ENVIRONMENTAL ASSESSMENT
FOR AMENDMENT OF PROJECT LICENSE TO REPLACE BOAT FUEL DOCK AND ASSOCIATED INFRASTRUCTURE AT DIABLO LAKE

Skagit River Hydroelectric Project ---- FERC Project No. 553-238
Washington

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, D.C. 20426

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LIST OF FIGURES AND TABLES

ACRONYMS AND ABBREVIATIONS

1995 Order	Order Accepting Settlement Agreement, Issuing New License, and Terminating Proceeding
2018 BO	2018 Biological Opinion
Advisory Council	Advisory Council on Historic Preservation
BMPs	best management practices
Commission or FERC	Federal Energy Regulatory Commission
Corps	U.S. Army Corps of Engineers
CY	cubic yards
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	decibels
EA	Environmental Assessment
ESA	Endangered Species Act
Forest Service	U.S. Forest Service
FWS	U.S. Fish and Wildlife Service
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
National Register	National Register of Historic Places
PA	Programmatic Agreement
Park Service	U.S. National Park Service
PM&Es	protection, mitigation, and enhancement measures
Seattle or Licensee	City of Seattle
SEPA	Washington State Environmental Policy Act
Washington DOE	Washington Department of Ecology
Washington DFW	Washington Department of Fish and Wildlife
Washington DHAP	Washington Department of Archaeological and Historic Preservation
WRIA-4	Washington Watershed Resource Inventory Area 4

I. INTRODUCTION

A. **Application Type:** Non-Capacity Amendment of Project License

B. **Date Filed:** June 11, 2020

C. **Applicant's Name:** City of Seattle, Washington (Seattle)

D. **Waterbody:** Skagit River

E. **County and State:** Snohomish, Skagit, and Whatcom counties, Washington

F. **Federal Lands:** The project occupies a portion of the Ross Lake National Recreation Area administered by the U.S. National Park Service (Park Service) and the Mount Baker National Forest administered by the U.S. Forest Service (Forest Service).

II. PURPOSE AND NEED OF ACTION

On June 11, 2020, Seattle filed an application for a non-capacity amendment to construct a replacement fuel dock at Diablo Lake, including the marine fueling dispenser and bulkhead. According to Seattle, the fuel dock is essential to servicing marine vessels that support routine operation and maintenance of Ross and Diablo Dams, Ross and Diablo Reservoirs, and Ross Powerhouse. There is no roadway access to Ross Dam and Ross Powerhouse, so all personnel, equipment, and materials must be transported via marine vessel across Diablo Lake. The fuel dock is also necessary to meet Seattle's obligations set forth in the Commission-approved Recreation Plan under Article 412 of the project license[1] to provide boat tours of Diablo Lake and ferry services facilitating access for visitors between Diablo Lake and Ross Lake. As such, marine vessels are necessary for Seattle to meet its many obligations under the project license. The new fuel dock assembly will provide safer access to marine fueling facilities, reduce the risk of fuel spills, and facilitate access for all vessels to the fuel dock at low lake levels.

This environmental assessment (EA) is being prepared to satisfy the Commission's responsibilities under the National Environmental Policy Act (NEPA).[2] In

[1] Order Approving an Interim Recreational Resources Plan (77 FERC ¶ 62,096) issued November 19, 1996.

[2] On July 16, 2020, the Council on Environmental Quality issued a final rule, *Update to the Regulations Implementing the Procedural Provisions of the National*

this EA, Commission staff examine the environmental effects associated with replacing the fuel dock and marine fueling dispenser, as well as repairing the bulkhead. A no-action alternative to the proposed project will also be examined along with any recommended staff conditions which may become a part of any license amendment that may be issued.

III. PROPOSED ACTION AND ALTERNATIVES

A. Project Description

On May 16, 1995, the Commission issued a new license to Seattle for the Skagit River Project that authorized the continued operation of a project consisting of three developments: (1) the Ross Development; (2) the Diablo Development; and (3) the Gorge Development.[3] All three developments are surrounded by the Ross Lake National Recreation Area which is managed by the Park Service. As amended,[4] the project is as described below.

Ross Development

The Ross facilities consist of: (1) a concrete arch dam rising 540 feet from bedrock to crest, with a 240-foot-wide spillway and 12 radial gates; (2) a 11,680-acre reservoir with a total storage capacity of 1,435,000 acre-feet; (3) an intake structure; (4) two 26-foot-diameter power tunnels, 1,800 feet long and 1,634 feet long; (5) four 16-foot-diameter penstocks, 350 feet long; (6) a power plant with four generating units having a combined authorized installed capacity of 352.5 megawatts (MW); (7) transmission lines extending from the Ross plant to the Diablo plant; and (8) appurtenant facilities.

Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was already in process at that time and is prepared pursuant to the 1978 regulations.

[3] *City of Seattle, Wash.*, 71 FERC ¶ 61,159 (1995) (1995 Order), *order on reh'g*, 75 FERC ¶ 61,319 (1996). Prior to 1995, Seattle was authorized to operate the project under the terms of its 1927 original license, as amended. *See* Eighth Annual Report of the Federal Power Commission (1928) at p. 190.

[4] *City of Seattle, Wash.*, 80 FERC ¶ 62,056 (1997); *City of Seattle, Wash.*, 144 FERC ¶ 62,044 (2013); *City of Seattle, Wash.*, 174 FERC ¶ 62,066 (2021).

Diablo Development

The Diablo facilities consist of: (1) a concrete arch dam rising 389 feet from bedrock to crest, with a 380-foot-wide spillway and 19 radial gates; (2) a 770-acre reservoir with a total capacity of 90,000 acre-feet; (3) an intake structure; (4) a 19.5-foot by 19.5-foot horseshoe shape power tunnel, 2,000 feet long; (5) two 15-foot-diameter penstocks; (6) a surge tank; (7) a power plant containing four generating units with a combined authorized installed capacity of 158.47 MW; (8) transmission lines extending from the powerhouse to the Bothell Substation; and (9) appurtenant facilities.

Gorge Development

The Gorge facilities consist of: (1) a combination concrete arch and gravity diversion dam rising 300 feet from bedrock to the crest, with a 94-foot-wide spillway and two fixed wheel gates; (2) a 240-acre reservoir with a total capacity of 8,500 acre-feet; (3) an intake structure; (4) a 20.5-foot-diameter and a 22-foot-diameter power tunnel, both 11,000 feet long; (5) three 11.25-foot-diameter penstocks and one 15.5-foot-diameter penstock totaling 1,600 feet long; (6) a surge tank; (7) a power plant containing four generating units with a combined authorized installed capacity of 189.3 MW; (8) a transmission line extending from the power plant to North Mountain substation; and (9) appurtenant facilities.

B. Description of the Proposed Action

Seattle states that the purpose of replacing the Diablo Lake fuel dock is to enhance employee safety, to protect Diablo Lake from fuel spills, and to improve access to the fuel dock and neighboring loading dock. The existing fueling equipment will be replaced with a fuel dispenser attached to a new float and gangway located approximately 80 feet northeast of the existing fuel float. The existing riprap bulkhead will be replaced with a prefabricated crib wall as well as a stem wall to which the gangway will be affixed. The existing fuel shed will be replaced with an underground transition sump.[5] The new fuel line will be routed below the sidewalk leading to the gangway, and then suspended beneath it, to the new fuel dispenser.

The deteriorating bulkhead will be replaced with a 40-foot-long by 9-foot-tall by 5-foot-wide crib wall to stabilize the shoreline. A stem wall (3.67-foot-tall by 8.3-foot - long, with a 90-degree bend at 6.4 feet) will extend from the north end of the crib wall toward the adjacent boat ramp to further stabilize the shoreline and to provide an anchor

[5] The sump is a small tank used to link the existing fuel line from the storage tank to the new fuel line leading to the fuel dispenser on the new dock.

point for the gangway.[6] Construction of these features will require removal of approximately 320 square feet of asphalt and approximately 88 cubic yards (CY) of soil behind the existing bulkhead. Approximately 10 CY of gravel will be placed beneath the crib wall to level the structure as it is placed using a crane. The stem wall will be poured into footings using a concrete mixer truck located on the upland. Once installed, the crib wall will be backfilled with layers of soil and gravel behind the crib wall (30 CY), additional soil (20 CY) and gravel (40 CY) will be placed within the crib wall. To prevent erosion, quarry spall (5 CY) will be placed along the toe of the crib wall.

The new fuel dock will be secured with two 16-inch diameter, steel piles[7] which will be driven approximately 25 feet into the lakebed using a vibratory hammer to reduce noise.[8] Should a soil mass plug the pile, an impact hammer will be used to finish driving the pile to the intended depth. One pile will be driven per day and each pile is expected to take less than seven minutes to install.

The existing fuel shed (9-foot-long by 5-foot-wide by 5-foot-tall) will be replaced with an underground transition sump which will link the existing fuel line with a new double-walled fuel line. Approximately 127 square feet of concrete removed during construction of this feature will be replaced with approximately 144 square feet of concrete.

Construction activity will occur after the lake level has been drawn down to an elevation of 1,200 feet North American Vertical Datum of 1988 (NAVD 88), approximately 11 feet below the ordinary high water mark and six to eight feet below normal operating levels. All excavation and fill operations will be conducted in the dry using an excavator from the shoreline. A crane will be employed to install the steel piles and to deploy the new float and gangway. An existing gravel area near the construction site will be used as a staging area. Construction is expected to last approximately 4-6 weeks and will take place during either the April-June (excluding Memorial Day weekend) or October-November time periods to avoid the peak summer use season.

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[6] The footing for the stem wall will be 10-inches-tall by 13-foot-long by 2.75-inches-wide.

[7] Reinhall Piles are designed to attenuate noise propagation, from pile driving, through the water and lakebed.

[8] When using a vibratory hammer, the head of the hammer rests on the top of the pile and the weight of the hammer pushes piles into the substrate as vibrations are sent through the pile. In contrast, an impact hammer raises the head above the pile and the force of the hammer head impacting the pile drives the pile into the substrate.

C. Proposed Environmental Measures

Seattle proposes to implement the following protection, mitigation and enhancement measures (PM&E) to minimize the potential for adverse effects of the proposed action. The measures are organized by the resources they are meant to protect and enhance below.

Water Quality

Seattle will implement all relevant and appropriate best management practices (BMPs), as necessary, to meet the state water quality standard for turbidity during construction.[9] To accomplish this, Seattle will monitor turbidity. BMPs include drawing down Diablo Lake to eliminate the need for in-water work (except for pile driving); designating and fencing off specific areas for staging; placing sandbags or compost socks in front of drains; and using erosion controls around stockpiles. Visual monitoring for sheen will occur during all ground-disturbing activities. With regard to the footprint of the staging areas, Seattle commits to surrounding all staging areas with high visibility fencing to prevent encroachment outside of the project footprint.

During construction, any poured concrete will be covered by Seattle with plastic sheeting until concrete is initially cured, a process which typically takes several days. Concrete will be poured while Diablo Lake is drawn down to minimize the potential for spillover into surface waters and will remain drawn down until the concrete is initially cured. Additionally, a concrete wash-out area will be created for use during construction, and Seattle will ensure that wash water does not enter the lake. Spill response equipment will be on site throughout the duration of construction.

With regard to spill containment, Seattle will construct an oil containment sump below the new fuel dispenser. Seattle would visually monitor for sheen once the fuel line is initially energized. New fuel piping will be double-walled over the water, suspended from the underside of the gangway, and placed in a utility trough incorporated into the new fuel dock. Also, Seattle will install a spill control alarm system to alert it if any spills, though unexpected, occur. A spill kit will remain permanently on the fuel dock, once constructed. Seattle notes this kit will be in addition to spill kits that are already kept in the Diablo Boathouse. Additionally, to minimize impervious surface, Seattle will install a vegetated strip rather than asphalt or gravel along the top of the crib wall.

[9] The applicable water quality standard for turbidity is no more the 5 nephelometric turbidity units (NTU) above background levels when the background is 50 NTUs or less; or, a 10% increase in turbidity when the background is more than 50 NTUs.

Aquatic Resources

With regard to reducing potential underwater noise impacts, Seattle states that pile driving will be conducted using Reinhall Piles with vibratory methods initially, then the Reinhall Piles will be advanced using impact methods to dampen noise to the extent possible. Additionally, it will conduct hydroacoustic monitoring to confirm the assumed attenuation of 12 decibels, and that noise does not exceed the calculated thresholds. If attenuation does not achieve calculated levels, Seattle will implement contingency measures such as limiting the strikes per day and/or installing a bubble curtain around each pile.

To reduce overwater shade from the newly constructed facilities, Seattle has chosen a fully grated design (allowing 44% light penetration) for the surface of the dock structure. Similarly, the gangway and steel platform attached to the concrete bulkhead will be fitted with molded fiberglass grating to allow light penetration.

Terrestrial Resources

To enhance vegetative cover, the upper one third of the new crib wall will be open faced, which allows native vegetation to be planted in pockets of the crib wall. A strip of native vegetation will also be planted on top of the crib wall to intercept runoff from adjacent impervious surfaces. Additionally, approximately 3,000 square feet of shoreline in the immediate vicinity will be replanted with native vegetation to establish a forest plant community. Monitoring will be conducted for up to five years to ensure plant growth and survival of native plant species.

Recreation and Aesthetic Resources

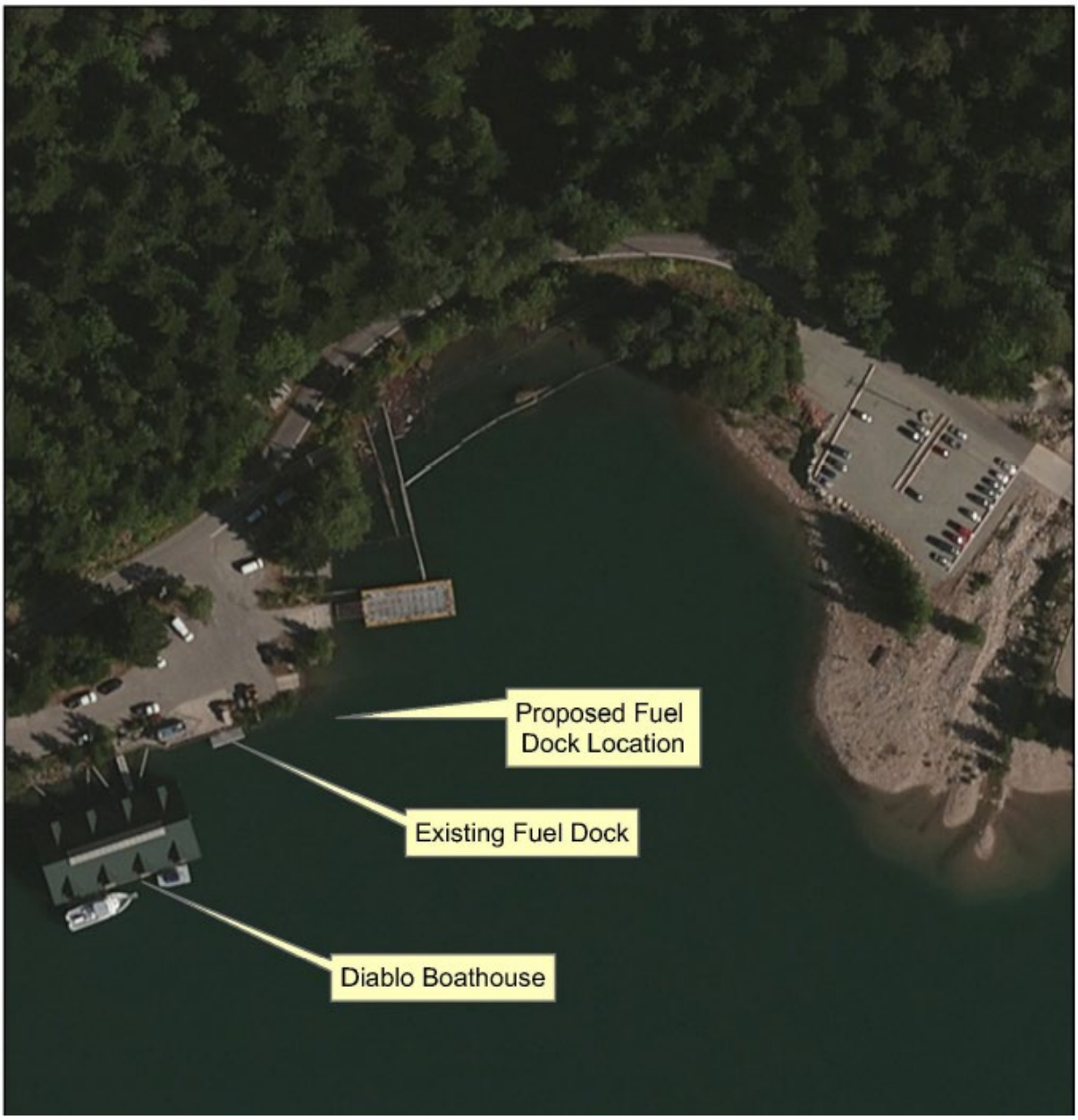
To reduce impacts on recreation and aesthetics, construction activities will occur outside of the peak visitation season which extends from June through September.

Cultural Resources

In order to protect cultural resources, a trained archaeologist will be onsite during any ground disturbing activities to observe any exposed soils and the excavator bucket as material is placed in a dump truck. Should unidentified archaeological resources be discovered during construction, work will be stopped until the resources have been evaluated in terms of the National Register eligibility criteria in consultation with relevant Indian Tribes and the Washington Department of Archaeological and Historic Preservation (Washington DHAP).

Figure 1: Project Vicinity Map (Source: Seattle, 2020).

Figure 2: Proposed Fuel Dock Location (Source: Seattle, 2020).



D. No-Action Alternative

Commission staff define the existing conditions at the project as the baseline for comparison with Seattle's proposed fuel dock replacement northeast of the crib wall. Under the no-action alternative, the existing fuel dock would not be replaced. Thus, the fuel dock will remain a safety risk for licensee staff, there will be an increased likelihood for fuel spillage into Diablo Lake, and some vessels will not be able to dock during low water events. The current fueling procedure requires staff to navigate several rungs of a

vertical ladder embedded in the concrete bulkhead while holding a fuel nozzle attached to a hose. In addition to the safety concern for staff using the facilities, this fueling procedure also increases the possibility of hazardous materials entering Diablo Lake as the nozzle and hose are moved up and down the ladder. The no-action alternative would be to deny Seattle's non-capacity license amendment application, resulting in Seattle's continued use of the existing fuel dock facilities. Due to staff safety concerns and the risk of fuel spills into Diablo Lake, the no-action alternative would not be in the public interest and, therefore, does not merit further consideration.

IV. CONSULTATION AND COMPLIANCE

A. Pre-filing Consultation

On December 22, 2017, Seattle issued a Determination of Non-significance regarding the development of a new fuel dock, pursuant to the Washington State Environmental Policy Act (SEPA).[10] Interested parties were given until January 12, 2018, to file comments.

In early 2018, Seattle coordinated with the U.S. Army Corps of Engineers (Corps) on its permit application pursuant to section 404 of the Clean Water Act for the development of a new fuel dock proposal (section 404 permit). The section 404 permit also required the Corps to conduct consultation with the U.S. Fish and Wildlife Service (FWS) under section 7(a)(2) of the Endangered Species Act (ESA). Seattle and the Corps developed a Biological Assessment, which the Corps filed with the FWS in April 2018. On July 11, 2018, the Corps requested that FWS initiate formal consultation under section 7 of the ESA, which it did on July 27, 2018. On November 5, 2018, the FWS issued a Biological Opinion (2018 BO) to the Corps.

On October 29, 2019, Seattle submitted a SEPA addendum to Washington DOE which included a design modification to shift the point of attachment for the gangway and fuel float to the opposite side of the crib wall. This modification shifts the dock such that water depth will be adequate to allow all vessels to fuel without the need for dredging in Diablo Lake. Consulting parties were given 30 days to comment on the design modification. By email dated November 4, 2019, the Upper Skagit Tribe concurred. No other comments were received.

[10] Chapter 43.21C of the Revised Code of Washington and Chapter 197-11 of the Washington State Administrative Code require Seattle to conduct an environmental analysis of a proposed action, in this case the fuel dock replacement, and submit the results of that analysis to the Washington Department of Ecology (Washington DOE) for agency and public scrutiny.

B. Public Notice

On July 7, 2020, Commission staff issued public notice of the licensee's application to replace the fuel dock and related infrastructure at Diablo Lake, soliciting comments, motions to intervene, and protests. In response to the public notice, no comments, motions to intervene, or protests were received.

C. Threatened and Endangered Species

Section 7(a)(2) of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened or endangered species or result in the destruction or adverse modification of their critical habitat.[11] Consultation pursuant to section 7 of the ESA was conducted between the Corps and the FWS during prefiling consultation for Seattle's section 404 permit application with the Corps under the Clean Water Act for the replacement fuel dock. The consultation identified several federally-listed species that are known to use or could potentially be affected by the fuel dock replacement, including: bull trout (*Salvelinus confluentus*); Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos*), marbled murrelet (*Brachyramphus marmoratus*), northern spotted owl (*Stryx occidentalis caurina*), western yellow-billed cuckoo (*Coccyzus americanus*), Chinook salmon *(Oncorhynchus tshawytscha*), steelhead *(Oncorhynchus mykiss*), and North American wolverine (*Gulo gulo luscus*).

The Corps submitted a Biological Assessment to the FWS in April 2018, concluding that the replacement of the fuel dock would have no effect on any of the species identified, or their critical habitat, except for bull trout, which the Corps concluded may be adversely affected. With regard to critical habitat for bull trout within the project area, the Corps concluded the proposed work may affect, but is not likely to adversely affect critical habitat for bull trout. The Corps then requested that the FWS initiate formal consultation under section 7 on July 11, 2018, which ultimately resulted in the 2018 BO.

Term and Condition No. 1 of the 2018 BO implements Reasonable and Prudent Measure No. 1, which requires a monitoring and reporting program that confirms that the take exempted for the proposed action is not exceeded. FWS considers incidental take of bull trout to occur if sound exceeds the peak pressure, sound exposure level and root mean squared levels, after accounting for the 12 dB sound attenuation, as defined in section V.C.5.b, *Threatened and Endangered Species, Environmental Effects*.

Term and Condition No. 1 of the 2018 BO also requires the Corps to develop and file a report with the FWS that details the amount of incidental take of bull trout that

[11] 16 U.S.C. § 1536.

occurred as a result of the proposed action and any conservation measures taken to minimize take. The report must also include: 1) the dates construction activities involving pile driving were conducted; 2) a description of pile driving activities (i.e., number and duration of piles installed, including the length of time vibratory and impact pile driving occurred, as well as the number and duration of strikes per pile and per day); and 3) the results of water quality and hydroacoustic monitoring activities that occurred during construction. The report must be filed with the FWS by June 1st of the year in which the project is completed. Finally, if any dead, injured, or sick bull trout are observed while the proposed action is taking place, the FWS must be notified within three days.

On April 6, 2020, the Corps informed the FWS that Seattle had modified its proposal regarding replacement of the fuel dock. Compared to the original proposal, the modified proposal includes a smaller pre-fabricated crib wall, removal of less asphalt during construction, post-construction repaving of a smaller area, reduced placement of quarry spall, and the elimination of excavation work in the wet. The Corps determined that, based on the fact that the modified proposal for the fuel dock replacement did not require excavation and fill of the lakebed for the new fuel dock or in-water work outside of pile driving, the change in the proposal would not result in an increase in adverse effects to any of the federally-listed species, or result in effects not analyzed in the FWS' 2018 BO. The Corps determined that it did not need to re-initiate section 7 consultation with the FWS for the following reasons: (1) the amount or extent of taking specified in the incidental take statement of the 2018 BO would not be exceeded; (2) there was no new information that reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the modification would not cause an effect to the listed species or critical habitat that was not previously considered; and (4) no new species has been listed or critical habitat designated that may be affected by the proposed action.[12] By email dated April 6, 2020, the FWS concurred with the Corps' determination that re-initiation was unnecessary. Based on this, and the fact that the FWS previously noted during a March 28, 2020 phone conversation with Seattle that the Corps should be the lead agency for section 7 consultation, not the Commission,[13] Seattle requested, in its June 11, 2020 application filed with the Commission, that the Commission find that no additional consultation under section 7 of the ESA was required.

By letter dated September 15, 2020, Commission staff contacted the FWS regarding section 7 of the ESA and requested clarification from the FWS regarding the Commission's section 7 obligations for Seattle's June 11, 2020 application for the

[12] Application; Exhibit I, pt. IV, at 53-54.

[13] *See* the March 28, 2020 Telephone Memo documenting a phone call between Seattle and FWS, located in Attachment I of Seattle's June 11, 2020 application.

proposed Diablo Lake fuel dock replacement project and its effect on bull trout and bull trout critical habitat. Specifically, Commission staff sought confirmation that additional section 7 consultation between the FWS and the Commission was not required. Commission staff further indicated that, to protect bull trout and bull trout critical habitat, any order the Commission may issue regarding Seattle's proposal to replace the fuel dock will require Seattle to comply with the terms and conditions of the Incidental Take Statement of the FWS's 2018 BO.

The FWS responded by letter dated September 22, 2020, confirming that the Commission did not need to consult on the proposed action and that the fuel dock replacement project remains covered under the 2018 BO and that all Reasonable and Prudent Measures and associated Terms and Conditions specified in the 2018 BO still apply.

Our analysis of the proposed action's effects on species protected under the ESA is presented in section V.C.5, *Threatened and Endangered Species*.

D. Coastal Zone Management Act

Under section 307(c)(3) of the Coastal Zone Management Act (CZMA),[14] the Commission cannot issue a permit for activities within or affecting a state's coastal zone unless the state CZMA agency concurs with the applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

In Seattle's June 11, 2020 application, it certified that the proposed action for the Skagit River Project complies with the Washington approved coastal zone management program (CZMP). Further, Seattle asked Washington DOE to confirm that the project is consistent with Washington's CZMP. Washington DOE received the request on May 31, 2018. By letter dated December 7, 2018, Washington DOE stated that replacement of the fuel dock is consistent with Washington's CZMP. Washington DOE reiterated this confirmation, by email dated May 14, 2020, in response to Seattle's design modification of the replacement fuel dock.[15]

[14] 16 U.S.C. § 1456.

[15] Application, Exhibit I, pt. IV at 64-66.

E. National Historic Preservation Act

Section 106 of the National Historic Preservation Act[16] requires the Commission to "take into account" the effect of its actions on historic properties and afford the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment on the undertaking.[17] The regulations implementing section 106 also require that the Commission seek concurrence with the state historic preservation office on any finding involving effects or no effects on historic properties, and consult with interested Indian tribes or Native Hawaiian organizations that attach religious or cultural significance to historic properties that may be affected by an undertaking.[18] Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register). In this document, we also use the term "cultural resources" for properties that have not been evaluated for eligibility for the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic.

Seattle, as the Commission's non-federal representative,[19] initiated section 106 consultation with the Washington Department of Archaeological and Historic Preservation (Washington DHAP), the Park Service, and the Upper Skagit, Suak-Suiattle,

[16] 54 U.S.C. § 306108.

[17] An undertaking means "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval." 36 C.F.R. § 800.16(y). Here, the undertaking is the potential authorization of Seattle's proposal to replace the fuel dock.

[18] 36 C.F.R. pt. 800 (2020).

[19] By letter dated September 8, 2020, Seattle was designated as the Commission's non-federal representative for the purposes of section 106 consultation regarding the replacement of the Diablo Lake fuel dock. In this letter, Commission staff explained that Seattle, as our non-federal representative, can perform tasks in support of the Commission's section 106 compliance, but that the Commission remains ultimately responsible for all findings and determinations made pursuant to section 106.

and Swinomish Tribes, via letters dated September 24, 2020.[20] The area of potential effect (APE) includes the construction area for the fuel dock and supporting infrastructure (where ground disturbance would occur), as well as half-mile buffer around the site to account for any visual or auditory impacts. The APE was agreed upon by consulting parties during consultation regarding the initial version of the fuel dock. By letter dated September 25, 2020, Washington DHAP concurred with Seattle's Determination of No Adverse Effect, issued as part of the Washington SEPA process, with the stipulations for archaeological monitoring and an unanticipated discovery plan.[21] No other comments were received. Subsequent to independent review and analysis, Commission staff agrees with the no adverse effect determination and consider section 106 consultation to be complete.

F. Wild and Scenic Rivers Act

Section 7(a) of the Wild and Scenic Rivers Act[22] requires federal agencies to make a determination as to whether a proposed water resources project would invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in a designated river corridor. Public Law 95-111 (November 10, 1978) designated a 12-mile segment of the Skagit River as a Wild and Scenic River, which extends from the confluence of Bacon Creek downstream to the pipeline crossing at Sedro-Wooley. The Skagit Wild and Scenic River is managed by the Forest Service to protect and enhance fish, wildlife, and scenic quality values for which the river was designated while providing for public recreation and resource uses that do not adversely affect or degrade those values. The Skagit River from Gorge Powerhouse to Bacon Creek has been determined eligible for status as wild and scenic, with the "recreational" classification, but this segment of the river is not yet designated.

Diablo Lake is located upstream of the Gorge Powerhouse and the installation of the proposed fuel dock will not negatively impact the designated or eligible segments of the Skagit River because any environmental impacts associated with replacement of the fuel dock and associated infrastructure will be localized to Diablo Lake and nearby lands.

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[20] Consultation regarding historic properties had been conducted with the same entities regarding a previous version of the fuel dock as required by the State of Washington's SEPA requirements. The revised fuel dock proposal under consideration eliminated in-water work associated with replacement of the crib wall to reduce impacts associated with the undertaking.

[21] *See* unpublished memo documenting an email exchange between Seattle and Commission staff which includes the letter from Washington DHAP dated April 21, 2021 (Accession number: 20210421-4000).

[22] 16 U.S.C. §§ 1271-1287.

V. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

In this section, we present a general description of the project vicinity as well as our analysis of Seattle's fuel dock replacement proposal and other recommended environmental measures. Sections are organized by resource area. Under each resource area, existing conditions (affected environment) are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures. Unless otherwise noted, the information in the Affected Environment and Environmental Effects sections is derived from the Environmental Report (Exhibit E) of Seattle's application.

A. General Description of the River Basin

The Skagit River, which is located primarily in the northwest portion of the State of Washington, is approximately 135 miles long, with a total drainage area of 3,115 square miles (USACE 2013). The northern end of the basin extends about 28 miles into Canada, and about 381 square miles of the total watershed area is located in British Columbia (USGS 2019). The headwaters of the Skagit River are at Allison Pass in the Canadian Cascades. The project generating facilities are in the Cascade Mountains of the upper Skagit River watershed, between river miles (RM) 94 and 127. The project is located in Whatcom, Skagit, and Snohomish Counties, Washington, and includes the Ross, Diablo, and Gorge developments in sequential order downstream. Each development includes a dam with a powerhouse and reservoir.

B. Geographic and Temporal Scope of Effects Analysis

Diablo Lake is located in a rural area with development along the shoreline concentrated on the northern shore near the dam within the Ross Lake National Recreation Area managed by the Park Service. An environmental education center, boathouse, boat launch, and fuel dock for Seattle operations, docking facilities for Park Service operations, passenger dock for tour boats, and recreation facilities are located in the immediate area. The area of proposed action of Seattle's Diablo Lake fuel dock replacement includes the shoreline and waters in the immediate vicinity of the existing bulkhead, fuel dispenser, and in-water fuel float, including the vegetation mitigation site across the small cove (see Figure 3). A larger area will be included in the analysis of potential auditory and visual impacts associated with the proposed project (see Figure 4). Construction is expected to last approximately 4-6 weeks and will take place during either the April-June (excluding Memorial Day weekend) or October-November time periods to avoid the peak summer use season.

Figure 3: Geographic Scope of Analysis (Source: Google Maps 2020, as modified by Commission Staff).

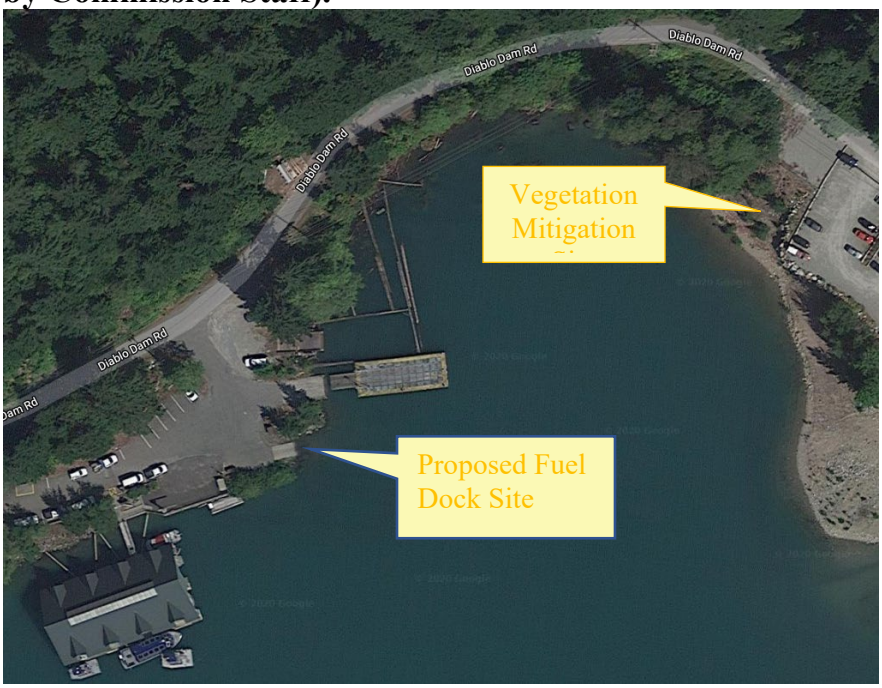

Figure 4: Area of auditory and visual effects analysis (Source: Seattle 2020, as modified by Commission staff).[23]

[23] The yellow circle is the extent of auditory and visual effects analysis (3,150 feet). The red boundary indicates the area of proposed construction for the new fuel dock.

C. Proposed Action

Only resources that would be affected by the proposed action are addressed in this EA and discussed in this section. Because the proposed action does not include any changes to project operations, and the proposed action would take place in a small, previously-disturbed area, the proposed action will not affect geology and soils, socioeconomics, or air quality. Therefore, we do not assess effects on these resources in this EA.

1. Water Quantity

a. Affected Environment

Diablo Lake is a 4.8-mile-long reservoir formed by Diablo Dam that is primarily used for daily and weekly regulation of discharge from Ross Dam. Diablo Lake is an oligotrophic lake that drains a pristine drainage. The reservoir, which has a volume of 89,000 acre-feet at full operating pool and a surface area of 770 acres, is drawn down between 5 and 11 feet from the full operating pool elevation (1,211 feet NAVD 88) during operations and maintenance. The reservoir has an average depth of 116 feet and maximum depth of 240 feet at full pool.

b. Environmental Effects

To facilitate the proposed action, Seattle will draw Diablo Lake down to an elevation of 1,200 feet NAVD 88 (i.e., 11 feet below the full operating pool elevation). This is within Seattle's drawdown band of 5 to 11 feet for routine operation and maintenance. Therefore, since construction will occur within the typical drawdown band for Diablo Lake, construction is not expected to affect water quantity.

In placing the pre-fabricated crib wall and adjoining sidewalk, a permanent loss of 200 square feet of "waters of the State" will occur when Seattle removes the existing rip-rap bulkhead to make room for the crib wall and sidewalk. This means that the volume of water occupying that space in the water column where the rip rap currently is would be displaced as a result of the proposed action. According to Seattle, the depth of water in the area of the proposed fuel dock can range from 3 feet to 14 feet, depending on the operating level. The depth of water where the rip rap is located could be even less due to the presence of the rip rap and the volume it occupies in the lake. Any reduction in water quantity due to the removal of the rip rap and placement of the crib wall, while permanent, will have a negligible effect on water quantity at the project, given the relatively small amount of water the loss would represent in Diablo Lake.

2. Water Quality

a. Affected Environment

Diablo Lake (and its tributaries) is located in the Upper Skagit River Basin, in the State of Washington's watershed resource inventory area 4 (WRIA 4) and is subject to water quality standards for fresh waters. This includes designated uses and water quality criteria, as identified by the state of Washington's Administrative Code 173-201A-200. The following designated uses and water quality criteria depicted in Tables 1 and 2 are applicable to WRIA 4, respectively.

Table 1: Designated uses of waters in the project area/WRIA 4 (Source: Seattle, 2020)

	Aquatic Life Uses						Recreational Uses			Water Supply Uses				Misc. Uses				
Water Body	Char	Core Summer Habitat	Spawning/Rearing	Rearing/Migration	Redband Trout	Warm Water Species	Ex Primary Contact	Primary Contact	Secondary Contact	Domestic Water	Industrial Water	Agricultural Water	Stock Water	Wildlife Habitat	Harvesting	Commerce/Navigation	Boating	Aesthetics
Skagit River and all tributaries upstream of Skiyou Slough except designated tributaries		✓					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Designated WRIA 4 tributaries, including Thunder Creek	✓						✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2: Water quality criteria for water resources in the project area (Source: Seattle, 2020).

Parameter	Water Quality Criteria
Bacteria	Fecal coliform organism levels must not exceed a mean value of 50 colonies per 100 milliliters (ml) with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies/100 ml
Dissolved Oxygen	Lowest 1-Day Minimum: *Char Spawning and Rearing:* 9.5 milligrams per liter (mg/l) *Core Summer Salmonid Habitat:* 9.5 mg/l *Salmon and trout spawning, rearing, and migration*: 8.0 mg/l
	For lakes/reservoirs, human actions considered cumulatively may not decrease the dissolved oxygen concentration more than 0.2 mg/l below natural conditions
Temperature	Maximum 7-day average of daily maximum temperature (7-DADMax): *Char Spawning:* 9°C (48.2°F) *Char Spawning and Rearing (summer)*: 12°C (53.6°F) *Salmon and trout spawning:* 13°C (55.4°F) *Core summer salmonid habitat (June 15 to Sept 15)*: 16°C (60.8°F) *Salmonid spawning, rearing, and migration (Sept 15 to June 14)*: 17.5°C (63.5°F) *Salmonid rearing and migration only*: 17.5°C (63.5°F)
	For lakes/reservoirs, human actions considered cumulatively may not increase the 7-DADMax temperature more than 0.3°C (0.54°F) above natural conditions
Total Dissolved Gas	Not to exceed 110 percent of saturation at any point of sample collection
pH	Within 6.5 to 8.5 pH units with human caused variation of: less than 0.2 unit for char spawning and rearing, and core summer salmonid habitat less than 0.5 unit for salmon and trout spawning, rearing, and migration
Turbidity	Shall not exceed either a 5-NTU increase over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background is more than 50 NTU

Diablo Lake is designated by Washington DOE as a Category 1 water body, which means there are no documented water quality impairments. Water quality in Diablo Lake is excellent because the lands in the Upper Skagit basin are largely pristine, as they are located within the boundaries of the North Cascades National Park Complex, Upper Skagit Provincial Park (British Columbia), and the Pasayten Wilderness Area. The Upper Skagit River drains mountainous terrain with landcover ranging from old growth forests and wetlands on the valley walls and bottoms to alpine meadows, bedrock, snowfields, and glaciers at higher elevations. Water flowing through the project remains clean and cold throughout the year. Summer temperatures range between 14 and 16 degrees Celsius in the epilimnion of the reservoir (shallower than 25 feet), and between 5 and 10 degrees Celsius in the hypolimnion of the reservoir (deeper than 85 feet).

The lake experiences naturally high turbidity caused by the glacial "flour" (i.e., fine-grained, silt-sized particles of rock, generated by mechanical grinding of bedrock by glacial erosion) contributed by Thunder Creek, the major tributary to the Skagit River

that enters Diablo Lake. Turbidity levels in Diablo Lake are variable over time and location within the lake. The Skagit River Basin supports the healthiest bull trout populations in Washington, which reflects the excellent water quality conditions in the project area.

There are no timber harvest activities or residential areas that affect the water quality of Diablo Lake. Overall, the ongoing operations of the Project have minimal impact on the water quality of the Upper Skagit River Basin, including water quality conditions in Diablo Lake.

b. Environmental Effects

The proposed action does not require any in-water work outside of pile driving since Seattle will complete the construction work during a drawdown that falls within the range of the typical operating and maintenance levels for Diablo Lake. Fill and excavation will be performed using an excavator from the shoreline, and a crane will be used to place the piles for pile driving. Staging and stockpiling will occur in a previously-disturbed gravel area adjacent to the location of the proposed fuel dock. Though the potential for minor, temporary impacts to water quality exists, it should be minimized by Seattle's use of the BMPs summarized in section III.C*, Proposed Environmental Measures*, as these BMPs are intended to reduce the potential for sedimentation or stormwater run-off during construction. Seattle's plan to conduct visual monitoring for turbidity and sheen during all ground-disturbing activities would ensure that the BMPs are functioning as intended.

Once constructed and operational, the potential for pollutants to enter Diablo Lake during the fueling process will be lower than that of current fueling operations. Under existing conditions, boat operators must ascend a 10-foot vertical ladder to access the fuel dispenser, drag the fuel dispenser hose and nozzle back down the ladder to the vessel, fuel the vessel, and then haul the fuel dispenser hose and nozzle back up the ladder to return it to the dispenser. This fueling process inherently poses a spill risk while the operator is descending and ascending the ladder to fuel the vessel and then return the fuel dispenser hose and nozzle. Under the proposed action, a fuel dispenser will be located on a float, which makes the fueling process easier and safer for operators. The absence of a tall ladder to traverse with a fuel dispenser in hand will greatly reduce spill risk. Further, the fuel dispenser on the float will be placed over an oil containment sump incorporated into the float, and a spill control alarm system will be installed to alert Seattle of breaches in the fueling system, should they occur. The use of double-walled fuel piping, which will be suspended from the underside of the gangway and placed in a utility trough incorporated into the new fuel dock, will also reduce the potential for pollutants to enter Diablo Lake.

While there is the potential for minor, temporary impacts to water quality to occur during construction and fueling operations, the proposed action should represent an overall improvement to the current re-fueling process, which, in turn, should reduce the potential for fuel spills that could adversely affect water quality in Diablo Lake. Water quality in Diablo Lake is expected to remain high, provided that Seattle implements the BMPs identified in section III.C., *Proposed Environmental Measures*.

3. Aquatic Resources

a. Affected Environment

Fish species documented in Diablo Lake include bull trout, Dolly Varden (*Salvelinus malma*), cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*Oncorhynchus mykiss*), and a nonnative char species: eastern brook trout (*Salvelinus fontinalis*). The redside shiner (*Richardsonius balteatus*), a minnow species native to the Lower Skagit River, has also been documented in Diablo Lake. Its population has been increasing rapidly in Ross Lake after being introduced to the Upper Skagit River system approximately 10 years ago. Of these species, bull trout are federally listed under the ESA, and are discussed in more detail in section V.C.5, *Threatened and Endangered Species*.

Diablo Lake supports a relatively healthy and stable population of Dolly Varden. Dolly Varden is a native char species that prefers cold high-quality water. It is likely the dominant char species in Diablo Lake due to the extremely cold and turbid water quality conditions found in Thunder Creek, which drains one of the largest glacier systems in the state, and is the principal spawning tributary for the species. Based upon the results of tangle net sampling conducted in Diablo Lake by Park Service and Seattle biologists in 2010, 79% of native char in the reservoir are Dolly Varden, while 21% of the native char are bull trout (Seattle 2012). This conclusion was supported by recent genetic testing completed by the Washington Department of Fish and Wildlife's (Washington DFW) Molecular Genetics Laboratory (Small et al. 2016). Brook trout are found in relatively low numbers in Diablo Lake, perhaps a reflection of the cold-water temperature regimes that favor bull trout and Dolly Varden relative to brook trout.

b. Environmental Effects

The construction of the crib wall will result in a permanent loss of 240 square feet of riparian habitat that overhangs the lake when the existing bulkhead is removed to make room for the crib wall. This area serves as a potential source of invertebrate habitat, and thus invertebrates, which are preyed upon by foraging fish in the project area. This loss of riparian habitat could result in minor, short-term adverse effects to the aquatic community until Seattle's mitigation plantings become established. Such mitigation plantings include planting the top and upper faces of the crib wall with native vegetation

to provide overhanging shade (shade that is currently provided by the strip of riparian vegetation slated for removal), and planting native shrubs and forbs (i.e., wildflowers) sourced from local genetic stock in a 3,000-square foot area of shoreline on the opposite side of the cove from the proposed fuel dock. Planting native shrubs and forbs in this area of the cove will enhance the riparian habitat that currently exists. Together, these plantings will result in a net increase of approximately 110 square feet of vegetation in the area of proposed action from what currently exists.[24] These plantings will provide valuable shade and foraging habitat for fish in the project area, and filter upland runoff entering Diablo Lake. This should offset the initial loss of riparian vegetation and habitat associated with the construction of the proposed fuel dock, gangway, and crib wall. Given this, no long-term adverse effects to the aquatic community are expected as a result of the removal of riparian habitat, provided that Seattle monitors and ensures vegetation growth occurs.

The construction of the fuel dock and gangway under the proposed action will result in an overwater surface area of 760 square feet. Seattle has designed the surface of the dock with full grating, allowing 44% light penetration. The design for the gangway and steel platform attached to the bulkhead includes molded fiberglass grating to allow for light penetration. Once constructed, the fuel dock and gangway represent a net increase in overhead cover of 562 square feet from the current fuel dock configuration. This accounts for less than 0.002% of the surface area of Diablo Lake. Though shading impacts could prevent the establishment of aquatic vegetation in Diablo Lake, the impacts should be very minor, given the percent cover of Diablo Lake that the fuel dock and gangway would represent, and the fact that the design of those structures allows for 44% light penetration.

Conversely, the shade created by the new fuel dock could attract brook trout, redside shiners and juvenile rainbow trout, since these species are attracted to shaded areas beneath overwater structures. Because the dock's surface will allow light penetration, brook trout are less likely to be attracted to the fuel dock compared to redside shiners and juvenile rainbow trout. Given the cold temperature regime of the reservoir at the project site, native bull trout and Dolly Varden are more likely to use the area beneath the fuel dock as habitat than nonnative brook trout, mostly to forage on redside shiners and juvenile rainbow trout. Given this, we conclude that the additional shade created by the proposed action will not adversely affect the aquatic community in the area of proposed action.

Vibratory and impact pile driving produce elevated underwater noise that can affect fish. The proposed action will primarily use vibratory pile driving, but impact pile driving may be necessary to complete the installation. Seattle will use Reinhall Piles

[24] The details of these plantings are discussed in more detail in section V.C.4, *Terrestrial Resources*.

with vibratory and/or impact driving methods. Noise and vibration from impact pile driving may involve levels that may cause behavioral responses or physical injury to bull trout or forage fish within 25 feet of each pile.[25] Disturbance will be limited to less than seven minutes on two days while pile driving occurs. Fish avoidance of this area for such a short time is not likely to significantly disrupt normal behavior patterns of fish in the project area.

Seattle will conduct hydroacoustic monitoring to confirm that assumed attenuation does not exceed the calculated thresholds as described in detail in section V.C.5.b, *Threatened and Endangered Species, Environmental Effects*. If attenuation exceeds the thresholds, Seattle will implement contingency measures such as limiting the strikes per day or installing a bubble curtain around each pile.[26] Given all of this, pile driving could have short-term, moderate adverse effects on the aquatic community in the project area; however, the effects of pile driving should be reduced with the implementation of Seattle's proposed hydroacoustic monitoring and BMPs.

Though the potential exists for temporary adverse effects during construction of the fuel dock, the gain in riparian habitat, improvement in runoff filtration along the crib wall, attraction of forage fish and creation of foraging habitat, and the overall reduction in risk of fuel spills compared to current conditions under the proposed action outweigh the short-term effects on the aquatic community.

4. Terrestrial Resources

a. Affected Environment

The land area affected by the proposed construction encompasses less than 10,000 square feet and is a previously-disturbed area. In addition to the existing fuel dock, fuel shed, and bulkhead, a boat ramp, barge landing, and parking lot are located in the immediate vicinity. Due to the high level of vehicle and pedestrian traffic that currently exists in the area proposed for construction, vegetation has only established itself in a narrow strip between the edge of the asphalt parking lot and the riprap shoreline. Existing vegetation is primarily Red alder (*Alnus rubra*) with a thick canopy which inhibits growth of other plant species except for a few forbs. Approximately 240

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[25] *See* Section V.C.5.b, *Threatened and Endangered Species, Environmental Effects*.

[26] The role of a bubble curtain is to reduce noise impacts to aquatic organisms produced by activities such as pile driving. To do this, the curtain produces a "wall" of bubbles that acts as a buffer to reduce the impact of sound waves dispersing in the water by absorbing sound waves and re-directing them back the source of the noise, rather than away from the source of the noise.

square feet of vegetation will be removed along with the existing bulkhead. A large Douglas-fir (*Pseudotsuga menziesii*) is nearby but would not be impacted by construction activity.

A variety of wildlife species have been observed in the area of proposed action including red-breasted nuthatch (*Sitta canadensis*), dark-eyed junco (*Junco hyemalis*), Douglas squirrel (Tamiasciurus douglasii), common raven, (Corvus Corax), common merganser (*Mergus merganser*), black-tailed deer (*Odocoileus hemionus columianus*), bobcat (*Lynx rufus*), black bear (*Ursus americanus*), and several species of bats (*Myotis spp.*). Wildlife activity in the proposed construction area would be limited to those species which can inhabit small patches of disturbed habitat or are tolerant of relatively high levels of human activity.

b. Environmental Effects

The top and sides of the new crib wall will be planted with approximately 350 square feet of native vegetation such as Pacific ninebark (*Physocarpus capitatus*), black twinberry (*Lonicera involucrate*), common snowberry (*Symphoricarpos albus*), red flowering currant (*Ribes sanguinium*), pussy toes (*Anternarria sp*.) and pearly everlasting (*Anaphoalis margaritacea*), resulting in a net increase of 110 square feet of vegetation as compared to existing conditions. The sparsely vegetated shoreline mitigation lands (Figure 3) will be replanted with conifers and other native riparian vegetation (approximately 3,000 square feet). No rare or sensitive plant species are known to occur within the area of proposed action. A restoration plan provides for monitoring for up to five years, as needed, to ensure success of the plantings. Employing the proposed PM&Es for vegetation resources described in the licensee's application will reduce the effects of the proposed action on terrestrial resources, as the intent of the PM&Es is to replace vegetation removed during construction with native plants as well as to reclaim a nearby site. Seattle's plan to conduct monitoring for plant survival and hardiness would ensure that the PM&Es are functioning as intended. Reestablishing native vegetation at the proposed construction and mitigation sites will be a long-term positive effect.

While some wildlife may be displaced during construction of the new fuel dock, the effects are expected to be minor and short-term. Wildlife are likely to benefit from the reestablishment of native vegetation through the provision of more suitable habitat for native species.

5. Threatened and Endangered Species

a. Affected Environment

Seattle compiled a list of species which are listed as either "Threatened" or "Endangered" under the ESA and are known to occur within the Ross Lake National Recreation Area. Seattle then denoted species on the list that are unlikely to occur within the area of proposed action either due to: 1) their intolerance to human activity; 2) lack of suitable habitat; and/or 3) the presence of a fish migration barrier downstream of the project. With regard to critical habitat, the area of proposed action only contains that of bull trout.

Federally-protected species known to occur within Ross Lake National Recreation Area include: Canada lynx, gray wolf, grizzly bear, marbled murrelet, northern spotted owl, western yellow-billed cuckoo, Chinook salmon, steelhead, North American wolverine, and bull trout. Of these species, only bull trout are located within the vicinity of the project.

Two avian species are identified as federally sensitive, bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinis*), neither of which are resident within the vicinity of the fuel dock. The approved wildlife resources plan for the project[27] requires an inventory of roost tree, nesting, and feeding locations of eagles on a five-year cycle. Bald eagles and peregrine falcons may occasionally occur near the fuel dock site as foragers, but they are not known nor expected to breed, nest, occur regularly, or occur in large numbers at the fuel dock site.

Table 3. Federally listed wildlife species which may use habitat located in or near the area of proposed action (Source: Seattle, 2020).

Common Name	Scientific Name	Federal Status
Bull Trout	*Salvelinus confluentus*	Threatened
Bald Eagle	*Haliaeetus leucocephalus*	Sensitive
Peregrine Falcon	*Falco peregrinis*	Sensitive

Fish Species

The only federally-listed species and designated critical habitat within the vicinity of the area of proposed action is for bull trout. Diablo Lake is within Core Area 3, Upper

[27] Order Approving Amended Wildlife Resources Plan (78 FERC ¶ 62,215) issued March 27, 1997.

Skagit River, which is one of 21 designated core unit areas within the Coastal Recovery Unit (FWS 2015). Diablo Lake was designated as critical habitat for bull trout by the FWS in a final rule published October 18, 2010. Diablo Lake primarily provides foraging, migration, and overwintering habitat for subadult and adult bull trout (Seattle 2012).

Populations of bull trout in the Upper Skagit core area are among the most abundant and stable in the Coastal Recovery Unit (FWS 2015). The estimated population of bull trout in the Upper Skagit core area is estimated to be over 7,000 adults, and most of those fish are in the Ross Lake drainage (Seattle 2012). Seattle fish biologists estimated the number of bull trout in Diablo Lake at 370 by downscaling the estimated number in Ross Lake based upon the surface area of Diablo Lake (Seattle 2012). A more robust population estimate has not been conducted based on traditional fisheries methods in Diablo Lake; however, FWS suggested that the actual number of bull trout may be lower than that estimate due to poor spawning habitat conditions in Thunder Creek, which is the only major stream drainage where bull trout can spawn in this reservoir system (FWS 2015).

Based upon the results of tangle net sampling conducted by Washington DFW in 2005 and by the Park Service in 2010, Diablo Lake is used mainly by subadult and adult bull trout (i.e., fish aged 3 years and older). No juvenile bull trout have been captured in the experimental gill nets used in the sampling, although some small fry may have escaped during the sampling event due to the mesh size. Regardless, this is consistent with the life history of bull trout, which typically spend the first 2 to 3 years of life in their natal tributaries (FWS 2015). There is no known spawning and early juvenile rearing habitat within the vicinity of the area of proposed action. Most of the spawning and early juvenile rearing habitat areas for bull trout in Diablo Lake are within the Thunder Creek drainage, which is on the opposite side of the lake from the proposed project.

Bull trout have been observed throughout Diablo Lake, and observations of acoustically tagged fish have found that they can move between different areas of the reservoir within a single day. The results of 3 years of migration data obtained from adult bull trout implanted with acoustic tags suggest that bull trout strongly prefer the Thunder Arm area of Diablo Lake (outlet of Thunder Creek), and the narrow and deep canyon area of the lake downstream of Ross Powerhouse because of the relatively high concentrations of forage fish (including redside shiners and juvenile rainbow trout). Bull trout typically congregate at the mouths of major tributaries in Ross and Diablo Lakes to feed on small fish migrating out of the tributaries. Based upon research findings in Ross Lake, most adult bull trout in Diablo Lake are expected to make regular daily migrations between shallower and warmer feeding areas of the lake during foraging periods, and the deep and cold “resting” areas located in deeper areas of the lake for the remainder of the day (Eckmann et al. 2016). The number of bull trout detections within the northern

portion of the reservoir in the vicinity of the proposed fuel dock was relatively small, accounting for only 4% of all observations (228,000 detections) recorded in Diablo Lake in 2015.

However, bull trout have been documented year-round in the area under the Diablo Boathouse, approximately 90 feet from the proposed fuel dock. A few individual fish, typically only one or two adult bull trout, are regularly observed using the Diablo Boathouse as their foraging territory. The boathouse provides habitat cover for forage fish, such as redside shiners and juvenile rainbow trout, which, in turn, attract the bull trout. Based on results of acoustic tagging studies conducted by Seattle over the past couple of years, the same bull trout may reside under the boathouse for months at a time. Any bull trout foraging under the boathouse are likely acclimated to high levels of noise disturbance, as well as frequent movement by Seattle personnel and boats.

b. Environmental Effects

Because all construction, except for pile driving, will occur in the dry, the potential for construction-related turbidity impacts to bull trout is very low, especially given the BMPs that Seattle proposes to implement. The following components of the proposed action have the potential to affect bull trout: the increase in overhead cover created by the new fuel dock, the removal of riparian vegetation associated with the installation of the crib wall, and pile driving. Of these components, pile driving has the greatest potential to affect bull trout. Each component, and its potential effect on bull trout, is discussed below.

The increase in overhead cover created by the proposed fuel dock (i.e., a 562-square foot increase from the current fuel dock configuration) will account for less than 0.002% of the surface area of Diablo Lake. Despite this small increase, shading by overwater cover limits establishment of aquatic vegetation and can cause fish, including bull trout, to avoid shaded areas. However, because the grated platform, float and gangway will allow for 44% light penetration, we expect these impacts to be minimal. Currently, there is no aquatic vegetation in the area of proposed action; therefore, the additional shade created by the proposed action will not result in a decrease in aquatic vegetation and is not expected to present a barrier to bull trout migration into this area. Conversely, because redside shiners and juvenile rainbow trout are attracted to shaded areas beneath overwater structures, their presence may increase once the proposed fuel dock is constructed. Therefore, it is possible that the additional shading created by the fuel dock could enhance bull trout foraging habitat.

As discussed in section V.C.3.b, *Aquatic Resources, Environmental Effects*, the installation of the crib wall will require the removal of 240 square feet of riparian habitat that overhangs Diablo Lake, including critical habitat for bull trout. Because this area is a potential source of invertebrates for foraging fish, including bull trout, short-term

adverse modification to bull trout critical habitat is possible until the mitigation plantings and crib wall vegetation are installed and become established. However, because adult and sub-adult bull trout feed primarily on small fish, it is unlikely that this removal of vegetation will have any measurable impact on the forage base of bull trout.

As stated in section V.C.3.b, *Aquatic Resources, Environmental Effects*, vibratory and impact pile driving produce elevated underwater noise that can adversely affect fish, including bull trout. Though a vibratory hammer will be the primary method of pile driving, noise and vibration from impact pile driving may involve levels that may cause behavioral responses or physical injury to bull trout.

Based on specific injury thresholds developed by the FWS of sound exposure levels and known peak pressure values of vibratory hammers, the use of vibratory hammers is not expected to cause physical injury to bull trout or other fish in the area of proposed action.[28] Impact pile driving, however, could result in underwater noise levels that could cause behavioral responses or physical injury to bull trout and other fish in the area of proposed action. Using the FWS's sound exposure level calculator for bull trout,[29] Seattle concludes that sound levels high enough to injure adult or sub-adult bull trout will be limited to within 25 feet of each pile. As stated earlier, adult bull trout in Diablo Lake prefer the Thunder Arm area and the deep canyon downstream of Ross Powerhouse, not the shallower area where the proposed fuel dock would be located. However, the one or two bull trout known to occur under the Diablo Boathouse for months at a time could be present during pile driving, and therefore, the proposed action may adversely affect bull trout. Based on the documented locations of those bull trout, they would generally remain outside of the physical injury zone unless they swam into the 25-foot radius of each pile while impact pile driving was occurring (i.e., 7 minutes on two days). Beyond those one or two individuals that may experience physical injury, other adult and sub-adult bull trout within approximately 1,175 feet of the piles may exhibit behavioral changes as a result of impact pile driving, based on calculated sound pressure levels. Commission staff expect the most likely behavioral change, if any, will be avoidance of the area where impact pile driving was occurring. However, avoidance of such a small area for such a short period of time is not likely to significantly disrupt normal bull trout behavior patterns.

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[28] Attachment A of Seattle's June 11, 2020 application with the Commission includes specific sound exposure levels developed by FWS based on injury data developed by its Fisheries Hydroacoustic Working Group.

[29] *See* the FWS's Sound Exposure Level Calculator for bull trout: https://www.wsdot.wa.gov/Environment/Biology/BA/BAguidance.htm.

As stated in section III.C, *Proposed Environmental Measures*, Seattle will implement a hydroacoustic monitoring program to confirm the assumed attenuation of 12 decibels (dB) is achieved and that noise levels in the water generated by pile driving activities do not exceed the thresholds established by FWS. The thresholds, including the 12 dB sound reduction, are: 188 dB peak pressure, 174 dB sound exposure level, and 186 dB root mean squared.[30] Should hydroacoustic monitoring during pile driving indicate that these levels are being exceeded, Seattle will limit strikes per day or install a bubble curtain around each pile.

Term and Condition No. 1 of the FWS's 2018 BO requires Seattle to implement its proposed hydroacoustic monitoring program, explained above, in order to reduce the potential for take of bull trout. If those levels are exceeded after the 12 dB sound attenuation, the protections under the incidental take statement in the 2018 BO will apply.

Commission staff find that implementation of the hydroacoustic monitoring program and contingency measures (i.e., limiting number of strikes per day or installing a bubble curtain if the sound thresholds are exceeded during pile driving) would reduce the potential for adverse effects of bull trout. Commission staff recommend that Seattle be required to comply with Term and Condition No. 1 of the 2018 BO, and that compliance with Term and Condition No. 1 be a condition of any Commission order approving the proposed action.

6. Recreation and Aesthetics

a. Affected Environment

The Diablo Lake development of the Skagit River Project is surrounded by the Ross Lake National Recreation Area. The proposed construction will occur within 100 feet of Diablo Dam Access Road (the only road which provides access to Diablo Lake facilities). In addition to vehicle access, members of the public also walk and bike this route to travel between the Environmental Learning Center (ELC), the Ferry Landing, and the tour dock, as well as to access hiking trails. Hiking, bicycling, swimming, paddling, boating, and fishing are common recreation activities which occur nearby the proposed construction zone. The approved recreation resources plan requires boat tours on Diablo Lake as well as ferry service for visitors travelling between Ross Lake and

[30] The FWS, in its 2018 BO, defines "peak pressure" as the highest level of amplitude or greatest absolute sound pressure level during the time of observation. It defines "sound pressure level" as a metric that incorporates sound pressure level and duration. It defines "root mean squared" as a value used for discussing behavioral effects often resulting from auditory cues (FWS 2018).

Diablo Lake. In order to comply with the terms of the license, Seattle must be able to fuel marine vessels on Diablo Lake.

The shoreline and waters of Diablo Lake in the immediate vicinity of the proposed fuel dock are not available for public recreational use. Seattle's boathouse, marine fueling, and barge operations require that public use be restricted. Visitors using Diablo Dam Road and nearby project waters would be able to see the construction and staging areas, as well as hear construction-related noise. Visual and noise related effects associated with the proposed construction activity are expected to extend beyond the immediate area of proposed action, thus a wider geographic area (3,150 feet around the site) is included in the analyses regarding potential effects for recreationists (Figure 4).

b. Environmental Effects

While walkers and cyclists travelling along Diablo Dam Road will likely have a diminished recreation experience as they travel past the proposed construction site, either due to visual or auditory stimuli, the effects are expected to be short term as the area impacted by construction is limited. Visitors using nearby project waters may be affected by construction activity, but Diablo Lake boaters can choose to visit Thunder Arm or Ross Canyon if they wish to avoid the area. Individuals using the designated swimming area at the ELC will be able to see and hear construction activity but be located far enough away that most construction activity will likely be considered a minimal intrusion. Visitors located more distant from the fuel dock may notice construction related activity and/or hear higher decibel noise emanating from the proposed construction site. General construction noise is expected to attenuate to background levels within 3,150 feet of the proposed construction site (Figure 4). Installation of the pilings, which will secure the fuel dock in place, would generate exceptionally loud sounds capable of travelling up to 15 miles over water and 3.4 miles over land and thus would be the most disruptive recreation and aesthetic effects associated with the proposed construction. The steep topography and forested vegetation of the surrounding landscape are expected to dampen noise over much shorter distances. Seattle indicates that driving the two pilings into place would generate sounds up to 110 dB (background noise at the site is estimated to be 46 dB). Driving the pilings into place is expected to take less than seven minutes on each of two days. Visitors in the area during these 7 minutes each of the two days would experience the noise from pile driving, but this is a temporary effect.

Avoiding construction during the peak summer season (June – September), as proposed by Seattle in section III.C, *Proposed Environmental Measures*, would reduce the effects of construction on visitors because there will be fewer visitors using the area in the Spring and Fall. Construction of the fuel dock is expected to have a temporary moderate effect on recreation and aesthetic resources on the two days pile driving occurs due to visitors' high expectations for natural surroundings commonly associated with

visiting sites managed by the Park Service, and a short-term minor impact for the remainder of the construction period.

7. Cultural Resources

a. Affected Environment

The APE for the undertaking is the area where ground disturbance would occur during installation of the fuel dock and supporting infrastructure (encompassing less than 10,000 square feet). No cultural resource sites are known to exist within the APE. While the APE for the proposed action is located within an historic district, installation of a new fuel dock will not affect any contributing resources to the historic district designation. The historic district extends for three miles along the Skagit River from the Town of Newhalem to the Diablo Dam. The existing fuel dock is located within the historic district, due to proximity to the Diablo Dam, but it is not a contributing resource.[31]

The Cultural Resources Settlement Agreement (SA), approved by the 1995 Order, required the development of a Memorandum of Agreement (MOA) detailing implementation of the Cultural Resources SA. The MOA was executed by the Advisory Council on May 20, 1994,[32] which requires signatories to cooperate regarding the mitigation of impacts to cultural resources at the Skagit River Project. The area is known to be of historical and cultural importance for indigenous people, thus there is a possibility that buried cultural resources may be discovered during ground disturbing activities. The most recently approved version of the Unanticipated Discovery Plan[33] stipulates actions to be taken should human remains or cultural artifacts be discovered during implementation of the proposed action.

[31] Historic Resources Mitigation and Management Plan required via section 5.5 of the Settlement Agreement concerning Cultural Resources, approved by 1995 Order.

[32] Signatories include Sauk-Suiattle Tribe, Swinomish Indian Tribal Community, Upper Skagit Tribe, City of Seattle, Park Service, Washington DHAP, FERC, and the Advisory Council.

[33] Unanticipated Discovery Plan for Cultural Resources (Including Human Remains) June 2020 (filed April 7, 2021 as Appendix D of Revised Study Plan).

b. Environmental Effects

There is low potential for discovery of previously unknown artifacts during removal of the existing riprap and asphalt, since the site has been disturbed during past construction activity. Since ground-disturbing activities are part of the fuel dock replacement project, there is a potential for buried cultural resources to be exposed during construction. By letter dated September 25, 2020, Washington DHAP concurred with Seattle's Determination of No Adverse Effect, issued as part of the Washington SEPA process, with the stipulations for archaeological monitoring and an Unanticipated Discovery Plan. As described in section III.C, *Proposed Environmental Measures*, Seattle has agreed to have a professional archaeologist on site during ground disturbing activities to limit negative effects to cultural resources which may be discovered during construction of the new fuel dock. Should any cultural resources or human remains be found during construction of the fuel dock, work will stop and the provisions of the 2020 Unanticipated Discovery Plan will be implemented. Upon independent review and analysis, Commission staff agrees with the no adverse effect determination and considers section 106 consultation to be complete.

VI. CONCLUSION

A. Staff Recommended Measures

As described in section V.C.2.b, *Water Quality, Environmental Effects*, to reduce the potential for minor, temporary impacts, Commission staff recommend Seattle implement the BMPs it has proposed to meet the state water quality standard for turbidity (i.e. no more the 5 nephelometric turbidity units (NTU) above background levels when the background is 50 NTUs or less; or, a 10% increase in turbidity when the background is more than 50 NTUs). To accomplish this, Seattle will monitor turbidity levels during construction. Additionally, Commission staff recommend Seattle implement the additional BMPs it has proposed, including designating and fencing off specific areas for staging, placing sandbags or compost socks in front of drains, and using erosion controls around stockpiles.

Additionally, to reduce the risk of fuel spillage during construction, Seattle will visually monitor for sheen once the fuel line is initially energized. It will also monitor the concrete washout area created for the construction of the oil sump to ensure that washout does not enter Diablo Lake. Commission staff recommend Seattle implement these measures as proposed to reduce the risk of any minor, temporary impacts that could affect water quality and aquatic resources during construction.

Vegetation removed to excavate the existing crib wall will be replaced by vegetation planted on the face and top of the new crib wall, as well as by replanting

nearby shoreline with native vegetation in order to establish a forest plan community. Commission Staff recommend Seattle implement these measures as proposed to enhance vegetative resources in the area of the proposed action.

Construction will be scheduled to avoid the peak visitation and boat tour periods which occur June through September. Commission staff recommend Seattle implement this measure to reduce construction impacts on recreation and aesthetic resources in the area of the proposed action.

B. Unavoidable Adverse Effects

During impact pile driving, adverse effects to bull trout are expected within a 25-foot radius of each pile. Commission staff recommend Seattle implement the hydroacoustic monitoring program and contingency measures (i.e., limiting number of strikes per day and/or installing a bubble curtain if the sound thresholds are exceeded during pile driving) explained in section V.C.5, *Threatened and Endangered Species*. Doing this will reduce the potential for adverse effects of bull trout. Further, Commission staff recommend that Seattle be required to comply with Term and Condition No. 1 of the 2018 BO, which requires implementation of Reasonable and Prudent Measure No. 1., and that compliance with Term and Condition No. 1 be a condition of any Commission order approving the proposed action.

Noise generated during pile driving is expected to result in temporary adverse recreation and aesthetic effects for individuals engaged in recreation pursuits nearby. In order to reduce the number of individuals exposed to pile driving, Seattle will time construction to avoid peak Summer visitation and peak boat tour season.

Based on our independent review and evaluation of the environmental effects and agency comments filed regarding the proposed action, and a no-action alternative, we recommend approving Seattle's proposal to replace the existing fuel dock and associated infrastructure because replacing the existing fuel dock will reduce the likelihood of hazardous material spilling into Diablo Lake, enhance safety for staff who use the fuel dock, and allow for refueling marine vessels at a wider range of lake levels. No cumulative effects were identified for any resource area as a result of this proposed action.

VII. FINDING OF NO SIGNIFICANT IMPACT

If the Skagit River Project is amended as proposed, the project would continue to operate while protecting aquatic resources, terrestrial resources, recreational resources, and any previously unidentified cultural resources in the area of proposed action.

Based on our independent analysis, approval of the proposed action for the Skagit River Project, as proposed and including staff recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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