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January 4, 2024

NEVADA IRRIGATION DISTRICT
1036 W. Main Street
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RE: Summary of the Draft Staff Report in Support of the Update to the Bay-Delta Water Quality Control Plan

Dear Board of Directors:

The State Water Resources Control Board released its Draft Staff Report (Staff Report) in Support of its planned update to the Bay-Delta Water Quality Control Plan (Delta Plan). The Staff Report is an environmental assessment of a range of alternative approaches to update to the Delta Plan, including numerous iterations of unimpaired flow and one alternative analyzing voluntary agreements. Comments on the State Water Board's Staff Report are due by January 19, 2024.

The purpose of this letter is to provide a summary of the Staff Report and to update the board on NID's development of comments on the State Board's unimpaired flow (UIF) approach. The full staff report is available here.

Chapter 1: Executive Summary

The task of the State Water Board when considering amendments to a water quality control plan is to provide reasonable protection to all beneficial uses of water. Given beneficial uses can and do compete against one another (e.g., instream uses v. consumptive uses), the State Water Board's process necessarily involves balancing. However, the Staff Report focuses exclusively on potential Delta Plan amendments to protect the fishery: "…updates to the Bay-Delta Plan focused on the reasonable protection of fish and wildlife in the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), and Delta…". (Staff Report, p. 1-2.) "Existing regulatory minimum Delta outflows would not be protective of the ecosystem, and without additional instream flow protections, existing flows may be reduced in the future, particularly when climate change and additional water development absent additional minimum instream flow requirements that ensure flows are preserved in stream when needed for the reasonable protection of fish and wildlife." (*Id.*, p. 1-9.)

The Staff Report is the functional equivalent (known as a "substitute environmental document") to a draft environmental impact report under the California Environmental Quality

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Act (CEQA). In addition to numerous CEQA mandates, the Staff Report must consider a reasonable range of alternatives. The Staff Report analyzes the following alternatives:

Alternative	Description
Proposed Plan Amendments	55% UIF with an adaptive range between 45% and 65% UIF; cold water habitat (carryover storage requirements), etc.
Alternative 1	No Project
Alternative 2	Low Flow Alternative (35%-45% UIF)
Alternative 3	High Flow Alternative (65%-75% UIF)
"Modular" Alternative 4a	Exclusion of Interior Delta Flow and Fall Delta Outflow Related Amendments
"Modular" Alternative 4b	Require Installation of Head of Old River Barrier
"Modular" Alternative 4c	Extended Export Constraint Alternative
"Modular" Alternative 5a	Instream Flow Protection During Drought (akin to Term 91)
"Modular" Alternative 5b	Shared Water Shortage Provision (all water users reduce use during drought)
Alternative 6	Voluntary Agreements
"Modular" Alternative 6a	Protection of VA Flows

Only Chapter 9 of the approximate 6,000 page Staff Report analyzes the proposed voluntary agreements (VAs). The balance of the analysis focuses on variants of UIF.

Chapter 2: Hydrology and Water Supply

UIF is "flow that would be present in a river or stream under current land use patterns in the absence of diversions, storage, releases from storage, water transfers, or other hydrologic modifications." (Staff Report, p. 2-1.) "Unimpaired flows are used to help characterize how human uses of water have altered the magnitude, timing, and duration of flows in the watershed under the current physical configuration of the watershed over time." (*Id.*, p. 2-4.)

The State Water Board developed a model, called the Sacramento Water Allocation Model or "SacWAM" to compare current conditions with the CEQA alternatives, including UIF. SacWAM results are then used to analyze a host of potential impacts of the alternatives, including water supply, recreation, groundwater, hydroelectric supplies, temperature, economics, and other aquatic and terrestrial species. SacWAM is like a master variable; to the extent it fails to accurately capture current operations compared to UIF operations (as we suspect it does), it will understate the true magnitude and scope of environmental impacts because SacWAM output is generally the starting point for impact analyses.

Enclosed are select pages of the Staff Report summarizing your system and showing current conditions expressed as a percent of unimpaired flow. Recall that the UIF preferred alternative is an initial 55% UIF standard measured on a 7-day running average for the *entire* year.

At page 2-122, the Staff Report critiques "a large volume of water [] reserved for future use under unassigned state filed water rights." It is clear from the context that the State Water Board (perhaps legislatively) will pursue discontinuation of these state filed water rights to prevent additional diversions that, it is claimed, exacerbate already declining fishery conditions. It is unclear how the AHO would consider NID's pending application for assignment of the state-filed Bear River water right, but the hearing process does vest the State Water Board with considerable discretion in deciding whether the assignment is in the public interest. Should NID abandon the petition for assignment, it is likely that legislation or other State Water Board fiat could extinguish state filed water rights.

Chapter 3: Scientific Knowledge to Inform Fish and Wildlife Flow Recommendations

Chapter 3 of the Staff Report is effectively a restatement of the State Water Board's 2018 scientific basis report. As far as we can discern, the State Board failed to make any changes or improvements to its prior analysis effectively concluding that UIF was the sole means of saving the declining fishery.

Chapter 5: Proposed Changes to the Bay-Delta Plan for the Sacramento Delta

"This chapter describes the possible updates to the Bay-Delta Plan for the reasonable protection of fish and wildlife." (Staff Report, p. 5-1, underlining added.) Notice, again, the State Board is narrowly defining its role as seeking reasonable protection of fish and wildlife, rather than ensuring reasonable protection of all beneficial uses of water.

Concerning a preferred or recommended alternative, the "State Water Board has made no decisions on actual updates to the Bay-Delta Plan, and all alternatives evaluated in this draft Staff Report remain available for consideration and approval after the public planning process." (*Id.*, p. 5-1.) The Staff Report acknowledges that VAs may be selected as an alternative, but the core VA concept being proposed as one to avoid UIF is not accurately described:

> The Proposed Voluntary Agreements Alternative evaluated in this draft Staff Report identifies that the regulatory pathway would apply to non-VA regions and could apply in VA regions in the event the VAs are discontinued after the proposed 8-year term of the VAs, as described in Chapter 9. The proposed VA regulatory pathway is largely consistent with the proposed Plan amendments described in this chapter, except that instead of updating the water quality objectives, the inflow, inflow-based Delta outflow, and cold water habitat provisions of the proposed plan amendments would be included in the program of implementation; they would be applicable to non-VA regions and could become applicable to VA regions in the future if the VAs are not continued.

(*Id.*, p. 5-2, underlining added.) In other words, in year 9 or 16 when the VA term lapses, the regulatory default will be unimpaired flow on former VA parties. That is not the negotiated deal. Instead, the VA parties have proposed that the State Water Board be required to go through

its full planning process, including new CEQA review, if it wishes to impose UIF once the VAs have reached their term.

The Staff Report proposes several new objectives that would constitute amendments to the Delta Plan (or, in the case of VAs, would be requirements of the program of implementation). Taken together, these requirements are described as the "proposed Plan amendments":

1. An inflow objective: maintain inflow conditions from all tributaries sufficient to support and maintain natural production of viable fish populations by maintaining inflows at 55% UIF, with an allowed adaptive range between 45% and 65% of UIF. How the 55% UIF would be implemented is ambiguous with the Staff Report oscillating between a uniform application of the standard on all water rights holders (i.e., "share the pain") versus its implementation consistent with the priority system. Compare the following statements:

    a. "All water users on these tributaries, except those with a *de minimis* effect on flows (e.g., 10AF/year or less), would have responsibility for contributing to the achievement of the objective." (Staff Report, p. 5-17.)
    b. "Subject to possible modifications for drought, public health and safety, public trust obligations for wildlife refuges, or alternative arrangement in a voluntary implementation plan, implementation of the flow objective would be required to be met in order of water right priority." (*Ibid.*)

2. A Cold Water Habitat Objective (Carryover Storage Requirement): maintain streamflows and reservoir storage conditions to protect cold water habitat for sensitive native fish.

    a. "All water users on these tributaries, except those with *de minimis* effect on temperature management, would bear responsibility for contributing to achievement of the objective." (Staff Report, p. 5-23.)
    b. Rim reservoir operations would be required to coordinate with the State Water Board and fishery agencies on cold water habitat protection. In other words, the State Water Board will dictate rim reservoir operations. (*Ibid.*)
    c. "As determined by the Executive Director of the State Water Board, upstream reservoir operators also may be required to develop their own strategies if their reservoir operations are affecting achievement of the [objective]." (*Ibid.*)

3. An Inflow-Based Delta Outflow Objective: the 55% UIF inflows required by 1, above, are required as Delta outflows with adjustments for downstream natural depletions and accretions.

4. Fall Delta Outflow Objective: this is an attempt to maintain the Fall X2 (salinity) requirement of the prior biological opinions governing CVP and SWP operations.

5. Suisan March Brackish Tidal Objective: this would be incidental to the Delta Outflow Objective.

6. Interior Delta Flows: maintain flow conditions in the interior Delta to support and maintain natural fish populations, including continuing Delta Cross Channel Gate operations.

7. Export Limits: this objective would attempt to hard code the California Department of Fish and Wildlife's 2020 incidental take permit (ITP) limiting the combined amount of water that can be exported and also imposing a import to export ratio (known as I:E) that varies based on year type.

8. Old and Middle River Reverse Flows (OMR): Again, the State Water Board's attempt to hard code biological opinion requirements into the Delta Plan.

To implement the myriad of new objectives, the State Water Board envisions substantial improvements in water right reporting, including more accurate demand data and reporting of diversions under a "correct" water right. (Staff Report, p. 5-57.) "The proposed program of implementation would include provisions for developing a methodology and system for identifying and notifying water users when they must reduce or cease diversions (bypass flows) at their priority of right to meet the proposed Plan amendments." (*Ibid.*) The State Water Board would "build on past efforts" including the Water Unavailability Methodology recently utilized to justify drought curtailments (and which is the subject of pending litigation).

Chapter 6: Changes in Hydrology and Water Supply

Chapter 6 expands on the SacWAM model to compare UIF against currently baseline operations and summarizes several assumptions utilized by the model. Strangely, the State Water Board acknowledges that climate changes in hydrology are not incorporated into the SacWAM model runs. (Staff Report, p. 6-8.) Similarly, "it was assumed that each tributary provides its proportional share of the numeric inflow requirement so that the range of flow scenarios is sufficient to illustrate the potential changes that may result from the proposed plan." (*Id.*, p. 6-7.) This would seem to counteract the prior statement that UIF would be imposed by water right priority.

The Staff Report analyzes impacts of UIF on the Bear River as estimated by SacWAM. First, it makes note of and requires modification/reduction of existing interbasin diversions by NID and PG&E from the Middle and South Fork Yuba Rivers. Consequently "with less Yuba River water supplementing the flow of the Bear River, streamflows above Camp Far West Reservoir are lower and the flows on the Lower Bear River above the Feather River are also generally lower." (Staff Report, p. 6-16.) The decrease in the flow at the mouth of the Bear River in the January through June period is estimated to be 23 TAF.

Carryover storage at New Bullards Bar Reservoir is modeled to be 18TAF more on average in all year types under a 55% UIF scenario, because the model limits out of basin transfers by NID and PG&E. In critical years, however, carryover storage at New Bullards Bar is modeled to be -57 TAF under a 55% UIF scenario. "Reduced transfers to the Bear River would lower storage levels in Bowman, Lake Fordyce, Jackson Meadows, Rollins and Lake Spaulding Reservoirs." (Staff Report, p. 6-47.)

Carryover storage at Camp Far West Reservoir on average for all year types is modeled to be -3 TAF under a 55% UIF scenario. In critical years, that figure is -1 TAF. Table 6.3-1 at p. 6-27 summarizes the supposed total water supply impacts under the various UIF standards as measured against current conditions/baseline. We believe these are significantly understated given SacWAM modeling flaws.

Table 6.3-1. Total Annual Delta Inflow Average by Water Year Type and Scenario: Change from Baseline (thousand acre-feet)

Water Year Type	Baseline	35	45	55	65	75
Critical	9,685	217	381	481	891	1,247
Dry	13,179	159	216	512	1,124	1,831
Below Normal	16,870	455	553	734	1,025	1,904
Above Normal	24,362	366	634	790	720	1,758
Wet	35,903	-26	61	376	800	891
All	21,575	193	312	543	919	1,458

Delta outflow generally increases in all months.
cfs = cubic feet per second

Table 6.4-2 at p. 6-57 shows the decrease in average annual water supply as measured against the SacWAM baseline. Again, these are likely understated given modeling flaws in SacWAM.

Table 6.4-2. Annual Water Year Type Average Annual Sacramento/Delta Supply for Baseline and Change from Baseline (thousand acre-feet)

Water Year Type	Baseline	35	45	55	65	75
Critical	9,305	-1,054	-1,512	-2,232	-3,149	-4,253
Dry	11,563	-596	-1,379	-2,630	-3,886	-5,375
Below normal	12,149	-384	-947	-1,937	-3,486	-5,413
Above normal	12,334	-129	-481	-1,278	-2,887	-4,749
Wet	13,394	-123	-267	-695	-1,945	-3,439
All	11,957	-428	-871	-1,682	-2,981	-4,538

The Staff Report states that senior water right holders such as the Sacramento River Settlement Contractors and Feather River Agencies would likely not experience water supply impacts in most year types. "A large percentage of water users in the Sacramento River watershed are CVP settlement contractors or SWP settlement contractors; as a general rule, these

demands receive full supply except after other users have been severely reduced." (Staff Report, p. 6-58.)

While probably understated, SacWAM modeling nonetheless shows significant water supply impacts to agriculture in the Sacramento River watershed:

Table 6.4-5. Annual Sacramento/Delta Supply to Agriculture in the Sacramento River Watershed Water Year Type Average: Change from Baseline (thousand acre-feet per year)

Water Year Type	Baseline	35	45	55	65	75
Critical	4,226	-743	-918	-1,208	-1,561	-2,177
Dry	4,660	-126	-313	-778	-1,288	-1,898
Below normal	4,756	-80	-173	-397	-1,011	-1,908
Above normal	4,735	-21	-84	-166	-547	-1,517
Wet	4,739	-28	-59	-153	-460	-922
All	4,641	-174	-279	-511	-937	-1,602

The Staff Report acknowledges that reductions in surface water supply will likely drive water users to greater reliance on groundwater (where available and consistent with SGMA): "The actual response of water users to reduced surface water supplies from the Sacramento/Delta is expected to include some increases in groundwater pumping to replace some of the reduced surface supplies, but not at volumes sufficient to replace all reductions in surface water supplies." (Staff Report, p. 6-81.) In addition, the Staff Report encourages "diversification" of water supply portfolios, including greater conservation, use of recycled water, increased water transfers, groundwater storage and recovery, and desalination.

Chapter 7: Project Description & Environmental Analysis

Chapter 7 begins the in-depth analysis of the environmental effects of the proposed new water quality objectives. In NID's CEQA comment letter, currently due January 19, 2024, we will offer comments on many of the impact areas and how the Staff Report's analysis inaccurately describes impacts or otherwise fails to comply with CEQA. Here we will just briefly touch upon some of the impact analyses (or lack thereof).

Concerning impacts to irrigated agricultural acreage, "Under the 55 scenario, approximately 2,170,000 irrigated crop acres would be maintained; this represents a decline of 3.9 percent of from baseline. (Staff Report, p. 7.4-45.) "Rice acres in the 55 scenario could be reduced by 6.0 percent from baseline." (*Id.*, p. 7.4-46.) "Because this crop [rice] is a comparatively lower revenue crop, does not tolerate deficit irrigation, and occupies a large proportion of the crop category acreage, changes in water supply would likely affect a larger proportion of the rice acreage." (*Id.* p. 7.4-48.)

The "worse case" decreases in crop acreage in a dry year assuming no replacement groundwater is reflected in Table 7.4-18:

Table 7.4-18. Dry Year: Irrigated Crop Acreage in the Sacramento/Delta, SWAP Model Analysis, No Replacement Groundwater (acres)

Crop Group	Existing	35	45	55	65	75
Rice	564,000	540,400	527,700	489,600	443,500	371,300
Alfalfa & Pasture	372,900	349,100	340,200	322,600	294,900	267,200
Deciduous Orchards	368,800	368,200	368,000	367,400	366,800	366,200
Corn and All Silage	257,600	254,800	253,400	250,600	248,500	245,600
Almonds & Pistachios	166,800	165,400	164,300	162,300	160,800	160,000
Wheat & Field Crops	199,300	200,400	199,500	197,400	196,400	194,100
Vine	134,500	134,300	134,300	134,200	134,100	134,000
Processing Tomatoes	101,100	99,500	98,800	97,700	97,000	96,200
Vegetables	78,800	78,600	78,400	78,300	78,100	78,000
Cotton	3,300	3,200	3,200	3,200	3,200	3,100
TOTAL	2,247,000	2,193,900	2,167,700	2,103,200	2,023,400	1,915,700

Source: Appendix A3, *Agricultural Economic Analysis: SWAP Methodology and Modeling Results.*

In the upper watersheds, the Staff Report observes "Groundwater is not extensively utilized in these areas because of the presence of a fractured rock aquifer system. Changes in supply could result in reductions in crop acreage and increased fallowing." (Staff Report, p. 7.4-52.) This is certainly true in NID's service area and should be highlighted in a comment letter to the State Water Board.

Concerning impacts to terrestrial species, like giant garter snakes or amphibians, the analysis minimizes impacts resulting from changes in water supplies and in many cases finds that ancillary restoration projects, like EcoRestore, would benefit these species and offset any habitat loss associated with decreased water supplies.

Concerning energy impacts, "Changes in hydrology would result in an increase in hydropower generation in spring and decrease in summer. Decreases in summer would likely be offset by gas-fired power." (Staff Report, p. 7.8-1.) However, mitigation measures are proposed that would supposedly offset energy impacts. Those mitigation measures include diversifying the water portfolio (groundwater pumping, groundwater storage and recovery, water recycling, water conservation, and increased water efficiency). Also, "coordination with existing requirements", which envisions "to the extent possible, the proposed Plan amendments are proposed to be integrated with existing and new FERC licenses associated with water quality certification by the State Water Board as well as ESA, California Endangered Species Act, and other requirements. These requirements may help reduce impacts on hydropower production by coordinating regulatory requirements to the extent possible." (Staff Report p. 7.8-41.)

Chapter 8: Economic Analysis and Other Considerations

Chapter 8 summarizes the economic effects of the proposed UIF alternatives. For agricultural impacts, the analysis uses the water supply impacts produced by SacWAM in concert with another model called the Statewide Agricultural Production (SWAP) model. The SWAP analysis "estimates the direct economic effects of potential changes in water supply on production of irrigated crops with a range of possible outcomes based on assumptions related to availability of groundwater to offset reductions." (Staff Report, p. 8-39.) In addition, "this analysis estimates how changes in agricultural production could affect total industry output

(sales), income, and employment throughout the regional economy" by using the "IMPLAN model". (*Ibid.*)

The interconnection of these models supposedly produced minimal economic impacts statewide. For example, under a scenario where no groundwater is pumped to make up for lost surface water, the total modeled economic impact to agricultural products on average is only a -2.5% decrease in crop revenue with 55% UIF. Under the maximum groundwater replacement pumping scenario, the crop revenue decrease with a 55% UIF standard is only -0.4%. Table 8.4-23 summarizes the economic effects on agriculture with various UIF flow scenarios:

Table 8.4-23. Summary of IMPLAN-Estimated Regional Economic Effects in the Sacramento/Delta from SWAP-Modeled Changes in Agricultural Production by Flow Scenario

	Change in:		
Flow Scenario	Output ($ millions)	Income ($ millions)	Number of Jobs
35	-131	-72	-1,324
45	-217	-121	-2,214
55	-416	-234	-4,283
65	-793	-445	-8,149
75	-1,392	-779	-14,280

These impacts will be minimized through various existing financial assistance programs, such as grants, loans and other water efficiency programs. The economic impact on municipal water providers is similarly limited, particularly when compared to the large California economy:

Table 8.5-1. Lower Bound and Upper Bound Annual Average Supply Needs to Replace Reduction in Sacramento/Delta Supplies for Municipal Use (TAF/yr), and Range of Estimated Costs for Municipalities to Replace Reduced Supply by Region for the 55 Flow Scenario

Region	Lower Bound (Partial Replacement) (TAF/yr) [a]	Upper Bound (Full Replacement) (TAF/yr) [b]	Cost ($) [c]
Sacramento River watershed	3	52	$213,000 to $4,499,000
Delta eastside tributaries	8	15	$408,000 to $2,544,000
Delta	0	1	$0 to $423,000
San Francisco Bay Area	41	166	$32,206,000 to $154,764,000
Central Coast	8	12	$9,152,000 to $14,475,000
San Joaquin Valley	0	22	$0 to $10,296,000
Southern California	22	446	$20,837,000 to $529,798,000

[a] Source: Appendix D, Supplemental Municipal Supply Analysis Information.
[b] Source: Table 7.20-6, Section 7.20, *Utilities and Service Systems*.
[c] Sources: Appendix D, Supplemental Municipal Supply Analysis Information, and Section 8.5, Economic Analysis and Other Considerations.
TAF/yr = thousand acre-feet per year

Doing the math, the claimed cost to replace the water supply impact in the Sacramento River watershed is merely between $4.09 per AF and $21.12 per AF. These are simply not realistic numbers to replace lost water supply. Moreover, the Staff Report cites positive economic effects of UIF, including "positive economic effects on California's commercial and recreational fishing industries" and enhanced rafting and kayaking and fishing.

Chapter 9: Proposed Voluntary Agreements

The analysis of VAs is confined to Chapter 9 of the Staff Report, acknowledging that the State Board is considering the proposed VAs as a possible path forward for updating the Bay-Delta Plan, but "will require consideration of public input on the draft Staff Report and peer review of the Scientific Basis Report Supplement." (Staff Report, p. 9-1.)

The SWRCB's analysis does not appear consistent with the VA MOU insofar as the UIF standard would automatically apply to VA parties once the term of the VA (8 or 15 years) lapses. "The staff-proposed regulatory pathway under the VA alternative would apply to non-VA parties and could apply to VA parties in the event the VAs are discontinued." (*Ibid.*).

The Staff Report notes that the State Board expects, by December 31, 2023, that the VA parties will submit the following documents: (i) draft Global Agreement; (ii) draft Enforcement Agreement; (iii) draft Implementing Agreements; (iv) draft Quantitative Flow Accounting Approach; (v) draft Funding Plan; and (vi) draft Systemwide Governance Committee Charter. (*Id.*, p. 9-2.)

CEQA requires a stable baseline from which to measure environmental effects. While confusing, it appears the Staff Report modified the baseline for the VA alternative compared to the baseline for UIF alternatives. "The major difference between the baseline and 2019 BiOps condition relative to exports and Delta outflows is the applicability of San Joaquin River inflow to export (I:E) constraints that apply during April and May." (Draft Staff Report, p. 9-13.) "The VA flow assets are accounted for as additive to the 2019 BiOps condition, not baseline." (*Id.*, p. 9-22.) The following tables illustrate how this problem understates the benefits of the VA contributions:

Table 9.5-29. Change in January–June Average Delta Inflow by Water Year Type (TAF/yr) for VA Scenarios Compared with Baseline

Water Year Type	Baseline	Proposed VA: Change from Baseline	Proposed VA High Inflow: Change from Baseline
C	5,313	44	109
D	7,098	428	586
BN	10,033	367	436
AN	16,250	293	429
W	24,949	-1	122
All	13,902	208	322

Table 9.5-30. Change in January–June Average Delta Inflow by Water Year Type (TAF/yr) for VA Scenarios Compared with the 2008–2009 BiOps Condition

Water Year Type	2008-2009 BiOps	Proposed VA: Change from 2008-2009 BiOps	Proposed VA High Inflow: Change from 2008-2009 BiOps
C	5,307	50	115
D	7,090	436	594
BN	9,965	435	504
AN	16,054	489	625
W	24,904	44	167
All	13,848	262	376

A few observations from these tables. First, the tables measure the VA contribution from a baseline described as the 2008/09 BiOps. Second, the VA "high inflow" column is assuming that the additional state water purchases contemplated by the VA are successful. Third, these modeled VA additive flows are less than the volumes included in the VA flow table, suggesting that SacWAM does not recognize VA flows as entirely new water.

There are hints throughout Chapter 9 that would suggest State Board staff are attempting to undersell the VA benefits. For example, it is pointed out that the VA flows do not increase flows year-round as compared to a UIF standard: "on a monthly average, Delta inflows would increase for some months and would decrease for other months compared to baseline." (Staff Report, p. 9-57.) Similar negative statements are made about the VA habitat benefits "Additional uncertainties in VA outcomes arise from the timing of physical habitat restoration completion; assumptions of the suitability of VA habitat assets; limitations in the habitat modeling approaches; the lack of a quantitative connection between certain aspects of the habitat and species abundance; the focus on a few at-risk species; and others…." (*Id.*, p. 9-81.)

The balance of Chapter 9 assesses the various CEQA impact categories for VAs akin to Chapter 7 for the UIF alternatives. Again, the overall theme of Chapter 9 is that VAs are not as beneficial as UIF. For example, "[g]enerally, the changes in hydrology under the proposed VAs are smaller than the changes in hydrology that would occur under the proposed Plan amendments evaluated in Chapter 7." (Staff Report, p. 9-165.)

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Conclusion & Next Steps

NID is in process of conducting its own modeling of UIF impacts within NID's watersheds to demonstrate the unique impacts of UIF on headwater regions without reliable alternative sources of supply like groundwater. NID will submit CEQA comments on the draft Staff Report by January 19, 2024.

Sincerely,

MINASIAN LAW

By: _____
DUSTIN C. COOPER

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Enc.

2.2.6.2 Yuba River

The Yuba River has a watershed of 1,339 square miles and runs to its confluence with the Feather River from an elevation of 8,600 feet at the crest of the Sierra Nevada (HDR and SWRI 2007). The Yuba River has three forks with the following watershed areas: North Fork, 490 square miles; Middle Fork, 210 square miles; and South Fork, 350 square miles (UYRSPST 2007). The Yuba River watershed is responsive to rain-on-snow events; during the January 1997 rain-on-snow event, instantaneous flow at Marysville reached 180,000 cfs (Entrix 2003). Historically, prior to the construction of New Bullards Bar and Englebright Dams, peak monthly runoff was generated by snowmelt during April and May (Pasternack 2009). Flows in the lower Yuba River during the July to January low-flow season appear to have increased since construction of the dams (Pasternack 2009), but streamflow gage records began only after most of the high elevation dams had been constructed.

North Fork Yuba River and Middle Fork Yuba River join in the foothills just below New Bullards Bar Reservoir; a few miles more downstream, they are joined by South Fork Yuba River, which then flows into the relatively small Englebright Lake (70 TAF). The Yuba River watershed can be naturally divided into three sections. The upper sections of each of the three forks run through a series of glaciated basins at elevations ranging from 5,500 to 7,000 feet (James et al. 2002; James 2003; NID 2011). Between the glaciated basins and the toe of the foothills just below Englebright Reservoir, the three forks and mainstem run through deep and narrow parallel canyons with relatively steep gradients (NID 2011). Below the foothills, the Yuba River flows through a valley section to its confluence with the Feather River.

The Yuba River has been extensively developed for hydropower generation and water supply. Development in the upper watersheds of North, Middle, and South Fork Yuba River and Deer Creek include parts of the South Feather Water and Power Agency's South Feather Hydroelectric Project (FERC No. 2088), Yuba County Water Agency's Yuba River Development Project (FERC No. 2246), Nevada Irrigation District's Yuba-Bear Hydroelectric Project (FERC No. 2266), PG&E's Drum-Spaulding Project (FERC No. 2310), and U.S. Army Corps of Engineers' (USACE) Englebright and Daguerre Point Dams (^SacWAM 2023). The many hydropower reservoirs and diversions in the upper watershed affect the timing of inflows to New Bullards Bar and Englebright Reservoirs. Additionally, there are major transfers of water out of the watershed. The Slate Creek Diversion (discussed in Section 2.2.6.1, *Feather River*) diverts on average about 80 TAF/yr from North Fork Yuba River into the Feather River watershed. The South Yuba Canal and the Drum Canal divert on average about 430 TAF/yr from the South Fork Yuba River at Lake Spaulding to the Deer Creek and Bear River watersheds.

As part of the Yuba River Development Project, Yuba County Water Agency delivers water to its member units at Daguerre Point Dam, located at RM 11. Water is diverted to irrigate lands both north and south of the river. Additionally, Browns Valley Irrigation District diverts water at its pumping plant approximately 2 miles upstream at RM 13.

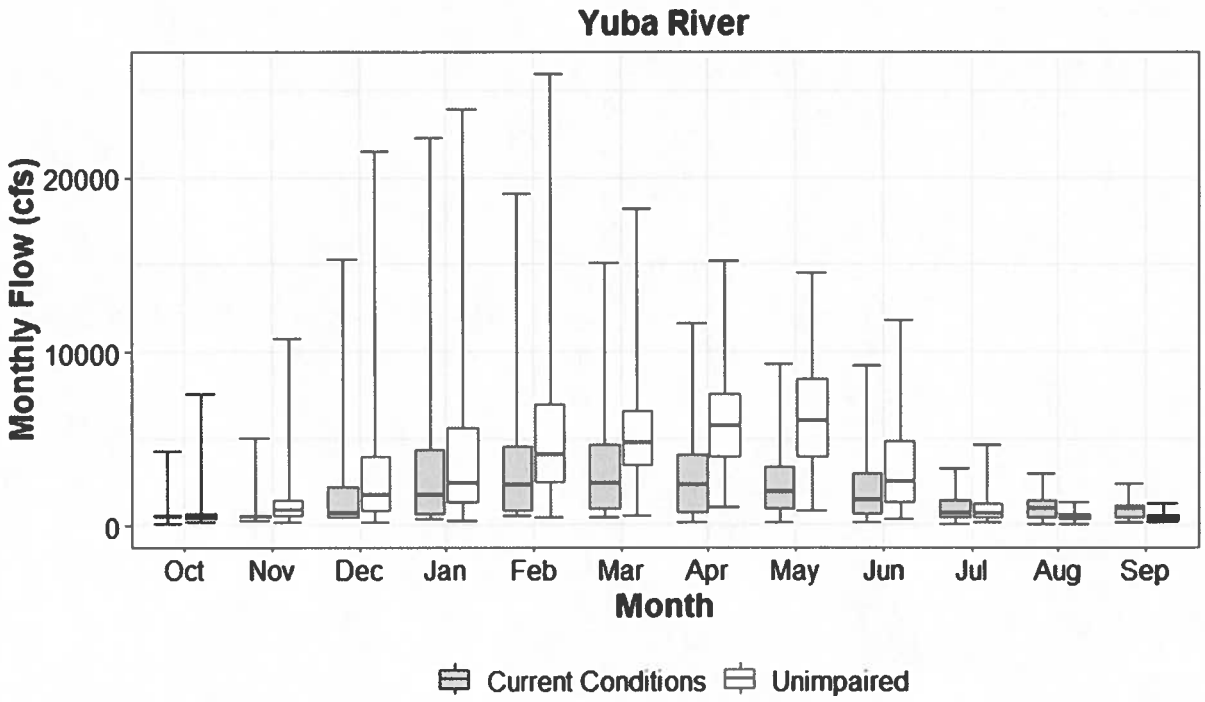
Dry Creek joins the Yuba River from the north, approximately 2 miles upstream from Daguerre Point Dam. Flows in Dry Creek are regulated by Browns Valley Irrigation District's operation of Merle Collins Reservoir and Virginia Ranch Dam. The district supplements Yuba River water with diversions below Merle Collins Reservoir.

New Bullards Bar Reservoir on the North Fork is by far the largest reservoir in the Yuba River watershed, with storage capacity of about 960 TAF. While reservoirs on the Middle Fork are smaller,

Middle Fork water can be transferred to either the North Fork via Yuba County Water Agency's Our House Diversion Dam or Log Cabin Diversion Dam, or to the South Fork via Nevada Irrigation District's Milton Reservoir. Similarly, reservoirs on South Fork Yuba River are relatively small, but South Fork water can be transferred to the Bear River at Lake Spaulding. As a result, winter and spring flows on the lower Yuba River may be dominated by unregulated South Fork flow downstream of Lake Spaulding; Middle Fork flow that could not be transferred to the other forks; or flow from Deer and Dry Creeks, which are tributaries to the lower Yuba River. However, North Fork flows may dominate flows in the lower Yuba River when flood releases are made from New Bullards Bar Reservoir.

Englebright Dam blocks fish passage on the Yuba River; the major impacts on fisheries are primarily due to the loss of spawning habitat above Englebright Dam and the other dams. There have been a number of operations agreements to maintain flow and water temperature below Englebright Dam and provide spawning habitat restoration actions in the lower Yuba River (Pasternack 2009; NID 2011; USACE 2013, 2014). Plans for fish passage above Englebright Reservoir and New Bullards Bar Reservoir are being discussed as part of the BiOp for continued operation of Englebright Reservoir and Daguerre Point Dam and the multiple FERC projects going through relicensing in the Yuba River watershed (DWR 2016c).

Groundwater interactions are complex along the lower Yuba River as they respond to droughts, seasonal groundwater pumping, and movement of stream water into and out of the large deposits of hydraulic mining sediment (Entrix 2003). However, despite those complexities, flow in the lower Yuba River is dominated by the operations of New Bullards Bar Reservoir and diversions at Daguerre Point Dam. Reservoir storage and diversions on the Yuba River have greatly reduced flows on the lower Yuba River during spring months, reduced winter peak flows, and reduced the variability in monthly flows (cfs = cubic feet per second Figure 2.2-17). The January–June Yuba River impaired flow as a percentage of unimpaired flow ranges from 28 to 71 percent and is less than 50 percent in half of the years. Flows in all months, except September, also are significantly reduced in some years but generally are reduced in the wet season and increased in the dry season (Table 2.2-12).



cfs = cubic feet per second

Figure 2.2-17. Yuba River Simulated Current Conditions (gray) and Unimpaired (white) Monthly Flows

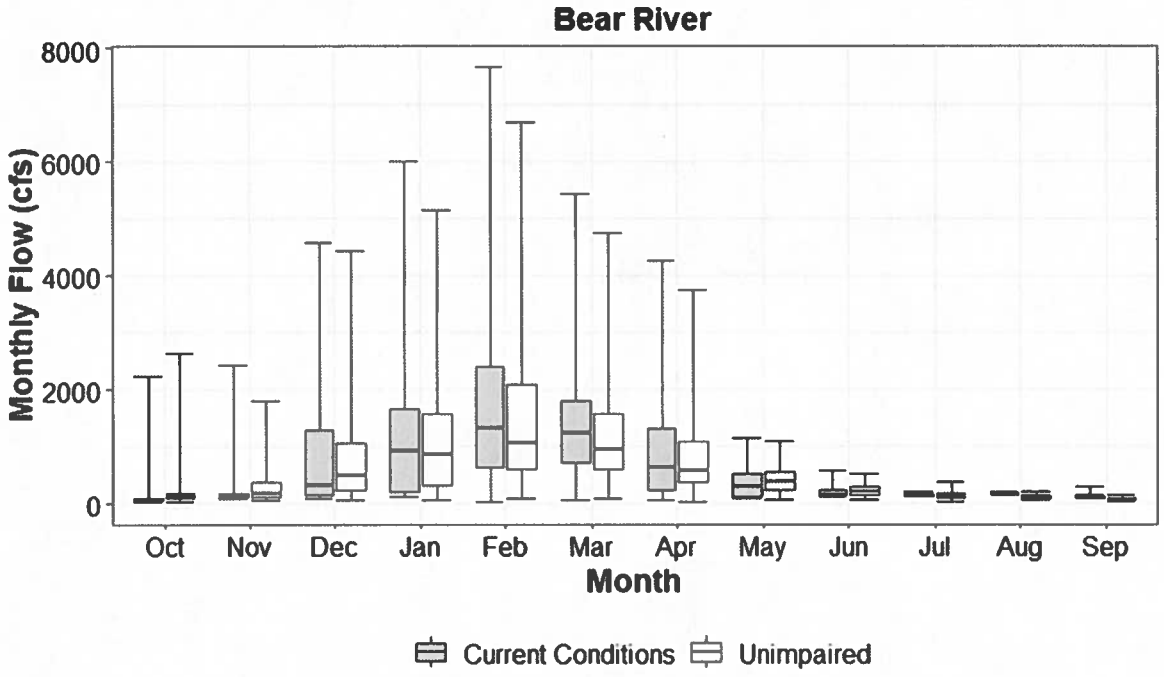
Table 2.2-12. Cumulative Distribution of Current Conditions as Percent of Unimpaired Flow in Yuba River

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Jan–Jun	Jul–Dec	Annual Total
0%	32	20	17	18	23	24	14	16	17	32	51	65	28	43	37
10%	58	36	36	39	37	27	20	22	35	80	120	120	34	69	44
20%	68	44	42	52	44	34	22	29	47	90	134	144	38	74	47
30%	76	47	52	59	50	38	26	32	55	95	144	162	41	80	51
40%	83	53	55	67	54	42	32	36	59	101	158	182	45	86	53
50%	93	65	62	73	58	52	38	38	63	107	197	196	50	92	56
60%	99	75	67	85	63	56	44	40	66	115	212	211	55	94	61
70%	106	84	71	89	69	75	49	45	68	121	227	229	60	102	66
80%	118	98	76	98	85	83	53	49	74	131	240	237	65	113	70
90%	140	117	87	110	96	88	62	55	81	145	277	256	71	125	73
100%	228	211	209	170	142	107	76	71	119	229	411	332	80	153	77

2.2.6.3 Bear River

The Bear River has a watershed of 292 square miles and runs from an elevation of 5,500 feet in the Sierra Nevada to its confluence with the Feather River. The Bear River can be divided into an upper section above Rollins Reservoir, a middle section above Camp Far West Reservoir, and a lower section in the Sacramento Valley from Camp Far West Reservoir to the Feather River confluence (James 1989).

The hydrology of the Bear River has been extensively altered through a complex series of power diversion and storage dams, exports and imports of water to and from adjacent watersheds, and the filling and subsequent incision of the hydraulic mining sediment in the channel (SWRCB 1955; James 1989; NID 2008, 2010, 2011; ^NMFS 2014b). The Bear River watershed receives imported water from the Yuba River and North Fork American River through PG&E's Drum-Spaulding Project and Nevada Irrigation District's Yuba-Bear Hydroelectric Project. The Bear River watershed upstream of Camp Far West Reservoir also includes storage and diversion facilities owned and operated by Nevada Irrigation District, Placer County Water Agency (PCWA), and PG&E. Water is released from Camp Far West Reservoir for power generation, irrigation, and to meet downstream flow requirements. South Sutter Water District operates a diversion dam at RM 17, approximately 1 mile downstream from Camp Far West Dam, to irrigate lands served by Camp Far West Irrigation District and South Sutter Water District. Low minimum flow releases from Camp Far West Reservoir during most of the year are the largest impact on anadromous fish in the river (^NMFS 2014b). Because of imported water from the Yuba watershed, current flows are greater than 110 percent of the unimpaired conditions in half of the years from January through June (cfs = cubic feet per second Figure 2.2-18, Table 2.2-13).



cfs = cubic feet per second

Figure 2.2-18. Bear River Simulated Current Conditions (gray) and Unimpaired (white) Monthly Flows

Table 2.2-13. Cumulative Distribution of Current Conditions as Percent of Unimpaired Flow in Bear River

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Jan–Jun	Jul–Dec	Annual Total
0%	23	28	32	35	24	25	28	29	45	39	81	50	38	51	59
10%	37	39	46	55	56	81	45	47	61	60	108	76	71	70	82
20%	42	50	53	66	79	92	58	58	66	65	120	95	85	79	87
30%	49	59	66	75	97	101	76	68	72	82	134	108	94	88	96
40%	55	68	70	94	114	107	91	77	83	91	144	125	101	94	101
50%	61	74	82	107	121	115	101	83	93	102	160	135	110	101	105
60%	70	83	103	116	125	120	114	90	98	111	172	151	114	105	109
70%	75	99	116	122	131	126	121	95	103	128	187	176	119	109	114
80%	83	121	127	128	140	136	132	104	115	150	220	207	122	115	117
90%	100	145	165	148	155	151	147	108	134	174	256	263	124	128	121
100%	180	388	198	196	214	264	267	200	250	303	293	485	164	160	134