



The Facts about Raising Shasta Dam

May 26, 2016

Shasta Dam is the fourth highest dam in California¹ and its 4.55 million acre-foot reservoir is the largest in the state.² The dam captures water from three rivers (the upper Sacramento, McCloud, and Pit).³ Constructed and operated by the U.S. Bureau of Reclamation, the Shasta Dam and Reservoir is the cornerstone of the giant Central Valley Project (CVP), which provides irrigation and drinking water for much of California's Central Valley and parts of, and valleys just south of, the San Francisco Bay Area.⁴

The Bureau of Reclamation (Reclamation or the Bureau) identified a plan with the greatest level of National Economic Development (NED) benefits as one including an 18.5-foot raise of Shasta Dam,⁵ which would increase water storage capabilities behind the dam by about 13%.⁶ This alternative was intended to improve conditions in the Sacramento River for threatened and endangered salmon and steelhead and increase the state's overall water supply reliability.⁷ The Bureau released a final Feasibility Report and environmental impact statement (FEIS) which did not recommend any action (dam) alternative because of serious outstanding considerations,⁸ including: (1) The Bureau's desire to have upfront funding from non-federal cost-sharing partners,⁹ (2) concerns by CVP contractors about CVP facilities serving non-CVP contractors,¹⁰ (3) California law prohibiting the expansion of Shasta Reservoir,¹¹ (4) applicability of state environmental law to the project,¹² and (5) process considerations. There has been no Record of Decision for the FEIS.¹³

Cost and Cost-Sharers

Cost and Benefits – Raising Shasta Dam by 18.5 feet will cost nearly \$1.3 billion dollars,¹⁴ equal to the unpaid reimbursable debt for the CVP.¹⁵ The Bureau allocates nearly 50% of the dam-raise cost to providing salmon benefits,¹⁶ which means that nearly 50% of the dam costs would be paid by American taxpayers and not the water contractors who directly benefit from the dam raise.¹⁷ The U.S. Fish & Wildlife Service (USFWS) strongly questioned the Bureau's claim that raising the dam will benefit salmon.¹⁸

Water Yield – The 18.5-foot raise will increase the reservoir's capacity by 634,000 acre-feet.¹⁹ But the average increased deliveries provided by the enlarged reservoir are only 51,300 acre-feet²⁰ (or 0.7% of CVP annual deliveries or a little more than 1/10th of 1% of the state's annual water budget²¹). To put this in perspective, California's urban water users saved in three months in the summer of 2015 more than 8 times the amount of the dam raise's average annual water yield.²² Of course, the Bureau admits that hydrology, climate change, water system operations, water supply reliability and water demand are all "significant uncertainties" in regard to the project's actual yield of water.²³

Water Contracts – There are no identified specific beneficiaries of the project, but the Bureau speaks of selling the additional supply to CVP contractors and even to State Water Project contractors,²⁴ an eye opener to CVP contractors.²⁵ Most of the increased supply is expected to be sold to water contractors south of the Delta.²⁶ Easing delivery constraints through the Delta by routing Sacramento River flows through the tunnels underneath the Delta increases the utility of the dam raise.²⁷ The Bureau's previous study of the Shasta Dam raise was shelved when voters rejected the proposed Peripheral Canal in 1982.

Non-Federal Cost-Sharing Partners – California law prohibits the dam raise.²⁸ There are no non-federal partners. However, the Bureau is requiring them as a condition of federal approval, not intending to construct without partners.²⁹

Significant & Unavoidable Impacts

The Bureau's FEIS admits to many significant and unavoidable environmental impacts that cannot be mitigated.³⁰ In addition, there are serious concerns about the validity of many of the Bureau's assumptions. Significant impacts and concerns include:

Threatened & Endangered Salmon and Steelhead – Even though the dam raise is proposed by the Bureau to supposedly improve conditions in the Sacramento River for threatened and endangered salmon and steelhead, the U.S. Fish & Wildlife Service (USFWS) said that the claimed benefit to salmonids was not “substantial” downstream of the Red Bluff pumping plant and “only provides minimal benefit” for spring and winter-run chinook salmon upstream. However, the proposed action, “by further restricting high water flows will result in additional losses of salmonid rearing and riparian habitat and adversely affect the recruitment and natural succession of riparian habitat along the Sacramento River and bypasses.” The Service “was unable to support the adoption of any of the proposed [dam-raise] alternatives.³¹ The USFWS also noted that improving the dam’s existing temperature control device, restoring downstream spawning gravel and rearing habitat, improving fish passage, increasing minimum flows, and screening water diversions all increase salmon survival more than the dam raise.³²

Native American Cultural Heritage – The Bureau admits that the dam raise and reservoir expansion will have “disproportionally high” impacts on Native Americans, specifically the Winnemem Wintu Tribe.³³ The Tribe lost most of their traditional homeland under the existing reservoir.³⁴ Raising the dam will drown cultural and sacred sites still used by the Winnemem to this day.³⁵

National Forest Lands & Infrastructure – Raising Shasta Dam and enlarging its reservoir will drown more than 2,600 acres³⁶ of the Whiskeytown-Shasta-Trinity National Recreation Area, which is managed by the U.S. Forest Service for public recreation and conservation.³⁷ The dam raise will also require the relocation of more than six miles of public roads, the relocation or modification of five bridges, dozens of recreation facilities (marinas, campgrounds, etc.), and utilities and wastewater systems.³⁸

Wild & Scenic Rivers – Expanding Shasta Reservoir will flood upstream rivers and streams, including the McCloud River, which is protected under the California Wild & Scenic Rivers Act.³⁹ The expanded reservoir would also flood segments of the McCloud and upper Sacramento Rivers identified by the Forest Service as eligible for protection in the National Wild & Scenic Rivers System.⁴⁰ Not only would the dam raise flood these important river segments, it would harm the rivers’ outstandingly remarkable scenic, recreational, wild trout, and Native American cultural values.⁴¹ The dam raise would also modify flows in a segment of the Sacramento River below the dam identified by the Bureau of Land Management for potential National Wild & Scenic River protection.⁴²

Wildlife – The enlarged reservoir footprint will cause permanent loss of habitat for numerous sensitive wildlife species, including Pacific fisher, northern spotted owl, northern goshawk, Cooper’s hawk, purple martin, foothill yellow-legged frog, Shasta salamander, and several special status bat and mollusk species. The project will also result in the flooding of several rare plant populations and their habitat (including fully or partially inundating 11 of the 24 known sites where the Shasta snow-wreath, a rare flowering shrub found nowhere else on earth, is found).⁴³ Critical deer fawning areas and winter habitat will also drown beneath the expanded reservoir.⁴⁴

Sacramento River National Wildlife Refuge – The dam raise/reservoir expansion will modify flows through the Sacramento River National Wildlife Refuge, with potentially significant impacts on the river’s riparian ecosystem and protected wildlife species that depend on that ecosystem (including the threatened yellow-billed cuckoo and bank swallow). The Bureau proposes a so-called Adaptive Management Plan to mitigate these impacts but provides no information on how the Plan will be implemented, how the needs of water contracts will be weighed against ecosystem flow needs, and what guarantees will be provided to ensure that these significant impacts are truly mitigated to less than significant levels.⁴⁵

Delta – The effects of the dam raise/reservoir expansion will be felt all the way downstream to the Sacramento-San Joaquin Delta. Storing more water behind the expanded dam and reservoir will reduce fresh water flows into the Delta during critical periods with increases in mortality for endangered Delta fish due to continued and increased reverse flows in the south Delta.⁴⁶

For current fact sheets and more resources see: <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>. For additional information concerning this project, please contact Steve Evans, Wild Rivers Project Consultant for Friends of the River, phone: (916) 708-3155, sevans@friendsoftheriver.org; or Ronald Stork, Friends of the River, (916) 442-3155 x 220, rstork@friendsoftheriver.org.

¹ https://en.wikipedia.org/wiki/List_of_the_tallest_dams_in_United_States.

² The California Water Atlas, prepared by the Governor's Office of Planning & Research in cooperation with the California Department of Water Resources, 1978 & 1979, p. 59.

³ "The four major tributaries to Shasta Lake are the Sacramento River, McCloud River, Pit River, and Squaw Creek, in addition to numerous minor tributary creeks and streams." Shasta Lake Water Resources Investigation (SLWRI) Final Feasibility Report, July 2015, p. 1-12.

⁴ SLWRI Final Feasibility Report, pp. 1-9, 1-12 figure 1-5.

⁵ SLWRI Final Feasibility Report, pp. 6-1-2.

⁶ The 18.5 ft. dam raise would increase the reservoir full-pool elevation by 20.5 feet, representing an enlargement of reservoir storage capacity by 634,000 acre-feet to a total capacity of 5.19 million acre-feet. SLWRI Final Feasibility Report, p. ES-19.

⁷ For more discussion and an expanded list of intended or modeled benefits of the NED alternative, see SLWRI Final Feasibility Report, pp. 6-3-4. In the preferred alternative, the Shasta power plant is modeled to increase Energy production by 5% resulting in a 2% increase in net CVP energy production. SLWRI FEIS p. 23-21, table 23-7.

⁸ SLWRI Final Feasibility Report p. 9-1. Although no plan is recommended, a plan (CP4A) is identified as the preferred plan. Table 6-15 from page 45, Chapter 6, "Timeline and Status of Feasibility Study," states: "This Final Feasibility Report evaluates and compares comprehensive plans and identifies the NED Plan. The Final EIS includes responses to public comments and identifies the Preferred Alternative." However, identification of a preferred but not recommended alternative in the Final Feasibility Report that is released to Congress is inconsistent with the 2004 federal statute authorizing the Secretary of the Interior to, in consultation with the Governor of California, submit the feasibility report of this and other named federal projects to the Congress once the Secretary determines that it should be constructed using in whole or in part federal funds. HR 2828, 108th Congress. The "Water Supply, Reliability, and Environmental Improvement Act." MP-15-122 Reclamation Transmits to Congress Final Report on Proposed Shasta Dam Raise, U.S. Bureau of Reclamation, Mid Pacific Region News Release, July 29, 2015.

<http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=49890>.

⁹ "Current Federal Budget conditions and the impacts those conditions have on Reclamation's budgetary resources significantly constrain Reclamation's ability to fully fund new construction activities of the scope and magnitude required by the SLWRI. As a result, the traditional model under Federal reclamation law, with Congress providing funding from annual appropriations to cover all the costs of construction over a relatively short period of time, and a portion of those funds being repaid to the Treasury over 40-50 years, is unrealistic for the identified SLWRI NED Plan. Alternative means of financing (primarily non-Federal) for a majority of the construction costs of the NED Plan would have to be identified and secured in order for the Secretary of the Interior to be able to recommend a construction authorization to Congress..." SLWRI Final Feasibility Report, p. 9-1.

¹⁰ "[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." SLWRI Final Feasibility Report, p. 9-1.

¹¹ Reclamation's stated concerns here go to continued participation of the California Department of Water Resources (DWR). There is little apparent understanding that California law applies to them, any cost sharing partners, and to awards of California Water Bond money. PRC §5093.542 (b) No dam, reservoir, diversion, or other water impoundment facility shall be constructed on the McCloud River from Algoma to the confluence with Huckleberry Creek, and 0.25 mile downstream from the McCloud Dam to the McCloud River Bridge; nor shall any such facility be constructed on Squaw Valley Creek from the confluence with Cabin Creek to the confluence with the McCloud River.

PRC §5093.61 (in part): All local government agencies shall exercise their powers granted under any other provision of law in a manner consistent with the policy and provisions of this chapter [the PRC code wild & scenic river chapter]. Chapter 4, 79711(e) Nothing in this division [bond act] shall be construed to affect the California Wild and Scenic Rivers Act (Chapter 1.4 (commencing line 5 with Section 5093.50) of Division 5 of the Public Resources Code) or the federal Wild and Scenic Rivers Act (16 U.S.C. Sec. 1271 line 7 et seq.) and funds authorized pursuant to this division shall not be available for any project that could have an adverse effect on the values upon which a wild and scenic river or any other river is afforded protections pursuant to the California Wild and Scenic Rivers Act or the federal Wild and Scenic Rivers Act.

¹² Federal Reclamation law has been clear for more than two decades. "The Secretary, immediately upon the enactment of this title, shall operate the Central Valley Project to meet all obligations under state and federal law, including but not limited to the federal Endangered Species Act, 16 U.S.C. s 1531, et seq., and all decisions of the California State Water

Resources Control Board establishing conditions on applicable licenses and permits for the project. (1992 Central Valley Improvement Act, §3406(b) (in part)), title 34 Public Law 102-575.

¹³ For a more extensive discussion of the preferred but not recommended issue, see Summary of Chapter Nine, Shasta Lake Water Resources Investigation (SLWRI) Final Feasibility Report and Environmental Impact Statement (EIS) Friends of the River et al., May 10, 2016, pp. 1, 5–6, 10–12. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Fact Sheets.

¹⁴ For the NED project, the estimated construction cost is \$1.265 billion plus \$105 million for interest on construction, making the total capital cost \$1.371 billion. Construction costs for all of the alternatives range from \$990 million to \$1.283 billion. Capital costs range from \$1.073 to \$1.291 billion (SLWRI Feasibility Report, p. 4-47 table 4-7).

¹⁵ 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.

¹⁶ SLWRI Feasibility Report, pp. 6-9–13 especially tables 6-2 & 6-3.

¹⁷ SLWRI Feasibility Report, pp. 4-87, 6-9, 6-10 table 6-1. But see SLWRI Feasibility Report pp. 8-5–6 for discussion of the Bureau’s desire to cost-share fish & wildlife benefits in this project.

¹⁸ The U.S. Fish & Wildlife Service said that the claimed benefit to salmonids was not “substantial” downstream of the Red Bluff pumping plant and “only provides minimal benefit” for spring and winter-run chinook salmon upstream. However, the proposed action, “by further restricting high water flows will result in additional losses of salmonid rearing and riparian habitat and adversely affect the recruitment and natural succession of riparian habitat along the Sacramento River and bypasses.” The Service “was unable to support the adoption of any of the proposed [dam-raise] alternatives.” United States Department of the Interior, Fish and Wildlife Service Draft Fish and Wildlife Coordination Act Report For the Shasta Lake Water Resources Investigation, Prepared for U.S. Bureau of Reclamation Sacramento, California, Prepared by U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California, November 14, 2014, (F&W CAR) p. xiii. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Agency Comments. This document was later “rescinded to allow higher level review.” See last endnote.

¹⁹ SLWRI Feasibility Report, pp. ES-19, ES-23 table ES-2.

²⁰ SLWRI Feasibility Report, p. 5-4 table 5-2.

²¹ SLWRI Feasibility Report, pp. 1-9, 1-20.

²² Media Release, “Californians Continue Meeting Governor’s Water Conservation Mandate, *Savings Must Continue to Reach February 2016 Goal*,” State Water Resources Control Board, October 1, 2015. http://www.waterboards.ca.gov/press_room/press_releases/2015/pr100115_aug_conservation.pdf.

²³ SLWRI Feasibility Report, p. 6-25–30.

²⁴ SLWRI Feasibility Report, pp. 4-30 table 4-4,

²⁵ SLWRI Feasibility Report, pp. ES-44, 9-1–2. Summary of Chapter Nine, Shasta Lake Water Resources Investigation (SLWRI) Final Feasibility Report and Environmental Impact Statement (EIS) Friends of the River et al., pp. 4–5, <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Fact Sheets.

²⁶ The report does not contain a breakdown of south of delta versus north of delta average annual delivery increases. Instead, it provides a breakdown of dry year delivery increases. See SLWRI Feasibility Report, pp. ES-28 table ES-3, 4-23 table 4-2.

²⁷ “Modifications of Shasta Dam and Reservoir could allow for increased system flexibility and further use of new Delta conveyance facilities, providing for even greater water supply reliability benefits.” SLWRI Feasibility Report, p. 1-36. “All SLWRI comprehensive plans were formulated specifically to increase CVP and SWP water deliveries and water supply reliability. Isolated north Delta diversion facilities implemented as part of the BDCP could increase water deliveries to CVP and SWP SOD water users and improve water quality for urban and agricultural water users. Implementation of an enlarged Shasta Dam and Reservoir in combination with any BDCP alternative would likely provide greater water supply benefits than implementing either proposed project independently. Modifications of Shasta Dam and Reservoir could increase system flexibility and potential use of new Delta conveyance facilities, providing for even greater water supply reliability. However, the magnitude of the combined benefits is dependent upon type and size of conveyance facilities included in BDCP alternatives.” SLWRI Feasibility Report, p. 6-30.

²⁸ The reservoir expansion would violate the California Wild & Scenic Rivers Act by impermissibly creating a reservoir on a protected section of the McCloud River. See endnote 11.

²⁹ SLWRI Feasibility Report, pp. ES-2, ES-32, ES-35, ES-37, ES-39, 6-32–33 9-1. See endnote 9. See also Summary of Chapter Nine, Shasta Lake Water Resources Investigation (SLWRI) Final Feasibility Report and Environmental Impact Statement (EIS) Friends of the River et al., pp. 1–5, <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Fact Sheets.

³⁰ See SLWRI FEIS Executive Summary table S-3.

³¹ “Three alternatives provide some tangible benefit for anadromous fish, CP4, CP4A, and CP5. CP4 provides for the dedication of 378,000 acre-feet of the cold-water pool for the purpose of maintaining the required downstream temperatures below Keswick Dam. CP4A would dedicate half that amount of the cold-water pool, 191,000 acre-feet, for water management to benefit anadromous fish. CP4, CP4A, and CP5 include a plan for proposed increase of riparian, floodplain, and/ or side channel habitat between Keswick Dam and the RBPP. Only one alternative (CP4) provides any substantial benefit to anadromous fish survival; however, alternate CP4, in the majority of years, would result in either negligible or slightly negative impacts to Chinook salmon survival overall. In about 90 percent of the years, there would be no benefit to anadromous fish survival. Even in CP4, the benefits of an enlarged cold water pool for each of the four runs of Chinook salmon are limited to a few critical and dry water years representing 6–16 percent of the water years, based on the 1922–2002 period of simulation. Simulations based on current Chinook salmon population levels (i.e., 1999–2006 population average) and predicted higher future Chinook salmon population levels (i.e., Anadromous Fish Restoration Program [AFRP] population goals) show that increases in immature smolt production of winter-, fall-, and late fall-run Chinook salmon relative to No Action in excess of 10 percent occurred in only 5–11 percent of the years simulated. Increases in springrun Chinook salmon immature smolt production of greater than 10 percent occurred in 15–16 percent of the years simulated. The modelling results do not take into account the conditions that would exist within the Sacramento River and the Delta and how that would affect the overall production and survivability of Chinook salmon.” (p.viii)

“For the period of 81 years (1922 -2002) used for Reclamation's modeling (SALMOD), no significant (an increase or decrease of greater than, or equal to 5 percent) change in overall production for any of the Chinook salmon runs (winter-run, spring-run, fall-run, and late fall-run) resulted from any of the proposed alternatives (CP1, CP2, CP3, CP4, CP4A, and CP5) compared to either the No-Action Alternative (Future Conditions 2030) or the Existing Condition (2005).” (p. ix)

“Based on the Service's evaluation of the information available, as contained in this report, as well as evaluations contained in the EIS and associated documents provided by Reclamation, the Service has determined that the proposed project does not provide substantial benefits to fish and wildlife resources within the Shasta Lake pool or the adjacent upland habitats. The Service has also determined that the proposed project does not provide any substantial benefit to anadromous fish downstream of the RBPP and only provides minimal benefit to anadromous fish (winter- and spring-run Chinook salmon) upstream of the RBPP. It is the Service's opinion that based on the existing information; the proposed action, by further restricting high water flows, will result in additional losses of salmonid rearing and riparian habitat, and adversely affect the recruitment and natural succession of riparian forest along the Sacramento River and bypasses. Upon consideration of the information provided to date, the level of potential impacts to fish and wildlife resources, and the lack of specificity on potential mitigation and compensation measures the Service is unable to support the adoption of any of the proposed action alternatives.” (xiii) United States Department of the Interior, Fish and Wildlife Service Draft Fish and Wildlife Coordination Act Report For the Shasta Lake Water Resources Investigation, Prepared for U.S. Bureau of Reclamation Sacramento, California, Prepared by U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California, November 14, 2014, (USFW CAR) p. xiii.

<http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Agency Comments. This document was later “rescinded to allow higher level review.” See last endnote.

³² Ibid pp. x–xi.

³³ SLWRI Feasibility Report, p. 5-15 table 5-8.

³⁴ SLWRI Feasibility Report, pp. 14-3–5, 14-9–11.

³⁵ SLWRI Feasibility Report, pp. 14-24.

³⁶ The 20.5 foot reservoir raise would further inundate 2,600 acres (SLWRI Feasibility Report, p. 4-72).

³⁷ SLWRI Feasibility Report, pp. ES-3, 1-5, 6-38. “The primary purposes of the [Whiskeytown-Shasta-Trinity] National Recreation Area are (1) public outdoor recreation benefits and (2) the conservation of scenic, scientific, historic, and other values which contribute to public enjoyment of the recreation resources...” (Public Law 89-336) Management Guide, Shasta and Trinity Units, Whiskeytown-Shasta-Trinity National Recreation Area, Shasta Trinity National Forest, 2014, p. 1-2.

³⁸ SLWRI FEIS, pp. 17-28–30. SLWRI Feasibility Report, p. 4-19 table 4-1.

³⁹ The state prohibits new dam and reservoir construction that would increase reservoir levels above the McCloud River Bridge. The bridge is a bit more than a mile (5,440 feet) downstream of the current reservoir gross (full) pool and one and two thirds of a mile (5,440 feet plus 3550 feet) downstream of the gross (full) pool that would be formed in the 18.5 foot dam raise alternatives (SLWRI FEIS, pp. 25-4–5, 25-36–40). However, see a different number (12,550 lineal feet or 2.38 miles) for the increased lineal inundation area at SLWRI FEIS, p. 25-37. This latter assessment seems also inconsistent with the FEIS map on p. 25-5. See Footnote 11 for the applicable statutory language.

⁴⁰ SLWRI FEIS, pp. 25-6-7, 25-37-39. For additional discussion about map and description confusion defining the length of the federal wild & scenic river eligibility segment, see California Wilderness Coalition and Friends of the River's comments on the draft feasibility report, January 28, 2013. p. 2. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Comments of Friends of the River and Other Environmental Groups. As of this writing, it is likely that the Shasta Trinity National Forest incorrectly assumed that the reservoir gross pool was further downstream (as depicted on maps) than it actually is. The relevance of this particular mapping issue to the reservoir raise is not high, however. It should also be noted that there may be some confusion between documents on the existing gross pool of Shasta Reservoir, described as elevation 1070 feet msl at p. 25-4. The Shasta Dam and Lake, Sacramento River, Report on Reservoir Regulation for Flood Control, Appendix 1 to Master Manual of Reservoir Regulation, Sacramento River Basin, California, April 1952, Rev. January 1977, Department of the Army, Sacramento District, Corps of Engineers, Sacramento California, Shasta Dam and Lake, Sacramento River, California, Pertinent Data describes the gross pool at elevation 1067. This is likely because two msl datum are used: "Two elevation datum are referenced in text and figures herein and in the accompanying EIS. The National Geodetic Vertical Datum of 1929 (NGVD29) is used in reference to Shasta Dam and appurtenant facility designs. The North American Vertical Datum of 1988 (NAVD88) is used in reference to Shasta Reservoir inundation pool elevations, and the elevations of potential reservoir area infrastructure that may need to be modified or relocated to accommodate increased water levels, consistent with a 2001 aerial survey of the reservoir area that referenced the NAVD88 datum. The NGVD88 is 2.66 feet higher than NGVD29" (SLWRI Feasibility Report, p. 2-19). Again, this discrepancy between documents is not of high relevance to the issue of raising the reservoir 20.5 feet.

⁴¹ SLWRI FEIS pp. 25-36-40.

⁴² California Wilderness Coalition and Friends of the River's comments on the draft feasibility report, January 28, 2013. pp. 4-5. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Comments of Friends of the River and Other Environmental Groups.

⁴³ United States Department of the Interior, Fish and Wildlife Service Draft Fish and Wildlife Coordination Act Report For the Shasta Lake Water Resources Investigation, Prepared for U.S. Bureau of Reclamation Sacramento, California, Prepared by U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California, November 14, 2014, (F&W CAR) pp. xi-xiii. <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Resources, Comments & Documents, Shasta Dam raise, Agency Comments. This document was later "rescinded to allow higher level review." See last endnote. See also botanical, fisheries and aquatic ecosystems, and wildlife, sections of table S-3 in the FEIS executive summary.

⁴⁴ SLWRI FEIS p. S-4.

⁴⁵ SLWRI FEIS p. S-72 table 3.

⁴⁶ F&W CAR, pp. 165-166. The Bureau believes that there are no significant Delta impacts (SLWRI FEIS pp. S-72-73). In their comments, however, the California Department of Fish and Wildlife (CDFW) emphasized the lack of information that they possessed to analyze the FEIS preferred but not recommended alternative (CP4A): "While the Department participated in the SLWRI in its current iteration since 2000 and is a member of the SLWRI Project Coordination Team, we were not aware of the development of a new alternative, CP4A. The lack of detailed information on Alternative CP4A, now the preferred alternative, hampered our ability to provide a thorough review of the CAR. Our review and comments are therefore based solely on the content of the CAR, with the acknowledgement that additional information may have affected our response. In addition, the CAR repeatedly states that, "... there is insufficient information provided ... to analyze the effects ...," or "... the Service is unable to analyze the effects ... due to insufficient information on project details." California Department of Fish and Wildlife Comments on the U.S. Department of the Interior, U.S. Fish and Wildlife Service, Fish and Wildlife Coordination Act Report for the Proposed Shasta Dam Enlargement Project, Shasta Lake Water Resources Investigation, February 13, 2015, p. 1-2. The Bureau's forward to the U.S. Fish and Wildlife Service of the CDFW comments (available at <http://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat/>, Shasta Dam raise, Agency Comments) notes that CDFW no longer had a review function except through the once the federal FEIS was no longer accompanied by a California Environmental Quality Act (CEQA) environmental impact report. It did not note that this was due to a lack of a non-federal partner in part because of the state law prohibiting the expansion of Shasta Reservoir. It does note that the CAR had been "rescinded to allow for higher level review." No final version of the CAR exists, as far as can be determined. A response to the rescinded CAR (presumably) was prepared by Reclamation, however. See Final Fish and Wildlife Coordination Act Recommendations for the Shasta Lake Water Resources Investigation Appendix, April 2015.

http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=22602. The rescinded report was obtained, however, under a Freedom of Information Act request. The San Jose Mercury News published a news article covering reactions to the rescinded report. See: http://www.mercurynews.com/science/ci_27406666/plan-raise-shasta-dam-takes-hit-after-federal.