservoir to the San Joaquin River was listed as impaired for temperature under Section 303(d) of the CWA in 2008. In previous comments to the Districts, State Water Board staff has indicated that this information must be included in the relicensing process. State Water Board staff has reviewed the DLA and cannot find a sufficient

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discussion of this matter. Although, the Districts have recognized the fact that the lower Tuolumne River is included on the CWA Section 303(d) list by including it in Table 3.4-14, there is no additional information or analysis included in the DLA.

A brief analysis of temperature in the lower Tuolumne River is included in *Section 4.0: Cumulative Effects of The Proposed Action*. Section 4.0 gives an overview of how flows in the lower Tuolumne River may affect temperature but there is only a brief mention of the impairment and no analysis of how the Project may be contributing to that impairment. Any application for water quality certification needs to contain this information. State Water Board staff also believes that clearly understanding the Project's effects on temperature and how it relates to the impairment is necessary in order to properly inform protection, mitigation and enhancement (PM&E) measures. Therefore, State Water Board staff requests that the Districts include this information in their FLA.

To assist the Districts in accomplishing this effort, State Water Board staff has included the Final 2008 California 303(d)/303(b) Integrated Report Supporting Information (Supporting Information) for the Tuolumne River temperature listing in Attachment B. This document outlines the information and criteria that was used to support the listing of the Tuolumne River as temperature impaired. The FLA should discuss how minimum instream flows controlled by the Districts' operation of the Project affect the temperature in the lower Tuolumne River and how such operations relate to the impairment listing. The FLA should also discuss how minimum instream flows can be altered to address the impairment.

In previous comments, State Water Board staff has maintained that the relicensing studies and environmental impact analyses should use the temperature criteria for salmonids outlined in the 2003 U.S. Environmental Protection Agency (USEPA) *Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (USEPA, 2003). The information in Attachment B further supports this request. The 2003 USEPA temperature criteria for salmonids was used as the Evaluation Guideline for five of the six Lines of Evidence used to support the listing of the Tuolumne River for temperature. State Water Board staff requests that any salmonids related PM&E measures included in the FLA be developed using the 2003 USEPA temperature criteria for salmonids. Using these criteria will help ensure the protection of beneficial uses and water quality objectives.

The temperature impairment in the lower Tuolumne River must be addressed through this relicensing. The State Water Board cannot issue a water quality certification for a Project which does not attempt to meet the water quality objectives and protect beneficial uses of the affected water body. As stated in the cover letter and previous comments, any application for water quality certification must include a description of the steps that will be taken to minimize, or compensate for loss of, or significant adverse impacts to beneficial uses of water. Additionally, if the Project does not comply with one or more of the water quality objectives or criteria, then the Districts must describe the actions that the Districts will take to bring the Project in compliance with applicable water quality objectives. If the Districts fail to use the proper water quality objectives when developing PM&E measures then the measures may not be sufficient to protect beneficial uses.

**General Comments**

State Water Board staff intends to use the information developed in this relicensing process to develop conditions in the water quality certification to ensure compliance with the CWA and with

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other requirements of state law. It is essential that the relicensing process consider all available technical information. Section 4.0, Cumulative Effects of the Proposed Action, of Exhibit E of the DLA contains a discussion of the State Water Board's ongoing related effort to establish flow objectives for the San Joaquin River and associated tributaries, including the Tuolumne River. State Water Board staff appreciates the Districts including this information as previously requested. While the State Water Board has not yet established flow objectives, it has developed technical information applicable to the Tuolumne River and this relicensing. State Water Board staff requests that the Districts review Appendix C of the *Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the Bay Delta: San Joaquin River Flows and Southern Delta Water Quality* (December 31, 2012), which was submitted by State Water Board staff as part of comments provided on the Initial Study Report. This information should be used as appropriate in developing PM&E measures for the FLA.

The Districts have only included three PM&E measures as part of their DLA: (1) a Vegetation Management Plan; (2) a Bald Eagle Management Plan; and (3) a Historic Properties Management Plan. Drafts of these plans are to be included in the FLA. State Water Board staff requests that these plans be developed in consultation with the agencies responsible for the protection of the respective resources. Effective consultation will help ensure that these plans are truly protective of environmental resources and designated beneficial uses within the Project area.

The three PM&E measures included in the DLA are not sufficient to mitigate all of the potential environmental impacts of the Project. The Districts have proposed to develop other PM&E measures in consultation with Relicensing Participants (RPs). The Districts intend to include these new PM&E in their FLA, which must be filed by April 30, 2014. To the knowledge of State Water Board staff, by the date of this letter, the Districts have not consulted with any RPs regarding the development of these additional PM&E's. Furthermore, there are outstanding studies that will not be complete prior to the FLA deadline and which are necessary to inform this consultation process. State Water Board staff does not believe there is sufficient time for meaningful consultation prior to the FLA due date.

The State Water Board encourages the Districts to work with the RPs to come to an agreement on PM&E measures to mitigate the environmental impacts of the Project. State Water Board staff understands that it will be difficult to accomplish this prior to the filing of the FLA. However, once the FLA is filed the Districts can continue to consult with RPs and develop appropriate PM&E measures which can be included in an amended FLA prior to the Notice of Ready for Environmental Analysis. State Water Board staff is committed to participating in this collaborative process in an advisory role to inform discussions regarding the proper protection of water quality objectives and beneficial uses. In order to cultivate a truly collaborative effort, State Water Board staff suggests that the Districts outline what they believe to be an effective consultation process in their FLA. The RPs will be able to review this process, submit comments as necessary, and hopefully come to an agreement on regarding how future collaboration will occur.

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**Specific Comments**

The comments in this section are confined to Exhibit E – Environmental Report of the DLA.

***Section 3.4.1.3: Water Quality***

Mercury

On page 3-37, the Districts state: *Methylmercury objectives in the Basin Plan do not apply to the vicinity of the Project.*

**Comment:** State Water Board acknowledges that this is currently a true statement. However, as the Districts are probably aware, the State Water Board is currently developing a Statewide Mercury Control Program for Reservoirs and Statewide Mercury Water Quality Objectives. It is anticipated that the Statewide Mercury Control Program for Reservoirs will address the 74 currently identified mercury-impaired reservoirs, one of which is Don Pedro Reservoir. It is also anticipated that the Statewide Mercury Water Quality Objectives will be aimed at protecting humans and wildlife that consume locally caught fish. The Statewide Mercury Water Quality Objectives will like be expressed as a methylmercury concentration in fish tissues and will be used to inform mercury policy, mercury pollution prevention plans, and water quality certifications. State Water Board staff requests that the Districts take this into consideration when developing their FLA.

Pesticides

On page 3-46 the Districts state that following: *Significant pesticide use does not occur within the Project Boundary, or in association with Project O&M [operations and maintenance] activities. Further, the Districts are aware of no instances where pesticide use in the vicinity of the Project has been reported to cause a nuisance or adversely affect designated beneficial uses.*

On page 4-10 the Districts then state: *DPRA [Don Pedro Recreation Agency] applies herbicides and pesticides to certain land areas at the Project. To control ground squirrels, a pesticide is applied in early spring or late fall as needed in the areas of developed recreation facilities. Pre- and post-emergent herbicides are used to treat invasive plants at campsite pads and road edges. Other areas treated with herbicides and pesticides include areas surrounding wastewater treatment facilities, wastewater ponds, shoreline trails and firebreaks, immediate areas around DPRA structures, immediate areas around shoreline restrooms, and semi-developed dispersed camping pads. These actions are not likely to contribute to have an effect on any cumulatively affected resources identified by FERC.*

**Comment:** While there may not be any *reported* instances where pesticide use in the vicinity of the Project has caused a nuisance or adversely affected a designated beneficial use, the potential still exists. The fact that an event has not been reported does not indicate that an event has not occurred. The application of pesticides and herbicides near recreation and wildlife areas has the potential to impact environmental resources, human health, and beneficial uses. Additionally, without quantifying the amount of pesticides and herbicides applied by DPRA, one is unable to determine whether or not it is significant. State Water Board staff

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requests that the Districts work with the appropriate resource agencies to develop a pesticide and herbicide use plan which will ensure that these impacts do not occur.

*Section 3.5.1.4: Fish Populations in the Lower Tuolumne River*

Physical Habitat Conditions

On pages 3-76 to 3-77 the Districts state: *Sediment model simulations indicate that without gravel augmentation, the channel bed from RM [River Mile] 52 to 39.7 would be slowly degrading and coarsening in response to a reduction in coarse sediment supply due to sediment retention in Don Pedro Reservoir. Gravel augmentation, however, has helped to increase coarse sediment storage in this area (TID/MID 2013a).*

**Comment:** The Districts have determined that sediment retention in Don Pedro reservoir has led to a reduction in sediment supply to the lower Tuolumne River. In recent years, this effect has been reduced due to gravel augmentation efforts. However, these gravel augmentation efforts are not guaranteed to continue in the future. State Water Board staff request that the Districts include a Gravel Augmentation Plan as a PM&E measure in the FLA. The details of this plan should be developed in consultation with the appropriate RPs. The Gravel Augmentation Plan should include measures aimed at mitigating the effects caused by gravel retention in Don Pedro reservoir.

Steelhead/Rainbow Trout In-River Rearing

On page 3-78 the Districts state: *Most LWD [large woody debris] captured in Don Pedro Reservoir originates upstream of the reservoir, and given the size of this LWD, a majority of it would pass through the lower river during high flows if it were not trapped in the reservoir (TID/MID 2013g).*

On page 3-97 the Districts state: *Because of its generally small size, location in the channel, and lack of complexity, most LWD in the lower Tuolumne River is unlikely to provide significant cover and habitat for *O. mykiss* (TID/MID 2013g). In addition, the amount of instream shelter in the form of boulders, aquatic vegetation, small woody debris, and terrestrial vegetation is very low.*

**Comment:** The Districts have identified that the quality of LWD is limited in the lower Tuolumne River. The Districts have also noted that a large quantity of LWD is captured in Don Pedro Reservoir which would otherwise pass through to the lower river during high flows. State Water Board staff believes that this illustrates a clear cause and effect. State Water Board staff recommends that any FLA accepted by the Commission should contain a LWD Management Plan that addresses the effects that of Don Pedro Reservoir on LWD in the lower Tuolumne River. This plan should be developed in consultation with the appropriate RPs.

**Section 4.3.2: Water Quality**

On page 4-63 the Districts state: *Water quality studies performed as part of relicensing indicate that the waters of the Don Pedro Reservoir and the Tuolumne River below La Grange diversion dam meet the state's water quality standards.*



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**Comment:** This statement is misleading and should be removed in the FLA. Don Pedro Reservoir and the Tuolumne River below La Grange diversion dam have significant water quality issues. As acknowledged by the Districts, Don Pedro Reservoir and the Tuolumne River are listed under Section 303(d) of the CWA as impaired for multiple water quality parameters (temperature and mercury) which indicates that they are not meeting the state's water quality standards. To address this ongoing issue, and to ensure that the operation of the Project does not further degrade water quality, the Districts should include a Water Quality Monitoring Plan in the FLA. This plan would also help the Districts determine if future PM&E measures are successful at mitigating the Project's impacts on water quality. This plan should be developed in consultation with the appropriate RPs.

*On page 4-64 the Districts state: The diversion of flows at La Grange diversion dam has more direct effect on river temperatures in the lower Tuolumne River by reducing the release from Don Pedro which reduces travel time and increases exposure to local meteorological conditions.*

**Comment:** State Water Board staff agrees with this assessment. However, the Districts fail to acknowledge the fact that the diversions at La Grange dam would not occur at the current magnitude without the presence of Don Pedro reservoir. The operation of La Grange diversion dam in conjunction with releases from Don Pedro reservoir results in reduced travel time of flows and increased exposure to local meteorological conditions which causes higher river temperatures. State Water Board staff requests that the Districts clarify this issue in the FLA. Additionally, the FLA should include PM&E measures which address the cumulative impact to temperature of both projects.

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Website:

[http://www.waterboards.ca.gov/rwqcb5/water\\_issues/tmdl/impaired\\_waters\\_list/final\\_2008\\_303d/table\\_of\\_contents.shtml](http://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/impaired_waters_list/final_2008_303d/table_of_contents.shtml)

Accessed: February 28, 2014

Tuolumne River: Temperature

**DECISION ID** 15207

<b>Pollutant:</b>	Temperature, water
<b>Final Listing Decision:</b>	List on 303(d) list (TMDL required list)
<b>Last Listing Cycle's Final Listing Decision:</b>	New Decision
<b>Revision Status</b>	Revised
<b>Sources:</b>	Source Unknown
<b>Expected TMDL Completion Date:</b>	2021
<b>Impairment from Pollutant or Pollution:</b>	Pollutant

**Weight of Evidence:** This pollutant is being considered for placement on the section 303(d) list under section 3.2 of the Listing Policy (Policy).

Six lines of evidence are available in the administrative record to assess this pollutant. These are temperature data on five life stages for anadromous fish and information on the historical and current state of the fishery. A large number of seven-day averages of maximum (7DADM) daily temperatures exceeded the anadromous fish life stage temperature criteria.

Based on readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:

1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Eighty-five of 147 yearly maximum 7DADM values calculated from temperature data collected during the adult migration life stage (Julian weeks 36 through 43) from 1996 to 2007 exceeded the narrative temperature objective, and this exceeds the minimum criteria for listing from Table 3.2 of the Policy.
4. One hundred two of 118 yearly maximum 7DADM values calculated from temperature data collected during the spawning life stage (Julian weeks 40 through 50) from 1996 to 2007 exceeded the narrative temperature objective, and this exceeds the minimum criteria for listing from Table 3.2 of the Policy.
5. Seventy-five of 137 yearly maximum 7DADM values calculated from temperature data collected during the smoltification life stage (Julian weeks 11 through 24) from 1997 to 2008 exceeded the narrative temperature objective, and this exceeds the minimum criteria for listing from Table 3.2 of the Policy.
6. Seventy-five of 137 yearly maximum 7DADM values calculated from temperature data collected during the juvenile rearing life stage (Julian weeks

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11 through 24) from 1997 to 2008 exceeded the narrative temperature objective, and this exceeds the minimum criteria for listing from Table 3.2 of the Policy.

7. Twenty-six of 78 yearly maximum 7DADM values calculated from temperature data collected during the steelhead summer rearing life stage (Julian weeks 24 through 37) from 1998 to 2007 exceeded the narrative temperature objective, and this exceeds the minimum criteria for listing from Table 3.2 of the Policy.

8. Pursuant to section 3.11 of the Policy, no additional data and information are available indicating that standards are not met.

9. The data used satisfies the data quality requirements of section 6.1.4.5.7 of the Policy.

**RWQCB Board Decision / Staff Recommendation:** After review of the available data and information, RWQCB-CVR staff concludes that the water body pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

**SWRCB Board Decision / Staff Recommendation:**

**USEPA Decision:**

**Lines of Evidence (LOEs) for Decision ID 15207**

LOE ID:	26536
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Aquatic Life Use:	Fish Migration
Number of Samples:	0
Number of Exceedances:	0
Data and Information Type:	QUALITATIVE (EVALUATED) ASSESSMENT – UNSPECIFIED
Data Used to Assess Water Quality:	In 1830 John Marsh noted that the Tuolumne River “particularly abounds with Salmon.” In 1849 Samuel Ward recalled a “plenteous fish summer of salmon, caught by rifle shot in the lower Tuolumne River.” A later historical account noted native people caught enough salmon to last all year. In 1929 G.H. Clark stated: The spawning run of the salmon...is during the spring and fall. The spawning grounds extend from Waterford to La Grange.” After the construction of the La Grange Dam, G.H. Clark noted, “the spring run amount to almost nothing but some fish come up in the fall.”
	Historical annual salmon escapement trends from 1940 to 2006 shows production steadily decreasing and may reach a point the population could become extinct given enough successive dry years. Pre New Don Pedro dam, escapement numbers averaged 28,000 fish per year.

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Post New Don Pedro dam, escapement numbers dropped to an average 6,000 fish per year. By 2000 (peak abundance that year 17,875 salmon) the fall run escapement population steadily declined and by 2006 had dropped to about 97% (500 salmon) below the year 2000 peak abundance.

The Department of Fish and Game submitted data to the Regional Water Quality Control Board regarding warm water temperatures present in the lower Tuolumne River during the fall adult upstream migration season for the years 1998 thru 2005 (Tables 8 and 10 in CDFG's Letter to the RWQCB dated February 2007). Also, CDFG submitted data to the RWQCB regarding warm water temperatures present in the lower Tuolumne River spawning habitat reaches during the first half of the spawning season for years 1998 thru 2005 (Table 12 in CDFG's Letter to the RWQCB dated February 2007).

Steelhead in the Tuolumne are considered winter run. Adult catch is considered infrequent. Juvenile rainbow trout out migrating the Tuolumne River are caught annually in seining surveys conducted by the Turlock Irrigation District. Anecdotal reports by anglers suggest that steelhead populations are good following years where summer rearing conditions are good (e.g. presence of cold water temperatures).

State and Federal agencies believe their abundance trends mirrors those of salmon causing them to be listed as threatened in the Central Valley. The Department of Fish and Game submitted data to the Regional Water Quality Control Board regarding warm water temperatures present in the lower Tuolumne River juvenile steelhead rearing reaches during the summer for years 2001 thru 2006 (Table 19 in CDFG's Letter to the RWQCB, 2007).

Data Reference:

[Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers](#)

Water Quality Objective/Criterion: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Objective/Criterion Reference:

In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional Board Basin Plan, Pg. III-8.00, Water Quality Objectives)

[Central Valley Regional Water Quality Control Board. Water Quality Control Plan \(Basin Plan\) for the California Regional Water Quality Control Board - Central Valley Region](#)

Evaluation Guideline:

In the absence of necessary data to interpret numeric water quality objectives, recent temperature monitoring data shall be compared to the temperature requirements of aquatic life in the water segment. In many cases, fisheries, particularly salmonids, represent the beneficial uses most sensitive to temperature. Information on current and historic conditions and distribution of sensitive beneficial uses (e.g., fishery resources) in the water segment is necessary, as well as recent

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temperature data reflective of conditions experienced by the most sensitive life stage of the aquatic life species. If temperature data from past (historic) periods corresponding to times when the beneficial use was fully supported are not available, information about presence/absence or abundance of sensitive aquatic life species shall be used to infer past (historic) temperature conditions if loss of habitat, diversions, toxic spills, and other factors are also listed (SWRCB, 2004).

Guideline Reference: [Water Quality Control Policy For Developing California's Clean Water Act Section 303\(d\) List. Sacramento, CA: State Water Resources Control Board, California Environmental Protection Agency.](#)

Spatial Representation: Tuolumne River.  
Temporal Representation: Information from year 1830 through 2006.

Environmental Conditions:  
QAPP Information: San Joaquin Fall-Run Chinook Salmon and Steelhead Rainbow Trout Historical Population Trend Summary. Dean Marston. September 2007.

QAPP Information Reference(s):

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LOE ID: 26535

Pollutant: Temperature, water  
LOE Subgroup: Pollutant-Water  
Matrix: Not Specified  
Fraction: None

Beneficial Use: Cold Freshwater Habitat

Number of Samples: 78  
Number of Exceedances: 26

Data and Information Type: PHYSICAL/CHEMICAL MONITORING  
Data Used to Assess Water Quality: Stream temperatures were measured by CDFG using data loggers (Stowaways, Tidbits and Hobo Temp Pros). Monitoring occurred from 1998 to 2007 depending on the monitoring station, identified by a river mile. The 7DADM was recorded weekly for each river mile. The maximum 7DADM value was calculated for each year. Based on the data provided, 26 out of 78 maximum 7DADM values exceeded the <18 degrees C criteria from 1998 to 2007.

Data Reference: [Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers](#)  
[Access and DSS database files of water temperature data, one each for the San Joaquin, Merced, Stanislaus, and Tuolumne rivers](#)

Water Quality Objective/Criterion: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional

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Objective/Criterion Reference:	Board Basin Plan, Pg. III-8.00, Water Quality Objectives) <a href="#"><u>Central Valley Regional Water Quality Control Board. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board - Central Valley Region</u></a>
Evaluation Guideline:	The guideline used was the 2003 US EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (USEPA, 2003). The document includes recommended temperature criteria for salmon and trout based on different life stages. The recommended temperature for steelhead summer rearing is <18 degrees C for a 7DADM. The steelhead summer rearing life stage occurs from river mile 52 (LaGrange Powerhouse) to 42.6 (Riffle K1). This life stage occurs during Julian weeks 24 through 37, which is approximately June 15th through September 15th.
Guideline Reference:	<a href="#"><u>EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. U.S. Environmental Protection Agency Region 10 Office of Water, Seattle, WA.</u></a>
Spatial Representation:	The steelhead summer rearing life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 42.6 (Riffle K1). Stream temperatures were monitored at the following stream location during the steelhead summer rearing life stage: River Miles 52 (LaGrange Powerhouse), 51.6 (Riffle A1), 50.8 (Riffle A7), 50.5 (Old La Grange Bridge), 49.7 (Riffle C1), 49 (Riffle 3B), 48.8 (Riffle D2), 47.5 (Basso Bridge), 45.7 (Riffle G2), 45.5 (Riffle 13B), 45 (Riffle G3), 43.4 (Riffle 19), 43.2 (Riffle I2), 42.9 (Riffle 21), and 42.6 (Riffle K1).
Temporal Representation:	The steelhead summer rearing life stage occurs during Julian weeks 24 through 37, which is approximately June 15th through September 15th. Data was collected during this life stage on a continuous basis (hourly intervals) from 1998 through 2007, depending on the station and year monitored. Refer to the CDFG 2007 report (Gordus, 2007) for specific years for each location.
Environmental Conditions: QAPP Information:	Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.
QAPP Information Reference(s):	
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LOE ID:	26534
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Cold Freshwater Habitat
Number of Samples:	137
Number of Exceedances:	75
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Assess Water Quality:	Stream temperatures were measured by CDFG using data loggers (Stowaways, Tidbits and Hobo Temp Pros). Monitoring occurred from 1997 to 2008 depending on the monitoring station, identified by a river

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Data Reference:	<p>mile. The 7DADM was recorded weekly for each river mile. The maximum 7DADM value was calculated for each year. Based on the data provided, 75 out of 137 maximum 7DADM values exceeded the &lt;16 degrees C criteria from 1997 to 2008.</p> <p><a href="#">Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</a> <a href="#">Access and DSS database files of water temperature data, one each for the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</a></p>
Water Quality Objective/Criterion:	<p>The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.</p>
Objective/Criterion Reference:	<p>In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional Board Basin Plan, Pg. III-8.00, Water Quality Objectives)</p> <p><a href="#">Central Valley Regional Water Quality Control Board. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board - Central Valley Region</a></p>
Evaluation Guideline:	<p>The guideline used was the 2003 US EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (USEPA, 2003). The document includes recommended temperature criteria for salmon and trout based on different life stages. The recommended temperature for salmon and trout juvenile rearing is &lt;16 degrees C for a 7DADM. The juvenile rearing life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 3 (Grayson Rotary Screw Trap). This life stage occurs during Julian weeks 11 to 24, which is approximately March 15th through June 15th.</p>
Guideline Reference:	<p><a href="#">EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. U.S. Environmental Protection Agency Region 10 Office of Water, Seattle, WA.</a></p>
Spatial Representation:	<p>The juvenile rearing life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 3 (Grayson Rotary Screw Trap). Stream temperatures were monitored at the following stream locations during the smoltification life stage: River Miles 52 (LaGrange Powerhouse), 51.6 (Riffle A1), 50.8 (Riffle A7), 50.5 (Old La Grange Bridge), 49.7 (Riffle C1), 49 (Riffle 3B), 48.8 (Riffle D2), 47.5 (Basso Bridge), 45.7 (Riffle G2), 45.5 (Riffle 13B), 45 (Riffle G3), 43.4 (Riffle 19), 43.2 (Riffle I2), 42.9 (Riffle 21), 42.6 (Riffle K1), 39.5 (Roberts Ferry Bridge), 38 (7-11 Gravel Company), 36.7 (Ruddy Gravel), 36.5 (Santa Fe Gravel), 35 (Riffle Q3), 33 (above Hickman Spill), 32 (below Hickman Spill), 31 (Hickman Bridge), 26 (Fox Grove), 23.6 (Hughson Sewer), 21 (above Santa Fe Bridge), 19 (Mitchell Road Bridge), 16.3 (above Dry Creek), 16 (9th Street Bridge), 12 (Carpenter Road Bridge), 3.4 (Shiloh Bridge), and 3 (Grayson Rotary Screw Trap).</p>
Temporal Representation:	<p>The juvenile rearing life stage occurs during Julian weeks 11 to 24, which is approximately March 15th through June 15th. Data was collected during this life stage on a continuous basis (hourly intervals) from 1997 to 2008, depending on the station and year monitored.</p>



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Environmental Conditions:	Refer to the CDFG 2007 report (Gordus, 2007) for specific years for each location.
QAPP Information:	Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.
QAPP Information Reference(s):	
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LOE ID:	26533
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Fish Migration
Number of Samples:	137
Number of Exceedances:	75
Data and Information Type:	PHYSICAL/CHEMICAL MONITORING
Data Used to Assess Water Quality:	Stream temperatures were measured by CDFG using data loggers (Stowaways, Tidbits and Hobo Temp Pros). Monitoring occurred from 1997 to 2008 depending on the monitoring station, identified by a river mile. The 7DADM was recorded weekly for each river mile. The maximum 7DADM value was calculated for each year. Based on the data provided, 75 out of 137 maximum 7DADM values exceeded the <16 degrees C criteria from 1997 to 2008.
Data Reference:	<a href="#"><u>Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</u></a> <a href="#"><u>Access and DSS database files of water temperature data, one each for the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</u></a>
Water Quality Objective/Criterion:	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.
Objective/Criterion Reference:	In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional Board Basin Plan, Pg. III-8.00, Water Quality Objectives) <a href="#"><u>Central Valley Regional Water Quality Control Board. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board - Central Valley Region</u></a>
Evaluation Guideline:	The guideline used was the 2003 US EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (USEPA, 2003). The document includes recommended temperature criteria for salmon and trout based on different life stages. The recommended temperature for salmon and trout smoltification is <16 degrees C for a 7DADM. The smoltification life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 3 (Grayson Rotary Screw Trap). This life stage occurs during Julian weeks 11 to 24,



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Guideline Reference:	which is approximately March 15th through June 15th. <a href="#">EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. U.S. Environmental Protection Agency Region 10 Office of Water, Seattle, WA.</a>
Spatial Representation:	The smoltification life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 3 (Grayson Rotary Screw Trap). Stream temperatures were monitored at the following stream locations during the smoltification life stage: River Miles 52 (LaGrange Powerhouse), 51.6 (Riffle A1), 50.8 (Riffle A7), 50.5 (Old La Grange Bridge), 49.7 (Riffle C1), 49 (Riffle 3B), 48.8 (Riffle D2), 47.5 (Basso Bridge), 45.7 (Riffle G2), 45.5 (Riffle 13B), 45 (Riffle G3), 43.4 (Riffle 19), 43.2 (Riffle I2), 42.9 (Riffle 21), 42.6 (Riffle K1), 39.5 (Roberts Ferry Bridge), 38 (7-11 Gravel Company), 36.7 (Ruddy Gravel), 36.5 (Santa Fe Gravel), 35 (Riffle Q3), 33 (above Hickman Spill), 32 (below Hickman Spill), 31 (Hickman Bridge), 26 (Fox Grove), 23.6 (Hughson Sewer), 21 (above Santa Fe Bridge), 19 (Mitchell Road Bridge), 16.3 (above Dry Creek), 16 (9th Street Bridge), 12 (Carpenter Road Bridge), 3.4 (Shiloh Bridge), and 3 (Grayson Rotary Screw Trap).
Temporal Representation:	The smoltification life stage occurs during Julian weeks 11 to 24, which is approximately March 15th through June 15th. Data was collected during this life stage on a continuous basis (hourly intervals) from 1997 to 2008, depending on the station and year monitored. Refer to the CDFG 2007 report (Gordus, 2007) for specific years for each location.
Environmental Conditions: QAPP Information:	Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.
QAPP Information Reference(s):	
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LOE ID:	26532
Pollutant:	Temperature, water
LOE Subgroup:	Pollutant-Water
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Fish Spawning
Number of Samples:	118
Number of Exceedances:	102
Data and Information Type: Data Used to Assess Water Quality:	PHYSICAL/CHEMICAL MONITORING Stream temperatures were measured by CDFG using data loggers (Stowaways, Tidbits and Hobo Temp Pros). Monitoring occurred from 1991 to 2007 depending on the monitoring station, identified by a river mile. The 7DADM was recorded weekly for each river mile. The maximum 7DADM value was calculated for each year. Based on the data provided, 102 out of 118 maximum 7DADM values exceeded the <13 degrees C criteria from 1996 to 2007.
Data Reference:	<a href="#">Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</a> <a href="#">Access and DSS database files of water temperature data, one each</a>

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Water Quality Objective/Criterion: The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

Objective/Criterion Reference: In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional Board Basin Plan, Pg. III-8.00, Water Quality Objectives)  
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Evaluation Guideline: The guideline used was the 2003 US EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (USEPA, 2003). The document includes recommended temperature criteria for salmon and trout based on different life stages. The recommended temperature for salmon and trout spawning is <13 degrees C for a 7DADM. The spawning life stage occurs from river mile 28 (near Santa Fe Bridge) to river mile 52 (Merced River Hatchery). This life stage occurs during Julian weeks 40 through 50, which is approximately October 1st through December 15th.

Guideline Reference: EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. U.S. Environmental Protection Agency Region 10 Office of Water, Seattle, WA.

Spatial Representation: The spawning life stage occurs from river mile 52 (LaGrange Powerhouse) to river mile 26 (Fox Grove). Stream temperatures were monitored at the following stream locations during the spawning life stage: River Miles 52 (LaGrange Powerhouse), 51.6 (Riffle A1), 50.8 (Riffle A7), 50.5 (Old La Grange Bridge), 49.7 (Riffle C1), 49 (Riffle 3B), 48.8 (Riffle D2), 47.5 (Basso Bridge), 45.7 (Riffle G2), 45.5 (Riffle 13B), 45 (Riffle G3), 43.4 (Riffle 19), 43.2 (Riffle I2), 42.9 (Riffle 21), 42.6 (Riffle K1), 39.5 (Roberts Ferry Bridge), 38 (7-11 Gravel Company), 36.7 (Ruddy Gravel), 36.5 (Santa Fe Gravel), 35 (Riffle Q3), 33 (above Hickman Spill), 32 (below Hickman Spill), 31 (Hickman Bridge), and 26 (Fox Grove).

Temporal Representation: The spawning life stage occurs during Julian weeks 40 through 50, which is approximately October 1st through December 15th. Data was collected during this life stage on a continuous basis (hourly intervals) from 1996 to 2007, depending on the station and year monitored. Refer to the CDFG 2007 report (Gordus, 2007) for specific years for each location.

Environmental Conditions:  
QAPP Information: Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.

QAPP Information Reference(s):

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LOE ID: 26232

Pollutant: Temperature, water

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LOE Subgroup:	Pollutant-Water
Matrix:	Not Specified
Fraction:	None
Beneficial Use:	Fish Migration
Number of Samples:	147
Number of Exceedances:	85
Data and Information Type: Data Used to Assess Water Quality:	PHYSICAL/CHEMICAL MONITORING Stream temperatures were measured by California Department of Fish and Game (CDFG) using data loggers (Stowaways, Tidbits and Hobo Temp Pros). Monitoring occurred from 1996 to 2007 depending on the monitoring station, identified by a river mile. The 7DADM was recorded weekly for each river mile. The maximum 7DADM value was calculated for each year. Based on the data provided, 85 out of 147 maximum 7DADM values exceeded the <18 degrees C criteria from 1996 to 2007.
Data Reference:	<a href="#">Cover letter, data and information regarding elevated water temperatures in the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</a> <a href="#">Access and DSS database files of water temperature data, one each for the San Joaquin, Merced, Stanislaus, and Tuolumne rivers</a>
Water Quality Objective/Criterion:	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.
Objective/Criterion Reference:	In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. (Central Valley Regional Board Basin Plan, Pg. III-8.00, Water Quality Objectives) <a href="#">Central Valley Regional Water Quality Control Board. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board - Central Valley Region</a>
Evaluation Guideline:	The guideline used was the 2003 US EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (USEPA, 2003). The document includes recommended temperature criteria for salmon and trout based on different life stages. The recommended temperature for salmon and trout adult migration is <18oC for a 7DADM. The adult migration life stage occurs from river mile 3.4 (Shiloh Bridge) to 52 (LaGrange Powerhouse). This life stage occurs during Julian weeks 36 through 43, which is approximately September 1st through October 31st.
Guideline Reference:	<a href="#">EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. U.S. Environmental Protection Agency Region 10 Office of Water, Seattle, WA.</a>
Spatial Representation:	The adult migration life stage occurs from river mile 3.4 (Shiloh Bridge) to river mile 52 (LaGrange Powerhouse). Stream temperatures were monitored at the following stream locations during the adult migration life stage: River Miles 3.4 (Shiloh Bridge), 12 (Carpenter Road Bridge),

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16 (9th Street Bridge), 16.3 (Dry Creek), 19 (Mitchell Road Bridge), 21 (Santa Fe Bridge), 23.6 (Hughson Sewer), 26 (Fox Grove), 31 (Hickman Bridge), 32 (below Hickman Spill), 33 (above Hickman Spill), 35 (Riffle Q3), 36.5 (Santa Fe Gravel), 36.7 (Ruddy Gravel), 38 (7-11 Gravel Company), 39.5 (Roberts Ferry Bridge), 42.6 (Riffle K1), 42.9 (Riffle 21), 43.2 (Riffle I2), 43.4 (Riffle 19), 45 (Riffle G3), 45.5 (Riffle 13B), 45.7 (Riffle G2), 47.5 (Basso Bridge), 48.8 (Riffle D2), 49 (Riffle 3B), 49.7 (Riffle C1), 50.5 (Old La Grange Bridge), 50.8 (Riffle A7), 51.6 (Riffle A1), and 52 (LaGrange Powerhouse).

Temporal Representation:

The adult migration stage occurs during Julian weeks 36 through 43, which is approximately September 1st through October 31st. Data was collected during this life stage on a continuous basis (hourly intervals) from 1991 through 2007, depending on the station and year monitored. Refer to the CDFG 2007 report (Gordus, 2007) for specific years for each location.

Environmental Conditions:

QAPP Information:

Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.

QAPP Information Reference(s):