State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

May 23, 2018

Joseph Yun
Executive Officer
California Water Commission
P.O. Box 942836
Sacramento, CA 94236-0001

Dear Mr. Yun:

RELATIVE ENVIRONMENTAL VALUE OF WATER STORAGE INVESTMENT PROGRAM PROJECTS AND DEPARTMENT FINDINGS

Thank you for your leadership during this process. As you know, the California Department of Fish and Wildlife (Department) is tasked with the responsibility of making recommendations to the California Water Commission (Commission). I acknowledge the complexity of the process has been challenging for you, Commissioners, the reviewing agencies, and each applicant. No one has tried a competitive approach to water storage on such a scale before. The good news is that the Commission and applicants are as close as ever to adding much needed water storage capacity through a portfolio of different types of projects across a diverse geography.

This competitive approach must adhere to the controlling statute and the implementing regulations. At each step of your process, our Department has always based our recommendations on the plain instructions in the statute and the regulations. All of the current applicants, as members of a broad-based stakeholder advisory group, helped develop these regulations during a two-year dialogue. At the last Commission meeting, the Department's recommendations to the Commission on monetized ecosystem benefits to include in the public benefit ratio calculations were discussed. This package contains our next assignment under the regulations related to our calculation of relative environmental value for the ecosystem improvements of a project and preliminary findings. However, as I describe at the end of this letter, each applicant retains an important obligation to complete due diligence for their projects promptly.

Pursuant to the Water Storage Investment Program (WSIP) regulations, this letter and attachments transmit to California Water Commission (Commission) staff (1) the relative environmental value scores calculated by the California Department of Fish and Wildlife (Department) and (2) the Department's findings on the public benefits claimed by each WSIP project. The WSIP regulations require the Department to calculate a relative environmental value for ecosystem improvements, based on information supplied in each project's application. (Cal. Code Regs. tit. 23, § 6007, subd. (c).) Additionally, if the Department "finds the public benefits as described in a project's application meet all of the requirements of Water Code section 79750 *et seq.* for which the reviewing

agency is responsible, the reviewing agency shall provide to the Commission a written statement confirming the finding." (Cal. Code Regs., tit. 23, § 6012, subd. (d).) This finding is a "preliminary assessment of public benefits based on information supplied in the application that indicates that a project's public benefits meet the requirements of Water Code section 79750 *et seq.*" (Cal. Code Regs., tit. 23, § 6012, subd. (a).)

For each ecosystem benefit quantified, project applications were required to identify at least one applicable ecosystem priority listed in section 6007, subdivision (c), of the WSIP regulations. (Cal. Code Regs., tit. 23, § 6003, subd. (a)(1)(Q).) The Department applied the 10 relative environmental value criteria outlined in Table 2 of section 6007, subdivision (c)(1)(A)(1), to score each of the ecosystem priorities identified by the applicant. Based on information supplied in the application, the Department considered information supporting ecosystem benefits including the analytical methods, modeling results, and physical, chemical, or biological information. (Cal. Code Regs., tit. 23, § 6007, subd. (c)(1)(A)(1).) Section 6007, subdivision (c)(1)(A)(2), states the score shall be assigned by evaluating the degree of change between with- and without-project conditions, and the degree to which ecosystem improvements associated with each claimed priority would be provided by a project.

The relative environmental value scores reflect the Department's critical and thorough evaluations of project applications and include comments to the Commission and its staff that address the many aspects of the projects as proposed. The Department's analysis contained in this package is consistent with our analysis related to public benefits.

The Department recognizes that the projects in many cases have a long history in water management planning in California, and have additional steps in front of them that will refine the projects, reduce uncertainties, and further inform the Commission's decisionmaking. The regulations emphasize the preliminary nature of the findings submitted to you today, and the fact that changes may occur after a reviewing agency's findings. (Cal. Code Regs., tit. 23, § 6012(g).) Moreover, prior to the Commission encumbering funding, each successful applicant must enter into enforceable contracts for public benefits and non-public benefit cost shares, complete feasibility studies and environmental documentation, obtain all required federal, state, and local approvals, and provide extensive additional information to the Commission, as applicable, on items including labor compliance, urban water management plans, agricultural water management plans, and groundwater management plans or GSP(s). (Cal. Code Regs., tit. 23, § 6013(a)(1), (c).)

This letter and attachments represent the completion of the Department's technical review of WSIP projects for the purpose of contributing toward the maximum conditional eligibility determination of each project that the Commission must make. The Department looks forward to continuing to work with the Commission and project

applicants in the next phase of the WSIP.

Sincerely,

Charlton H. Bonham
Director

Encl: CDFW Findings on WSIP Public Benefits, Relative Environmental Value Scores, Technical Review Comments

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Chino Basin Conjunctive Use Project – Relative Environmental Value Score

Project Overview

The Inland Empire Utilities Agency (Applicant) is proposing the Chino Basin Conjunctive Use Project (Project), which would store water in the Chino Basin Water Bank, located primarily in San Bernardino County. The Project would involve the construction of an advanced water treatment facility and distribution system, capable of treating and storing up to 15,000 acre-feet (AF) of recycled water per year. The Project would provide up to 100,000 AF of storage capacity for water dedicated to ecosystem benefits, with an additional 100,000 AF of borrowing capacity of previously stored water to provide ecosystem benefits prior to completion of the project. The Project's claimed ecosystem benefits would be realized through water transfers with the State Water Project (SWP), whereby a SWP Contractor would use water from the Project in lieu of SWP water. This would allow water stored in Oroville Reservoir to be dedicated to providing instream flow benefits. The Project proposes providing up to 50,000 AF of water per year, in the spring of dry and critically dry years, to act as pulse flows on the Feather River.

Ecosystem Priorities Identified by the Applicant

The Applicant has identified the following ecosystem priorities:

- Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids.
- Priority 6 – Increase attraction flows during upstream migration to reduce straying of anadromous species into non-natal tributaries.

The California Code of Regulations requires the California Department of Fish and Wildlife (Department) to apply 10 Relative Environmental Value (REV) criteria to score each of the priorities that an applicant claims would be provided by a project. (Cal. Code Regs., tit. 23, § 6007, subd. (c)(1)(A)(1).) Based on the information provided in the application, the Department scored each ecosystem priority listed above to determine the ecosystem REV score shown below. To implement REV Criterion 1, the Department has developed a standard calculation to assign points based on the number of ecosystem priorities a project has claimed. For each priority claimed, the Department added 0.375% to a project's final ecosystem REV score. REV Criterion 2 through 10 were each scored on a scale of 0 to 6. Detailed scores are provided in Table 1. A summary of comments for each Priority-REV combination is provided in Chino Basin Conjunctive Use Project – Technical Review Comments.

REV Score Summary

Total Points Possible	108
Total Points Received	64.4
Additional % for Number of Ecosystem Priorities (REV Criterion 1)	0.8%
Total REV Score	**60.4%**

Chino Basin Conjunctive Use Project – Technical Review Comments

REV Criterion 1 (Number of different ecosystem priorities claimed)

To implement Relative Environmental Value (REV) Criterion 1, the California Department of Fish and Wildlife (Department) has developed a standard calculation to assign points based on the number of ecosystem priorities a project has claimed. For each priority claimed, the Department added 0.375% to a project's final REV score. The Department has applied the standard calculation to each of the projects.

In its application for funding under the Water Storage Investment Program, the Inland Empire Utilities Agency (applicant) identified two ecosystem priorities for the Chino Basin Conjunctive Use Project (Project). The calculation described above resulted in an increase of 0.8% for the Project's ecosystem REV score. The Department applied the other nine REV criteria to each priority identified by the applicant. The Department's evaluation of each priority is described below.

Priority 2 – Provide flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids.

Priority 2 – REV Criterion 2 (Magnitude of ecosystem improvements) Score = 4.5

The Project would provide 50,000 acre-feet of water from Oroville Reservoir to serve as pulse flows, which would be released in April and May into the low flow channel of the Feather River. The pulse flows would be timed in conjunction with the release of approximately 2 million spring-run Chinook smolts from the Feather River Hatchery. The application cites the Feather River Hatchery Genetic Management Plan, which identifies a production goal of 2 million spring-run Chinook smolts to be released in April and May of every year. This documentation supports the claim that providing pulse flows in dry and critically dry years, when water is normally less likely to be available, would provide a benefit to emigrating hatchery produced spring-run Chinook smolts. However, this timing likely diminishes the magnitude of benefits to naturally produced emigrating spring-run Chinook fry, as most naturally occurring spring-run Chinook fry on the Feather River begin emigrating between November and January.

Priority 2 – REV Criterion 3 (Spatial and temporal scale of ecosystem improvements) Score = 4.5

The proposed pulse flows would be released from the Feather River low flow channel in April and May, and would be timed in conjunction with the release of approximately 2 million hatchery produced spring-run Chinook smolts. This would likely provide a benefit to emigrating hatchery produced spring-run Chinook smolts throughout the Feather River. However, the timing of pulse flows to benefit hatchery produced spring-run Chinook smolts is outside the peak emigration period for naturally produced spring-run Chinook fry, as most spring-run Chinook fry on the Feather River begin emigrating between November and January.

Priority 2 – REV Criterion 4 (Inclusion of an adaptive management and monitoring program that includes measureable objectives, performance measures, thresholds, and triggers to achieve the ecosystem benefits) Score = 3.0

The application states that the adaptive management of the proposed pulse flows would be conducted in close coordination and collaboration with the Department of Water Resources' (DWR) Oroville FERC Relicensing compliance monitoring program. The applicant intends to use data from the compliance monitoring to measure the success of the proposed pulse flows, including data collected from rotary screw traps on downstream juvenile Chinook migration and upstream adult Chinook migration weir and

hatchery counts. Data collected through compliance monitoring would be used to provide a baseline for setting performance standards and measuring the success of pulse flows. The application states that the downstream migration data would be used to establish the relationship between pulse flows and migration. While weir and hatchery collection of adults would aid in validating attraction flow effectiveness, capture coded wire tags at other Central Valley hatcheries could be examined to provide more insight on stray rates. Based on information gathered, the Project would alter the configuration of pulse flows to maximize the benefits to spring-run Chinook. The applicant states it is prepared to work with DWR operators, Department staff, and other agencies to coordinate the delivery of pulse flows with the release of smolts to the Feather River in order to maximize their effectiveness. However, it is unclear whether the applicant would rely solely on existing monitoring to provide data for the adaptive management plan, or whether it would conduct additional monitoring. It is also unclear whether the applicant would dedicate funds to conduct the proposed analysis.

Priority 2 – REV Criterion 5 (Immediacy of ecosystem improvement actions and realization of benefits) Score = 4.0

The application states that up to 100,000 acre-feet (AF) of "borrowing capacity" water from the Chino Basin Water Bank would be made available for pulse flows in critically dry and dry years. This would consist of providing up to 50,000 AF of water in dry and critically dry years, from the Chino Basin Water Bank, both prior to completion of the Project, and/or before the Project stores an equivalent amount of water. The Project would make this water available as early as 2020, which is prior to the estimated date when Project construction would be completed. Additionally, because the availability of water for pulse flows is not dependent on the completion of Project construction, ecosystem benefits could be realized prior to completion of construction. Therefore, the immediacy and realization time frames are the same.

Priority 2 – REV Criterion 6 (Duration of ecosystem improvements) Score = 3.5

The application states that the lifespan of the Project would be 50 years, with pulse flows provided in dry and critically dry years that occur within 25 years from either the date of construction completion or the date that water is first borrowed from the Chino Basin Water Bank. The Executive Summary, provided with the application, states that the Project's assets would revert to Inland Empire Utilities Agency for local use after a period of 25 years, meaning that no further pulse flow benefits would be provided. The applicant estimates that pulse flows would occur in approximately 7.5 of those 25 years. However, depending on hydrological conditions over the 25-year period, the frequency of pulse flows could vary because the Project would provide pulse flows in dry and critically dry water years, which may occur more or less frequently than calculated. This creates uncertainty regarding the actual number of years in which this ecosystem benefit would be provided by the Project.

Priority 2 – REV Criterion 7 (Consistency with species recovery plans and strategies, initiatives, and conservation plans) Score = 2.8

The application states that the Project would be consistent with two primary and two secondary recovery actions for the Feather River, as outlined by the National Marine Fisheries Service (NMFS) 2014 Recovery Plan for Chinook salmon and steelhead. The two primary recovery actions include identifying and implementing actions intended to minimize straying of Feather River Hatchery salmon and steelhead, and managing releases from Oroville Dam with instream flow schedules and criteria to provide suitable water temperatures for all life stages, reduce stranding and isolation, protect incubating eggs from being dewatered, and promote habitat availability. The two secondary recovery actions include negotiating agreements with landowners and Federal and State agencies to provide

additional instream flows or purchase water rights in the Feather River, and evaluating pulse flow benefits in the Feather River for adult immigration and juvenile outmigration during peak migration periods for years with low water availability. While the proposed pulse flows would likely contribute to these primary and secondary recovery actions, the application only provided documentation to support the degree of improvement for one of the secondary recovery actions, and did not point to documentation in support of the degree improvement for the remaining primary and secondary recovery actions. Additionally, the application states that the Project would address three of the five listing factors identified by NMFS for the decline in Central Valley spring-run Chinook and steelhead abundance. However, the application does not state which three listing factors the Project would address.

Priority 2 – REV Criterion 8 (Location of ecosystem improvements and connectivity to areas already being protected or managed for conservation values) Score = 4.3

The proposed pulse flows are in a location that is likely to provide a benefit to emigrating hatchery produced spring-run Chinook smolts. Pulse flows provided in the Feather River low flow channel during dry and critically dry years, when water is less likely to be available, would help to increase the number of spring-run Chinook smolts that successfully emigrate from the Feather River Hatchery. The ecosystem benefits would occur below Oroville Reservoir, an area with direct hydrologic connections to areas being protected and managed for conservation values. No significant barriers exist downstream of the pulse flow release point. Thus, flows would be accessible to emigrating spring-run Chinook smolts.

Priority 2 – REV Criterion 9 (Efficient use of water to achieve multiple ecosystem benefits) Score = 3.8

The application states that the Project would efficiently use water by creating a highly reliable, dedicated environmental water supply to benefit instream flows. The Project would create this supply by increasing groundwater supplies in the Chino Basin through wastewater recycling, and then reserving a like amount of water explicitly for environmental flow purposes. The application provides documentation to support the assertion that pulse flows made available through water efficiency would provide benefits by improving in-river rearing and emigration and enhancing natal stream imprinting for spring-run, fall-run, and steelhead. Additionally, the application states that pulse flows would reduce straying rates for spring-run Chinook adults, provide cold water for eggs and fry, improve ecosystem water quality, increase dissolved oxygen and lower water temperatures to support anadromous fish passage, and enhance habitat for native species that have commercial, recreational, scientific, or educational uses. While Project pulse flows would likely provide some of these ecosystem benefits, the application does not point to supporting documentation or further analyze the Project's ability to provide these benefits.

Priority 2 – REV Criterion 10 (Resilience of ecosystem improvements to the effects of changing environmental conditions, including hydrologic variability and climate change) Score = 3.0

The application states that the Project would deliver pulse flows in 25 of the 82-year simulation period, or in approximately 30% of years, under both 2030 and 2070 hydrologic scenarios. However, the Project would only provide pulse flows in either the first 25 years of Project operations, or 25 years from the date that water is first borrowed from the Chino Basin Water Bank. Thus, ecosystem benefits provided by the Project would not extend into the 2070 hydrologic scenario. Providing a "borrowing capacity" from the existing Chino Basin Water Bank adds to the resilience of the Project's ecosystem benefits, as pulse flows could be provided regardless of whether the Project is storing water in the Chino Basin

Water Bank. The application examined the availability of water out of Oroville under different climate scenarios, but did not directly discuss the resilience issue in terms of the ecosystem benefit.

Priority 6 – Increase attraction flows during upstream migration to reduce straying of anadromous species into non-natal tributaries.

Priority 6 – REV Criterion 2 (Magnitude if ecosystem improvements) Score = 2.5

The Project proposes to use pulse flow releases to simultaneously benefit hatchery produced spring-run Chinook smolts, and to serve as attraction flows for returning Spring-run Chinook adults, in order to reduce straying rates. Existing straying rates on the Feather River for spring-run Chinook adults are low (~1%), and therefore any improvements to straying rates created by the pulse flows would likely be minimal . The application assumes, without pointing to supporting documentation, that pulse flows would reduce straying rates to 0.5%. It is possible that pulse flows would provide a benefit for spring-run Chinook attraction, potentially resulting in a reduction in straying rates. However, without pointing to supporting documentation that demonstrates the projected decrease in straying rates, the Department is unable to verify the magnitude of the benefit.

Priority 6 – REV Criterion 3 (Spatial and temporal scale of ecosystem improvements) Score = 4.0

Project pulse flows would be released from the Feather River low flow channel in April and May, and would coincide with the timing and location of migration of spring-run Chinook adults. However, it is unclear from the documentation provided whether the magnitude of the pulse flows released from Oroville Reservoir would be sufficient to serve as attraction flows.

Priority 6 – REV Criterion 4 (Inclusion of an adaptive management and monitoring program that includes measureable objectives, performance measures, thresholds, and triggers to achieve the ecosystem benefits) Score = 3.3

See comments under Priority 2 – REV Criterion 4.

Priority 6 – REV Criterion 5 (Immediacy of ecosystem improvement actions and realization of benefits) Score = 4.0

See comments under Priority 2 – REV Criterion 5.

Priority 6 – REV Criterion 6 (Duration of ecosystem improvements) Score = 3.3

See comments under Priority 2 – REV Criterion 6.

Priority 6 – REV Criterion 7 (Consistency with species recovery plans and strategies, initiatives, and conservation plans) Score = 2.8

See comments under Priority 2 – REV Criterion 7.

Priority 6 – REV Criterion 8 (Location of ecosystem improvements and connectivity to areas already being protected or managed for conservation values) Score = 4.3

The pulse flows would occur in a location that could increase attraction flows during upstream migration of spring-run Chinook and reduce straying into non-natal tributaries. However, there is low confidence in the magnitude of the benefit, which reduces confidence that the benefit would be realized in the identified location of the improvement. The ecosystem benefits would occur below Oroville Reservoir, an area with direct hydrologic connections to areas being protected and managed for conservation

values. No significant barriers exist downstream of the pulse flow release point. Thus, flows would be accessible to migrating spring-run Chinook adults.

Priority 6 – REV Criterion 9 (Efficient use of water to achieve multiple ecosystem benefits) Score = 3.8

See comments under Priority 2 – REV Criterion 9.

Priority 6 – REV Criterion 10 (Resilience of ecosystem improvements to the effects of changing environmental conditions, including hydrologic variability and climate change) Score = 3.0

See comments under Priority 2 – REV Criterion 10.

Table 1. Relative Environmental Value Scores for the Chino Basin Conjunctive Use Project												
Priority	**REV2**	**REV3**	**REV4**	**REV5**	**REV6**	**REV7**	**REV8**	**REV9**	**REV10**	**REV1**	**Points Possible**	**Points Received**
P 2	4.5	4.5	3.0	4.0	3.5	2.8	4.3	3.8	3.0	X	54	33.4
P 6	2.5	4.0	3.3	4.0	3.3	2.8	4.3	3.8	3.0	X	54	31.0
TOTAL									REV1 = [1]	0.8%	108	64.4
										TOTAL REV SCORE[2]		**60.4%**

[1]Additional 0.375 percent applied to total REV score for each priority claimed

[2]Total REV Score equals total points received divided by total points possible, plus REV1 percentage addition