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The Temperance Flat Dam Is Costly and Produces Little Water

The U.S. Bureau of Reclamation (Reclamation), the owner of the federal Central Valley Project (CVP), has completed a draft feasibility report¹ and an environmental impact statement² for the Temperance Flat Dam (TFD), conceived to be located in the upstream part of Reclamation's Millerton Reservoir³ in the San Joaquin River Gorge.⁴ Four⁵ and then five⁶ different dam operational scenarios were under study, but Reclamation was unable to identify any preferred alternatives⁷ because of serious unresolved issues⁸ and a number of project uncertainties.⁹

Reclamation's action alternatives all featured construction of a 665 foot-high dam¹⁰ with capacity to store an additional 1.26 million acre-feet (MAF) of water.¹¹ But regardless of the alternative, it is clear that the dam produces relatively little new water¹² and could cost state and federal taxpayers and water users billions of dollars.¹³ In addition, there are significant environmental impacts to the scenic San Joaquin River Gorge, as well as to the river and its resources downstream of Friant Dam in the view of resource experts outside of Reclamation. Key issues concerning the Temperance Flat project include:

Water Capacity and Yield – Although the TFD could store up to 1.331 MAF¹⁴ of water, Reclamation concluded that the new dam would increase average annual water deliveries by only 61,000-87,000 acre-feet (depending on the emphasis of the operational scenario).¹⁵ The potential front runner was modeled to produce 70,000 acre-feet, 21,000 in a dry or critically dry year.¹⁶ (Reclamation's Central Valley Project produces 7 million acre-feet annually¹⁷ and statewide water use is 42 million acre-feet.¹⁸) The dam's yield is small because eight large dams and reservoirs and two large canals already capture and divert most of the flow of the San Joaquin River,¹⁹ which is often dry northwest of Fresno.²⁰

Can the Project Operate Legally? – The San Joaquin River is a year-round fully appropriated river,²¹ meaning the State Water Resources Control Board has determined that no more water rights are available here.²² Although Reclamation is free to challenge this determination²³ and, if successful, attempt to seek new very junior rights,²⁴ a recent UC Davis study found that the state has over-allocated water rights in the San Joaquin River by an astounding 861%.²⁵ Reclamation notes that this is an unresolved issue for Temperance Flat Dam.²⁶

Cost & Economics – Reclamation's most recent estimate for the capital cost of TFD was \$2.6 billion,²⁷ although it recognizes that this estimate could grow.²⁸ To compare, the unpaid reimbursable costs being borne by the entire CVP are \$1.3 billion.²⁹ The TFD price tag does not include a complete picture of environmental mitigation costs,³⁰ and it is unclear whether PG&E has agreed with Reclamation's explanation on how it will be compensated for the loss of two major powerhouses — one of Reclamation's issues to be resolved.³¹ Reclamation's aspiring project partner estimates TFD cost at \$2.8 billion.³²

Benefits – Depending on which of the five alternative operating plans is chosen, the TFD is modeled to result in small decreases or increases of water for agricultural or municipal consumption,³³ as well as provide comparatively small increases in reserved storage for emergency water supplies to Southern California customers in case of a catastrophic disruption in Delta water exports.³⁴ No actual beneficiaries have been identified, but in all but one of Reclamation's dam scenarios, the TFD would export water to the municipal and industrial customers of the State Water Project (SWP),³⁵ which would require a controversial expansion of the place of use (where water is delivered) of the CVP.³⁶ Contrary to Reclamation's

expectations,³⁷ the California Department of Water Resources did not prepare an environmental impact report for this project, perhaps a signal of the Department's view of its importance to the SWP, which it serves. In an attempt to be eligible for federal taxpayer funding, Reclamation alleged salmon enhancement benefits account for 49% or \$1.3 billion of the project cost.³⁸ After the publication of Reclamation's documents, the San Joaquin Valley Water Infrastructure Authority was formed to attempt to capture billions of taxpayer dollars in potential California Water Bond funding for alleged "public benefits"³⁹ of the project while at the same time working to achieve the conflicting goal of bringing more water to the Friant-Kern and Madera Canals' service areas.⁴⁰

Critiques of Benefits – The draft feasibility report and environmental impact statements received uncomfortable critical reviews of its benefit assumptions by state and federal natural resources agencies,⁴¹ environmental groups,⁴² and by University of the Pacific economist Jeff Michaels, and others. To summarize, resource agencies are unconvinced that minor modeled temperature benefits to cold-water fishery habitat are real or worth the loss of water and occasional high channel-shaping flows to downstream river ecosystems. Environmental groups noted (among a large body of other comments) that Reclamation's Friant Project water would become more expensive, potentially reducing affordable water available to Friant Project farms and cities and the San Joaquin River Restoration Project.⁴³ To summarize Dr. Michaels, Reclamation's draft reports for the TFD overestimated the value of agricultural benefits by two or three times and "extremely exaggerated" ecosystem and emergency water supply benefits in order to provide a modeled positive cost-benefit ratio.⁴⁴

Environmental/Cultural Impacts and the San Joaquin River Gorge – The Bureau admits that the TFD would have long-term unavoidable adverse impacts on riverine fisheries and their habitat,⁴⁵ botanical resources⁴⁶ and wetlands,⁴⁷ wildlife and wildlife habitat,⁴⁸ cultural resources,⁴⁹ recreation,⁵⁰ and scenery.⁵¹ Up to 5,000 acres of public land would be flooded by the dam,⁵² adversely impacting 11 known and 19 possible sensitive, threatened, or endangered wildlife species.⁵³ The reservoir would also drown several miles of trails popular for public recreation and used for Native American cultural interpretation and outdoor education in the scenic San Joaquin River Gorge.⁵⁴ In addition, the reservoir would drown the unique Millerton Cave System, perhaps the world's best example of a granite cave carved by a year round flowing underground stream.⁵⁵ In contrast, in December of 2014, the U.S. Bureau of Land Management Bakersfield field office issued a Record of Decision recommending this reach of the Joaquin River Gorge for National Wild & Scenic River protection by the Bureau of Land Management (BLM) in recognition of the river's outstanding scenic and historical/cultural values.⁵⁶

Power Loss – Although TFD would have a 160-megawatt power plant, the loss of PG&E's powerhouses would make the project a net energy loser.⁵⁷

Risks, Uncertainties, & Unresolved Issues – Reclamation recognizes and discusses a number of uncertainties that could affect the findings of the Draft Feasibility Report. They include: hydrology and climate change, water supply reliability and demands, the effects on the San Joaquin River Restoration Project, water systems operations analysis, cost estimates, and alternatives refinements.⁵⁸ Predicting salmon survival is difficult due to limited data, modeling problems, and many other influencing factors. Unresolved issues include: securing non-federal partners, resolution of Native American tribes cultural resource issues, environmental impacts and mitigation, BLM's conflicting wild and scenic river designation, water rights, and lost hydropower mitigation.⁵⁹

For current fact sheets and more resources see: <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>. For more information, contact Ronald Stork, Friends of the River, 1418 20th Street ~ Suite 100, Sacramento, CA 95814, phone: (916) 442-3155 Ext. 220, rstork@friendsoftheriver.org; and Steven L. Evans, Wild Rivers consultant, sevans@friendsoftheriver.org.

Some Sources:

Upper San Joaquin River Basin Storage Investigation Draft Environmental Impact Statement, August 2014, U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region. Upper San Joaquin River Basin Storage Investigation Draft Feasibility Report, January 2014, U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region.

http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=821
http://www.usbr.gov/mp/scca/storage/docs/Draft_Feasibility_Report_2014/USJRBSI_Draft_FR_2014_Full_Report.pdf

New Temperance Flat Feasibility Study Claims Salmon Benefits and Delta Earthquake Risk Reduction Justify the New Dam and a Big Taxpayer Subsidy, March 4, 2014, Valley Economy blog by Jeff Michaels, Director of the Business Forecasting Center and Associate Professor, Erberhardt School of Business, University of the Pacific. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/>
“Brief Economics Review by Dr. Jeff Michaels, University of the Pacific.”

Bakersfield Field Office Proposed Resource Management Plan & Final Environmental Impact Statement, Volume 1, August 2012, Department of the Interior, Bureau of Land Management. Record of Decision and Approved Resource Management Plan, Dec. 2014
<http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “San Joaquin River Gorge – Wild & Scenic (W&S) recommendation documents

NRDC et al., FOR et al., California Department of Fish & Wildlife, Trout Unlimited, CSPA, American Rivers, U.S. EPA, American Whitewater, U.S. NOAA NMFS comments on TFD draft EIS, October 2104. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/>
“Comments by FOR & Other Environmental groups on the Draft Environmental Impacts Study(DEIS)”

¹ Upper San Joaquin River Basin Storage Investigation [USJRBSI], Draft Feasibility Report, U.S. Department of the Interior, U.S. Bureau of Reclamation, Mid-Pacific Region, January 14, 2014. (USJRBSI Draft Feasibility Report)

² USJRBSI Draft Environmental Impact Statement [DEIS], U.S. Department of the Interior, U.S. Bureau of Reclamation, Mid-Pacific Region, August 2014. (USJRBSI DEIS)

³ USJRBSI Draft Feasibility Report, p. ES-3, figure ES-1.

⁴ USJRBSI Draft Feasibility Report, p. 1-21.

⁵ For a brief introduction to four action (dam) alternatives, see USJRBSI Draft Feasibility Report, pp. ES-12–14. For a brief introduction to the subsequent five action alternatives, see USJRBSI DEIS, pp. ES-23–25. The Report and the DEIS also displayed a no-action (no-dam) alternative.

⁶ USJRBSI DEIS, p. ES-23–25.

⁷ USJRBSI DEIS, p. 2-105. Interestingly, Reclamation commits on this page reference to selecting a preferred alternative in the Final EIS. “Consistent with CEQ Regulations, 40 CFR Part 46.425, a preferred alternative (or alternatives, if there is more than one) will be identified in the Final EIS.” See also USJRBSI DEIS p. ES-33. However, the value of a preferred alternative seems to have been devalued recently. Reclamation chose a preferred alternative in a similar situation in Reclamation’s Shasta Lake Water Resources Investigation (SLWRI) Final EIS examining a Shasta Dam raise. However, it found itself unable to recommend an alternative. “In light of the outstanding considerations articulated below, the Secretary is unable to provide a recommendation for implementation of the SLWRI NED Plan until these considerations are addressed. Although there is no recommendation at this time for Congressional action, all of the alternatives analyzed are feasible from an engineering standpoint. Based on the economic analysis of the alternatives, alternative CP4A has the highest net NED benefits.” Final Shasta Lake Water Resources Investigation, Feasibility Report, USBR, July 2105, p. 9-1.

⁸ USJRBSI Draft Feasibility Report, pp. 6-34–36.

⁹ USJRBSI Draft Feasibility Report, pp. 6-27–33.

¹⁰ At 665 feet, the TFD would be the 5th tallest dam in the United States and the 2nd highest dam in California.

https://en.wikipedia.org/wiki/List_of_the_tallest_dams_in_United_States.

¹¹ USJRBSI DEIS, p. ES-17–18.

¹² USJRBSI DEIS, p. 2-95–96.

¹³ USJSBSI DEIS, p. 6-34.

¹⁴ “Constructing Temperance Flat RM 274 Dam and Reservoir would create a storage capacity of 1,331 TAF, reduce the storage capacity of Millerton Lake by about 75 TAF, and create additional net storage capacity of about 1,260 TAF.” (USJRBSI Draft Feasibility Report, p. 3-38.)

¹⁵ USJRBSI DEIS, p. 2-92, table 2-9.

¹⁶ USJRBSI Draft Feasibility Report, pp. ES-21–22.

¹⁷ The CVP “[m]anages some 9 million acre-feet of water” and [a]nnually delivers about 7 million acre-feet of water for agricultural, urban, and wildlife use.” About the Central Valley Project. USBR MidPacific Region website, accessed 12/7/2015

<http://www.usbr.gov/mp/cvp/about-cvp.html>.

¹⁸ The U.S.G.S. estimated California water use in 2010 at 42,600,000 acre feet. Maupin, M.A., Kenny, J.F., Hutson, S.S., Lovelace, J.K., Barber, N.L., and Linsey, K.S., 2014, Estimated use of water in the United States in 2010: U.S. Geological Survey Circular 1405, p. 9. <http://dx.doi.org/10.3133/cir1405>.

¹⁹ For a description of the law of diminishing returns for major water supplies, see: “Peak water limits to freshwater withdrawal and use,” Peter H. Gleick and Meena Palaniappan, Pacific Institute, 654 13th Street, Oakland, CA 94612. http://www.pacinst.org/wp-content/uploads/2013/02/peak_water_pnas2.pdf. Discussion around Figure 3 is particularly relevant.

²⁰ USJRBSI Feasibility Report, p. 2-11. “As it is now ‘plumbed,’ — that is, manipulated — the river’s natural hydrology has been destroyed. Today the San Joaquin flows as one of the nations’ most controlled rivers, moving more in man-made canals, tunnels and penstocks than it does in its own natural channel...In the 41 mile stretch downstream of Gravelly Ford, the river doesn’t flow at all...” San Joaquin, A River Betrayed, by Gene Rose, Linrose Publishing Co. Fresno, California, 1992, p. vi.

²¹ The San Joaquin River is fully appropriated during the entire year. State Water Resources Control Board, Water Rights Order, 98 - 08, p. 11. Available at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/fully_appropriated_streams.

²² California Water Code §1205 (b) A declaration that a stream system is fully appropriated shall contain a finding that the supply of water in the stream system is being fully applied to beneficial uses where the board finds that previous water rights decisions have determined that no water remains available for appropriation.

²³ California Water Code, §1205(c) “Upon its own motion or upon petition of any interested person, and following notice and hearing, the board may revoke or revise a declaration that a stream system is fully appropriated.”

²⁴ California Water Code, §1206(a) “From and after the date of adoption of a declaration that a stream system is fully appropriated, and subject to subdivision (b) [not applicable here], the board shall not accept for filing any application for a permit to appropriate water from the stream system described in that declaration, and the board may cancel any application pending on that date.” Reclamation’s discussion of water rights in the Draft Feasibility Report (USJRBSI Draft Feasibility Report, January 2014, pp. 6-34, 6-35) is in error since they assumed that water rights associated with their Friant Dam project would be available for use by the Temperance Flat Dam. State Water Resources Control Board staff subsequently informed Reclamation that the new dam would require its own water rights and discussed the procedures for seeking a revision of the status of the fully appropriated San Joaquin River required before seeking a new junior water right for TFD. (Letter from Katherine Mrowka, Inland Streams Unit, Division of Water Rights, State Water Resources Control Board, to Robert Colella, KDM:A005638, August 7, 2014)

<http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/>

“Resources & Documents Comments by Government Agencies (state & federal) on Temperance Flat Dam (TFD).”

²⁵ Grantham, T.E. and Viers, J.H., 100 years of California's Water Rights System: Patterns, Trends and Uncertainty, Environ. Res. Lett. 9 (August 19 2014) at p. 5, available at: https://watershed.ucdavis.edu/files/biblio/WaterRights_UCDavis_study.pdf.

²⁶ USJRBSI Draft Feasibility Report, pp. 6 34–36.

²⁷ USJRBSI, DEIS, pp. ES-15, ES-18, table ES-3.

²⁸ USJRBSI Draft Feasibility Report, p. 6-33–34.

²⁹ As of 2011, the unpaid reimbursable cost for irrigation and municipal and industrial purposes was \$1.3 billion. Central Valley Project, California: Repayment Status And Payoff, Office of the Inspector General, U.S. Department of the Interior, Report No.: WR-EV-BOR-0003-2012, March 2013, p. 2.

³⁰ Project mitigation costs are not fully known, in part, because they have not been fully identified. “Details about offsite opportunities to mitigate impacts on biological resources in the primary study area are not yet available.” USJRBSI Draft Feasibility Report, p. 6-34. In addition, undisclosed impacts in the secondary study area (downstream San Joaquin River) were a major focus of the comments of the National Marine Fishery Service, California Department of Fish & Wildlife, U.S. EPA, and NRDC et al. to the SJRBSI DEIS.

³¹ USJRBSI Draft Feasibility Report, pp.6-34–36.

³² https://cwc.ca.gov/Documents/2016/WSIP/SJVWIA_TemperanceFlat.pdf.

³³ USJRBSI DEIS, p. 2-96, table 2-11.

³⁴ USJRBSI DEIS, pp. 2-2, 2-32, 2-92–93. Note that water available to the Metropolitan Water District of Southern California (MWD) in south-of-delta MWD and SWP surface reservoirs, the Kern Water Bank, and local groundwater aquifers dwarf reserved storage in TFD.

³⁵ USJRBSI DEIS, pp. ES-23–25, including table ES-1. For more precision see: USJRBSI DEIS p. 2-96, table 2-11.

³⁶ USJRBSI Draft Feasibility Report, pp. 6-35–36. This matter has come up before: “[s]ignificant concerns have been raised by existing CVP water service and repayment contractors regarding water-supply benefits from the proposed project being made available to California SWP contractors outside the existing service area of the CVP. In part, their concern emanates from a desire to have water supply developed under any of the alternatives meet existing demands of Federal contractors within the existing CVP service area before being utilized to meet water supply needs of public water agencies that do not currently contract for delivery of CVP water.” (Final Shasta Lake Water Resources Investigation, Feasibility Report, USBR, July 2105, p. 9-1)

³⁷ “During the meeting, Reclamation informed the Division that the Department of Water Resources (DWR) will be the California Environmental Quality Act (CEQA) lead agency. Reclamation anticipates that a National Environmental Policy Act document will be circulated in September, 2014. The CEQA document will be circulated at a later date by DWR.” (Letter from Katherine Mrowka, Inland Streams Unit, Division of Water Rights, State Water Resources Control Board, to Robert Colella, KDM:A005638, August 7, 2014) <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/>

“Resources & Documents Comments by Government Agencies (state & federal) on Temperance Flat Dam (TFD).”

³⁸ USJRBSI Draft Feasibility Report, p. 6-14, table 6-2 and p. 6-19, table 6-4 for preliminary cost allocation information for the “representative” or tentative NED plan. See p. 6-20, table 6-4 for the preliminary cost allocations for the “representative” plan.

³⁹ The San Joaquin Water Infrastructure Authority’s current ask of from the California Water Commission is for \$1.4 billion. https://cwc.ca.gov/Documents/2016/WSIP/SJVWIA_TemperanceFlat.pdf. For the definition of “public benefits,” (ecosystem improvements, water quality improvements, flood control benefits, emergency response, and recreational purposes) and other details of the chapter 8 of the California Water Bond, see page six of the California Water Commission’s proposed Water Storage Investment Program Quantification Regulations: <https://cwc.ca.gov/Documents/2016/Quantification/DraftRegs011116.pdf>.

⁴⁰ <http://tularecounty.ca.gov/board/index.cfm/san-joaquin-valley-water-infrastructure-authority/>,

<http://www.visaliatimesdelta.com/story/news/local/2015/11/17/counties-working-together-water-storage/75974252/>,

http://hanfordsentinel.com/news/in_focus/california_drought/kings-joins-push-for-new-dam/article_768cc2cd-85a7-57bd-a8ec-846045c50, <http://www.mercedsunstar.com/opinion/opn-columns-blogs/article69296347.html>.

⁴¹ See comments of the National Marine Fisheries Service, California Department of Fish & Wildlife, and the U.S. Environmental Protection Agency at: <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/>

“Resources & Documents Comments by Government Agencies (state & federal) on Temperance Flat Dam (TFD).” See especially the succinct comments of the Department of Fish and Wildlife at page 3, which in part follow: “The Department has significant concerns with the Project-related impacts to the San Joaquin River below Friant Dam. The DEIS implies that the Project would be beneficial to restoring the San Joaquin River below Friant Dam, and to the ecosystems in the lower San Joaquin River and Delta, mainly due to the conclusion that increased storage will benefit water temperatures. However, while temperature benefits would likely be realized during drier years, the DEIS fails to adequately consider the ecosystem benefits that flood releases currently provide to the aquatic and riparian communities downstream of Friant Dam and the potentially detrimental effects to those ecosystems by eliminating flood flows from the hydrograph.

“There may be some benefit to water temperatures from the Project, but overall it would mean less water and altered timing of releases for the San Joaquin River and the Delta. Temperature benefits for reintroduced Chinook salmon would be spatially limited to Friant Dam and Reach 1 of the San Joaquin River below Friant, and temporally limited to late summer and fall, benefitting spawning and egg incubation, but providing no benefit to or harming other life stages of salmon. Downstream reaches of the San Joaquin River, the lower San Joaquin River, and the Delta would see no temperature benefit and a loss of habitat due to reduced flows.”

⁴² See comments of NRDC et al., Friends of the River et al., CSPA, American Whitewater, Trout Unlimited, American Rivers and others at: <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “Comments by FOR & Other Environmental groups on the Draft Environmental Impact Study(DEIS)”

⁴³ “The Friant Division contractors would be affected by the increase in cost to deliver stored Temperance Flat Reservoir water that would have otherwise been released as \$10 water, but with Temperance Flat Reservoir could receive a greater volume of water supply and greater water supply reliability. In addition, the Friant Division contractors would be affected if the volume of water made available from Temperance Flat Reservoir is not made available to them and is stored for other CVP contractors. (USJRBSI Draft Feasibility Report p. 3-47) For an analysis, see NRDC et al. Comments on the USJRBSI DEIS, p. 31 and Friends of the River et. al. Comments on the USJRBSI DEIS at pp. 6–7, 9–11 at: <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “Comments by FOR & Other Environmental groups on the Draft Environmental Impact Study(DEIS).”

⁴⁴ <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “Brief Economics Review by Dr. Jeff Michaels, University of the Pacific.”

⁴⁵ USJRBSI Draft DEIS, pp. ES-37 FSH-1, ES-40 FSH-9, ES-40 FSH-11, table ES-3; pp. 5-68–69, 5-87–89, 5-94–97.

⁴⁶ USJRBSI DEIS, p. ES-48 Bot-2, table ES-3; pp. 6-60–78.

⁴⁷ USJRBSI DEIS, pp. 6-73–78.

⁴⁸ USJRBSI DEIS, pp. ES-53 Wld-3, ES-56 Wld-10, table ES-3; pp. 7-71–74.

⁴⁹ USJRBSI DEIS, pp. ES-61–62 Cul-1–5, table ES-3; pp. 9-23–32,

⁵⁰ USJRBSI DEIS, pp. ES-90–91 Rec-1–4, table ES-3; pp. 22-42–73. In addition to the land-based recreation in the San Joaquin River Gorge, the river is also used: “For our members and other whitewater enthusiasts, the San Joaquin River between Kerckhoff Dam and Millerton Reservoir is a place to experience this area while enjoying Class III to V whitewater. Our members run the “Patterson Bend” and “Millerton Lake Bottom” runs, both of which would be inundated if the Temperance Flat Dam were constructed.” Comments of American Whitewater to the USJRBSI DEIS, p. 1. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “Comments by FOR & Other Environmental groups on the Draft Environmental Impact Study(DEIS).”

⁵¹ USJRBSI DEIS, pp. ES-101–102 Vis-1–3, table ES-3; pp. 26-25–38.

⁵² For a visual representation of the land ownership of the 5,700 (surface) acres (USJRBSI DEIS p. 22-42) that would be inundated by the Temperance Flat Dam if built, see USJRBSI DEIS, p. 17-6, figure 17-2.

⁵³ USJRBSI DEIS, pp. 7-9–14, table 7-1.

⁵⁴ USJRBSI DEIS, p. 22-44, table 22-15.

⁵⁵ USJRBSI DEIS, p. 22-18.

⁵⁶ <http://www.friendsoftheriver.org/our-work/rivers-under-threat/san-joaquin-threat/> “San Joaquin River Gorge – Wild & Scenic (W&S) recommendation documents”

⁵⁷ See USJRBSI DEIS, chapter 20 for a detailed discussion of lost hydropower associated with Temperance Flat Dam. For alternative 4 (the potential NED project): “Alternative Plan 4 would inundate the Kerckhoff Hydroelectric Project powerhouses and eliminate energy generation at these facilities. Under Alternative Plan 4, onsite hydropower energy generation at Temperance Flat RM 274 Reservoir would replace 91 percent of Kerckhoff Hydroelectric Project generation compared to Existing Conditions and the No Action Alternative. Ancillary services would increase 31 percent and 43 percent compared to Existing Conditions and the No Action Alternative, respectively. Alternative Plan 4 has higher carryover storage in Temperance Flat RM 274 Reservoir than other action alternative and can replace more lost energy and ancillary services value, although not to the level of the Kerckhoff Hydroelectric Project.

“Energy generation impacts would be significant under Alternative Plan 4. No feasible avoidance or minimization measures are available to reduce this impact below the level of significance. Mitigation for this impact is not proposed because no feasible mitigation is available to reduce the impact to a less-than-significant level. Although not considered mitigation for this impact, PG&E’s net lost power generation value after development of new on-site hydropower facilities would be compensated, as described in Chapter 2, ‘Alternatives.’ ” (USJRBSI DEIS 20-29.)

⁵⁸ USJRBSI Draft Feasibility Report, p. 6-27–33.

⁵⁹ USJRBSI Draft Feasibility Report, p. 6-34–36.