



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

CECW-NWD

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: Howard A. Hanson Dam (HAHD) Additional Water Storage Project (AWSP), Final Validation Report (VR) and Supplemental Environmental Impact Statement (SEIS)

1. Purpose. To provide for your review the enclosed Post Authorization Change Validation Report (PACR). The report documents the need to increase the authorized project cost from \$75,600,000 at Fiscal Year (FY) 1999 price levels to \$855,185,000 at FY 2022 price levels.
2. Post-Authorization Change. This PACR presents a revised cost estimate and updated analysis of the authorized project to request authorization of a new project cost. The PACR does not include any new plan formulation and there are no changes in the project location, purpose, or scope. The current total project first cost estimate is \$855,185,000 at FY 2022 price levels. The current Section 902 limit for the Howard A. Hanson Dam (HAHD) Additional Water Storage Project (AWSP) is \$197,787,000 at FY 2022 price levels. Cost sharing remains the same as established under the existing executed 2003 Project Cooperation Agreement (PCA). The cost allocation in the PCA was previously negotiated with your office to address the biological opinion requirements associated with the listing of Puget Sound Chinook salmon which occurred shortly before the 1999 authorization. This approach is consistent with the 1999 Chief's Report which committed to reviewing the Endangered Species Act (ESA) issue during the Preconstruction Engineering and Design (PED) phase to make appropriate adjustments to design, cost allocation, and cost sharing to reflect obligations the U.S. Army Corps of Engineers (Corps) might have in order to respond to the listing. The federal cost share for the AWSP is \$815,207,000 and the non-federal cost share is \$39,979,000. The total federal share for the Phase I Fish Passage Facility (FPF) is \$806,140,000, which is 98.4% of the total cost for the Phase I FPF. The federal cost of the AWSP includes 97.8 percent of the Phase I FPF construction to elevation 1,147 feet and 100 percent of monitoring and adaptive management costs for the FPF. The remaining 2.2 percent of the Phase I FPF cost to elevation 1,177 feet as well as Phase II costs are joint use costs allocated between municipal and industrial (M&I) water supply at 61.2 percent and Ecosystem Restoration at 38.8 percent.
3. Project Authorization. The HAHD AWSP project remains an open construction project that was authorized by Congress under Section 101(b)(15) of the Water Resources Development Act (WRDA) of 1999 (Public Law 106-53). Under Public Law 106-53, the Corps was authorized to construct and operate a downstream FPF, provide

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additional storage for M&I water supply as well as low flow augmentation in accordance with the Feasibility Report of the Chief of Engineers dated 13 August 1999.

4. Project Background and Status of Construction.

a. The HAHD, initially named the Eagle Gorge Dam (until 1958), was completed in 1962. The project was authorized to provide flood control, fish conservation, irrigation, and M&I water supply. The Corps determined at the time of project implementation that the fish conservation purpose was best executed by storing water in the spring for augmenting stream flows during the summer and fall low flow season. The irrigation and water supply portions of the authorization were deferred and not implemented at the time of construction.

b. Since 1989, the Corps has investigated the potential for the project to help meet M&I water supply needs of the Puget Sound area. In 1994, the scope of the study was expanded to include ecosystem restoration. The Corps evaluated multiple reservoir storage alternatives with options for fish passage and other ecosystem restoration features. Single-purpose water supply, dual-purpose water supply, and ecosystem restoration alternatives included full implementation as well as phased implementation. The Corps completed a Final Feasibility Study Report and EIS in 1998 and recommended a dual-purpose water supply/restoration project implemented in phases. The AWSP was authorized in WRDA 1999.

c. The plan recommended in 1998 and authorized in 1999 consists of a dual-purpose phased plan, which would modify HAHD by changing the reservoir operation to allow for raising the level of the reservoir conservation pool for additional water storage and ecosystem restoration. The recommended plan includes two phases: Phase I includes storage of 20,000 ac-ft for M&I water supply; and Phase II includes additional storage of 2,400 ac-ft for M&I water supply and 9,600 ac-ft for low flow augmentation. Phase I has been implemented; this raised the conservation pool elevation from 1,147 feet to 1,167 feet. However, the FPF included in the Phase I recommendation has not been constructed. In addition, implementation of Phase II is dependent upon the evaluation of the success of Phase I, as well as the findings from future dam safety evaluations to validate that Phase II would not pose unacceptable risks to the downstream public.

d. Most of the components described in the 1998 EIS for the AWSP have been constructed including the new administration building and maintenance facility, upgraded seawall at the boat launch site, and the powerline upgrade to support the infrastructure. The components include significant ecosystem restoration measures including extensive river and stream habitat projects above the dam and re-establishing

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downstream movement of gravel and large wood below the dam. Engineering design and construction of the downstream FPF was started in 2003. Construction of the FPF completed to date includes installation of a cofferdam for building in the dry and excavation of the space for the fish collection structure. Construction of the downstream FPF was suspended in 2011 due to an anticipated Section 902 cost limit exceedance; all construction was halted, and the cofferdam has remained in place.

5. Least-Cost Evaluation Approach. The VR/SEIS was undertaken to modernize the design of the FPF including identification of the least-cost fish passage design that meets Biological Opinion (BiOp) requirements for fish passage collection efficiency and facility performance while complying with other federal laws. The VR/SEIS documents changes from the original plan and updates the total project cost for the authorized project to meet the 2019 BiOp requirements for species listed since the original authorization. The study is compliant with planning guidance in ER 1105-2-100. Any fish passage design option must meet the collection and passage survival criteria established in the 2019 BiOp. As such, the Corps identified the least-cost fish passage design option that has the highest likelihood of meeting the established collection and passage survival criteria outlined in the BiOp. The Corps determined that the Fixed Multiport Collector with Steep Slope Bypass would be the least cost design option that meets the collection and fish passage survival criteria outlined in the 2019 BiOp, which generally includes the following components: Fixed multiport collector, steep slope bypass, deceleration tunnel, outfall stilling basin structures, and post-construction monitoring and adaptive management in accordance with the requirements outlined in the 2019 BiOp.

Phase II of the authorized project includes a second pool raise to provide additional water supply and low flow augmentation for ecosystem restoration downstream of the dam. The implementation of Phase II would be dependent on an evaluation of Phase I success and consensus of the State and Federal resources agencies, the Muckleshoot Indian Tribe, City of Tacoma, and the Corps as well as findings from future dam safety evaluations required to support the additional pool raise following completion of Phase I. Future Phase II study, monitoring, and mitigation costs are included in the total project cost estimate presented in the report.

6. Environmental Considerations. In 2019, the National Marine Fisheries Service (NMFS) issued a jeopardy BiOp. The 2019 BiOp from NMFS requires the Corps to have a completed and operational FPF by the end of 2030 that meets prescribed performance criteria (Reasonable and Prudent Alternative (RPA) 1), as well as make operational adjustments in the interim until downstream fish passage is implemented (RPA 2). The Corps prepared a Final Supplemental Environmental Impact Statement (FSEIS), which supplements the 1998 EIS and Decision Document, and documents

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compliance with applicable environmental laws and regulations. The FSEIS presented an evaluation of the FPF design options developed in response to NMFS' RPAs in the 2019 BiOp. The Amended Record of Decision (ROD) represents the culmination of the NEPA process. All compensatory mitigation requirements for the AWSP Phase I have been met. Phase II mitigation requirements are consistent with those authorized in the original Chief's Report for the AWSP and include mitigation actions associated with stream habitat, elk forage habitat, upland forest habitat, and wetland riparian zones.

7. Monitoring and Adaptive Management Plan. Performance monitoring and potential adaptive management actions will be conducted as generally described in the project's Monitoring and Adaptive Management Plan. Phase I monitoring is anticipated to occur for up to 10 years and is estimated to cost \$11,876,000. Phase II monitoring is anticipated to occur for 5 years and is estimated to cost \$4,879,000.

8. Technical and Policy/Legal Review. Technical review has been completed and incorporated. Agency Technical Review was completed on 03 May 2022. Policy and legal compliance review has been completed and all comments have been resolved. The Corps also conducted an Independent External Peer Review (IEPR) because of the project complexity and the total project cost. The Final IEPR report included thirty-one comments. The Corps concurred with all but one comment and adopted all but two of the IEPR panel's recommendations. All IEPR comments were resolved and closed by the panel.

9. Conclusion. The Seattle District prepared the Validation Report in accordance with ER 1105-2-100, as amended, to document the increases in the project cost and recommend an increase in the authorized project cost. The Cost Engineering Mandatory Center of Expertise Agency Technical Review was completed and certified on 29 April 2022. The Corps policy compliance review of the Validation Report concluded that there are no unresolved policy issues and that the project is technically sound, environmentally acceptable, and economically justified.

10. Recommendation. I recommend the enclosed Validation Report be transmitted to Congress as the basis for increasing the authorized project cost of the Howard A. Hanson Dam Additional Water Storage Project to \$855,185,000 at FY 2022 price levels.

Encl

ALVIN B. LEE
Director of Civil Works