

Finding of No Significant Impact

Final Environmental Assessment

Anderson Ranch Dam Turbine Modernization Project

Elmore County, Idaho

U.S. Department of the Interior

Bureau of Reclamation

Columbia-Pacific Northwest Region

Snake River Area Office

CPN FONSI # 21-03

Introduction

The Bureau of Reclamation (Reclamation) has prepared this Finding of No Significant Impact (FONSI) to comply with the Council on Environmental Quality regulations for implementing procedural provisions of the National Environmental Policy Act. This document briefly describes the Proposed Action, other alternatives considered, the scoping process, Reclamation's consultation and coordination activities, and Reclamation's finding. The Final Environmental Assessment fully documents the analyses of the potential environmental effects of implementing the changes proposed.

Location and Background

The proposed project is located 28 miles northeast of the City of Mountain Home in Elmore County, Idaho. The dam, constructed in 1954, is situated on the South Fork Boise River and is a major feature of the Boise Project. Anderson Ranch Dam is a zoned earthfill embankment that impounds Anderson Ranch Reservoir, with a crest length of 1,350 feet. Anderson Ranch Reservoir is formed in a natural depression along the South Fork Boise River. The reservoir has an active storage capacity of 413,074 acre-feet at reservoir water surface elevation 4,196 feet above sea level. The authorized purposes for Anderson Ranch Dam are irrigation water supply, power development, and flood control, with dead storage space providing for silt control, conservation of fish, and recreation. Anderson Ranch Reservoir stores water from the 980-square-mile drainage area above the dam.

Anderson Ranch Powerplant consists of two Francis turbine generating units installed in 1950 and 1951. While both generating units were updated from 13 to 20 megawatts in 1986, the existing turbine runners remain original. Cracking on the runner buckets was first identified in 1993. In 2017, due to the increase in crack propagation, Reclamation voluntarily imposed an operational limitation

of no less than 50 percent gate opening in an effort to prevent additional damage, with the intent of replacing unit No. 2 runners in 2018 and unit No. 1 runners in 2019. The replacement has not been completed due to funding limitations.

During the annual inspection of the units in October 2019, extensive crack propagation was found. Reclamation engineers determined the unit to be unsafe to operate until a proper repair or replacement could occur. In early 2020, an interagency agreement with Tennessee Valley Authority was set forth to perform welding repairs of the runner blades on unit No. 2. This repair work was performed on bucket Nos. 3, 10, 11, 12, and 13. Unit No. 2 was placed back into operational status and maintained the 50 percent restriction in which the unit had been previously operated, with additional monitoring for vibration. Unit No. 2 buckets were re-inspected during the 2020 Unit Annuals; crack propagation was evident again on bucket No. 12. The inspection team also noted a crack on unit No. 1, bucket No. 4 on the high-pressure side; however, the crack does not appear to have developed through the blade to the low-pressure side.

The 2021 Unit Annuals observed unit no. 1, bucket no. 4 crack has propagated through the blade thickness but does not require weld repairs at this time. Inspection on unit no. 2 indicated no noticeable changes as previously noted in 2020. The limitation set on the plant's operation configuration has led to an increase wear on unit no. 1 and is verified by the decrease in damage to unit no. 2. Reclamation plans to continue annual crack inspections and monitoring of each unit runner.

Purpose and Need

Reclamation's purpose and need for the proposed action is to modernize Anderson Ranch Dam turbine unit Nos. 1 and 2 by undergoing a baseline mechanical overhaul of both units. This would help avoid the risk of an unplanned unit outage due to degradation over their 70 years in service and ensure continued use for power generation for an additional 50 years. Reclamation repaired multiple cracks in 2020 and continues to observe new crack propagation in new and different locations within both units. Annual inspections have shown increased wear in multiple parts of both units.

Alternatives Considered and Recommended Action

The range of alternatives developed for analysis of this Proposed Action was based on the purpose and need for the project, and on the issues raised during internal, external, and tribal scoping. The alternatives analyzed include a No Action alternative and the Proposed Action. The No Action alternative does not meet the defined purpose and need for action but was evaluated because it provides an appropriate baseline to which the recommended action is compared.

Summary of Environmental Effects

The following summarizes the effects that the preferred alternative – the Proposed Action (Alternative B) – would have on each resource category analyzed in the EA. The Proposed Action alternatives B1 and B2 would involve the baseline mechanical overhaul of both units, with an alternative transportation route for Proposed Action B2 dependent on securing funding. Resources that do not specify an alternative when describing effects suggests they apply to both options, compared to those resources that specify which effects pertain specifically to each alternative. Chapter 3 of the EA provides a full analysis and explanation of how each resource was evaluated.

Biota – Vegetation, Wetlands, Fish and Wildlife

The proposed work would occur inside the Anderson Ranch Dam facility and would not directly affect water releases or have direct effects to aquatic habitat or the riparian corridor. Because the use of established staging areas and transportation routes is incorporated, no new ground disturbance would occur as part of the proposed alternative. The increase in vehicular traffic for the transportation of equipment and personnel could be expected to result in increased airborne and deposited dust in areas adjacent to unpaved transportation routes (i.e., on the unpaved road along the South Fork Boise River and along Cow Creek Road, if that alternative transportation route is used). These effects would not be anticipated to result in measurable increases in dust or sediment deposition on vegetation and into the South Fork Boise River beyond an area limited to approximately 600 feet from transportation routes, and such effects would be expected to be mitigated to insignificant levels via the implementation of industry Best Management Practices (BMPs) for the reduction of fugitive dust. Dust deposition on roadway-adjacent vegetation would only temporarily affect this habitat, until cleared via seasonal leaf senescence (i.e., vegetation deterioration in the fall) and winter precipitation. Therefore, this effect would be limited to the short term.

The risk of wildlife collision with vehicles would be increased due to the increased traffic load on transportation routes. However, as this risk is greatest at times of low light (dawn, dusk, and nighttime), terrestrial wildlife would be expected to adopt avoidant behavior toward busy roadways during peak traffic hours, and nighttime transportation of equipment and personnel would be minimal if it occurs, such an effect would be insignificant. Adaptive avoidant behavior could temporarily disrupt movement patterns in the short term as wildlife avoid busy roadways but would not be expected to persist beyond the completion of the project. No long-term effects to biota would occur.

Potential introduction or spread of noxious weeds would be mitigated to an insignificant level through implementation of industry BMPs such as vehicle checks/cleaning designed to minimize the introduction and spread of invasive vegetation. As no new soil disturbance would occur, there would be limited opportunity for new noxious weed establishment. No in-waterway work would occur under the Proposed Alternative; therefore, no new risk of introduction of aquatic invasive species would be created.

If the Proposed Alternative were to occur concurrent with other proposed activities such as the Anderson Ranch Dam Raise, the effects of the proposed action would temporarily, and minimally, incrementally increase the much larger similar impacts to biota identified in the draft EIS for the dam raise.

In the absence of hydrologic alterations or ground disturbance, no effects to wetlands or riparian corridors are anticipated.

Threatened and Endangered Species

Under the Proposed Alternative, the potential for slight increases in sediment deposition into the South Fork Boise River below Anderson Ranch Dam due to the increased traffic load on non-paved roadways near the river exists; however, the effects to water quality are not anticipated to be measurable or persistent (see EA Section 3.5) and would therefore not result in short-term or long-term effects to bull trout present in this habitat. No changes to water releases or in-waterway work are incorporated into the proposed action, therefore no direct effects to the species or its critical habitat are anticipated.

Potential effects to the riparian corridor from increased dust from transportation activity can be used as a proxy for potential effects to monarch butterflies, as this could affect milkweed present along the river. However, these effects are anticipated to be mitigated by the incorporation of industry BMPs to an insignificant level, as described in discussion of effects to vegetation and wetlands/riparian areas in EA Section 3.2.2. No long-term effects to listed species are anticipated.

Hydrology

Under the proposed action, if flows higher than 800 cfs and lower than 10,800 cfs were needed during the proposed action's time period (September through May), flows up to 800 cfs would be released out of one of the powerplant units and the remaining volume would be released out of the hollow jet valves. If flows above 10,800 cfs needed to be released, the powerplant and hollow jet valves would run at full capacity and the remaining volume would be released over the spillway. If Anderson Ranch Dam raise spillway construction occurred at the same time, which would render the spillway inaccessible for releases, as in Alternative B2, there would be a greater restriction on the volume of water allowed to fill in the reservoir. The only direct effect to the hydrology would be the reduction of the total maximum volume of water that could be released from 31,600 cfs to 30,800 cfs.

Any effect of loss of power generation would occur if flows above approximately 1,200 cfs were needed during the September-to-May time period. From 1980 to 2020, flows above 1,200 cfs during the September-to-May time period occurred 71 percent of the time, which results in less power production.

Water Quality

The replacement of the turbine runners would not directly affect water quality of the reservoir or the South Fork Boise River because all work would be internal to Anderson Ranch Dam. However, transporting the equipment, supplies, and personnel could cause increased sediment into the South

Fork Boise River due to fugitive dust from increased road traffic depending on the route used for these deliveries. Project construction traffic (Tables 1 and 2 below) is estimated at 24 truck/tractor loads and 380 crew transport trips from mid-August to May 1 for each turbine replacement activity. Also, the staging areas, due to their proximity to the spillway and the South Fork Boise River, could also introduce sediment into the river. A more detailed description of effects is identified in the Transportation section (3.9) of the EA by construction route.

Alternative B1 – Turbine Overhaul and Modernization Funded for Unit No. 2

No increased sediment in the South Fork Boise River or Anderson Ranch Reservoir is expected from construction traffic via the Anderson Ranch Dam Road because its distance from the river (approximately 880 feet at the closest spot). The construction traffic would have to cross Anderson Ranch Dam, which is a hardened surface that would not create sediment.

Staging areas could be sediment sources due to their proximity (less than 50 feet) to the river. BMPs such as watering down the staging areas to reduce dust would mitigate most of the sediment issues. Additionally, construction would occur in the fall through spring, which is typically less dusty than during a dry, hot summer. Use of the staging areas is not expected to affect water quality standards in the short term (1 to 5 years) or long term (more than 10 years).

Alternative B2 – Turbine Overhaul and Modernization Funded for Unit No. 1

The replacement of the turbine runners would not directly affect water quality of the reservoir or the South Fork Boise River because all work would be internal to Anderson Ranch Dam. However, transporting the equipment, supplies, and personnel could cause increased sediment into the South Fork Boise River due to fugitive dust from increased road traffic depending on the route used for these deliveries. Project construction traffic (Table 2 and Table 3) is estimated at 24 truck/tractor loads and 380 crew transport trips from mid-August to May 1 for each turbine replacement activity. Also, the staging areas, due to their proximity to the spillway and the South Fork Boise River, could introduce sediment into the river. A more detailed description of effects is identified below by construction route.

Alternative B1 – Turbine Overhaul and Modernization Funded for Unit No. 2

No increased sediment in the South Fork Boise River or Anderson Ranch Reservoir is expected from construction traffic via HD-121 because of its distance from the river (approximately 880 feet at the closest spot). Construction traffic would have to cross Anderson Ranch Dam, which is a hardened surface that would not create sediment.

Staging areas could be sediment sources due to their proximity (less than 50 feet) to the river. BMPs such as watering down the staging areas to reduce dust would mitigate most of the sediment issues. Additionally, construction would occur in the fall through spring, which is typically less dusty than during a dry, hot summer. Use of the staging areas is not expected to affect water quality standards in the short (1 to 5 years) or long term (more than 10 years).

Alternative B2 – Turbine Overhaul and Modernization funded for Unit No. 1 and 2

Similar water quality effects are expected for Anderson Ranch Reservoir and the staging areas, as described in the previous section. However, use of HD-131 for construction activities on unit No. 1

could increase the sediment load in the South Fork Boise River. This route is adjacent to the river for about 1.75 miles from the Cow Creek bridge to the staging areas. The increase in construction traffic would increase fugitive dust and release sediment downslope that could be transported into the river.

Additionally, because work associated with the Anderson Ranch Dam raise, as identified in the 2020 Boise River Basin Feasibility Study Draft Environmental Impact Statement (Reclamation 2020), could potentially be occurring at the same time as the unit No. 1 overhaul construction, there could be combined effects from increased vehicle traffic on HD-131. The draft EIS identifies that, "...road construction, maintenance, and/or increased road activity adjacent to South Fork Boise River is also likely to contribute to fugitive dust and release sediment downslope that could be transferred into live water. Effects to water quality as a result of construction activity along the South Fork Boise River would not be anticipated to occur greater than 600 feet downstream of construction footprints and no effects would extend to Arrowrock Reservoir downstream" (Reclamation 2020). Similar effects would be expected from unit No. 1 construction traffic, although to a much lesser degree.

The Water Recourses section of the draft EIS states, "Through a combination of adherence to state and Federal regulations, and project design features, direct and indirect impacts to water quality from construction activities would not be significant" (Reclamation 2020). The incremental increase of sediment due to unit No. 1 construction traffic added to the sedimentation effects from Anderson Ranch Dam raise could increase the overall sediment load in the South Fork Boise River. Although the increased sediment input with just the unit No. 1 construction traffic is minor compared to sediment released from the Anderson Ranch Dam raise, it would be additive to the sediment from the dam raise. However, project design features identified in the draft EIS would mitigate effects from both construction activities in the short and long terms; thus, the projects would continue to meet state water quality standards in the South Fork Boise River.

Cultural Resources

Under the Proposed Action, with either Alternative B1 (Unit No. 2) or Alternative B2 (Unit Nos. 1 and 2 with use of HD-131 and HD-121 for access), Anderson Ranch Dam (IHSI #39-1202) would experience two direct effects, both beneficial. First, completion of the modernization of the turbines would ensure the continued function of the generation units and the fulfillment of an authorized purpose of power generation, a beneficial result of overhauling the equipment. Second, the in-kind replacement of the equipment will not significantly reduce the historic integrity of the facility. The direct effects of the actions involved with Alternative B (including both B1 and B2), when assessed in their short-term and long-term, adverse and beneficial, public health and safety, and effects that would violate Federal, State, Tribal, or local law protecting the environment, would not adversely impact Anderson Ranch Dam and Powerplant's historic integrity.

A possible indirect effect of the modernization of the turbines is a reduction in the need to perform extensive regular maintenance, thus having a lesser physical impact to the cultural resource over the next several decades. Less frequent and smaller interactions with the equipment could result in less wear and tear within the powerplant, thus prolonging the condition and integrity of that historically significant space. The indirect effect of the actions involved with Alternative B, when assessed in

their context and intensity, could beneficially impact the sustained good condition of the powerplant and its historic integrity.

Combined impacts from the ongoing and upcoming projects in the vicinity of Anderson Ranch Dam and Powerplant could result in a combined loss of historic integrity that might threaten the characteristics of the cultural resource from meeting the criteria necessary to qualify for listing on the National Register of Historic Places. The Anderson Ranch Dam Raise project, especially, would have significant adverse effects to the cultural resource. Raising the dam, even if following original design and engineering outlines, would physically alter the cultural resource to such a degree that it would effectively become a different structure. However, consultation with the State Historic Preservation Officer had determined that the adverse effects caused by the dam raise project can be mitigated with specific tasks, which have been formally outlined in a Memorandum of Agreement (MOA #R20MA11742).

Tribal Interests – Treaty Rights

Under Alternative B, there are no known or anticipated long-term effects, either beneficial or adverse, to reserved Treaty Rights, such as access to or impacts to traditional or customary places for hunting, fishing, or gathering, or for livestock grazing in the area.

Alternative B would not adversely impact hydrology, water quality, or aquatic biota at or near the Proposed Action area that would have a short-term or long-term sustainability effect on fish in Anderson Ranch Reservoir, the Snake River, or its tributaries.

The proposed HD-131 and HD-121 construction ingress and egress routes associated with Alternative B2 may cause a temporary, short-term adverse effect on access to traditional or customary hunting, fishing, or gathering sites, or for livestock grazing areas during the construction periods.

Reclamation requested information from the Shoshone-Bannock Tribes, who traditionally and currently use the area for hunting, fishing, and gathering of plants; however, no responses were received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response, Reclamation assumes that there would be no adverse effects to reserved Treaty Rights such as access or impacts to areas for hunting, fishing, or gathering or for livestock grazing.

Mitigation Summary

Mitigation efforts may be required to reduce the effects of construction ingress and egress on Tribal access to hunting, fishing, or gathering along HD-121 and HD-131 should construction ingress and egress activity take place in the same location and at the same time of year as traditional or customary hunting, fishing, and gathering of plants, or for livestock grazing.

Transportation

Transportation for the Project

Transportation traffic would be the same for Alternatives B1 and B2 in terms of total number of trips, workdays, and contractor pick-up trucks per workday. Table 1 shows these trips for the entire length of the project and split into unit Nos. 1 and 2. These estimates were provided by Reclamation’s Technical Service Center to be followed by the selected contractor.

Table 1. Construction traffic expected from mid-August to May 1

Activity (Crew Transport)	Total # of Trips- Both Units No. 1 and No. 2	Total # of Trips Per Unit	Work Days Per Unit	Contractor Trucks* per Work Day
Mobilization / Prep	80	40	10	4
Unit Measurement Data Gathering	80	40	10	4
Haul Away	160	80	20	4
Shop Work (off site)	NA	NA	0	NA
On-site Machining	80	40	20	2
Delivery (10 deliveries)	40	20	60	2 per delivery
Installation	320	160	40	4
Total	760	380	160	

*Semi-trucks included.

Table 2. Truck/trailer traffic expected from mid-August to May 1

Activity (Truck/Trailer)	Total # of Trips, Unit Nos. 1 and 2	Total # of Trips Per Unit
Mobilization / Prep	4	2
Haul Away	20	10
On-site Machining	4	2
Delivery (10 deliveries)	20	10
Total	48	24

Alternative B1 – Turbine Overhaul and Modernization Funded for Unit No. 2

HD-134 and Spillway Bridge would be the identified transportation route for Alternative B1. Construction traffic along HD-134 from U.S. 20 to Anderson Ranch Dam for the Anderson Ranch Dam Raise would not occur during this time frame. Additional travel described in Tables 1 and 2 above for the proposed action would be incremental when spread over the 9-month construction duration and insignificant when compared to the amount of traffic already using this transportation route.

Alternative B2 – Turbine Overhaul and Modernization Funded for Unit No. 1

Use of the detour route along HD-121 and HD-131 for Alternative B2 would depend on the approval of funding for the modernization of turbine unit No. 1. If funding is approved, workers who would need to access the powerhouse and the turbines would experience road closures on HD-

134 if the timing of this project overlaps with the construction for the Anderson Ranch Dam raise. Implementation of the detour route along HD-121 and HD-131 would increase travel time compared to the use of HD-134 to access the powerhouse. However, the detour includes snow removal, moderate road improvements, and new alignment construction on HD-121 and HD-131, which would improve travel time to areas north of the reservoir in summer compared to its current state and make the route passable in winter. Considering the number of trips per unit on HD-131 and HD-121, as shown in Tables 1 and 2 above, there would be a slight increase in the amount of traffic using this route, which would cause minor road deterioration. When added to the effects caused by the number of trips using the detour route for the Anderson Ranch Dam raise, these additional trips would not cause a significant effect due to the incremental increase. Additionally, repairs would be performed to roadways after the Anderson Ranch Dam raise is completed, which would occur well after the completion of this action.

Unaffected Resources

The Proposed Action would not cause any short- or long-term direct, indirect, or cumulative effects to the following resource categories:

- Indian sacred sites
- Tribal Interests, including Indian Trust Assets
- Environmental justice
- Recreation

Consultation, Coordination, and Public Involvement

In compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended in 1992), Reclamation consulted with the Idaho State Historic Preservation Office to identify cultural and historic properties in the area of potential effect. Consultation was initiated on September 9, 2021, and the State Historic Preservation Office concurred with the finding of no adverse effect to historic properties on October 1, 2021 (see Appendix B of the Final EA).

Reclamation mailed tribal and public recipients scoping letters, with a project information package enclosed, on July 15 and July 23, 2021, respectively. Reclamation received two comments during the scoping period. The first comment from United States Forest Service acknowledged the transportation routes identified in the scoping document and identified them as being under easement to Mountain Home Highway District. A request was made for Reclamation to coordinate with the Highway District to ensure all roads and bridges can accommodate the loads required to complete the project. On May 3, 2021, Reclamation began outreach and coordination pertaining to the potential use of the alternative route along HD-131 and HD-121 with Mountain Home Highway District and Forest Service and was completed by September 2021. Mountain Home Highway District has been identified as the authority having jurisdiction over Cow Creek Bridge, HD-131, and HD-121 roadways. The second comment from Dylan Lawrence with Varin Wardewell, LLC was on behalf of the Board of Commissioners

of Elmore County, Idaho. The comment included identifying a clerical error which was corrected and stated ‘concern regarding the effect that closing the road across Anderson Dam will have on the ability to provide emergency services to the community of Smith Prairie.’ Reclamation is committed to public safety and will provide road conditions to ensure year-round access via HD 134. Anderson Ranch Dam

Raise Project will identify required road improvements and determine specifications using Idaho Transportation Department and Mountain Home Highway District standards. The mailing list, scoping letters, and comments received are presented in Appendix C of the Final EA.

Finding

Based on the analysis of the environmental effects presented in the Final EA and consultation with potentially affected agencies, tribes, organizations, and the general public, Reclamation concludes that implementation of the preferred alternative – the Proposed Action (Alternative B) – will not have a significant impact on the quality of the human environment or natural and cultural resources. The effects of the Proposed Action will be minor, temporary, and localized. Therefore, preparation of an Environmental Impact Statement (EIS) is not required.

Decision

Based on the analysis in the EA, it is my decision to select for implementation the preferred alternative (i.e., the Proposed Action, Alternative B). The Proposed Action will best meet the purpose and need identified in the EA.

Recommended:

ROCHELLE OCHOA

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Rochelle Ochoa
Natural Resources Specialist
Snake River Area Office, Boise, Idaho

Date

Approved:

MELANIE PAQUIN

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Melanie Paquin
Snake River Area Manager
Columbia-Pacific Northwest Region, Boise, Idaho

Date