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ENVIRONMENTAL ASSESSMENT
FOR APPLICATION TO SURRENDER LICENSE

Newhalem Creek Hydroelectric Project—FERC Project No. 2705-037

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 ABBREVIATIONS

Advisory Council	Advisory Council on Historic Preservation
APE	area of potential effects
BMPs	best management practices
BP	Before Present
ºC	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	Methane
City Light	Seattle City Light
Commission	Federal Energy Regulatory Commission
CO_2	Carbon Dioxide
CRMMP	Cultural Resources Mitigation and Management Plan
DPS	Distinct Population Segment
EA	environmental assessment
EAP	Emergency Action Plan
EAP muster site	Skagit EAP evacuation muster site
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionarily significant unit
ºF	degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Department of Agriculture, Forest Service
FPA	Federal Power Act
FWS	U.S. Department of the Interior, Fish and Wildlife Service

GHGs	Greenhouse Gases
IPaC	Information for Planning and Consultation
LiDAR	Light Detection and Ranging
MMT CO_2e	Million Metric Tons Carbon Dioxide Equivalent
NAAQS	National Ambient Air Quality Standards
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NO_x	Nitrous Oxides
NAVD 88	North American Vertical Datum of 1988
OPP	Office of Public Participation
PAH	polycyclic aromatic hydrocarbon
Park Service	National Park Service
PCB	polychlorinated biphenyl
RLNRA	Ross Lake National Recreation Area
RM	river mile
SHPO	State Historic Preservation Officer
SD1	Scoping Document 1
Swinomish Tribe	Swinomish Indian Tribal Community
TCP	traditional cultural properties
U.S.C.	United States Code
USGS	U.S. Department of the Interior, Geological Survey
USIT	Upper Skagit Indian Tribe
WAC	Washington Administrative Code
Washington DFW	Washington Department of Fish and Wildlife
Washington DOE	Washington Department of Ecology
Washington Trust	Washington Trust for Historic Preservation

1.0 INTRODUCTION

Application:	Surrender of License for the Newhalem Creek Hydroelectric Project (Newhalem Project or project), FERC Project No. 2705-037
Date Filed:	January 28, 2022, and supplemented on February 14 and December 12, 2022, and April 10 and October 24, 2023
Applicant:	Seattle City Light (City Light)
Water body:	Newhalem Creek
County and State:	Whatcom County, Washington
Federal Lands:	The project occupies 6.56 acres within the Ross Lake National Recreation Area (RLNRA), which is managed by the National Park Service (Park Service) as part of the North Cascades National Park Complex.

2.0 PURPOSE AND NEED FOR ACTION

Under the Commission's regulations at 18 Code of Federal Regulations (CFR) § 6.1, an application for surrender of a project license must be filed by the licensee in the same manner as an application for license. Pursuant to 18 CFR § 6.2, a project license may be surrendered only when the licensee has fulfilled the obligations under the license as prescribed by the Commission.

The Newhalem Project began operation in 1921 to provide power for construction of the Gorge Dam and Powerhouse, which are project features of the Skagit River Hydroelectric Project No. 553 (Skagit River Hydroelectric Project). The project was most recently licensed by the Commission in 1997,[1] and the current project license to City Light expires on January 31, 2027. When operational, the project diverts a portion of the flow from the lower 1 mile of Newhalem Creek. The project, however, has not been consistently in service since 2010 due to the following issues: leaks in the power tunnel; maintenance needs at the headworks and powerhouse; and access road safety concerns due to an active landslide.

After conducting an engineering analysis in 2020, City Light concluded that the cost of relicensing the project and making the necessary repairs and upgrades to equipment/facilities and the access road exceeded the estimated future value of the project. On April 28, 2021, City Light filed a Notice of Intent to surrender the project license and proposed to decommission most of the existing infrastructure. Subsequently, City Light filed its surrender application on January 28, 2022, with several supplements following the initial application.

This Environmental Assessment (EA) is being prepared to satisfy the Commission's responsibilities under the National Environmental Policy Act of 1969 (NEPA),[2] the Council on

[1] *Seattle City Light,* 78 FERC ¶ 62,097 (1997).

[2] 42 U.S.C. §§ 4321 *et seq*.

Environmental Quality (CEQ) regulations for implementing NEPA (40 C.F.R. 1500-1508), and the Commission's implementing regulations under 18 C.F.R. 380.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Project Description

The 2.125-megawatt Newhalem Project (Figure 1) includes the following facilities: (1) a 45-foot-long by 10-foot-high concrete, overflow diversion dam; (2) a combination sluiceway/intake structure and small gatehouse at the dam; (3) a 55-foot-tall, 5-foot-by-5-foot unlined rock vertical shaft that conveys water from the intake to the power tunnel; (4) a 2,700-foot-long unlined rock power tunnel;[3] (5) a 925-foot-long, 33-inch-diameter steel penstock that begins 218 feet inside the power tunnel and conveys water from the rock power tunnel to the powerhouse;[4] (6) 6 concrete thrust blocks and 56 concrete and/or wooden penstock support saddles; (7) a 30-foot by 56-foot wood-framed powerhouse; (8) one double-overhung Pelton impulse turbine (2,250 kilowatts) connected to a single generating unit rated at 2,125 kilowatts; (9) a 350-foot-long tailrace channel that discharges into the Skagit River; (10) a 3.6-foot-high, 18-foot-wide concrete tailrace fish barrier with concrete wing walls; (11) a 7.2-kilovolt transmission line, consisting of: (a) a 350-foot-long buried cable; (b) 400-foot-long cables over the Skagit River to Newhalem; (c) a 3,000-foot-long buried cable; and (d) 637-foot-long overhead cables crossing the Skagit River to the Gorge Powerhouse (part of the Skagit River Hydroelectric Project No. 553); (12) an access road to the diversion dam; (13) a pedestrian bridge from the diversion dam access road to the gatehouse; and (14) an access road from the Newhalem Creek Campground to the powerhouse.

The license requires City Light to operate the project in a run-of river mode and release minimum flows of 40-95 cubic feet per second (cfs) in the bypassed reach, depending on time of year. Instream flow requirements typically limit operations to 8 to 10 months of the year.

3.2 Proposed Action (Partial Removal)

City Light proposes to decommission and remove most of the project features and to retain certain features considered to be historically important. The disposition of the various project features is provided in Table 1. The diversion dam, which would be removed, is shown in Figure 2.

The power tunnel would remain, but the shaft at the headworks that connects to the power tunnel would be filled and sealed as discussed below. The penstock, penstock saddles, and powerhouse would also be retained in place. The tailrace from the powerhouse to the tailrace fish barrier would remain, but some regrading of the tailrace embankments may occur. The existing trail from the Newhalem Powerhouse along the penstock to the downstream end of

[3] The surrender application describes the unlined rock power tunnel as 6 foot wide by 7 foot high by 2,452 foot long.

[4] The above ground portion of the 33-inch-diameter penstock is approximately 707 feet.

the power tunnel would be retained because it is a flood emergency evacuation route for the Skagit River Hydroelectric Project.

The equipment in the powerhouse would be deactivated but retained in place. The three-phase electrical service line to the powerhouse and the six poles (three on each side of the river)[5] that support the line would remain in place to provide the power needed for heating and lighting for historic interpretation and tours. Alternative methods of supplying electricity to the powerhouse may be investigated to eliminate the need to retain these overhead line and poles. The above ground transmission lines that cross the Skagit River would be removed.

The existing interpretive panels along the front windows of the powerhouse would be updated, and other interpretive elements would be added. City Light would continue to maintain these historic properties and interpretive features in perpetuity. Additional opportunities for interpretation, including signage displaying Tribal, Park Service, and City Light history along the trails in the vicinity may also be considered.

Most of the cleared area adjacent to the powerhouse would be restored, except for a small site for parking up to three vehicles at the road's edge, south of the powerhouse. Routine vegetation maintenance along the penstock would cease, which would result in the restoration of the adjacent corridor to forested habitat. Vegetation would be removed only in the immediate footprint and only as necessary to repair or paint the penstock. Painting of the penstock would occur approximately every 10 to 20 years. The penstock would continue to convey groundwater intrusion from the power tunnel to the tailrace.

The tailrace is part of an existing intermittent stream that drains the slope behind the powerhouse and would be maintained by the water that periodically runs through this channel. The diversion dam access road below elevation 840 feet North American Vertical Datum of 1988 (NAVD 88) would also remain because this feature is a designated emergency evacuation route in the Skagit River Hydroelectric Project's Emergency Action Plan (EAP), which City Light would continue to maintain. The access road to the diversion dam above elevation 840 feet NAVD88 would be cleared to remove the existing landslide materials that block the road as discussed below to allow equipment to reach the diversion dam and headworks site for their removal.

3.3 Proposed Environmental Measures

City Light would develop the following plans, in consultation with resource agencies and Tribes, to support the proposed action:

Road Decommissioning Plan – This plan would detail the decommissioning activities involved with removal of the diversion dam access road, including a summary of City Light's interactions and any agreements made with the landowner (the Park Service), a preliminary work

[5] *See* City Light's February 14, 2022 supplement, that corrected information in the original surrender application filed on January 28, 2022.

schedule, necessary permits, proposed construction methods, any specific fire prevention or vegetation/weed control measures required during construction, and a cost estimate.

Invasive Plant Management Plan – This plan would include measures for monitoring and controlling non-native and invasive plant species identified by the Park Service and those on the current noxious weed list for Whatcom County. Maintenance would use an integrated pest management approach, combining cultural, chemical, and mechanical methods for removing and managing invasive plants. Monitoring would extend for five years after removal and would include preparing an annual monitoring report documenting completed maintenance, identifying future maintenance needs, and providing digital images of restoration areas.

Sediment and Erosion Control Plan – This plan would include a summary of construction BMPs, typical detail drawings, and limits of construction.

Restoration Plan – This plan would be developed for areas temporarily disturbed by decommissioning activities and would include planting, seeding, and five years of monitoring and maintenance. City Light would develop quantitative performance standards in coordination with the Park Service and evaluate and identify success and maintenance or contingency measures in annual monitoring reports, as appropriate. Annual monitoring reports would compare observed conditions with identified performance standards for each area, recommend maintenance measures, and provide digital photographs from permanent monitoring points.

Cultural Resources Mitigation and Management Plan (CRMMP) – This plan would be developed in consultation with affected Tribes, the Park Service, and the Department of Archaeology and Historic Preservation. Implementation of the plan would depend on many factors, including identification of historic properties, evaluation of adverse effects, and development of mitigation through consultation.

Spill Plan – This plan would include measures to reduce the potential for and minimize the adverse effects of any spills of oil and other hazardous materials that may occur during project deconstruction activities.

3.4 Full Removal Alternative

Under the full removal alternative, all aboveground project features would be decommissioned, including the penstock, powerhouse, and power lines. City Light states that if this alternative is selected, the following additional measures would be implemented: (1) attempt to access the penstock and saddles using the existing disturbed corridor adjacent to the penstock (i.e., area devoid of trees); and (2) keep vegetation clearing (including tree removal) to the minimum necessary if removal of the penstock or saddles requires access via areas outside the existing disturbed corridor and a temporary route is needed. The only features remaining in place would be the tailrace, since it is part of an intermittent stream, and the Skagit Project's EAP emergency evacuation route, which includes the diversion dam access road to elevation 840 feet and the trail leading to the lower end of the rock tunnel. The power tunnel and underground powerlines would be abandoned in place.

3.5 Proposed Action (Partial Removal) with Staff-Recommended Measures

This section describes staff modifications to the proposed action, based on recommendations made in response to scoping and staff's analysis of the effects of the proposed action. Staff's recommended additional measures include:

- Limit construction activities to occur only between the hours of 7 a.m. to 7 p.m., Monday through Saturday.

- Provide public notice (e.g., town website, local newspaper, mailers, etc.) at least two weeks prior to the start of the higher noise volume construction actions of removing the diversion dam and tailrace fish barrier.

- Develop all management plans (road decommissioning plan, invasive plant management plan, sediment and erosion control plan, restoration plan, CRMMP, and spill plan) in consultation with stakeholders, including the Tribes, the Park Service, FWS, National Marine Fisheries Service (NMFS), and Washington DFW.

- Identify any roadway repairs, safety measures, or road closures needed during the decommissioning, including closure of the one-lane bridge that provides access to the project from State Route 20.

- Follow guidance outlined in the publication *Preservation Brief 31: Mothballing Historic Structures* (Park Service, 1993) in plans for decommissioning the project powerhouse.

- Conduct three years of monitoring post-dam removal to identify and address any barriers to fish passage that may develop due to sediment movement that have the potential to impede the passage of salmon, steelhead, bull trout or Dolly Varden into or within the lower 0.65-mile section of Newhalem Creek.

3.6 No-Action Alternative

Under the no-action alternative, the Newhalem Project would remain out of service for hydroelectric generation purposes, as it is today, and would continue to be subject to the terms and conditions of the existing license. All project facilities would remain in place and there would be no disturbance of existing environmental conditions at the project site resulting from removal of project facilities. The no-action alternative represents existing conditions and serves as the baseline for evaluating the effects of the proposed action. Environmental resources in the project area would remain the same as they are initially described under the *Affected Environment* sections for each resource area in section 6.0, *Environmental Analysis*.

Until a surrender order is issued and the terms of the surrender order have been met, City Light would retain its license, and maintain the project features in their current condition and in a safe and secure manner. Ultimately, the project would have to be either relicensed, decommissioned, or licensed by another entity because perpetual annual licensing is not authorized under the Federal Power Act (FPA).

4.0 STATUTORY AND REGULATORY COMPLIANCE

This surrender request for the project would be subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in Appendix A.

5.0 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 CFR § 6.1) require that licensees consult with appropriate resource agencies, Tribes, and other entities before filing an application for surrender of license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act,[6] the Endangered Species Act[7] (ESA), the National Historic Preservation Act[8] (NHPA), and other federal statutes. Pre-filing consultation must be completed and documented according to the Commission's regulations. The surrender application included documentation of pre-filing consultation.

5.1 Comments on the Application

On April 29, 2022, the Commission issued a notice of application for surrender of license, soliciting comments, motions to intervene, and protests. The notice set May 31, 2022, as the deadline for filing comments, interventions, and protests. The following entities filed comments in response to the Commission's notice:

Commenting Entity	Date Filed
American Whitewater	May 31, 2022
American Rivers	May 31, 2022
Upper Skagit Indian Tribe	May 31, 2022
Park Service	May 31, 2022[a]
Washington Department of Fish and Wildlife	May 31, 2022
Sauk-Suiattle Indian Tribe	June 1, 2022
Swinomish Indian Tribal Community	June 1, 2022

[a] The Park Service filed errata to its May 31, 2022 letter on June 2, 2022.

City Light filed responses to comments on the notice of application on July 1, 2022, and the Park Service filed a response to City Light's comments on September 1, 2022.

[6] 16 U.S.C. § 661 et seq.

[7] 16 U.S.C. § 1536.

[8] 54 U.S.C. § 306108.

5.2 Interventions

In response to the April 29, 2022 notice, the following entities filed notices of intervention or motions to intervene (with none filed in opposition):

Intervenor	Date filed
Washington Department of Fish and Wildlife	May 26, 2022
Department of Interior	May 26, 2022
American Whitewater	May 31, 2022
American Rivers	May 31, 2022
Upper Skagit Indian Tribe	May 31, 2022
Sauk-Suiattle Indian Tribe	May 31, 2022
Swinomish Indian Tribal Community[a]	June 1, 2022

[a] Late intervention granted January 9, 2023.

5.3 Scoping

Before preparing this EA, we conducted scoping to determine what issues and alternatives should be addressed. On August 29, 2022, the Commission issued a notice soliciting scoping comments, and a scoping document (SD1) was issued on the same day. It was noticed in the *Federal Register* on September 2, 2022.[9] The notice set September 28, 2022, as the deadline for filing scoping comments. The following entities filed comments in response to the Commission's notice:

Commenting Entity	Date Filed
City Light	September 28, 2022
Washington Department of Fish and Wildlife	September 28, 2022
American Rivers	September 28, 2022
Park Service	September 28, 2022
American Whitewater	September 28, 2022
Washington Trust for Historic Preservation	October 4, 2022
Historic Seattle	September 29, 2022

5.4 Notice of Intent

On January 30, 2024, the Commission issued a notice of intent that revised the schedule for issuing this EA and invited federal, state, local, and Tribal agencies to participate as cooperating agencies. No requests to cooperate were received. In a letter filed on February 14,

[9] 87 Fed. Reg. 54211.

2024, the Environmental Protection Agency (EPA) recommended certain information to include in the EA, e.g., compliance with statutes of the Clean Water Act (CWA), specific resource areas to address, and effective monitoring post surrender. The recommendations of EPA were considered in the development of this EA.

6.0 ENVIRONMENTAL ANALYSIS

6.1 General Description

Newhalem Creek is 8.8 miles long and originates high in the North Cascades. The surrounding peaks are 5,000 to 6,500 feet in elevation, and some are glaciated. Elevations in the project area range from approximately 500 feet at the powerhouse to 1,011 feet at the diversion dam. The entire drainage is within the North Cascades National Park Complex, which is managed by the Park Service and includes the RLNRA and North Cascades National Park.

Newhalem Creek drains a watershed area of 29.2 square miles with inflows from Stout Lake and melt waters from McAllister, Little Devil, and Neve Glaciers. The creek joins the Skagit River approximately 1 mile west of the town of Newhalem. Based on data from the U.S. Geological Survey (USGS) stream gage located upstream of the dam,[10] flows in the creek over the last five years (2016 to 2020) ranged from lows of 20 to 40 cfs in summer to peaks over 1,000 cfs in winter. When operating, the project influences flow in the lowest 1 mile of the creek.

The Newhalem Creek area has a west coast marine climate modified by local topography and orographic effects. Heavy winter rains with some snowfall, dry summers, and moderate annual temperatures are typical of the area. The mean annual precipitation at the closest weather station 6 miles from the project, (Diablo Dam; elevation 1,201 feet) is approximately 79 inches (2000 to 2020), with roughly 80 percent falling from October through April. Monthly temperatures at Diablo Dam for the last 20 years range from an average of 34 degrees Fahrenheit (°F) in December to 66.8°F in August. The highest temperature recorded in that period was 104°F; the lowest temperature recorded was 2°F.

6.2 Scope of Cumulative Effects Analysis

According to the CEQ's regulations for implementing the NEPA (40 C.F.R. § 1508.1), a cumulative effect is the effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time, including hydropower and other land and water development activities.

Based on our review of the proposed action and associated project application, along with resource agency comments, and the project record, we have not identified any resources that would be cumulatively affected by the proposed action.

[10] USGS gage no. 12178100, Newhalem Creek near Newhalem, Washington.

6.3 Proposed Action and Action Alternatives

In this section, we discuss the effects of the proposed action and alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects.[11] We then discuss and analyze the environmental effects of the alternatives. We also consider the effects on environmental justice communities. We discuss the recommendations provided by stakeholders and the basis for our recommendations in section 7, *Conclusions and Recommendations*.

6.3.1 Geology and Soils

6.3.1.1 Affected Environment

Geology

The upper Skagit River Basin, including the Newhalem Creek drainage area, is underlain by the 60- to 70-million-year-old Skagit Gneiss formation (labeled TKbg(s) and TKog(s) on Figure 3). This bedrock is resistant to weathering and erosion, forming the steep stream canyon with numerous waterfalls downstream from the diversion dam. Aside from the steep canyon walls, Quaternary landforms include the floodplain in the lower gradient area upstream of the diversion dam, and the alluvial fan near the confluence with the Skagit River that has cut into the moraines and terraces in the Skagit River valley (Figure 3). Several debris cones control floodplain width and limit channel movement across the floodplain in the lower gradient valley upstream from the diversion dam. While the project was operating and to keep the intake clear of sediment, City Light reported that an average of 200-400 cubic yards of material were removed from the impoundment annually and placed in the channel downstream.

Soils

The U.S. Department of Agriculture, Natural Resources Conservation Service's Skagit County soil survey terminates approximately 20 miles down the Skagit River from the town of Newhalem (Klungland and McArthur, 1989). Therefore, no detailed soil survey has been done in the Newhalem Creek area, and information is limited to issue-specific assessments.

Composed of alpine glacial deposits on top of bedrock, the entire area is deforming very slowly downslope. Reidel (1990, as cited in City Light, 1992) identified a large, ancient landslide (of unknown age) on the southern side of Newhalem Creek (Figure 3). More recent Light Detection and Ranging (LiDAR) and hillside slope imagery indicates that this feature extends for approximately 2,000 feet along the western slope of Newhalem Creek, with the diversion dam roughly in the center of the northern edge (Golder Associates 2021; Figure 3). While much of this landslide feature is inactive, there is an active portion at the lower (northern) end, approximately 1,100 feet west of the dam. Here, oversteepening of the larger landslide materials from the cut-slope of the old Forest Service logging road (now the dam access road) led to the failure of approximately 250 feet of road section. The landslide is blocking the access road with boulders of varying sizes and the area remains unstable (Figure 4).

[11] Unless noted otherwise, the source of our information is the application for surrender filed January 28, 2022, as supplemented.

Between 2013 and 2018, surveys and sampling were conducted within a 1.5-acre site along the 904-feet-long exposed penstock to determine whether sandblasting the penstock or preservatives (e.g., creosote[12]) in the wood saddles had contaminated nearby soils to levels considered potential risks to human health and ecological receptors. Soils along the penstock consist of gravelly silty sands (Hart Crowser, 2014; Floyd Snider, 2022). The 2013 and 2014 sample analyses identified contaminants of potential concern for human health for two metals (arsenic and lead), bis(2-chloroethyl)ether, five polycyclic aromatic hydrocarbon (PAH) compounds, and a calculated carcinogenic polycyclic aromatic hydrocarbon toxic equivalent (Floyd Snider, 2022). In 2016–2017, 171 tons of contaminated soil were removed from the site as part of the penstock saddle replacement project and time-critical removal action under the Park Service Action Memorandum (Park Service, 2016, as cited by Floyd Snider, 2022) and Administrative Settlement Agreement and Order on Consent (Park Service, 2019, as cited by Floyd Snider, 2022).

Following completion of the time-critical removal action, the Park Service determined that site conditions warranted additional response to evaluate the release or threatened release of hazardous substances and that a non-time-critical removal action may be appropriate at the site as specified in 40 CFR Section 300.415(b). In 2018, additional investigations were performed to delineate the remaining lateral and vertical extent of metal and PAH contamination in the soil in the vicinity of the penstock and to collect data for the engineering evaluation/cost analysis. A site investigation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) states that expected impacts to surface water and groundwater would be minimal (Floyd Snider, 2022). Based on these factors, none of the contaminants of potential concern for human health were designated as contaminants of concern for human health because (1) soil is the only environmental medium that people could potentially encounter on an ongoing basis, and (2) the lack of recreational opportunities at the site. Based on analyses that incorporated problem formulation, exposure and effects assessment, and risk characterization (including an uncertainty analysis), none of the contaminants of potential ecological concern were designated as contaminants of ecological concern. Based on the findings of Floyd Snider (2022), current environmental conditions are protective of human health and the environment, comply with applicable or relevant and appropriate requirements, and are protective of short- and long-term public health and the community.

Streambed Characteristics

Newhalem Creek has three distinct geomorphic reaches between the confluence with the Skagit River and the valley upstream from the diversion dam. Upstream from the diversion dam, the stream has a relatively consistent gradient (2–3 percent); there is a confining debris cone approximately 0.25 miles upstream from the diversion dam and another, larger debris cone approximately 0.5 miles upstream from the dam that limit channel movement across the valley and create steps in the overall stream profile (Figure 5). Downstream of the diversion dam, the stream flows through a steep bedrock canyon and has a high gradient (10–25 percent) with

[12] Creosote is a complex mixture of over 200 compounds, predominantly PAHs, as well as phenolic and aromatic nitrogen and sulfur compounds, obtained by fractional distillation of crude coal tar.

numerous waterfalls. Downstream from the canyon reach, Newhalem Creek encounters the Skagit River valley terraces and forms an alluvial fan with numerous relict channels; the stream has an average gradient of approximately 5 percent that decreases toward the Skagit River confluence.

The 2022 streambed profile (Figure 5) also indicates the approximate sediment accumulation in the impoundment for a distance of approximately 300 feet upstream of the dam. During project operations until 2019, the impoundment regularly filled with sediment, consisting mostly of bedload material (boulders, cobbles, gravel) with only small amounts of fines (sand, silt, clay) (Figure 6). City Light removed an average of 200–400 cubic yards of sediment annually from the impoundment and placed it in the channel downstream from the dam to keep the area near the intake clear of sediment. This volume provides a minimum estimate of the annual bedload transported in the stream.

6.3.1.2 Environmental Effects

Streambed Profile and Sediment Mobilization

Removal of the diversion dam (including the sluiceway and intake), gatehouse, and pedestrian bridge, under both the proposed action and the full dam removal alternative, would in the short-term mobilize the sediment in the impoundment and transport it downstream. Dam removal would also result in some headcutting (i.e., upstream erosion beyond the upper limit of the impoundment) because the stream would adjust to its natural grade and would mobilize additional sediment in the process. Ground disturbance associated with removal of the tailrace barrier and associated riprap, as well as the transformer and overhead transmission lines, would also result in the potential for sediment mobilization in the Skagit River in the tailrace.

In comments filed on May 31, 2022, the Upper Skagit Indian Tribe (USIT) states that mobilized sediment from dam removal could temporarily fill step pools downstream of the dam and increase short-term turbidity in the stream; the USIT suggests that City Light consider measures to limit elevated sediment transport from dam removal. In comments filed on June 2, 2022, the Park Service recommends construction of a grade control structure upstream from the dam to mitigate the extent of potential headcutting erosion and to protect fish habitat upstream and downstream of the dam. In additional comments filed on September 28, 2022, following a site visit on September 12, 2022, the Park Service remains concerned about headcutting but states that boulder and bedrock features in the stream may diminish effects associated with headcutting; the Park Service also requests further analysis. In comments filed on September 28, 2022, following the same site visit, American Whitewater also notes that it is likely that the large boulders in the stream would dissipate the extent of headcutting and, pending further information, American Whitewater supports natural regrading of the stream channel alignment following dam removal without a constructed grade control structure.

In its updated geomorphology report[13] provided by City Light, Dubé (2023) presents three bounding estimates of the amount of potential channel lowering upstream of the dam:

- Lower bounding estimate: This estimate assumes that the large boulders 320 feet upstream from the dam would provide grade control. The channel downstream from this location would lower to the green line in Figure 5, potentially mobilizing approximately 4,400 cubic yards of sediment stored in the impoundment.

- Middle bounding estimate: This estimate assumes that the creek bank around the large boulders at 320 feet upstream from the dam would erode, with smaller boulders in the new channel allowing some downcutting at this location. The stream profile would adjust over time; the projected stream profile (brown line in Figure 5) would be overall lower but otherwise similar to the existing profile. This scenario would mobilize approximately 9,000 cubic yards of sediment from dam removal.

- Upper bounding estimate: This estimate assumes that (1) the stream would erode around the boulders at 320 feet upstream from the dam, (2) the remaining boulders at this location would not form a grade control, and (3) the stream would continue to adjust upstream to the 5-foot angular boulders distributed across the stream 1,250 feet upstream from the diversion. In this scenario, the stream would adjust to a straight-line profile from the bedrock under the diversion dam to the boulders at 1,250 feet upstream (blue line in Figure 5). This scenario would mobilize approximately 12,900 cubic yards of sediment.

Figure 7 shows the lowering in channel bed elevations for the three bounding estimates. Channel bed lowering would be greatest just upstream from the removed dam (up to 10 feet, i.e., the height of the dam). Channel bed lowering would stop at the boulders 320 feet upstream from the dam for the lower bounding estimate. For the middle and upper bounding estimates, channel bed lowering would extend upstream, at varying depths.

Dubé (2023) considers the risk of far-reaching headcutting low because: (1) the diversion dam area is underlain by bedrock that would provide a stable, long-term base level; (2) as accumulated material is transported downstream during peak runoff events, large immobile boulders underlying the channel at several locations upstream from the diversion dam would provide natural grade controls; and (3) the large substrate in Newhalem Creek would continue to form an armor layer resistant to rapid erosion. Dubé (2023) expects that grade adjustment occur slowly over decades or longer, following the initial channel adjustment. Therefore, City Light

[13] The updated geomorphology report, filed on October 24, 2023, contains an updated report, comments of consulting parties, and City Light's response to those comments. This updated report supplements City Light's December 12, 2022 filing.

(2022d) prefers to forgo construction of a grade control structure to allow for a natural adjustment of the stream to the new base level.[14]

If a grade control structure was required to be installed as part of the license surrender, City Light suggests that potential locations include the boulder field at approximately 550 feet upstream of the dam (City Light, 2022c) and a location approximately 100 feet upstream from the dam (City Light, 2022d). City Light would divert the creek temporarily around the work site by constructing a bypass or diversion during periods of low flow commensurate with dam removal activities. City Light would then excavate a trench and stilling basin across the streambed, install a geotextile fabric, and place large angular boulders/rocks in the trench to form a boulder weir. City Light may use boulders from the landslide along the access road and transport them to the weir location. In case the potential grade control structure location lacks vehicle access, City Light would likely use helicopters to transport all equipment and materials to the work site; this could require tree removal to provide for a safe drop zone. Alternatively, City Light could construct an access road through the riparian zone, also requiring tree removal. Following completion of the weir, City Light would place streambed material over the boulders and remove the temporary bypass/diversion. If constructed, City Light recommends designing the structure to "naturally fail" over time, without the need for maintenance—to allow the stream to eventually return to its natural processes. City Light (2022d) estimates the costs for design, permitting, and construction of the grade control structure would be $1.1 million, with an additional $1.1 million for maintenance, if required.

The geomorphology of the stream and its watershed reflects a dynamic system. The impoundment is small, and the large boulders in the stream provide a degree of grade control. Thus, Commission staff finds that only minor short-term adverse effects would occur on the streambed profile upstream of the dam due to streambed mobilization. Moderate or significant adverse effects resulting from headcutting upstream of the dam are not expected. Staff finds that a grade control structure as recommended by the Park Service would disturb the natural system surrounding its potential location and would run counter to the overall project goal of returning the site to its natural condition. Multiple factors would affect sediment mobilization and potential channel bed lowering over time as follows:

- Rate of channel bed lowering: Dubé (2021, 2023) concludes that immediately following the diversion dam removal, the local stream gradient just upstream of the dam would increase the sediment transport frequency. Over time, the local gradient increase would become less until a new, long-term streambed profile is reached. Correspondingly, the amount of energy in the stream to move particles decreases over time, resulting in less frequent bedload movement and a slowing of this process.

- Grain size of sediment: While streambed adjustments can migrate upstream rapidly in fine-grained sediments with a large fraction transported in suspension, the large particle

[14] City Light (2022d) based its assessment on a draft of the Newhalem Decommissioning Geomorphology Considerations Report (an update of Dubé, 2021). It is noted the findings and conclusions in the draft report remained unchanged in the final version of the report (Dubé, 2023).

sizes of the sediment in the stream would result in predominantly bedload transport requiring high-energy flows. In addition, the coarse material would form an armor layer, lengthening the time of streambed adjustments. The large, immobile boulders at various locations in the stream would further limit channel incision and channel adjustment progression. An armor layer would mobilize the larger substrate less frequently, and adjustments to a new equilibrium channel gradient would be take time.

- Hydrology: City Light proposes to remove the diversion structure from July 16 through August 19,[15] during a period of typically low flows, based on flow rates recorded at USGS station 12178100 Newhalem Creek, located approximately 0.5 mile upstream of the diversion dam (Figure 8 and Figure 9; Table 2). Flow rates gradually increase in the early fall (September/October), followed by large short-term peak flow events in late fall and winter, and large baseflows together with large peak flow events in spring and early summer. As a result, sediment mobilization would likely occur over an extended period.

- Watershed: The steep terrain and instability of the watershed of the stream intermittently affect the gradient in the creek. This is reflected, for example, by the large boulders in the streambed that have led to steps in the stream's profile (Figure 5), the landslide west of the access road (Figure 4), and the debris cones in front of small tributaries to Newhalem Creek (Figure 3). While mass movement events are rare and unpredictable, large storm events (such as an "atmospheric river" precipitation event) not only lead to high sustained flow rates, but also to an increased risk of mass movement that could affect the streambed profile.

- Turbidity: The coarse substrate and the gradual release of the accumulated sediment in the impoundment during flows is not expected to increase turbidity over long periods of time, largely because of its coarse grain size. This is consistent with sediment monitoring observations during sediment removal from the impoundment during project operation; turbidity levels returned to background within a few hours of the removal (City Light, 2022c).

The small size of the impoundment, the large particle size of the substrate, and the hydrology of the stream suggest that sediment mobilization would spread over an extended period of time. Considering the coarse nature of the accumulated sediment, mobilized sediment would not fill pools downstream in the lower part of creek or in Skagit River with fine sediment that would reduce spawning habit. In addition, construction of a grade control structure would disturb the ground surrounding the work site. For these reasons, staff does not consider a potential grade control structure upstream of the dam beneficial.

Instead, staff suggests monitoring the lower reach of Newhalem Creek and its confluence with the Skagit River for any sediment accumulation that could create a temporary barrier for fish migrating to access habitat within the creek. USIT recommends this monitoring in

[15] In its draft biological assessment, filed as part of the surrender application, City Light requests the in-water work window for removal extend through September 1 for section 7 consultation, in light of potential construction delays.

comments filed on May 31, 2022. Developing a plan to conduct monitoring to detect any likely barriers to fish migration and implementing measures to restore fish passage if needed, would address this potential effect of dam decommissioning. Staff find that monitoring for three years post removal and then assessing whether additional surveys need to be continued based on monitoring results would be appropriate.

Effect of Rock Scaling and Road Decommissioning on Slope Stability

City Light proposes to repair the access road to allow for temporary vehicle access during the decommissioning of the diversion structure and headworks. This would include partial rock scaling[16] and clearing of debris from the 2019 landslide. Improvements to the access road would occur for both the proposed action and full removal alternative.

In comments filed on September 9, 2022, the Park Service recommends a photogrammetric survey of the landslide area and surroundings to define the extent of the unstable area, both before and after the decommissioning to assess the effects of the road decommissioning actions, including rock scaling, and any mitigations that may be employed. In response, City Light (2022g) indicates that mapping the slope and monitoring the effects of the slope post-decommissioning would not be appropriate for the reasons described below.

The access road is on land administered by the Park Service and is not within the project boundary. It continues well beyond the diversion dam and was a former logging road, constructed by the Forest Service around 1943. City Light intermittently provided maintenance for the road after 1969, including construction of retaining walls in the landslide area, installation of culverts, and road surface maintenance along the length of the road. City Light (2022g) states that the failing road conditions are caused by slope instability in an active landslide area and by original road construction methods.

Rock scaling as part of the proposed decommissioning project would only target loose rocks that could fall during construction; this effort would not worsen road or slope stability, nor would it create any additional factors that would affect slope stability. Rocks at this unstable location may fall in the near-term regardless of City Light's intervention, and scaling would not result in changes to the landscape or effects to Newhalem Creek that would not otherwise occur naturally. The slope is expected to continue to erode regardless of proposed decommissioning activities because of rain exposure on an over-steepened slope and surface water flowing along the head and lateral scarps. This effect may have increased after the 2015 Goodell Creek wildfire that burned most trees in the area. The unraveling slope already affected Newhalem Creek when the mass associated with the large, ancient landslide (of unknown age) filled the creek for approximately 2,000 linear feet, shifting the creek to the north as a result.

Although the road is not within the project boundary, City Light (2022g) proposes to decommission the roadway and notes that the proposed road decommissioning measures are commensurate with City Light's past and proposed level of use. City Light considers monitoring

[16] Rock scaling refers to the process of removing unstable or loose rocks using a variety of techniques. City Light proposes the use of small explosives for the purposes of rock scaling in the affected areas.

the performance of restoration plantings or weed treatments as part of decommissioning as appropriate. However, City Light does not consider mapping the slope and monitoring the effects of the slope post-decommissioning as an appropriate task because it was not responsible for the original construction of the road or the slope that is now failing from natural processes.

Staff finds that photogrammetric surveys are not beneficial if the road is decommissioned and the area is left to natural processes, as proposed. It is well-established that the area is unstable and will likely continue to experience landslides and other mass wasting processes in the future. The time scale of further landslides is unpredictable and affected by rainfall events, fire, earthquakes, and other highly variable natural factors.

Tunnel Leakage

Leakage into tunnels alters the natural flow path of water and can erode surface soil at its exit point from a tunnel if the water is not dispersed. In its application for surrender, City Light identifies leaks in the unlined rock power tunnel as one of the three significant issues that prevents the project from being operational. Under City Light's proposal, a grate would be placed at the lower end of the rock tunnel. This measure would prohibit human access but allow continued access to small wildlife to the lower portion of the tunnel. City Light would continue to allow groundwater infiltrated into the power tunnel to be conveyed through the penstock to the tailrace.

In its comments filed on filed on May 31, 2022, the USIT states that although the penstock currently drains the tunnel leakage in a way that prevents erosion, it prefers that the tunnel leaks be grouted so water can continue as fractured flow to where it would go otherwise. Alternatively, if the volume of flow is known, City Light could evaluate potential erosion at this location and, if necessary, design a less obtrusive, inexpensive solution.

City Light (2022a, [appendix C]) has estimated that the leaked power tunnel flow is approximately 3 to 5 gallons per minute in the summer. Although there may be more leakage during the wet season, more than half of the 2,450-foot-long unlined rock power tunnel is over 200 feet below the surface, suggesting that the amount of rainwater infiltrating into the tunnel is limited. Continuing to route the tunnel leakage through the penstock to the tailrace, under the proposed action, would prevent erosion and movement of the contaminants found in the penstock area.

Full removal of the project would result in removal of the penstock, so it would no longer be used as a conduit to route leakage into the tunnel downslope. City Light (2022d,e) acknowledges that there are other ways to convey or address the leakage into the power tunnel, including the USIT's suggestion, and commits to consider various options if the penstock is removed. These options would need to consider the potential for discharges from the tunnel to cause disturbance and route contaminants in the area down toward and possibly into the tailrace and develop appropriate mitigation. Appropriate mitigation would depend on the magnitude of the expected flow and may include dispersing the flow across the soil near the penstock or diverting it away from the potentially affected area in a channel or pipe.

Staff concludes that effects of tunnel leakage under the full dam removal alternative would likely necessitate additional avoidance measures to direct leakage away from the penstock area. Without it, Commission staff finds that this leakage would result in moderate, permanent adverse effects to geology and soils due to the increased potential for erosion. Staff finds that continuing to direct tunnel leakage through the penstock, under the proposed alternative, would provide the highest level of protection against erosion and potential risks from contaminants that are in the soil near the penstock.

Disturbance of Soil Containing Contaminants

Hydropower project facilities and maintenance procedures have the potential to disperse contaminants on nearby project soils and sediments. Under both the proposed action and the full removal alternative, removing project features could disturb and transport these accumulated contaminants and thereby pose an increased risk to the health of plants, wildlife and humans. The magnitude of negative effects would depend on several factors including, but not limited to, the contaminant volume, composition, and concentration; exposure pathway between contaminant source and receptors; exposure route (e.g., inhalation, ingestion, and dermal absorption); and the duration of exposure to the receptor (EPA, 1997; 2011).

In its application, City Light proposes the removal of aboveground buildings, structures, and equipment associated with the project, except for the powerhouse and penstock. In its comments filed on May 31, 2022, the USIT states that it prefers complete removal of the project. The USIT requests that City Light assess the potential for water quality contamination from disposal of concrete in the rock shaft and power tunnel to guide whether this concrete disposal method would be implemented. The USIT states that City Light should conduct a thorough assessment of hazardous materials and water quality concerns prior to removing the powerhouse. The USIT suggests that City Light consult with logging operators to identify ways to use heavy equipment on slopes to preserve slope stability without the need for extra roads (e.g., suspension systems and tethered options). It states that the impact from removal could be minimized by using a helicopter for extraction or spider extractor for direct access to the penstock.

In comments filed on June 2, 2022, the Park Service states that it fully supports the USIT's preference for complete removal of the project's infrastructure. The Park Service continues to request that City Light conduct a complete environmental site assessment within the existing footprint to determine whether any potential environmental liability exists as a result of City Light's operations. This request includes determining whether contamination from all CERCLA hazardous substances, including lead and asbestos, occurred and whether a threat of release of hazardous substances exists in the soils and any materials within the existing footprint of the project, including the power tunnel and powerhouse. The Park Service states that this site assessment may exclude soils underneath the penstock from consideration if those soils were considered as part of the CERCLA process for the Newhalem penstock and, if decommissioning activities would not alter the findings, conclusions, and/or recommendations reached in the Newhalem Penstock Engineering Evaluation and Cost Analysis (Floyd Snider, 2022).

City Light has clarified that it proposes to dispose of concrete within the power tunnel shaft, which has a concrete plug at its downstream end that would continue to prevent movement of material and runoff into it. In response to additional information requests, City Light (2022d) states that it has begun "a site evaluation that includes evaluating materials in the penstock tunnel

(adit) and other operational activity centers within the project footprint for potential toxicological effects." In its response to comments on its application, City Light (2022e) commits to this evaluation including the power tunnel, powerhouse, and dam/headworks. City Light would provide a copy of the evaluation to the Park Service. City Light also commits to not dispose of any concrete containing hazardous materials in the power tunnel shaft.

Since City Light's proposed partial removal of the project would retain the penstock in place, there would be no need to construct an access road to the penstock. Therefore, the proposed action would continue to support the current environmental conditions in the soil near the penstock. By retaining the penstock, soil disturbance along the penstock route would be minimal, and no negative effects would occur. Under City Light's proposal, it would continue its evaluation for potential toxicological effects of any hazardous materials within the penstock tunnel, power tunnel, powerhouse, and dam/headworks. If concrete at the dam/headworks was found to contain a hazardous level of contaminants, this concrete would be disposed of off-site instead of in the power tunnel shaft. Although removal of the transformer next to the powerhouse would eliminate risks associated with the oil and potentially polychlorinated biphenyls (PCBs) within it,[17] legacy hazardous materials originating from the transformer may be present in the pad it sits on and soil near it. Staff concludes that development of a spill plan, as proposed by City Light, would address any spills of hazardous materials and/or contaminants that pose a risk to human health and/or ecological receptors that could be exposed or released during deconstruction activities would adequately address these risks. We recommend that the development of the spill plan, as well as all other plans, be developed in consultation with relevant resource agencies and Tribes.

Full removal of the project would present more risks from hazardous substances to human health and ecological receptors than City Light's proposed partial removal of the project. In addition to the risks discussed above, removal of the penstock and powerhouse would disturb soils containing hazardous substances to be transmitted directly or indirectly to humans, plants, and animals in the area. Commission staff finds this disturbance of soils would result in moderate, temporary adverse effects. In the long-term, Commission staff expect a permanent beneficial effect from removing any soils containing hazardous materials during construction. For the full removal alternative, staff finds that development of the spill plan, as proposed, would address any needed mitigation measures associated with removal of the penstock, including construction of an access road to it and removal of the powerhouse.

[17] PCBs are toxic chemicals and persistent in the environment. PCBs were used widely in electrical transformers prior to banning of their manufacture in 1979. Many transformers still contain traces of PCB-contaminated oil even after the oil has been changed several times (University of Washington, 2018).

6.3.2 Aquatic Resources

6.3.2.1 Affected Environment

Newhalem Creek is a boulder-dominated stream with a moderate to high gradient. The average gradient from the confluence of the Skagit River to the project diversion dam at River Mile (RM) 1.0 is 10 percent but varies by reach.

Water Quantity

Discharge records from USGS Gage No. 12178100, located in Newhalem Creek about 0.5 miles upstream of the project diversion dam, provide insight into seasonal patterns and variability of inflow to project. High flows result from heavy precipitation during warm, early winter storms; rain-on-snow-events; spring snowmelt, and rainfall events (Figure 9). Flow is lowest during summer dry periods, particularly under seasonal drought conditions, and during mid-winter freezing events. Aside from these extremes, discharge is typically lowest during September and February. Daily mean flows from February 1, 1961, through September 30, 2021, range from 18 to 5,300 cfs. Baseflow during dry periods (90 percent exceedance) can be less than 60 cfs in August through March (Table 2). Based on flow data for Newhalem Creek and the Skagit River near their confluence, Newhalem Creek contributes an average of 2.2 to 7.6 percent of the total monthly flow in the Skagit River.

Water Quality

The U.S. Environmental Protection Agency (EPA)-approved water quality standards (WAC 173-201A) provide use designations and water quality criteria. The use designations for aquatic resources consist of char spawning/rearing[18] in Newhalem Creek and core summer habitat[19] in the upper Skagit River. Both Newhalem Creek and the upper Skagit River also have use designations for water supply for domestic water, industrial water, agricultural water, and stock water; wildlife habitat; fish harvesting; commerce and navigation; primary contact recreation, boating; and aesthetic values. Table 3 provides selected water quality criteria applicable to these reaches.

The water quality standards also require compliance with the sediment management standards. Washington DOE determines the criteria, methods, and procedures employed for freshwater sediments on a case-by-case basis.

The current license does not require water quality monitoring in Newhalem Creek and except for water temperature, relatively little water quality data has been collected in the upper Skagit River Basin. However, it is believed that water quality in this area is generally in good to

[18] The key identifying characteristics for char spawning/rearing are spawning or early juvenile rearing by native char (bull trout and Dolly Varden) or use by other aquatic species similarly dependent on such cold water.

[19] The key identifying characteristics for core summer habitat are summer (June 15–September 15) salmonid spawning or emergence, or adult holding; use as important summer rearing habitat by one or more salmonids; or foraging by adult and subadult native char.

excellent condition because it is managed primarily as national park, provincial forest, national forest system, wilderness area, and national recreation area lands. Some parts of national forest system and Skagit provincial forest lands were historically managed for timber harvest, but the level of harvest has declined considerably in recent years and currently occurs primarily in portions of the basin downstream of Gorge Dam, in British Columbia, and within the Cascade River and Sauk River Basins.

The current EPA-approved water quality assessment under Clean Water Act sections 303(d) and 305(b) (Washington DOE, 2022) lists:

- The 0.8-mile-long reach of Newhalem Creek upstream of the confluence with the East Fork Newhalem Creek as a water of concern for pH.

- The project's 1.0-mile-long bypassed reach as having inadequate instream flow.[20]

Table 4 summarizes available water temperature data for USGS gages in the Skagit River and Newhalem Creek in the four-year period of October 1, 2017–September 30, 2021. The range of daily mean temperature was 0.5 to 13.4 degrees Celsius (°C) in Newhalem Creek and 2.4 to 15.2°C in the Skagit River. City Light (2022c) states that based on measurements made in 2015, 2016, and 2018, its removal of sediment from the project's impoundment and placement downstream from the dam elevates turbidity for a few hours before returning to background levels.

Aquatic Habitat

The bypassed reach can be divided into two zones based on fish use: the anadromous fish zone that extends from the confluence to an upstream barrier (lower waterfall) and the resident zone that extends from the upstream barrier to the diversion dam. The anadromous fish zone extends from the confluence of Newhalem Creek with the Skagit River to a 14-foot-high waterfall located 0.65 miles upstream that forms a barrier to upstream migration of anadromous fish. Three habitat areas occur in the anadromous zone. The downstream section, starting at the confluence with the Skagit River and extending upstream to RM 0.27, is characterized by a 2.5 percent gradient and a broad channel with boulder and cobble substrates that form wide riffles and shallow pools. Gravel and cobble material transported from Newhalem Creek provides a source of spawning substrate to the Skagit River. The middle section, extending from RM 0.27 to RM 0.38, contains high banks and small to large boulders. Stream habitat consists of plunge and lateral scour pools interspersed by narrow cascades and runs. The upper section, extending from RM 0.38 to RM 0.65 (14-foot-high waterfall), steepens to a 7.7 percent gradient and becomes confined by steep canyon walls. Substrates are dominated by boulder blocks (greater than 6 to 7 feet in diameter), boulders, large cobbles, and occasional large bedrock outcroppings. Habitat is characterized by plunge pools interspersed by boulder cascades.

The anadromous zone in Newhalem Creek is occupied by rainbow trout, summer and winter steelhead, chum salmon, summer Chinook salmon, pink salmon (odd year), coho salmon,

[20] Category 4C, which is not on the 303(d) list because it cannot be addressed through a Total Maximum Daily Load plan.

resident coastal cutthroat trout, Dolly Varden, and bull trout. Surveys for the 1992 licensing effort documented steelhead adults, juveniles, and fry as well as rainbow trout juveniles and fry. Steelhead spawning was also observed in three of the four survey years, with the greatest numbers of adults occurring in the upper one-third of the reach. Steelhead and rainbow trout were by far the most abundant fish recorded in this reach (City Light, 2022a). This 3,400-foot reach provides spawning and rearing habitat for ESA-listed Puget Sound steelhead (winter) and bull trout (City Light, 2022c), and City Light reports that mountain whitefish and various sculpin species are present in the reach.

An assessment of habitat conditions provided in the 1992 license application notes that the highly dynamic habitat conditions in Newhalem Creek appear more suitable for steelhead trout and resident rainbow trout than for salmon. Rainbow trout and steelhead are better adapted to the heterogeneous hydraulic conditions and substrate cover provided by a boulder-dominated stream than the other salmonid species occurring in the upper Skagit River system. In addition to boulder cover, the surface turbulence associated with boulder-dominated runs and cascades can provide an important source of habitat cover for juvenile steelhead and rainbow trout. In addition, Newhalem Creek's abundance of "pocket water" habitat is highly preferred by rainbow trout and juvenile steelhead in moderate to high-gradient streams (City Light, 1992). Of the salmon species that potentially use Newhalem Creek, rearing conditions appear most suitable for Chinook salmon because they prefer riffle and run habitat types and cobble and boulder substrates.

The 0.35-mile-long resident fish zone extends from the 14-foot-high waterfall to the diversion dam located at RM 1.0. This section of Newhalem Creek is very steep, with a gradient of 10 to 25 percent, and has deep plunge pools interspersed by steep cascades and waterfalls. Newhalem Falls, a 167-foot waterfall, is located downstream of the diversion dam at RM 0.8. Upstream of the diversion dam, Newhalem Creek has a 2 to 3 percent gradient with a cobble/boulder/gravel bed. Rainbow trout occur in the small reach between the waterfalls, and rainbow and cutthroat trout occur in the 0.10-acre impoundment and reach upstream of the dam (City Light, 2022c).

Puget Sound Chinook salmon, Puget Sound steelhead, bull trout, and Dolly Varden are known to use the Skagit River in the area adjacent to the tailrace and at the confluence of the Skagit River and Newhalem Creek. Chinook salmon and steelhead may spawn or rear in the Skagit River downstream of the Newhalem Powerhouse tailrace. Aquatic habitat for spawning and rearing ESA-listed fish in the Skagit River mainstem in this area is generally properly functioning (City Light, 2022c).

ESA-listed Puget Sound Chinook salmon, Puget Sound steelhead, bull trout, and ESA-proposed Dolly Varden are discussed in section 6.3.4*, Threatened and Endangered Resources*.

6.3.2.2 Environmental Effects

City Light's proposed action, as well as the full removal alternative, would have long-term beneficial effects on aquatic resources as either alternative would restore natural flow conditions in the bypassed reach of Newhalem Creek. However, we find that during removal, construction activities would temporarily adversely affect fish and aquatic habitat in Newhalem Creek (e.g., ground and in-stream disturbance, temporary increases in turbidity, loss of habitat,

degradation of water quality, etc.). In addition, dam removal would affect stream geomorphology both above and below the dam and increase sediment transport and turbidity downstream (as described in section 6.3.1 above).

City Light proposes the following measures to minimize potential effects on fish and aquatic habitat, including water quality, in Newhalem Creek:

- Limit disturbance of riparian vegetation to the minimum amount necessary to achieve construction objectives to minimize habitat alteration and limit the effects of erosion and sedimentation.

- Minimize vegetation clearing along riparian areas. Coordinate with the Park Service to develop any additional BMPs to minimize sedimentation.

- Ensure compliance with any conditions included in the section 401 water quality certification and section 404 permit for in-water work.

- Adhere to BMPs prescribed in Washington DOE's most current *Stormwater Management Manual for Western Washington.*

- Develop a spill plan that would include measures to reduce the potential for and minimize the adverse effects of any spills of oil and other hazardous materials that may occur during project deconstruction activities.

City Light (2022c) also proposes the following in-water measures to minimize potential effects on fish and aquatic habitat, including water quality:

- Implement cofferdam dewatering systems prior to any dam demolition. Excavators may be operated instream to set cofferdams or create a streambed gravel berm for in-water work isolation. If this occurs, excavators would operate on portions of the streambed that are naturally dewatered during the summer in-water work period or would use materials placed on the substrate (e.g., timber cribbing) so the excavator tracks are elevated above the water level.

- Construct cofferdams from an approved combination of streambed materials, including supersacks filled with native material that are placed within the channel by an excavator or other suitable lifting equipment.

- No equipment would be operated in the active flow of the river during any in-water activity except for equipment used to set and reposition the supersack cofferdam.

- Implement provisions to limit seepage into the isolation area. However, because in-water work would be limited to infrastructure removal (e.g., concrete, rebar) and no new concrete would be poured, some seepage is acceptable. Measures to limit seepage into the work area could include the use of plastic sheeting aprons upstream of cofferdams, pumped flow from sumps, and isolation of clean versus sediment-laden water in the construction areas.

- Remove and reposition cofferdams cleanly and incrementally to reduce sedimentation pulses downstream.

- Rescue and relocate resident fish from the in-water work isolation area in compliance with Washington DFW requirements.

- Develop BMPs to minimize the impact of pH from concrete removal, as necessary.

- Following completion of deconstruction activities at the diversion dam and headworks, grade and restore the sites previously occupied by them.

Under both the proposed and full removal alternatives, removal of the diversion dam and headworks would create ground- and instream-disturbing activities that would cause temporary localized erosion and associated water quality and habitat degradation both within and downstream from the impoundment. Short-term increases in turbidity would occur during the process of filling and placing supersacks to create the cofferdam. However, given the predominately gravel/cobble substrate, turbidity plumes resulting from cofferdam installation are anticipated to be minor, and the small resulting sediment plume is expected to settle out of the water column within 300 feet of the work site (City Light, 2022c).

Staff finds the greatest effect on turbidity would coincide with removal of the cofferdam, release of supersack contents, and return of flow through the currently impounded channel. However, the magnitude and duration of elevated turbidity would be limited by City Light's proposed grading of the immediate dam removal area and location where the supersacks would be emptied along with incremental removal of the supersacks. At this point, however, the creek would start to erode the remaining sediment that has accumulated in the impoundment and the immediate upstream channel. Given that most of the sediment deposits behind the diversion and upstream are coarse-grained, the increase in turbidity in the creek downstream would likely be short-term and transient (Dubé, 2021, 2023). Construction activities would likely cause short-term, minor increases in erosion, turbidity, and sedimentation, but Commission staff finds these effects would be minimized by the implementation of City Light's proposed BMPs. In addition, adverse effects on water quality and aquatic resources that may result from accidental hazardous substance spills would be minimized through development of the proposed spill plan, as proposed by City Light.

Construction activities would occur after the spring spawning period for resident rainbow and cutthroat trout. Relocating resident fish away from construction activities and machinery would reduce the threat of direct mortality, exposure to increased turbidity, and potential for stranding. Adverse effects due to increased turbidity on resident fish in Newhalem Creek downstream from the dam would be minimal. There would be a permanent loss of habitat for benthic macroinvertebrates and any mussels that may reside in the coarse-grained sediment within the impoundment. Because the impoundment is only 0.1 acre, this loss would be minor and benthic macroinvertebrates and mussels would likely recolonize this area.

Under the proposed action, construction activities with implementation of City Light's proposed measures and BMPs would likely cause short-term, minor increases in erosion and sedimentation. City Light's proposed measures would help minimize adverse effects on aquatic

biota and habitat, including water quality, in Newhalem Creek. In addition, adverse effects on water quality and aquatic resources that may result from accidental hazardous substance spills would be minimized through development of a formal spill plan.

Under the full removal alternative, effects on aquatic resources (fishes, benthic macroinvertebrates, and mussels) and habitat would be similar to those described under the proposed action, with the additional effect of any release of contaminants or sediment associated with removal of the penstock and powerhouse. In its comments filed on June 2 and September 28, 2022, the Park Service expresses concern over the risk of head cutting erosion associated with the removal of the diversion dam and recommends installation of a grade control structure upstream of the dam. In comments filed on May 31, 2022, Washington DFW comments that it supports a grade control structure if it allows full upstream and downstream fish passage. Washington DFW adds that full passage would probably require ongoing maintenance and recommends a maintenance plan to accompany its construction.

Installation of a grade control structure upstream of the diversion dam, if required, would likely occur in an existing boulder field. Upland disturbance would be required to access the site, thereby increasing the risk of erosion and sedimentation in Newhalem Creek. The creek would be temporarily diverted around the work site by constructing a bypass or diversion commensurate with dam removal activities during periods of low flow. Effects on aquatic biota and habitat due to construction would be similar to those discussed above for dam removal. If a grade control structure were installed, then development of a maintenance plan along with the design of the structure, in consultation with the Park Service and Washington DFW, would help guide design and maintenance efforts, thereby reducing the potential for adverse effects on fish passage. See section 6.3.1.2, *Geology and Soils, Environmental Effects, Streambed Profile and Sediment Mobilization*, for further discussion.

In its comments, USIT expressed concern over the potential release of sediment into the step pools and aquatic habitat downstream of the dam after its removal and recommends several years of monitoring to assess changes in channel morphology within the unconfined reach upstream of the dam and major pools downstream. City Light notes that it has removed approximately 200–400 cubic yards of sediment from behind the dam almost annually since 1997 and has placed the material just below the diversion dam. The step pools, which are in an extremely high-gradient reach of the stream, have not been observed to fill with sediment as a result of this placement.

Commission staff finds that any deposition in pools below the dam site would likely be scoured and transported downstream during high precipitation events. However, there is some potential that coarse sediment transported to the lower reaches of Newhalem Creek could form a temporary barrier to anadromous fish migration into or within the lower section of Newhalem Creek that is used by anadromous fish and bull trout. Commission staff recommends the development of a plan to conduct surveys for three years following dam removal to detect potential barriers to fish migration downstream of the dam, and implement measures to restore fish passage if needed, would address this potential project effect.

In its comments, USIT states that Article 409 requires City Light to maintain County Line Pond No. 3,[21] and states that City Light should describe whether the maintenance requirement would be transferred to the Skagit River Hydroelectric Project license or remain an ongoing responsibility of the Newhalem Project.

In response, City Light states that it continues to occasionally conduct road and culvert maintenance as needed for County Line Pond No. 3, although Washington DFW has not used this facility in recent years. City Light proposes to discontinue maintenance for County Line Pond No. 3, once the Newhalem Project license is surrendered. City Light notes that if ongoing maintenance is needed, the matter can be raised during the concurrent proceedings to relicense the Skagit River Hydroelectric Project. Given that Washington DFW no longer uses County Line Pond No. 3 for fish production, Commission staff finds that continued maintenance is not warranted.

6.3.3 Terrestrial Resources

6.3.3.1 Affected Environment

Vegetation

The project is in the western hemlock vegetation zone. Following the 2015 Goodell Creek wildfire, much of the project area supports young regenerative conifer stands of Douglas fir and red alder, with smaller amounts of western hemlock and western red cedar. The entire road corridor also burned and is similarly dominated by young conifer stands. The only areas spared from the fire were the forest stands near the powerhouse and tailrace, and areas along the lower 1,500 feet of the stream corridor. These areas are characterized primarily by closed canopy conifer or mixed conifer/deciduous forest stands, with a few large Douglas fir and western red cedar trees. The understory consists of a variety of shrubs, ferns, other herbaceous perennials, and mosses; common species include sword fern, salal, red huckleberry, and vine maple.

City Light maintains vegetation in the penstock corridor in an early successional stage to allow for inspections and access for repairs. The corridor supports a dense cover of low shrubs and ferns. The transmission line corridor between the Newhalem Powerhouse and the Skagit River is approximately 300 feet long by 50 feet wide and is dominated mainly by deciduous shrubs and sapling cedars and hemlocks. City Light regularly prunes trees in the corridor to protect the powerlines.

[21] County Line Pond No. 3 is a shallow 0.5-acre pond, which is part of a complex of 11 ponds created when gravel was excavated for use in constructing the Skagit River Project. The ponds are located near the Skagit River about 3 miles downriver from its confluence with Newhalem Creek. During relicensing of the Newhalem Project, City Light proposed to continue to operate and maintain County Line Pond No. 3, as an acclimation pond for steelhead smolts, to mitigate for the loss of any resident fish entrained at the project's intake.

Invasive Plants

Invasive plant species include those species that are on one or more of the following lists: (1) Washington state-designated noxious weeds; (2) Whatcom County-designated noxious weeds; and (3) Park Service -designated first-priority species, which are trees, shrubs, and herbaceous plants that have escaped cultivated landscapes into the surrounding RLNRA lands.

Surveys conducted by the Park Service and City Light after the Goodell Creek wildfire documented 43 invasive species in and near the town of Newhalem and/or along State Route 20. No invasive species surveys have been conducted in the project area or along the access road to the diversion dam. However, incidental observations in the undisturbed portions of the project area, especially near the dam and powerhouse and along the tailrace, suggest that invasive species infestations are relatively few. More disturbed areas, particularly the access road to the diversion dam, are expected to have greater occurrences of invasive species. Some of the more pervasive species that occur in the project area include oxeye daisy, foxglove, common tansy, common mullein, and blackberry.

Rare Plants

Rare plants include species that fall into one or more of the following categories: (1) federal species of concern; (2) state-listed as threatened or endangered; or (3) state designated as sensitive or vulnerable. Species federally listed as threatened or endangered, or species that are candidates for federal listing are discussed in section 6.3.4, *Threatened and Endangered Species.*

Rare plant surveys conducted in 1991 documented small northern bog orchid (*Platanthera obtusara*), a Washington state-listed sensitive species, at two locations along the road to the diversion dam, in second-growth conifer forest at elevation 850 to 900 feet. Another Washington state-sensitive species—bog clubmoss (*Lycopodium inundatum*)—was tentatively identified near the access road to the dam during a site visit in 1989, but not confirmed nor found again. There have been no recent surveys for rare plant species in or near the project area, and the recent wildfire has significantly changed habitat conditions.

Wildlife

Until recently, slopes adjacent to the lower 1 mile of Newhalem Creek supported sizable stands of mature and second-growth conifers, including Douglas fir, western red cedar, and western hemlock. However, the 2015 Goodell Creek wildfire burned through this area, leaving only patches of forest. The burned acreage is now in the early stages of forest regeneration, with seedling conifers and a low shrub/forb layer. The area around the powerhouse, which is approximately 0.25 miles from the creek itself, was mostly untouched by the fire and still supports a canopy of second-growth conifer forest.

No wildlife surveys have been conducted in the area surrounding the project in recent years, and the 2015 wildfire substantially altered the habitats along the lower portion of Newhalem Creek since the last relicensing. Early successional areas of shrubs and forbs provide habitat for a variety of birds and small mammals; wide-ranging mammals such as black bear, coyote, and cougar occasionally occur in the project area. These areas are also likely used as forage habitat for big game, particularly black-tailed deer, which are relatively common in the

project area. The numerous snags are probably used by cavity-nesting birds and foraging woodpeckers. The unburned areas support wildlife typical of lower elevation conifer forests in western Washington. The larger trees along the lower end of Newhalem Creek likely provide perch sites for bald eagles, which are common in the area during winter.

Special Status Wildlife

Special status wildlife species include those species identified as threatened, endangered, or candidate species by Washington DFW and bird species under Fish and Wildlife Service (FWS) protection based on the Migratory Bird Treaty Act and Band and Golden Eagle Protection Act. Species federally listed as threatened or endangered, or species that are candidates for federal listing are discussed in section 6.3.4, *Threatened and Endangered Species.*

Table 5**Error! Reference source not found.** provides a list of these species, preferred habitat type, and information about their occurrence in the project area.

FWS identifies species of migratory nongame birds that are likely to become candidates for listing under the ESA; these species are classified as Birds of Conservation Concern (FWS, 2021) in addition to being protected under the Migratory Bird Treaty Act. A FWS Information for Planning and Consultation (IPaC) trust resources report identified the following Birds of Conservation Concern as potentially occurring in the project area (City Light, 2022d): bald eagle, black swift, Cassin's finch, evening grosbeak, Lewis's woodpecker, olive-sided flycatcher, rufous hummingbird, and western grebe. FWS lists the bald eagle as potentially occurring in the project area with moderate to high probability of occurrence from late December through mid-June and low probability of occurrence from July through October. Breeding periods for other migratory species are generally early May through late August. Probabilities of occurrence for black swift, evening grossbeak, olive-sided flycatcher, and rufous hummingbird are moderate to high during the breeding season; Cassin's finch, Lewis's woodpecker, and western grebe have low probabilities of occurrence.

6.3.3.2 Environmental Effects

Effects on Vegetation

Project decommissioning under the proposed alternative would result in short-term loss of vegetation in areas used for staging equipment and areas disturbed during removal activities. Some trees may need to be removed near the diversion dam and/or tailrace barrier for access to the work area. Road improvements may also result in the temporary loss of some vegetation. Decommissioning of the upper portion of the access road, including the removal of culverts and road scarification would also result in temporary vegetation disturbance. Vegetation disturbance can create conditions suitable to the introduction of invasive species, which can alter the existing vegetation community and local wildlife food webs. Construction vehicles can also transport invasive species propogules[22] to the project area and facilitate the introduction of new species.

[22] The term propagules refers to any plant material capable of regenerating a mature plant, depending on the plant species, this can include pieces of roots and stems, or seeds.

Following removal activities, disturbed areas are expected to be restored through revegetation efforts, as described below.

To minimize potential effects associated with vegetation removal, City Light proposes to limit tree removal to the greatest extent feasible and develop a restoration plan, in collaboration with the Park Service, for any areas temporarily disturbed by deconstruction activities. The plan would identify areas for regrading and replanting with native species and sites that can be left for natural recovery. Specific measures City Light proposes to include in the restoration plan are:

- Identify areas for regrading and replanting with native species and areas suitable for natural recovery.
- Revegetate temporarily disturbed areas adjoining the creek and tailrace barrier with appropriate plant species, and replace any mature trees removed at a ratio determined by City Light and the Park Service.
- Coordinate with the Park Service to tailor a mix of appropriate native plant species for each restoration area.
- Recontour the southern bank of the Newhalem Creek channel disturbed by construction and annual gravel passage activities to match adjacent shoreline conditions.
- Identify areas in the tailrace and fish barrier weir vicinity to receive post-construction contouring, replanting, and regeneration.
- Ensure all sources of plant material come from the project vicinity within the Skagit River Basin.
- Create an agreement with the Park Service to propagate needed plants via the existing plant propagation Memorandum of Agreement between the Park Service and City Light.

Additionally, City Light proposes to develop an invasive plant management plan that identifies BMPs to reduce the establishment of invasive plant species during construction. Proposed BMPs include:

- Inspect construction equipment.
- Wash and treat equipment prior to arrival at the construction site to remove seeds, plants, and plant fragments. Use a high-pressure washing system to remove all seeds, plants, plant fragments, dirt, and debris from construction equipment; take care to wash the sides, tops, and undercarriages of equipment before accessing in-stream work areas to remove vegetation and dirt clods that may contain noxious weed seeds.
- Survey the construction area for invasive botanical species prior to and after construction.
- Control weeds prior to construction start.

- Implement other measures and practices, as appropriate, to reduce the establishment of invasive plant species during construction.

- Treat invasive species populations that establish within areas disturbed during project decommissioning activities and five years of annual monitoring and maintenance.

To address effects associated with removal of the upper 0.75 miles of the access road, City Light proposes to develop a road decommissioning plan based on Forest Service and/or Washington Department of Natural Resources guidelines and in collaboration with the Park Service. This plan would include removing the approximately eight existing culverts and restoring natural drainages, scarifying the road surface, natural regeneration and/or replanting, and controlling invasive species for five years as needed.

In comments filed on the decommissioning plan filed with the surrender application, the Park Service, the USIT, Sauk-Suiattle Indian Tribe, and Washington DFW recommend the decommissioning plan include the full removal of all aboveground project facilities.

In its comments on City Light's surrender application, the Park Service states City Light's plan lacks the details necessary to implement, determine BMPs, or evaluate the effects of removing the road and culvert, restoring natural drainage patterns, preventing long- and short-term erosion associated with deconstruction activities and abandonment of infrastructure, preventing the spread and establishment of invasive weeds, and restoring native plant communities. The Park Service requests all these activities, including monitoring plans for each, be developed in consultation with the Park Service and included in the decommissioning plan. The Park Service also requests these plans be fully developed for inclusion in the NEPA analysis. In its comments on scoping document 1 (SD1), the Park Service requests the Commission consider the effects of leaving the penstock and maintaining the clearing around this structure would have on the spread of invasive plants, forest humidity, and the increased potential for wildfire ignition and spread.

The USIT comments that tree removal should be minimized to the greatest extent possible and requests to be included in the development of restoration plans. The USIT requests the restoration plan include details for how tree removal would occur and how removed tress would be disposed; the USIT recommends that root-wads be left intact and removed trees remain on-site and positioned as through natural windfall. The USIT also notes that following the Goodell Creek wildfire, the remaining trees are of important ecological significance for bank stabilization, food web input for aquatic and terrestrial wildlife, and forest regeneration.

Decommissioning the project, as City Light proposes, would result in temporary disturbance to approximately 1 to 2 acres of existing vegetation and may require removal of some trees. Development of a restoration plan, invasive plant management plan, and a road decommissioning plan, in consultation with project stakeholders, as City Light proposes, would ensure appropriate BMPs are identified to minimize the removal of trees, control invasive species, and restore native vegetation to temporarily disturbed areas. In general, City Light proposes to monitor invasive species populations for five years after project decommissioning. Staff notes that the Commission's jurisdiction over the project would end once the surrender becomes effective (after all conditions of any surrender order are met) and it is not the

Commission's general practice to retain jurisdiction over projects for a long period of time after a surrender order is issued. Thus, staff recommends that City Light's proposal to monitor invasive species for five years be reduced to three years to allow for adequate monitoring prior to the Commission's jurisdiction ending.

Removal of the project facilities as proposed would restore about 2.78 acres of terrestrial habitat. If tree removal is necessary, leaving trees on-site, in a manner as the USIT suggests, would be consistent with natural process of windfall trees. The decomposing trees would provide nutrients to the soil, support terrestrial food webs, and provide nurse logs[23] for the establishment of new tree seedlings. These decomposing logs would provide habitat for, insects, snails, amphibians, and small mammals.

Under current operations, City Light clears woody vegetation along the penstock to provide access and prevent damage. Under the proposed action, frequent vegetation clearing would be discontinued, but some vegetation management would occur every 10 to 20 years to facilitate painting and repair, if needed. Following decommissioning, the penstock corridor is likely to return to forested vegetation, and the canopy gap above the penstock would close. Because the proposed surrender would leave the penstock in place, no ground disturbance would occur in this area, and there would be little if any effect on the introduction of invasive species. As vegetation fills in, ambient humidity in the corridor would rise with increased vegetative respiration and decreased sunlight. No effects on wildfire ignitions or wildfire spread are anticipated.

City Light estimates that removing the powerhouse and penstock, as the Park Service, the USIT, Sauk-Suiattle Indian Tribe, and Washington DFW recommend, would result in an additional 1 acre of temporary vegetation disturbance and increase the long-term restoration of terrestrial habitat from 2.78 acres to 2.94 acres. Commission staff finds this additional temporary disturbance would be mitigated by revegetating the area of disturbance.

Effects on Wildlife

Decommissioning activities would result in temporary increases in noise and human presence and could deter wildlife use of surrounding habitats. Use of heavy machinery could cause injury or mortality of small animals, resulting from vehicular collisions or crushing during vegetation removal. Removal of trees could disturb nesting birds and result in reduced reproductive success for nesting periods during the deconstruction period. Retaining power supply to the powerhouse using the existing distribution lines would continue to present a collision risk for birds.

To minimize potential short-term adverse effects on wildlife, City Light proposes to conduct decommissioning activities that create the most noise, such as micro-blasting and jackhammering, outside the spring to early summer breeding season for wildlife. City Light proposes to leave the lower end of the penstock tunnel open, but gated to allow access to small wildlife, including bats, but not allow unauthorized human entrance. To minimize potential risk

[23] Nurse logs is a term used for fallen logs, particularly in northwest temperate forests that provide suitable germination conditions for germination and growth of tree seedings.

of bird collisions, City Light proposes to install bird deterrents on the remaining power lines to improve visibility. As discussed above, City Light also proposes to minimize tree clearing to the greatest extent practical.

Washington DFW recommends removing the distribution lines that cross the Skagit River to the Newhalem Powerhouse to eliminate potential for bird collisions. As an alternative to removal, Washington DFW recommends that City Light either use directional boring to place the lines under the river or reroute the lines to cross the river at an existing bridge. Washington DFW recommends City Light evaluate whether the power tunnel would provide habitat for bats. In its reply comments, City Light states birds using the river as a migratory flyway would be flying at elevations above tree height and above the existing power lines. City Light acknowledges that the lines may pose some risk to geese and blue heron, but that these birds are not common in the area. Regarding potential for bats to use the power tunnel, City Light notes that the power tunnel has been closed at both ends since operation began and does not provide habitat for bats. However, the 218-foot tunnel connecting the penstock to the power tunnel is accessible and would remain accessible to bats under City Light's proposal.

Distribution lines can present a high collision hazard for birds, but the specific hazards are highly variable from one line to another and depend on a multiple factors, including landscape context, bird behavior patterns, and species of birds that frequent that area. Lines located near high concentrations of birds, in frequent flight paths between nests and foraging areas, across rivers, or along mountain ridges create higher risk of collisions. Birds can be at higher risk during times of flocking, breeding displays, or flushes from disturbance. Species at greatest risk tend to be large birds or birds with a large body size to wingspan ratio because these species are less maneuverable (APLIC, 2012). The distribution line crossing the Skagit River to the powerhouse poses a greater risk than some distribution lines because it is located in a riparian corridor and oriented perpendicular to the river. However, the line is below tree level, and the river is banked by steep hillsides, reducing risk to many migratory species that would likely fly at altitudes above the line. Based on the bird species likely to occur in the area (Park Service, 2000), species at greatest risk are likely to be those spending extended time in the vicinity of the line, including merganzers, harlequin ducks, blue heron, and Canada geese. Installation of line markers that improve the visibility of the powerlines, as City Light proposes, would reduce the risk of collisions, but some collisions, at low frequency are still likely to occur. Removal or rerouting of the line, as Washington DFW recommends, would eliminate the potential for collisions. We find City Light's proposal adequate to minimize the potential for collisions.

Removal of large trees would increase the risk for injury, mortality, or reduced reproductive success for any birds nesting in the tree at the time of removal. City Light proposes to limit tree removal to small trees (<8-inch diameter) or dead trees killed in the Goodell Creek wildfire. Such trees are unlikely to provide nesting sites for birds, including bald eagles, and Commission staff finds their removal would have minor adverse effects on nesting birds. We find that protecting larger trees, as City Light proposes, is acceptable to minimize this potential minor adverse effect to nesting birds.

Retaining access to the power tunnel for bats or other small wildlife would require City Light to transport the 50 cubic yards of debris that it proposes to use to seal the upper end of the tunnel off-site, which would require an additional 16 haul trips and add a day to the debris

removal process. Using a steel grate to seal the upper end of the tunnel would deter unauthorized human access to the tunnel and allow access for bats; however, it is unknown whether the ambient temperature and humidity in the tunnel would be favorable for roosting bats. Maintaining access to the 218-foot-long tunnel, as proposed, would continue to provide habitat for bats and is likely to provide sufficient roosting habitat for bats occurring in the project area.

In summary, Commission staff finds City Light's proposed measures adequate to minimize the temporary, minor adverse effects on wildlife under both the proposed action and full removal alternatives. We find that removal or rerouting the electrical service lines to eliminate the potential for bird collisions, as recommended by Washington DFW, is unnecessary given the proposed mitigation. Following removal activities, Commission staff finds that wildlife species would return to the area, with no long-term adverse effects and no overall increased risk from collisions over baseline conditions.

6.3.4 Threatened and Endangered Resources

6.3.4.1 Affected Environment

Puget Sound Steelhead

Listing Status and Distribution. Puget Sound steelhead (*Oncorhynchus mykiss*) were listed as threatened on May 11, 2007.[24] The Puget Sound Distinct Population Segment (DPS) includes more than 50 stocks of naturally spawned anadromous steelhead populations originating below natural and human-made impassable barriers of rivers that flow to Puget Sound. This includes all rivers east of the Elwha River, including rivers in Hood Canal, South Sound, North Sound, and the Strait of Georgia. Steelhead from six hatchery programs are also included in the DPS but are not applicable to the Skagit River watershed. Resident *O. mykiss* (rainbow trout) are not part of this DPS (City Light, 2022c).

Puget Sound steelhead have two distinct forms: inland and coastal. Skagit River steelhead belong to the coastal form found west of the Cascade Mountains. Washington DFW identifies three winter stocks (Skagit Mainstem, Sauk, and Cascade) and three summer stocks (Finney Creek, Sauk, and Cascade) in the Skagit River. Most Puget Sound steelhead populations, including those in the Skagit River, experienced severe declines in the early 2000s. The DPS continues to be at very low viability, and remains at moderate risk of extinction (City Light, 2022c).

Life History of Skagit River Steelhead. Winter steelhead enter the Skagit River in November and spawn from March through June, with peak spawning in May (

Table 6). Incubation of steelhead eggs occurs during spring and early summer when flows are primarily from annual winter snowpack melt. Fry emergence peaks in early August. Most winter steelhead undergo smoltification and outmigration at age two, and approximately 18 percent out-migrate at age three. Outmigration occurs primarily from late April through early

[24] 72 Fed. Reg. 26722.

June with peak densities occurring in late April and early May. Approximately 57 percent of Skagit River winter steelhead return to spawn after just one winter in the ocean, while approximately 42 percent do so after two winters. Although most Skagit River winter steelhead die after spawning, as many as 14 percent may return to the ocean and spawn again (City Light, 2022c).

Steelhead use a variety of habitat types, but generally use higher velocity water than other salmon. This allows them to migrate farther into higher gradient headwater streams than Chinook, coho, pink, or chum salmon. Juvenile steelhead tend to move away from stream edges and toward faster moving water as they grow. They may also move to larger streams if crowding occurs in headwaters. During winter, many steelhead juveniles move back into smaller tributaries to avoid high flows and use structures such as boulders, large woody material jams, root-wads, and undercut banks as cover. There is little information on Skagit River steelhead egg-to-fry or fry-to-smolt survival rates in the Skagit River. Peak river flows and fine sediment are important factors that may adversely affect these life stages (City Light, 2022c).

Occurrence. The Skagit River mainstem and lower reaches of Newhalem Creek below the lower waterfall at RM 0.65 provide spawning and rearing habitat for winter steelhead. Summer steelhead presence is documented in the Skagit River at the confluence of Newhalem Creek, and the 1992 license application states that steelhead and rainbow trout were the most abundant species recorded in surveys of Newhalem Creek below the barriers.

Table 6 indicates Puget Sound steelhead may spawn in the project area from March through June, and eggs are likely to be present from March through early August. Rearing juveniles could be present year-round.

Critical Habitat. NMFS designated critical habitat for Puget Sound steelhead on March 25, 2016.[25] Critical habitat is designated within the lower Skagit River from Puget Sound to Newhalem. The lower 0.6 miles of Newhalem Creek is also designated as critical habitat due to known spawning (City Light, 2022c).

Puget Sound Chinook Salmon

Listing Status and Distribution. Chinook salmon (*Oncorhynchus tshawytscha*) in the Puget Sound Evolutionary Significant Unit (ESU) were listed as threatened on May 24, 1999.[26] The status was reaffirmed following a status review in June 2005.[27] The ESU includes all naturally spawned populations of Chinook salmon from streams and rivers flowing into Puget

[25] 81 Fed. Reg. 9251.

[26] 64 Fed. Reg. 14308.

[27] 70 Fed. Reg. 37160.

Sound, the Straits of Juan de Fuca from the Elwha River eastward, and 26 hatchery programs (City Light, 2022c).

Life History of Skagit River Chinook Salmon. Chinook salmon juvenile life-history patterns are typically grouped into "ocean-type" and "stream-type." Ocean-type juveniles out-migrate to marine waters as sub-yearlings, while stream-type juveniles rear in freshwater for at least a year. In the Skagit River, ocean-type juvenile life-history forms have been further refined into four life-history strategies: fry migrants, delta-rearing migrants, parr migrants, and yearlings. Fry migrants are juveniles that out-migrate shortly after emergence and spend relatively little time in the Skagit River mainstem and delta, but some may spend a significant amount of time in a limited number of pocket estuaries situated along Skagit Bay. Delta-rearing migrants emerge at the same time as fry migrants and move rapidly to the delta region but then spend several weeks to months rearing in the Skagit River delta before moving into Skagit Bay at an average size of 74 millimeters. Parr migrants (also referred to as "fingerling" or "riverine" life-history forms) rear in freshwater for several months, then move through the delta relatively quickly and enter Skagit Bay at about the same size as delta-rearing migrants. Yearlings rear in freshwater for over one year and out-migrate from late March through May at an average size of 120 millimeters (City Light, 2022c).

Wild Chinook salmon fry enter Skagit Bay in February and March at an average size of 39 millimeters. Farther upstream, trapping at RM 17 (the Burlington Northern Railroad crossing in Mount Vernon) during 2007 indicated that some fry may begin out-migrating in mid-January, and peak fry migration is usually in mid-March. Median migration dates between 1997 and 2006, when 50 percent of fry have passed the trap, averaged March 27 and have ranged from March 10 (1999) to May 2 (1998) (City Light, 2022c).

Occurrence. The Skagit River mainstem provides spawning and rearing habitat for summer Chinook salmon from the Puget Sound ESU. Summer Chinook salmon presence has been documented in the lower reaches of Newhalem Creek. Washington DFW has not documented spawning or rearing in Newhalem Creek; however, the lower reaches of the creek are accessible from the Skagit River and could be used for spawning or occupied by rearing juveniles, particularly during high-flow periods when Newhalem Creek could provide high-velocity refuge from the Skagit River mainstem.

Table 6 indicates pre-spawn adults may be present as early as June within the project area. Spawning begins in late August and extends through mid-October. Juveniles are likely to emerge from spawning gravels from December through February and rear in the Skagit River mainstem year-round (City Light, 2022c).

A limited number of Chinook salmon adults were seen during surveys in 1982 and 1983 with two possible redds noted. Study results for the 1992 license application noted that among salmon species that potentially use Newhalem Creek, rearing conditions appear most suitable for Chinook salmon because they prefer riffle and run habitat types and cobble and boulder substrates (City Light, 2022c).

Critical Habitat. NMFS designated critical habitat for the Puget Sound Chinook Salmon ESU on September 2, 2005.[28] The entire Skagit River mainstem up to Gorge Dam is designated as critical habitat, as well as portions of tributaries draining to the Skagit River. Newhalem Creek is not included in the designation.

Bull Trout

Status and Distribution. All populations of bull trout (*Salvelinus confluentus*) within the coterminous United States were listed as threatened on December 1, 1999.[29] Bull trout are distributed throughout the cold, clear waters of the high mountains and coastal rivers of northwestern North America, including Yukon, British Columbia, Washington, Oregon, Idaho, and western Montana. Bull trout are threatened by the combined effects of habitat degradation, fragmentation, and alteration, including dewatering, road construction, mining, grazing, dams, entrainment, poor water quality, and introduced non-native species. The 2015 Bull Trout Recovery Plan delineates bull trout into six recovery units divided into 109 core areas (City Light, 2022c).

Life History of Skagit River Bull Trout. Bull trout express both resident and migratory life-history strategies. Resident forms of bull trout complete their entire life cycle in the tributary streams in which they spawn and rear, while migratory bull trout spawn in tributary streams and reside for one to four years before migrating to either a lake or river. Both resident and migratory bull trout may be found together, and offspring from either form may exhibit either behavior. Anadromous bull trout are found only in the Coastal Recovery Unit, which includes the Newhalem Creek local population (City Light, 2022c).

The lower Skagit River core area, defined as the river downstream of Gorge Dam, has been identified as a current population stronghold because of plentiful intact habitat and an abundant population. This core area likely supports the largest population of bull trout in the state, numbering in the thousands. Long-term monitoring indicates that the population trend in this core area is stable or increasing. The lower Skagit core area consists of 19 local populations, including Newhalem Creek, and two potential populations based primarily on their spawning distribution (City Light, 2022c).

After spawning, bull trout in the lower Skagit River core area disperse downstream to overwintering and foraging areas during October through November. Overwintering and foraging habitat for fluvial populations includes predominately larger pools and deep runs in the upper reaches of the Skagit River mainstem but may also include the Sauk River. Post spawning, anadromous bull trout out-migrate to the estuary during February through April with peak movements in mid-March (City Light, 2022c).

[28] 70 Fed. Reg. 52630.

[29] 64 Fed. Reg. 58910.

Occurrence. Newhalem Creek from its confluence with the Skagit River upstream to the lower waterfall at RM 0.65 provides spawning and rearing habitat deemed essential for the local Newhalem Creek bull trout population.

Table 6 indicates Skagit River bull trout may spawn in the project area from September through November, and eggs are expected to be present from September through approximately February, depending on water temperature. It is unknown if bull trout overwinter in Newhalem Creek, but overwintering is assumed. Rearing juveniles could be present in Newhalem Creek year-round, and subadults and amphidromous[30] adults could occur at any time in the Skagit River mainstem near Newhalem Creek (City Light, 2022c).

Although bull trout are relatively abundant in the lower Skagit River core area and most local populations include more than 100 adults, adult abundance in Newhalem Creek is unknown. During surveys conducted for the previous license application, bull trout were not observed in the creek, although native char were documented. Bull trout have been reported staging in the lower reaches of Newhalem Creek, and City Light has documented this species in the lower portions of the creek in fall (City Light, 2022c).

Critical Habitat. FWS designated critical habitat for bull trout in the coterminous United States on October 6, 2005[31] and revised designated critical habitat for the species on November 17, 2010.[32] The lower reach of Newhalem Creek to the waterfall barrier at RM 0.65 is designated as critical habitat and provides spawning and rearing habitat (City Light, 2022c).

Dolly Varden

Status and Distribution. Dolly Varden (*Salvelinus malma*) was proposed as threatened under the "Similarity of Appearance" provisions of the ESA on January 9, 2001.[33] Its historic range included Alaska, Washington, and Oregon. In Washington, Dolly Varden occurs in several river drainages within the Coastal-Puget Sound DPS of bull trout, which is listed as threatened under the ESA. Although these two species of "native char" were previously considered a single species, bull trout and Dolly Varden are now formally recognized as two separate species. Specific distinctions between bull trout and Dolly Varden are based on morphometrics and meristic variation; currently, genetic analyses can distinguish between the two species. Threats are similar for both species.

[30] An amphidromous fish is a type of diadromous fish that migrates between fresh and saltwater. Unlike anadromous and catadromous fish, which migrate explicitly for the purposes of breeding, amphidromous fish migrate for other purposes.

[31] 70 Fed. Reg. 56212.

[32] 75 Fed. Reg. 63898.

[33] 66 Fed. Reg. 1628.

Life History of Dolly Varden. Depending on location, char generally spawn from late August to late December, with the peak occurring in September. Dolly Varden appear to have slightly colder water temperature requirements for spawning than bull trout. Fry normally emerge from early April through May, depending on water temperatures and increasing stream flows (FWS, 2006).

Occurrence. In the North Cascades, Dolly Varden occurs in the upper Skagit River and in tributaries of the North Fork and South Fork Nooksack Rivers. Dolly Varden may also be present in the lower Skagit core area, but this has not been confirmed. Areas of known occupancy occur on national park or national forest lands (FWS, 2006). Researchers note that upper Skagit River Dolly Varden, which is generally a stream resident, small in size, and a drift feeder, predominate in tributary streams while bull trout appear to predominate in the main river (FWS, 2006).

Critical Habitat. No critical habitat has been proposed for Dolly Varden.

Essential Fish Habitat

City Light reviewed NMFS's online Essential Fish Habitat (EFH) mapper to determine the extent of EFH in the project area (City Light, 2022c). The mapper identifies the full Newhalem Creek subbasin as EFH. EFH, however, does not include waters upstream of naturally impassable barriers such as waterfalls. City Light believes that the presence of two natural waterfalls that are impassable to fish preclude EFH in Newhalem Creek upstream of RM 0.65. As a result, the lower reach of Newhalem Creek and the Skagit River at the confluence with Newhalem Creek contain EFH for Pacific Coast Salmonids including Chinook (summer), coho, and pink salmon (see Table 7).

Summer Chinook Salmon. Summer Chinook salmon have been documented in the lower reach of Newhalem Creek downstream of the lower-most waterfall (Washington DFW, 2021 as cited in City Light, 2022c). Summer Chinook salmon spawn and rear in the Skagit River at the confluence of Newhalem Creek and possibly in the creek. Based on spawning time (

Table 6), pre-spawn adults may be present as early as June within the project area. Spawning begins in late August and extends through mid-October. Juveniles emerge from spawning gravels from December through February and rear in the Skagit River mainstem year-round. Juvenile outmigrants exhibit several strategies and may out-migrate as fry beginning in March. Yearling smolts out-migrate from the Skagit River from late March through May (City Light, 2022c).

Coho Salmon. Washington DFW believes coho salmon may occur in the lower reaches of Newhalem Creek but spawning and rearing have not been documented (Washington DFW, 2021 as cited in City Light, 2022c). Coho salmon spawning habitat occurs in the Skagit River at and downstream of the confluence with Newhalem Creek, and rearing habitat occurs upstream of the confluence in the Skagit River.

Although coho salmon have not been documented to spawn in the lower reach of Newhalem Creek, occasional spawning and limited rearing cannot be completely discounted. As indicated in

Table 6, coho salmon spawn in the Skagit River tributaries from November 1 through March 31 and may therefore enter the project area as early as late September. Juveniles may be present year-round in areas of the Skagit River that are suitable for rearing (e.g., side channels and low-velocity pools) and may use Newhalem Creek for rearing, particularly as a high-flow refugia.

Pink Salmon. Odd-year pink salmon are reported to spawn in the lower reaches of Nehalem Creek (Washington DFW, 2021a, as cited in City Light, 2022c). As indicated in

Table 6, pink salmon spawn in the Skagit River from approximately mid-September through October 31 and may enter the project area as early as late August. Juveniles are present year-round in spawning reaches of the Skagit River and Newhalem Creek.

Whitebark Pine

FWS listed the whitebark pine (*Pinus albicaulis*) as a threatened species on January 17, 2023.[34] Whitebark pine is a mid-sized and relatively shade-intolerant subalpine tree species, found only above the elevation of continuous closed forests. Whitebark pine communities in the Cascade Range are often mixed with sagebrush and mountain grassland communities at elevations from approximately 5,000 feet to tree line. At lower elevations, whitebark pine is often found among subalpine and Douglas fir. Whitebark pine is found in scattered stands above 5,900 feet in the southeastern portion of the North Cascades National Park Service Complex. FWS has not designated any designated critical habitat for this species in the project area.

The elevation at the diversion site, the highest elevation at which construction would occur under the proposed action, is approximately 1,019 feet, well below the elevation known to support whitebark pine. Further, no known stands are located in or near the project area. Therefore, the proposed action would not jeopardize the continued existence of the proposed threatened whitebark pine, and no further analysis in needed for this species.

Gray Wolf

Although gray wolves (*Canis lupus*) throughout the lower 48 states were delisted on January 4, 2021,[35] the IPaC list obtained for the proposed action indicates that FWS is currently considering gray wolves in the action area for ESA relisting. As of January 2021, there were at least 132 wolves in 24 known packs, including at least 13 breeding pairs in portions of

[34] 87 Fed. Reg. 76882.

[35] 85 Fed. Reg. 69778.

Washington state managed by Washington DFW. In addition, 46 wolves were reported on Confederated Tribes of the Colville Reservation. Wolves are habitat generalists but occupy mostly forests and nearby open habitats with sufficient prey. Most known packs occur in northeastern and southeastern Washington, but increasing numbers are present in the north-central region. FWS has not designated critical habitat for this species in the project area.

The project area is in the North Cascades recovery region, which has six packs located primarily on the eastern slope of the Cascade Mountains. The pack nearest to the action area is the Diobsud Creek Pack. Washington DFW winter surveys documented only a single wolf from this pack during winter 2020–2021; denning status is unknown. Territory for this pack is generally in the area between Baker Lake and the Skagit River, southwest of the action area.

North American Wolverine

On November 30, 2023, FWS listed a distinct population segment of the North American wolverine (*Gulo gulo luscus)* as a threatened species.[36] This listing is limited to the contiguous United States. Critical habitat has not been designated.

Wolverines are wide-ranging, with documented long-distance dispersals across habitats far from the high mountains near the timberline where known populations reside in Washington, Idaho, Montana, and Wyoming. The Cascade Range in Washington is the southernmost extent of the current wolverine range along the Pacific coast, although individual wolverine have been found as far south as California and the species is more widely distributed in Washington than once thought. No observations of wolverine are reported in the action area, and the elevation of the highest portions of the action area near the dam site (approximately 1,019 feet mean sea level) is considerably lower than elevations typically occupied by the species. However, given the remote nature of the site, the wide home ranges used by the species, and the proximity of the action area to known observations to the east (i.e., Ross Lake), it is possible that individuals may occasionally transit through the project area.

Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) is a small, diving seabird that breeds in old-growth forests from central California to the Aleutian Islands of Alaska. It occurs in highest abundance between Vancouver Island, British Columbia, and the Alexander Archipelago in Southeast Alaska. In Washington, murrelets occur in the greatest numbers in Puget Sound and the Strait of Juan de Fuca. FWS listed the Washington, Oregon, and California population as a threatened species under the ESA on September 8, 1992.[37] There is no designated critical habitat for this species in the project area.

The marbled murrelet spends more than 90 percent of its time on the ocean, resting and feeding, but flies inland to nest in old-growth forest stands. In Washington, the marbled murrelet nesting season is April 1 through September 23. In their terrestrial environment, the presence of

[36] 88 Fed. Reg. 83726.

[37] 57 Fed. Reg. 45328.

large branches or deformities is the most important characteristic of nesting habitat. Suitable marbled murrelet nesting trees are mature conifers (greater than 15 inches diameter at breast height) situated in contiguous conifer-dominant (greater than 60 percent) stands with at least one suitable nesting platform at least 33 feet off the ground. Adults nest on mossy-limbed branches of large conifers such as coast redwood, western hemlock, Douglas fir, and Sitka spruce, in mature stands covering at least 5 acres. Washington DFW recommends projects occurring up to 70 miles inland consider the potential for marbled murrelet occurrence.

The Newhalem project area is located approximately 57 miles from the coast. In 2011, City Light identified suitable nesting habitat in the upper Newhalem Creek drainage and along the Skagit River south of Newhalem, where older forest stands were present. During May and June 2008, radar surveys conducted downstream of the town of Newhalem recorded possible detections of marbled murrelet flying along the Skagit River. The Washington DFW Priority Habitat Species database has no records of marbled murrelet sightings within 10 miles of the project site. Radar surveys conducted in 2021 along the Skagit River in Newhalem recorded seven "murrelet-type" targets flying toward or away from the creek. Although, concurrent audio/visual surveys did not confirm whether these radar detections were indeed murrelets, use of the drainage by murrelets cannot be ruled out. In general, however, the radar surveys of the upper Skagit River (Newhalem to Ross Lake) suggest low use of the entire area by murrelets.

Despite past data regarding nesting habitat suitability in the Newhalem Creek area, the Goodell Creek wildfire (2015) destroyed most forest stands that could be used by marbled murrelet within and adjacent to the access road and diversion site. Although a few scattered conifers of suitable size with potential nesting platforms exist in portions of the project area that were not severely burned (e.g., near the Trail of Cedars, approximately 4,000 feet northeast of the diversion dam site), such habitat is not present near the diversion site or access road. Any remaining suitable nest trees within several hundred feet of the diversion dam or access road are isolated and surrounded by dead trees with little to no cover. Therefore, portions of the project area that were severely burned near the dam and access road landslide location do not provide suitable nesting habitat.

Northern Spotted Owl

FWS listed the northern spotted owl (*Strix occidentalis caurina*) as threatened on July 23, 1990.[38] It is believed to have historically inhabited most forests throughout southwestern British Columbia, western Washington and Oregon, and northwestern California as far south as the San Francisco Bay. The primary causes of spotted owl population declines are loss and adverse modification of nesting, roosting, and foraging habitat due to timber harvesting; land conversions; natural disturbances such as fire, windstorms, and insect outbreaks; and competition with encroaching barred owls. FWS has not designated critical habitat for this species in the project area.

The northern spotted owl is strongly associated with old-growth forests that are characterized by multi-storied canopies; several species of trees, sizes, and ages; and standing and downed dead trees. Northern interior forests typically require 150 to 200 years to attain the

[38] 55 Fed. Reg. 26114.

attributes important for nesting and roosting habitat. Suitable owl habitat has moderate to high canopy closure (60 to 80 percent); a multilayered, multi-species canopy dominated by large (greater than 30 inches in diameter at breast height) overstory trees; a high incidence of large trees with various deformities (e.g., large cavities, broken tops, dwarf-mistletoe infections, and other evidence of decadence); numerous large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for owls to fly.

In 2011, City Light identified the late seral stage conifer forests near Newhalem as potential nesting habitat for northern spotted owls. However, the Goodell Creek wildfire eliminated most, if not all, suitable nesting, roosting, and foraging habitat in the project area. Dispersal habitat may persist in burned forested areas if they contain areas with canopy cover greater than or equal to 40 percent. However, such cover is no longer present near the diversion site and the access road, as most areas were severely burned and have limited, if any, remaining canopy. Further, the extremely low numbers of spotted owls in the North Cascades suggests that use of the project area is unlikely.

Yellow-billed Cuckoo

FWS listed yellow-billed cuckoos (*Coccyzus americanus*) as threatened on November 3, 2014.[39] Yellow-billed cuckoos breed in large (greater than 100 acres), wide (more than 330 feet), contiguous blocks of riparian habitat, particularly woodlands with cottonwoods and willows). Yellow-billed cuckoos breed in dense willow and cottonwood stands in river floodplains but are not believed to breed in Washington. The last confirmed breeding records from Washington are from the 1930s. The nearest recently recorded breeding sites to the project area included a few scattered nesting pairs in southern Idaho. The only detection of a yellow-billed cuckoo in Whatcom County occurred prior to 1950 near Bellingham. Between 1990 and 2016, several scattered observations occurred in the eastern slope of the Cascades.

No yellow-billed cuckoos are expected to occur within or near the project area. Riparian habitat that is suitable for nesting and foraging either does not exist in sufficient quantities to support the species or has been burned. Therefore, decommissioning the Newhalem Project would have no effect on western DPS yellow-billed cuckoos, and no further analysis is needed.

Monarch Butterfly

The monarch butterfly (*Danaus plexippus*) was determined to be a candidate species on December 17, 2020,[40] meaning that there is sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA; however, higher priority actions preclude immediate listing. The monarch is a large, black, orange, and white butterfly that occurs throughout much of the United States. It is dependent on milkweed plants as a host for the larval stage of its life cycle. In Washington, the distribution of milkweed is limited to areas east of the Cascade Mountain Range. The number of monarchs in Washington is relatively low. Milkweeds are patchily distributed within the Columbia Basin. Monarchs migrating south

[39] 9 Fed. Reg. 59991.

[40] 85 Fed. Reg. 81813.

through Washington often concentrate along the large river courses of the Columbia and Snake Rivers (Washington DFW, 2023). Because the monarch butterfly is not listed under the ESA, no critical habitat is designated for the species.

No specific surveys for monarch butterfly have been conducted in the project area. However, because the project lies on the western slope of the Cascades, monarch butterflies are unlikely to occur in the project area, and project decommissioning would have no effect on the monarch butterfly and no further analysis is needed.

6.3.4.2 Environmental Effects

Puget Sound Steelhead and Puget Sound Chinook Salmon

Diversion Dam, Headworks, and Tailrace Barrier Removal

Potential threats to Puget Sound steelhead and Chinook salmon resulting from removal of the diversion dam, associated headworks structures, and tailrace fish barrier include temporary increases in turbidity, degradation of water quality, loss of habitat, construction debris, disturbance, and direct mortality from construction machinery. Heavy equipment also could release hydrocarbon-based contaminants into the creek.

City Light proposes measures to minimize potential effects on Puget Sound steelhead and Chinook salmon. These measures are described in section 6.3.2.2, *Aquatic Resources, Environmental Effects*. In addition, City Light proposes the following measures to minimize potential effects on threatened and endangered fish species:

- Rescue and relocate fish from the upper portion of the tailrace prior to channel-filling activities.

- Comply with any measures included in the Biological Opinion and Incidental Take Statement for listed fish species.

Downstream water quality degradation caused by construction-related turbidity from diversion dam and headworks removal and cofferdam installation/removal would be limited and temporary. Gravels and cobbles, with few fines, dominate the substrate in the impoundment area. Based on City Light's experience with sediment removal and placement downstream of the diversion dam, most sediment that is disturbed during instream construction work or that enters the stream due to nearby construction activities would settle out within 300 feet downstream of the construction area. In addition, City Light proposes the use of BMPs to minimize adverse effects from erosion and sedimentation on aquatic resources in Newhalem Creek. Therefore, Puget Sound steelhead and Chinook salmon, which are blocked from upstream passage at the lower natural waterfall at RM 0.65, would not be exposed to measurable levels of construction-related turbidity.

City Light proposes to prepare a spill plan to reduce the potential for hazardous or contaminated material release. City Light also proposes to retrofit heavy equipment with biodegradable fluid in the hydraulic system. Preparation of a spill plan would minimize the risk of negative effects on water quality and Puget Sound steelhead and Chinook salmon that may result from accidental hazardous/contaminated substance spills. Commission staff find that

development of this spill plan, in consultation with the consulting parties as proposed, would ensure appropriate measures to reduce the potential for spills are implemented.

The tailrace barrier is located at the lower end of the channel and prevents fish from the Skagit River from entering the tailrace during high flows. During normal flows, the tailrace barrier is separated from the Skagit River by dry land. City Light would remove the barrier during the fall low-flow period when it is disconnected from the Skagit River. No in-water work is expected. Thus, construction activities associated with the tailrace barrier removal would not affect Puget Sound steelhead or Chinook salmon.

The tailrace from the powerhouse discharges into a natural, intermittent stream that discharges to the Skagit River during high flows. City Light proposes to retain the tailrace from its confluence with the intermittent stream downstream to the Skagit River. After removal of the tailrace barrier, the channel would be regraded to a shallow, natural-appearing outlet channel with the ability to convey water from the intermittent stream during periods of extended precipitation and tunnel drainage. During high flows in the Skagit River, Puget Sound steelhead and Chinook salmon would likely be able to access the intermittent outlet channel for use as backwater habitat.

In its comments filed on September 28, 2022, the Park Service comments that the natural intermittent stream that joins the tailrace passes through two culverts and suggests that these culverts should be assessed for replacement with culverts that allow aquatic organism passage or be permanently removed. City Light explains one of these culverts lies beneath the emergency evacuation route in the EAP for the Skagit River Project, and the other is associated with the Trail of the Cedars. Commission staff find these culverts near the powerhouse do not have a nexus to Newhalem Creek. Therefore, Commission staff consider Park Service's recommendation for culvert replacement of these culverts unnecessary.

Post-Construction Changes in Sediment Transport

As discussed in section 6.3.1.2, *Geology and Soils, Environmental Effects*, material from the sediment wedge that has accumulated upstream of the dam would be transported during high-flow events, most likely in late fall, early winter, and spring, to the alluvial fan area at the mouth of the creek, with the potential for short-term effects on fish and aquatic habitat. Some cobble, gravel, and finer sediment would eventually reach the Skagit River, augmenting substrate there. Sediment transport and deposition is expected to reach equilibrium over approximately 10 years (City Light, 2022c).

Because accumulated sediments upstream of the dam are primarily coarse in nature with few fines, increases in turbidity are expected to be relatively low, and any deposition of fine sediment in Newhalem Creek and in the Skagit River is not likely to adversely affect the survival of incubating eggs. Effects on steelhead and Chinook salmon from the transport of accumulated sediment are expected to be sublethal in nature and would primarily affect the behavior of mobile juveniles and adults because they would either swim through any plume or make evasive movements to avoid high levels of turbidity. Therefore, increased sediment transport may affect, and is likely to adversely affect, Puget Sound steelhead and Puget Sound Chinook salmon, as well as critical habitat for both species, in Newhalem Creek and in the Skagit River just downstream from the confluence of Newhalem Creek and the Skagit River. The transport of

coarse substrates suitable for spawning may ultimately benefit critical habitat for both species in Newhalem Creek and the Skagit River over time.

Under the full removal alternative, effects on Puget Sound steelhead and critical habitat would be similar to those described under the proposed action. Therefore, the full removal alternative may affect, and is likely to adversely affect, Puget Sound steelhead and may affect, and is likely to adversely affect, critical habitat in Newhalem Creek. The full removal alternative may affect, but is not likely to adversely affect, critical habitat for Puget Sound steelhead in the Skagit River.

Under the full removal alternative, effects on Puget Sound Chinook salmon and critical habitat would be similar to those described under the proposed action. Therefore, the full removal alternative may affect, and is likely to adversely affect, Puget Sound Chinook salmon, and may affect, but is not likely to adversely affect, critical habitat in the Skagit River.

In comments filed on May 31, 2022, the USIT expresses concern regarding the temporary infilling of the step pools and aquatic habitat downstream of the dam after its removal and requests several years of monitoring to assess changes in channel morphology within the unconfined reach upstream of the dam and major pools downstream. City Light comments that it has removed approximately 200 to 400 cubic yards of sediment from behind the dam almost annually since 1997 and has placed the material just below the diversion dam. The step pools, which are in an extremely high-gradient reach of the stream, have not been observed to fill with sediment as a result of this placement (City Light, 2022e).

Any deposition in pools below the dam site would likely be scoured and transported downstream by subsequent floods. However, coarse sediment transported to the lower reaches of Newhalem Creek could form barriers to anadromous fish migration into and within the lower section of Newhalem Creek (anadromous zone). As discussed in section 6.3.1.2, *Geology and Soils, Environmental Effects, Streambed Profile and Sediment Mobilization*, staff suggests monitoring the lower reach of Newhalem Creek to its confluence with the Skagit River for potential excessive sediment accumulation that could create a temporary barrier for fish migration to access habitat within the creek. An adaptive monitoring plan combined with a mitigation plan in this reach would address this risk to fish migration. Monitoring is recommended for three years, after which the need for continued monitoring would be assessed.

Bull Trout and Dolly Varden

Diversion Dam, Headworks, and Tailrace Barrier Removal

Potential threats to bull trout and Dolly Varden resulting from removal of the diversion dam, associated headworks structures, and tailrace fish barrier would be the same as those described above for Puget Sound steelhead and Puget Sound Chinook salmon.

City Light proposes measures to minimize potential effects on threatened and endangered species. These measures are described above under *Puget Sound Steelhead and Puget Sound Chinook Salmon* and in section 6.3.2.2, *Aquatic Resources, Environmental Effects*.

The lower reach of Newhalem Creek below the waterfall barrier at RM 0.65 is designated as critical habitat for bull trout and provides spawning and rearing habitat. The Skagit River is

also designated as critical habitat and provides a migration corridor for amphidromous (migrates between fresh and saltwater) and subadult bull trout. Bull trout may spawn in the project area from September through November, and eggs are expected to be present from September through approximately February. It is unknown if bull trout overwinter in Newhalem Creek, but overwintering is assumed. Rearing juveniles could be present in Newhalem Creek year-round, and subadults and amphidromous adults could occur at any time in the Skagit River near Newhalem Creek (City Light, 2022c).

Critical habitat has not been designated for Dolly Varden. Dolly Varden and bull trout are related char species and share a similar reproductive ecology. Char generally spawn from late August to late December, with the peak occurring in September. Fry normally emerge from early April through May (FWS, 2006).

Potential effects from construction activities to remove the diversion dam, headworks, and tailrace barrier on bull trout and Dolly Varden would be similar to those described above for Puget Sound steelhead and Puget Sound Chinook salmon.

Instream work would potentially overlap with upstream migration for pre-spawning adult bull trout and Dolly Varden. Given that cofferdams would be removed by September 1 when flows are typically low, and because substrate in the impoundment area contains few fines, turbidity levels in spawning areas located more than 1,900 feet downstream are expected to be minimal and remain within sublethal limits for adults or incubating eggs.

Post-Construction Changes in Sediment Transport

Under the proposed action, dam removal could affect stream geomorphology above and below the dam and increase sediment transport and turbidity downstream in habitat occupied by bull trout and Dolly Varden.

Post-construction changes in sediment transport could potentially affect bull trout and Dolly Varden in the lower reaches of Newhalem Creek during seasonal high-flow events that transport accumulated sediment from upstream of the dam. Bull trout (spawning/overwintering adults and rearing juveniles) and Dolly Varden could be present at this time and could be exposed to increased levels of turbidity. Sublethal and behavioral effects on these species would be similar to those discussed above for juvenile steelhead. Therefore, increased sediment transport may affect, and is likely to adversely affect, bull trout and Dolly Varden in Newhalem Creek. In addition, sediment transport may affect, and is likely to adversely affect, critical habitat for bull trout in Newhalem Creek.

The lower reach of Newhalem Creek provides critical habitat for bull trout spawning. Adults are less likely to be affected by increased turbidity associated with mobilized sediments because adults typically enter the project area and spawn from September through November; high flows are less likely during September (see Figure 8). Some sediment deposition on incubating eggs in the creek may occur if flows during the incubation period are sufficient to mobilize sediments. Because substrate accumulated upstream of the dam generally consist of boulders, cobbles, and gravels, the potential for fine sediment deposition on downstream redds in the lower reach of the creek is low and would not likely reduce egg survival. The transport of coarse substrates suitable for spawning may ultimately benefit bull trout critical habitat in

Newhalem Creek over time. Diversion removal would restore natural sediment regimes and improve nutrient transport to the lower reaches of Newhalem Creek and the Skagit River. If lower Newhalem Creek is used for spawning by Dolly Varden, effects would be similar to those described for bull trout.

The Skagit River provides critical habitat as a migration corridor for bull trout. For individual bull trout in the Skagit River, increased levels of turbidity from the transport of accumulated sediment are unlikely to be discernible from background levels beyond the immediate confluence with Newhalem Creek. Migration patterns could be temporarily altered if an individual becomes disoriented, but it is not likely that fish would abandon migratory routes in the Skagit River. Therefore, the proposed action may affect, but is not likely to adversely affect, critical habitat for bull trout in the Skagit River.

Under the full removal alternative, effects on bull trout and critical habitat would be similar to those described under the proposed action. Therefore, the full removal alternative may affect, and is likely to adversely affect, bull trout and their critical habitat in Newhalem Creek. The full removal alternative may affect, but is not likely to adversely affect, critical habitat for bull trout in the Skagit River.

Under the full removal alternative, effects on Dolly Varden would be similar to those described under the proposed action. Therefore, the full removal alternative may affect, and is likely to adversely affect, Dolly Varden.

As discussed above under *Puget Sound Steelhead and Puget Sound Chinook Salmon*, implementing an adaptive monitoring plan combined with a mitigation plan in lower Newhalem Creek (anadromous zone) to identify and remedy any passage barriers that develop due to sediment movement would address this risk to bull trout and Dolly Varden.

Essential Fish Habitat

The lower reach of Newhalem Creek (anadromous zone) between the 14-foot waterfall and the confluence with the Skagit River and the Skagit River at the confluence with Newhalem Creek contain EFH for Pacific Coast Salmonids including summer Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), and pink (*Oncorhynchus gorbuscha*) salmon (see Table 7). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802(10)).

The Biological Assessment concludes that ". . . negative effects on EFH for Pacific Coast Salmonids in the action area will be temporary in nature and primarily related to the transport of accumulated sediment during seasonal high flows. Therefore, the proposed action will not adversely affect Pacific Salmon EFH. The temporary degradation of rearing habitat in Newhalem Creek during seasonal high flows will be offset by the Project-related benefits to various stream functions . . ." (page 9-3 in City Light, 2022c).

As discussed above for Puget Sound steelhead and bull trout, accumulated sediments transported during high-flow events may increase turbidity to levels that cause sublethal and behavioral effects on juveniles, adults, and eggs in the lower reaches of Newhalem Creek. Effects on these species from sediment transport are expected to primarily affect the behavior of

mobile juveniles and adults because they would either swim through any plume or make evasive movements to avoid high levels of turbidity. In addition, because juveniles rear in the project area year-round, episodic turbidity increases may affect foraging, territorial behaviors, or predatory responses (City Light, 2022c).

Staff finds that that increased sediment transport due to removal of the diversion dam may affect, and is likely to adversely affect, critical habitat for steelhead and bull trout in Newhalem Creek. Adverse effects would be short term and episodic, associated with seasonal high-flow events that have the capacity to transport accumulated sediments to the lower reaches of Newhalem Creek and, ultimately, to the Skagit River. Effects would continue until accumulated sediments reach equilibrium upstream of the dam, in approximately 10 years.

Newhalem Creek does not contain designated critical habitat for Chinook salmon, but the lower reaches of the creek are accessible from the Skagit River and could be used for spawning or occupied by rearing juveniles particularly during high-flow periods when Newhalem Creek could provide refuge from the Skagit River. Under the proposed action, Chinook salmon, along with coho and pink salmon, could be subjected to sediment transport while occupying Newhalem Creek, and effects on these species and habitat would be similar to those discussed above for steelhead and bull trout.

For individual fish that spawn or migrate in the Skagit River, increased levels of turbidity from the transport of accumulated sediment are unlikely to be discernible from background levels beyond the immediate confluence with Newhalem Creek. Therefore, unless a redd was created at or just downstream of the confluence, project-related effects on adults and incubating eggs would not be significant. Migration patterns could be temporarily altered if an individual becomes disoriented, but it is not likely that fish would abandon migratory routes in the Skagit River.

Thus, we conclude that effects of sediment transport under both the proposed action and the full removal alternative may affect, and are likely to adversely affect, EFH in lower Newhalem Creek, and may affect, but are not likely to adversely affect, EFH in the Skagit River.

As discussed above under *Puget Sound Steelhead and Puget Sound Chinook Salmon*, implementing an adaptive monitoring plan combined with a mitigation plan in lower Newhalem Creek (anadromous zone) to identify and remedy any passage barriers that develop due to sediment movement would adequately address risks to fish passage in EFH.

Gray Wolf and Wolverine

Project decommissioning is most likely to affect gray wolves or wolverine if there are individuals present in the project area during decommissioning activities, and noise disturbs foraging behavior or causes the animals to avoid the area. Potential for both species to occur in the project area is low. However, if any wolves or wolverine are displaced from the project area by noise, the landscape surrounding the project are provides similar habitat and resources as that within the project boundary. Therefore, the effects of relocation to avoid noise would be minor, and decommissioning of the project may affect, but is not likely to adversely affect**,** gray wolves or wolverine.

Marbled Murrelet and Spotted Owl

Project decommissioning could affect marbled murrelet or spotted owls if construction activities disturb nesting behavior, if potential nest trees are removed, or if individuals collide with project electrical service lines. To minimize potential for adverse effects, City Light proposes to only remove dead trees or trees with diameters of less than 8-inchs at breast height. City Light also proposes to install markers on the electrical service lines providing electricity to the powerhouse to make the lines more visible to birds and reduce potential for collisions.

Washington DFW comments that murrelets may fly at lower elevation (near the distribution line providing service to the powerhouse) if they have nests in the greater area, when they come below tree canopy, start circling behavior, or dip down as they fly up into the nest tree. Washington DFW recommends City Light either remove the line or resight the line to cross under the Skagit River or cross the river under an existing bridge.

Limiting tree removal to dead or small trees, as City Light proposes, would eliminate potential for murrelet and spotted owl nest trees to be removed because these trees do not provide adequate nesting habitat. Additionally, because of the extensive reduction in forest canopy following the Goodell Creek wildfire, there is little potential for either murrelets or spotted owls to nest in the project area until the forests regenerate an intact, dense, canopy extending for at least 5 acres (for murrelets) or hundreds of acres (for spotted owl). Such regeneration is likely to take many decades to centuries, well past the timeline for the proposed decommissioning activities. Under current conditions, the decommissioning of the project would have no effect on nesting murrelets or spotted owls.

Spotted owls have keen eyesight and are highly skilled flyers at home in the dense structure of old-growth forest canopies. For these reasons, staff considers potential for spotted owl collisions with the electrical service lines to be very low. With nest heights as low as 33 feet, marbled murrelets could fly at the same elevation of the powerhouse lines when accessing a nest site. However, to collide with the lines, the nest would need to be located close to the lines. Currently, no trees that would provide suitable nesting habitat for murrelet are located along the distribution line. While suitable murrelet nesting habit may regenerate near the line, this is not likely to occur for 60 to 100 years or more and would be beyond the scope of this EA. Therefore, decommissioning the project would have no effect on spotted owl or marbled murrelet.

6.3.5 Recreation, Land Use, and Aesthetics

6.3.5.1 Affected Environment

The Newhalem Project is located entirely within the RLNRA, which provides for a variety of recreational opportunities including camping, backpacking, hiking, mountain climbing, boating, fishing, sightseeing, and wildlife viewing. Recreational use in the area tends to be seasonal with 80 percent of the annual use occurring from June through September.

Visitation to the RLNRA was consistent from 2010 to 2014, with about 700,000 visitors annually. Fluctuations between 760,000 to 900,000 visitors occurred from 2015 through 2018, and annual visitors increased to a peak use level of 1.1 million visitors in 2019. In 2020, the Park Service recorded more than 900,000 visitors to the RLNRA.

There are no developed project recreation sites; however, the Park Service operates the North Cascades Visitor Center (also referred to as Newhalem Creek Visitors Center) and Newhalem Creek Campground, in the project vicinity (Figure 10). The campground includes 107 camp sites and is located approximately 0.25 miles from the powerhouse, while the visitor center is an interpretive facility, located next to the campground. Visitors to the campground can drive on an unpaved road to the powerhouse or hike via the road or the linking trail. Newhalem Creek Campground received about 19,600 overnight tent camping stays and about 10,900 recreational vehicle overnight stays in 2022. Several trails (see Figure 10) are outside the project boundary but in the area, including:

- Rock Shelter Trail – a 1,000-foot accessible trail providing access to a platform that overlooks an ancient hunting camp shelter under a large boulder near Newhalem Creek. This trail also leads to a 1,600-foot side trail with views of the lower portion of Newhalem Creek and a 14-foot waterfall; however, City Light states this section of the trail to the falls is not maintained and is frequently overgrown.

- Trail of Cedars – a 0.6-mile interpretive nature trail loop that connects the town of Newhalem by a suspension bridge and provides pedestrian access to the Newhalem Creek Powerhouse and an overlook of the tailrace fish barrier. A trail counter installed in 2014 recorded 3,780 users from May through September, but the trail is used year-round by visitors and Newhalem residents.

- Linking Trail – an accessible trail connecting the Trail of the Cedars to Newhalem Creek Campground.

- Newhalem Creek Trail – a continuation of the project access road to the diversion dam and headworks that provides access to the backcountry. The trail begins at the diversion dam extends 4.5 miles along the river ending at Newhalem Creek Camp. The Park Service does not maintain this trail nor the backcountry campsite; however, the Newhalem Creek Trail is listed on the Washington Trails Association website and receives limited use. Reoccurring landslides along Newhalem Creek Trail have currently blocked vehicular access to the dam and trailhead.

- Tunnel Portal/Gatehouse Trail – built to access the penstock and power tunnel portal, this trail serves as an emergency evacuation route; however, it is a steep unimproved trail from the powerhouse to the gatehouse at the diversion. It is not on any maps of the area and does not have an official name or public signage, thus use is limited.

Rangeland, agricultural lands, and forested lands are dominant land uses in the region. All project facilities proposed to be removed are located on Park Service-owned and managed lands, where primary land uses include recreation and the preservation of natural resources for public enjoyment. Secondary land uses in this area include roads, research areas, and hydroelectric projects.

The project is located in a deep mountain valley region, and the terrain is characterized by rocky, steep, glaciated valleys with forest-covered slopes. Vegetation in the area is mostly dense, coniferous species. The area is relatively undeveloped, except for the North Cascades

Highway, the town of Newhalem, recreation facilities within the RLNRA, and hydroelectric projects like the Skagit River Hydropower Project located about 6 miles upriver.

The project facilities blend into the surrounding landscape; however, visitors can view Newhalem Creek from the bridge on the powerhouse access road or from the diversion dam access road. The creek mouth and the tailrace discharge area can be seen from points along the northern bank of the Skagit River in the town of Newhalem. With the access road blocked by the landslide, the diversion dam and gatehouse are visible only to visitors on foot. The powerhouse and a small segment of the penstock are visible from the Trail of the Cedars and Link Trail or to visitors driving on powerhouse access road. Views of the entire penstock require traversing the Tunnel Portal Trail. Neither the powerhouse nor the penstock is visible from the town of Newhalem, State Route 20, or the Newhalem Creek Campground.

Two waterfalls are located in the lower part of Newhalem Creek. After the Goodell Creek wildfire burned the thick forest vegetation in 2015, the 167-foot waterfall became partially visible from the access road, west of the rockslide area, and less than half a mile from the diversion. Typically, this waterfall is obscured by dense forest vegetation and difficult to access due to steep terrain. Visitors can see the second, 14-foot waterfall as they walk along the western side of Newhalem Creek from the Rock Shelter Trail. There is no physical access to these waterfalls given the steep gradient of the creek and surrounding terrain.

Newhalem Creek has not been listed as a Wild and Scenic River; however, the Skagit River at the confluence of Bacon Creek, located about 9 miles from the project, extending downstream to the pipeline crossing at Sedro-Wooley is designated as recreational.

6.3.5.2 Environmental Effects

City Light proposes to retain and maintain the powerhouse and penstock as described in detail in section 3.2, *Proposed Action*, which would preserve these historical features in the visual landscape. In collaboration with the Park Service, City Light proposes to develop a road decommissioning plan (providing an overview of decommissioning activities) and a restoration plan (describing activities to revegetate, monitor, and restore any disturbed areas to pre-project conditions). City Light proposes to maintain all remaining facilities as part of a memorandum of agreement to be developed with the Park Service. Maintenance activities would include painting the penstock every 10- to 20 years, updating existing interpretive panels along the front windows of the powerhouse, and adding other interpretive elements. With these proposed activities, Commission staff finds there would be negligible long-term effects to recreation, land use, and aesthetics, under the proposed alternative.

In its comments filed on October 10, 2022, Historic Seattle supports City Light's proposal for partial decommissioning, but does recommend preservation of the upper gatehouse and providing a hiking trail to the general area of the dam. While we recognize this recommendation, we also note that it conflicts with City Light's proposed decommissioning, as well as the NPS and USIT's recommendations for full removal. Therefore, we do not recommend it here. In its comments filed on September 28, 2022, the Park Service recommends full removal of all hydroelectric infrastructure, and analysis of the effects of the removal/restoration of the powerhouse road from the Rock Shelter trailhead to the powerhouse and the effects related to the loss of recreational access to view Newhalem Falls and Newhalem

Creek above the falls. City Light (2022f) agreed that if the powerhouse and penstock were removed, the portion of the powerhouse road from Rock Shelter trailhead to the powerhouse would necessitate decommissioning similar to the proposal for the dam access road. City Light reiterates, and we concur, that road decommissioning would not prevent pedestrian access to view Newhalem Falls and the Newhalem Creek area above the falls. The Park Service further recommends analysis of the effects of decommissioning of the access road on visitor access, increased vehicular use of the one-lane bridge that is the sole access from State Route 20 to the project and Park Service facilities, as well as the visual and audible experience of visitors and residents in the project area. We address this recommendation below.

Similar to the Park Service, the USIT recommends full removal of project facilities and suggests that City Light investigate alternative locations for the EAP muster site, focusing on areas already disturbed and more heavily used by the public. The USIT recommends that a trail be left in place after roadway decommissioning for future pedestrian access. City Light responded that the emergency access trail would remain in place regardless of the outcome of the powerhouse and penstock because it is required by the Skagit River Hydroelectric Project for emergency evacuation. City Light plans to decommission the road in a manner that best preserves pedestrian access following decommissioning, while also protecting worker safety. Commission staff find City Light's proposal acceptable. Since the EAP muster site is a part of the Skagit Project, staff also finds USIT's recommendation to evaluate alternative EAP muster sites beyond the scope of the proposed decommissioning analyzed here.

Decommissioning and partial removal of facilities, as proposed, would return the Newhalem Creek back to a natural free-flowing state in the mile-long stretch below the dam. The powerhouse and penstock would remain, requiring periodic maintenance, and continue to provide educational and interpretive opportunities along the trails. Commission staff finds the powerhouse and penstock are historical focal points that occur within an interconnected, 1-mile recreational corridor where two trails, one from the Newhalem townsite (Trail of Cedars) and one near the Newhalem Creek Campground intersect. The Trail of Cedars is known to be one of the busiest trails in the RLNRA with nearly 6,000 visitors in July 2022. This interconnected recreational corridor provides educational and interpretative opportunities about the history of the land, natural and cultural resources, and management of the national recreation area. We find City Light's proposal to maintain facilities and historical and interpretive elements under this alternative would preserve interpretive recreational activities and define management responsibilities. However, after decommissioning activities are complete, City Light would no longer have license obligations to uphold, therefore long-term management of remaining facilities would have to be decided by the Park Service and City Light.

City Light's proposal to decommission the road above the EAP muster site would include removing existing culverts, restoring natural drainages, scarifying the road surface, allowing for natural regeneration and/or replanting, and controlling invasive species. Visitors to this area would park at the EAP muster site and safely walk to view the nearby waterfall views without traversing the landslide area. Recreational opportunities above the waterfalls include Newhalem Creek Trail; however, this trail is described as minimally maintained and overgrown. The landslide area also restricts about 0.2 miles of vehicular access to this area at the dam/trailhead. Road decommissioning above the muster site would result in visitors using the Newhalem Creek Trail to have to walk about 0.5 miles farther, but pedestrian access would remain available after

decommissioning. As discussed above, any changes to the location of this muster point is beyond the scope of the surrender of the Newhalem Project.

The USIT's recommendation for the complete decommissioning of the entire roadway and conversion to a trail in place of the roadway would not allow for vehicular access to the EAP muster site at a safe elevation for emergency evacuation as part of the Skagit River Hydroelectric Project, as described above. Converting the road to a trail would require ongoing maintenance, and after completion of decommissioning activities, any maintenance of the trail would be the responsibility of the Park Service because the Commission's authority to require City Light to maintain a trail would end with surrender of the license. This area is likely to continue to experience landslides and falling rocks, which would pose an ongoing risk to the public and increase the maintenance required to keep the area open for safe public access. Slope stabilization and erosion control would be challenging to manage and maintain, likely increase maintenance costs, and again endanger public safety. Maintenance of trail functionality could include clearing the road of rock debris and scaling the slope, constructing an elevated bridge structure across the active area to avoid future effects, or constructing a catchment structure at the base of the slope that would require regular maintenance to remove accumulated slide debris. These maintenance challenges would be a constant, costly concern for any managing entity and could be significant depending on the level of risk acceptable for this area. For these reasons, Commission staff finds decommissioning the road above the EAP muster point is appropriate. We do not recommend complete decommissioning of the entire road and converting the roadway to a trail.

During partial decommissioning (the proposed action), visitors to nearby trails or the North Cascades/Newhalem Visitor Center and Newhalem Creek Campground may experience an increase in traffic, dust, emissions from construction equipment, and noise levels. Any effects on visitors related to air quality or noise levels would be minor, limited to the immediate area, and short term given the small scale of the construction activities. Decommissioning activities may require temporary closures of portions of the Trail of the Cedars and Linking Trail as well as the entire Newhalem Creek Trail; however, these closures could be timed to occur during periods of lesser use to minimize effects, as City Light proposes. BMPs would mitigate for this temporary increase in noise and traffic related to decommissioning.

Commission staff recommends City Light address in the decommissioning plan the potential for increased vehicular use of the one-lane bridge that provides access to the project and Park Service facilities from State Route 20. Commission staff also recommends the decommissioning plan identify appropriate measures to address needed roadway repairs, safety measures, or road closures during the decommissioning efforts. Overall, we find that development of the decommissioning plan in consultation with the consulting parties, as recommended here, would allow the Park Service and others to be involved in the detailed planning to minimize effects of the use of the one-lane bridge that provides access to Park Service facilities.

City Light's proposed restoration plan would allow for any disturbed areas to be revegetated, managed, and monitored for five years in collaboration with the Park Service for the benefit of the long-term aesthetics of the area by returning disturbed areas to a natural pre-project state. As discussed elsewhere in this EA, the Commission's jurisdiction over the project would

end once the surrender becomes effective (after all conditions of any surrender order are met) and it is not the Commission's general practice to retain jurisdiction over projects for a long period of time after a surrender order is issued. Given this, Commission staff finds three years of monitoring and maintenance would ensure all revegetation efforts are successful after partial decommissioning.

The full removal alternative would result in the removal of the powerhouse, the penstock, and the road from Rock Shelter trailhead to the powerhouse, which would completely remove opportunities for visitors to view historic and educational opportunities in their locational context. The powerhouse is a historical and interpretive focal point near the Trail of Cedars and the Newhalem Creek Campground, and it is in the vicinity of several other Park Service-owned or managed facilities and trails. Full removal would eliminate the powerhouse, which is known to be a popular day use opportunity that is accessible via a short, flat trail from either the town of Newhalem or the Newhalem Creek Campground and provides easy access to visitors with a range of abilities unlike many other steep, remote recreation opportunities in the RLNRA. Removal of these additional aboveground facilities would likely cause a minor increase in the duration of temporary closures to surrounding trails for deconstruction activities for the protection of public safety in the area. Full removal of facilities would also lengthen the time for noise disturbances and increased traffic in the immediate vicinity of the project from decommissioning activities. Full removal would restore the aesthetic quality of the area to a natural pre-project condition and reduce maintenance requirements; however, it would also remove the locational context provided by the existing historical facilities and interpretive displays, as well as trails and important history of this area. Under the proposed action (partial decommissioning), the powerhouse and penstock remain and provide visitors an easily accessible area to learn and view historical structures in the original context, which may give visitors a better understanding of the continuum of history in the Skagit Valley. Neither the proposed action nor the full removal alternative is expected to cause any adverse effects to the wild and scenic-designated or eligible segments of the Skagit River.

6.3.6 Cultural and Historic Resources

6.3.6.1 Affected Environment

Definition of Cultural Resources, Historic Properties, Effects, and Area of Potential Effect

Historic properties are cultural resources listed or eligible for listing in the National Register of Historic Places (National Register). Historic properties can be buildings, structures, objects, districts (a term that includes historical and cultural landscapes), or sites (archaeological sites or locations of important events). Cultural resources must meet at least one the following criteria to be eligible for listing in the National Register:

- Are associated with events that have made significant contributions to the broad pattern of our history (Criterion A); or
- Are associated with the lives of persons significant in our past (Criterion B); or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a

significant and distinguishable entity whose components may lack individual distinction (Criterion C); or

- Have yielded, or may be likely to yield, information important in history or prehistory (Criterion D).

Historic properties also may be resources of traditional religious and cultural importance to Native American Tribes that meet the National Register criteria; these properties are known as TCPs. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources also must have enough internal contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible.

Section 106 of the NHPA, as amended (section 106), requires federal agencies including the Commission, to consider the effects of their undertakings on historic properties and to allow the Advisory Council a reasonable opportunity to comment. 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, among other things, processes requiring a federal permit, license, or approval. The Advisory Council's regulations implementing section 106 define effects on historic properties as those that change characteristics that qualify those properties for inclusion in the National Register. In this case, the section 106 undertaking is the proposed surrender of the license for the Newhalem Project and the removal of project facilities.

In a letter to the Washington SHPO and other agencies issued on July 8, 2021, the Commission stated that it had designated City Light as the non-federal representative for the purpose of informal section 106 consultation.

Determining effects on historic properties first requires identifying historic properties in the APE of an undertaking. The Advisory Council's regulations define the APE as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. By letters dated August 11, 2022 (filed December 12, 2022), City Light submitted a proposed APE to the Washington SHPO, Park Service, Swinomish Indian Tribal Community (Swinomish Tribe), Sauk-Suiattle Indian Tribe, and the USIT for review and comment. In its letters, City Light defined the APE as all lands within the project boundary with a buffer around the boundary to account for any visual, auditory, or atmospheric effects that could occur as a result of decommissioning and facility removal. On August 12, 2022 (filed by City Light on December 12, 2022), the Washington SHPO concurred with City Light's definition of the APE.

In response to Commission staff's notice of the application, several Tribes filed motions to intervene. These Tribes were the USIT (letter filed May 31, 2022), Sauk-Suiattle Indian Tribe (letter filed May 31, 2022), and Swinomish Tribe (letter filed June 1, 2022).

The Commission also consulted directly with participating Tribes, and in a letter issued November 21, 2022, to the Sauk-Suiattle Indian Tribe, Swinomish Tribe, the USIT, Nooksack Indian Tribe, Lummi Tribe of the Lummi Reservation, Samish Indian Nation, Snoqualmie Indian Tribe, and the Confederated Tribes of the Warm Springs Reservation, the Commission invited

the Tribes to provide comments on City Light's proposal to decommission the project. To date, no responses to the November 21, 2022 letter have been filed with the Commission.

Cultural History Overview[41]

Prehistoric and Ethnographic Background. Human occupation of western Washington dates to between 10,000 and 8,000 years before present (BP). These populations are known as Paleo-Indians and consisted of small groups of primarily hunter-gatherers that were highly mobile. Using what is known as broad-spectrum foraging, these groups moved between resource procurement areas on a seasonal basis. Paleo-Indian sites are characterized by the presence of large fluted projectile points that were used to hunt large game. While they are rare in western Washington, Paleo-Indian sites have been documented near East Wenatchee, Redmond, and at a pass through the Cascade Mountains.

The period between 8,000 and 5,500 BP is marked by fluctuations between warm/drier weather and cool/wet conditions. Populations continued to be highly mobile, but sites dating to this time reflect a change in tool technology. Archaeological sites may contain artifact assemblages consisting of large, stemmed and leaf-shaped projectile points as well as flaked and cobble tools. The use of atlatl technology also indicates a major technological change. Radiocarbon dates from charcoal obtained at an archaeological site located several miles from the Newhalem Project indicate that prehistoric populations used lands in the vicinity of the project at least 6,000 years ago.

Between 5,500 and 3,500 BP, populations shifted from using a broad-spectrum subsistence strategy to one that is better described as a semisedentary foraging strategy. During this time, both short-term seasonal camps and longer-term habitation bases were established, which increased the importance of food storage for the winter months. Populations exploited a wider variety of resources, and inland riverine fishing traditions were established. This resulted in further changes in tool technology, including tools designed for fishing, food processing, and the development of non-habitation features such as ovens, storage pits, and other features.

After 3,500 BP, populations in the region increased, the use of varied resources intensified, and stored foods became even more important in population economies. Trade between groups across the Cascade Mountains and with people in other regions became common.

The project area is ancestral to at least three Tribal organizations. Tribes that have expressed interest in the Newhalem Project decommissioning include the Sauk-Suiattle Indian Tribe, the Swinomish Tribe, and the USIT. No Tribal reserved lands are located within the project's APE. However, on January 22, 1855, the federal government executed a land settlement agreement with a number of Tribes within the Puget Sound area. Known as the Treaty of Point Elliot, the treaty established the Swinomish, Suquamish, Tulalip, and Lummi

[41] Adapted from Seattle City Light (1992) and Seattle City Light (no date).

reservations. The treaty also guaranteed fishing, hunting, and gathering rights within the Tribes' "usual and accustomed grounds and stations."[42]

The Newhalem Project is situated within the ethnographic territory of the Upper Skagit people. An Upper Skagit village was reported in the vicinity of the Newhalem Project that consisted of several separate winter houses located on the Skagit River. This village would have been located at the intersection of two trails: one along the Skagit River that led downstream people to and from the Skagit River valley, and one used by groups traveling south from northern winter villages. During the winter, families resided in the winter houses and took advantage of the salmon runs, but in the warmer months, residents traveled from the villages to pursue other resources. According to City Light's 1992 license application, no archaeological evidence of the Upper Skagit village that was located near the Newhalem Project remains, and it is likely that any associated cultural materials have long since eroded and been redeposited downstream.

Historic Background. Historic use of the area was initiated with construction of the Newhalem Project. The project was originally intended as a temporary power plant to supply electricity to City Camp, now Newhalem, which was established in 1918 as a camp for workers tasked with building the Skagit River Hydroelectric Project. The camp contained a general store, numerous bunkhouses, a mess hall, and several individual craftsman/bungalow style homes. In 1920, City Light constructed the 23-mile-long Skagit River Railway from Rockport to the camp that carried materials, workers, and equipment to the area. In 1924, use of the rail service was extended to tourists, and it remained in operation until the railroad was removed in 1954. While a road to Newhalem was constructed by the Forest Service in 1940, it was not suitable for passenger vehicles until 1940.

The Newhalem Project was the first of four hydroelectric facilities built by City Light in the Skagit River Basin. Construction began in 1920 with the excavation of a power tunnel designed to transport water from a log crib dam located on Newhalem Creek approximately 3,000 feet upstream of its confluence with the Skagit River. Two Pelton turbines were placed within a small wooden powerhouse, and the plant began generating electricity in August 1921. The powerhouse operated until July of 1966, when it was destroyed by a fire. Reconstruction of the Newhalem Project in 1969 included the installation of a new concrete diversion dam near the location of the original log crib dam.

Identified Cultural Resources

Archaeological Resources. In 1990, City Light conducted an archaeological survey of the project area for the project relicensing (Larson and Lewarch 1990, as cited by City Light, 1992). The survey included shovel probes placed along the Skagit riverbank between Newhalem Creek and the tailrace and west of the penstock on a glacial terrace. No archaeological resources were identified during the fieldwork. However, no subsurface investigations were conducted at the tailrace, tailrace barrier, along the penstock, or at the project headworks.

[42] Article 5, Treaty of Point Elliott (1955). Treaty of Point Elliott, 1855 | GOIA (wa.gov). Accessed January 23, 2023.

In 2016, one archaeological site, a lithic scatter, was documented within the project boundary during monitoring efforts associated with the penstock saddle replacement project. This site, 45WH1029, consisted of a lithic scatter located within an area containing disturbed sediments. The sediment was subsequently found to be contaminated, and the entire site matrix was screened and removed as part of a CERCLA effort.

In its memorandum filed on December 12, 2022, the USIT agree that as an individual property, site 45WH1029 does not appear to be eligible for listing in National Register. However, the USIT states that while this site may have been disturbed, the site's significance "cannot be determined in isolation from the cultural context of other documented sites in the Newhalem vicinity" and that it carries significance because of its association with these sites. The Tribe states that it anticipates a review of a final report documenting field investigations and monitoring of the site. Additionally, the Tribe states that the site contributes to the understanding and eligibility of TCP 45WH450 (see below).

Historic Built Environment. The Newhalem Project is a component of the Skagit River and Newhalem Creek Hydroelectric Projects Historic District (DT66) that was listed on the National Register in 1996. A 2010 update of the district nomination added the Newhalem Creek Powerhouse and Dam. The district currently consists of: (1) the town of Newhalem; (2) the Gorge and Diablo Powerhouses and Dams (Skagit River Hydroelectric Project); and (3) historic elements of the Newhalem Project. Construction of the Newhalem Project was initiated in 1920, and elements of the project that contribute to the eligibility of the district include the penstock (1921), power tunnel (1921), and diversion dam (1969). The powerhouse, which was burned in a 1966 wildfire and was reconstructed in 1969, also contributes to eligibility of the district. The powerhouse retains many of its original 1921 components (tailrace, generator, penstock, impulse wheels), and it provides a visual tie between the original 1921 powerhouse design and the reconstructed 1969 structure. Many of the original wooden penstock saddles also burned in a second 2015 wildfire and were replaced with concrete saddles in 2016. In its application for surrender of license, City Light states that an updated district nomination form was anticipated in 2022 in compliance with existing license requirements. However, in its December 12, 2022, response to the Commission's request for additional information, City Light clarifies that that additional research for the updated nomination form is needed, including preparation of historic property inventory forms for historic buildings and structures.

Traditional Cultural Properties. City Light consulted with the USIT, and in its application, it identifies one area of traditional importance that had been recorded by the Tribe in the vicinity of the project. Additional details regarding this resource are not provided, but in City Light's July 1, 2022, response to comment #9 from the Park Service (City Light, 2022d), City Light states that it would be continuing to consult with the Tribes regarding TCPs. On December 12, 2022, and in response to the Commission's request for additional information regarding the resource, the USIT filed a memorandum that contained a summary description of TCP 45WH450. According to the Tribe, this resource was determined to be eligible for listing on the National Register under multiple criteria and documentation in that regard was signed by the Washington SHPO and Park Service superintendent in 2019. Further details regarding this TCP are privileged.

6.3.6.2 Environmental Effects

Effects of Partial Decommissioning on Archaeological and Built Resources and Traditional Cultural Properties

Commission staff finds the proposed surrender of the project and removal of project facilities would end the Commission's jurisdiction over archaeological sites, historic hydroelectric facilities, and TCPs that are located within the project APE and would remove these resources from the federal protection afforded by the NHPA. Additionally, Commission staff finds that implementation of City Light's proposed action would also result in direct, adverse effects on historic properties.

Effects on Archaeological Resources. In its application, City Light states that there would be no impact to known archaeological resources because only one archaeological site (45WH1029) was identified within the APE, and all archaeological sediments associated with the site were removed in 2016 as part of the CERCLA cleanup. However, City Light acknowledges that decommissioning could disturb previously unidentified archaeological resources located in an unsurveyed area between the diversion dam and the tailrace fish barrier and indicates consultation with the USIT continues regarding mitigation for adverse effects. No updates on this consultation have been filed with the Commission. Commission staff finds that development of a CRMMP, as proposed, in consultation with the USIT, would serve to adequately mitigate for any realized adverse effects to archaeological resources.

Effects on Historic Built Environment Resources. Commission staff finds that City Light's proposed action would result in permanent, adverse effects on some National Register-eligible historic structures (i.e., the dam) located in the APE, but would preserve the National Register-eligible penstock and powerhouse. The Newhalem Creek structures are components of the Skagit River and Newhalem Creek Hydroelectric Projects Historic District, a district that is eligible for listing in the National Register. We concur with City Light and find that removing the diversion dam under the proposed action and permanently ceasing operations would constitute an adverse effect under the NHPA to the Newhalem Project site and to the larger historic district but retention of the powerhouse and penstock would lessen that adverse effect.

In a letter filed with the Commission on October 12, 2022, the Washington Trust for Historic Preservation (Washington Trust) acknowledges the benefits of project decommissioning on natural resources while expressing disappointment over the loss of historically structures that are listed on the National Register. However, Washington Trust suggests that retention of the Newhalem Creek Powerhouse and penstock for continued use as important interpretive elements while removing the diversion dam and other features that hinder natural flows would provide a balanced "trade-off" that considers the importance of both natural and cultural resources. The retention of the powerhouse and penstock is also supported by Historic Seattle in its letter filed on October 11, 2022**.**

In its letters filed on June 1, 2022, the Sauk-Suiattle Indian Tribe and the Swinomish Tribe express support for the decommissioning of the Newhalem Project facilities but do not provide specific comments on partial or full removal.

Effects on Traditional Cultural Properties. Commission staff finds there would be long-term, beneficial effects of project decommissioning because the pre-contact setting of Newhalem Creek would be restored. The removal of project facilities and the access road, under the partial alternative, and the cessation of vegetation management would increase forest habitat and return the area to its natural state.

In its letter filed on December 12, 2022, the USIT states that City Light's proposal to decommission but retain the penstock and powerhouse structures at the Newhalem Project would "affect the historic integrity of TCP 45WH450 by altering its integrity of setting, feeling, location, and association of the natural landscape, its forest setting, and its cultural setting." Additionally, the Tribe asserts that toxic and hazardous substances thought to remain in the soils underneath the project penstock would also adversely affect TCP 45WH450 but that "a full review of this issue awaits a final decision on CERCLA cleanup under penstock saddles."

In its response to the Commission's request for additional information, City Light states that evaluation of the effects of decommissioning on TCPs has not been completed but would be accomplished through further consultation with the USIT (City Light, 2022d). As discussed above, Commission staff finds that development of the proposed CRMMP, in consultation with the USIT and other parties, would serve to protect and mitigate for any potential adverse effects to TCPs.

Effects of Complete Decommissioning on Archaeological and Built Resources and Traditional Cultural Properties

Overall, Commission staff finds the full removal of all aboveground facilities would result in the same effects to archaeological resources and historic structures as the proposed action, but with additional adverse effects associated with removal of the powerhouse and penstock. However, in its letter filed on December 12, 2022, the USIT states that full removal of project facilities, including the powerhouse and penstock would serve at mitigation of potential adverse effects to TCP 45WH450. In letters filed on May 31, 2022, and September 1, 2022, the Park Service supports the USIT's preference for full removal of the Newhalem Project powerhouse and penstock. Commission staff finds that development of the proposed CRMMP, in consultation with the USIT and other parties, would serve to protect and mitigate for any potential adverse effects to historical and cultural properties under the full dam removal alternative.

Development of the CRMMP

City Light proposes to develop the CRMMP after the Commission's completion of the NEPA process and when the identification of historic properties, determination of adverse effects, and development of mitigation measures through section 106 consultation has also been completed. The Washington SHPO has not commented on City Light's proposal for decommissioning of the Newhalem Project or on its proposed measures to resolve adverse effects on historic properties.

We find that inclusion in the proposed CRMMP of measures developed in consultation with the Washington SHPO, the Park Service, and affected Tribes to resolve adverse effects on historic structures and on the overall historic district would be appropriate. As City Light

suggests, these measures could include detailed reporting and photographic documentation of affected structures as well as installation of new interpretive opportunities. We also recommend that the measures implemented for the decommissioning of the Newhalem Powerhouse follow the guidance outlined in the publication *Preservation Brief 31: Mothballing Historic Structures* (Park Service, 1993).

According to the USIT, the only appropriate mitigation for potential effects of decommissioning on TCP 45WH450 is the complete removal of the Newhalem Project powerhouse and penstock. We agree that this would return the project area closer to its pre-project condition. In turn, this could improve fishing, hunting, and gathering activities by the Sauk-Suiattle Indian Tribe, Swinomish Tribe, and the USIT that are rights-secured by the 1855 Treaty of Point Elliot. However, removal of these structures would result in greater adverse effects to the Skagit River and Newhalem Creek Hydroelectric Projects Historic District than would occur under the proposed action. Additionally, the removal of the powerhouse and penstock would result in the loss of current recreational resources through the removal of the existing trail to the powerhouse. While relocation of the powerhouse to another public location could aid in the retention of interpretive opportunities, Commission staff finds this action would still adversely affect the structure's integrity of location, result in further ground disturbance, and could be cost prohibitive.

To meet the requirements of section 106 of the NHPA, Commission staff intends to execute a Memorandum of Agreement with the Washington SHPO for the proposed decommissioning of the Newhalem Project. The terms of the Memorandum of Agreement would require City Light to develop and implement a CRMMP in consultation with the Washington SHPO, the Park Service, the Sauk-Suiattle Indian Tribe, Swinomish Tribe, and the USIT as a stipulation of any license surrender order issued for the project.

6.3.7 Environmental Justice

6.3.7.1 Affected Environment

In conducting NEPA reviews of proposed hydropower actions, the Commission follows the instruction of Executive Order 12898 and Executive Order 14096, which direct federal agencies to identify and address "disproportionate and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[43] Executive Order 14008, also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative effects on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[44] The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and

[43] Exec. Order No. 12,898, 59 Fed. Reg. 7629, at 7629, 7632 (Feb. 11, 1994); Exec. Order No. 14,096, 88 Fed. Reg. 25251 (Apr. 21, 2023).

[44] Exec. Order No. 14,008, 86 Fed. Reg. 7619, at 7629 (Jan. 27, 2021).

overburdened by pollution.[45] Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.[46]

Commission staff used *Promising Practices for EJ Methodologies in NEPA Reviews* (*Promising Practices*)[47] which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this project. Additionally, consistent with EPA recommendations, Commission staff used EPA's Environmental Justice Screening and Mapping Tool 2.0 (EJScreen) as an initial screening tool to better understand locations that require further review or additional information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors.[48]

Meaningful Engagement and Public Involvement

The Council on Environmental Quality's (CEQ) *Environmental Justice Guidance Under the National Environmental Policy Act (CEQ Environmental Justice Guidance)*[49] and *Promising Practices* recommend that federal agencies provide opportunities for effective community participation in the NEPA decision-making process by: identifying potential effects and mitigation measures in consultation with affected communities; improving accessibility of public meetings, crucial documents, and notices; and using adaptive approaches to overcome potential barriers to effective participation. In addition, Executive Order 13985 and Executive Order 14096 strongly encourage independent agencies to "consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, federal policies and programs,"[50] and "provide opportunities for the

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[45] *Id.*

[46] *See* EPA, *EJ 2020 Glossary* (Jul. 31, 2023), https://www.epa.gov/environmentaljustice/ej-2020-glossary.

[47] Federal Interagency Working Group on Environmental Justice & NEPA Committee, *Promising Practices for EJ Methodologies in NEPA Reviews* (Mar. 2016) (*Promising Practices*), https://www.epa.gov/sites/default/-files /2016-08/documents/nepa_promising_practices_document_2016.pdf.

[48] The EPA recommends that screening tools, such as EJScreen, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review.

[49] CEQ, Environmental Justice: Guidance Under the National Environmental Policy Act 4 (Dec. 1997) (CEQ's Environmental Justice Guidance), https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/ej/justice.pdf.

[50] Exec. Order No. 13985, 86 Fed. Reg. at 7011 (Jan. 20, 2021).

meaningful engagement of persons and communities with environmental justice concerns who are potentially affected by Federal activities."[51]

As discussed in section 5.0 *Public Review and Comment* of this EA, there have been opportunities for public involvement during the Commission's environmental review process, although the record does not demonstrate that these opportunities were specific to engaging environmental justice communities. The Commission's communication and involvement with the surrounding communities began when a Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene, and Protests was issued on April 29, 2022, which established a 30-day comment period and intervention deadline. Subsequently, the Commission issued a Notice Soliciting Scoping Comments, and SD1 on August 29, 2022, which established a 30-day comment period. No comments regarding environmental justice concerns were filed during either notice period.

All documents that form the administrative record for these proceedings, with the exception of privileged or critical energy infrastructure information, are available to the public electronically through the internet on the Commission's website (www.ferc.gov). Anyone may comment to the Commission about the proceeding, either in writing or electronically. Commission staff has consistently emphasized with the public that all comments receive equal weight by Commission staff for consideration in the EA.

In 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public, including environmental justice communities, landowners, Tribal citizens, and consumer advocates, with assistance in FERC proceedings—including navigating Commission processes and activities relating to the project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6592 or OPP@ferc.gov for further information.

Identification of Environmental Justice Communities

According to CEQ's *Environmental Justice Guidance* and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, the Commission uses the 50 percent and the meaningfully greater analysis methods to identify minority populations. Using this methodology, minority populations exist when either: (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The aforementioned guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices'* low-income threshold criteria method, low-income populations are identified as census block

[51] 51 Exec. Order No. 14,096, 88, Fed. Reg. 25254 (Apr. 21, 2023).

groups where the percentage of low-income population in the identified block group is equal to or greater than that of the county.

Here, Commission staff selected Whatcom County, Washington, in which the project action is located, as the comparable reference community to ensure that affected environmental justice communities are properly identified. A reference community may vary according to the characteristics of the particular project and the surrounding communities.

According to the current U.S. Census Bureau information, minority and low-income populations exist within the project area, as discussed further below. Table 8**Error! Reference source not found.** identifies the minority populations (by race and ethnicity) and low-income populations within the county affected by the proposed action (Whatcom County, Washington), and U.S. census block groups[52] within vicinity of the project site. For this project, staff chose a 1-mile radius around areas affected by the proposed action (i.e., proposed project area). Commission staff found that a 1-mile radius is the appropriate unit of geographic analysis given the limited scope of the proposed action and concentration of project-related effects near the proposed project.[53] For this project we used U.S. Census American Community Survey File #B03002 for the race and ethnicity data and Survey File #B17017 for poverty data at the census block group level.[54]

As presented in Table 8, staff found that the single block group within the geographic scope of the project meets the definition of an environmental justice community. Census Tract 101.03, Block Group 2 has a low-income population equal to or greater than the respective county. The same block group also has a population where the aggregate minority population in the affected block group is at least 10 percent higher than the aggregate minority population percentage in the county. Figure 11 provides a geographic representation of this community relative to the area affected by the proposed action.

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[52] U.S. Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people. U.S. Census Bureau. 2022. Glossary: Block Group. Available online at: https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4 (October 19, 2022).

[53] The activities proposed, including facility removal and equipment staging near the diversion dam, tailrace barrier, and access road would occur within small footprints that are located in or nearby environmental justice communities. Staff found that impacts on traffic and recreation may affect environmental justice communities but that adverse impacts associated with the proposed activities would not exceed a 1-mile radius.

[54] U.S. Census Bureau, American Community Survey 2022 ACS 5-Year Estimates Detailed Tables, File #B17017, *Poverty Status in the Past 12 Months by Household Type by Age of Householder*, https://data.census.gov/table/ACSDT5Y2022.B17017?q=B17017 (Dec. 27, 2023); File #B03002 *Hispanic or Latino Origin by Race*, https://data.census.gov/table/ACSDT5Y2022.B03002?q=b03002 (Dec. 27, 2023).

6.3.7.2 Environmental Effects

Consistent with *Promising Practices*, Executive Order 12898, and Executive Order 14096, we reviewed the alternatives to determine if resulting effects would be disproportionate and adverse on minority and low-income populations and also whether effects would be significant.[55] *Promising Practices* provides that agencies can consider any of a number of conditions in this determination and the presence of any of these factors could indicate a potential disproportionate and adverse effect. For these alternatives, a disproportionate and adverse effect on an environmental justice community means the adverse effect is predominantly borne by such population. Relevant considerations include the location and the natural physical environment of project facilities and the project's human health and environmental effects, including associated social, economic, or cultural direct, indirect, and cumulative effects, on identified environmental justice communities. A full discussion of effects on these communities is discussed below.

As described in section *3.2 Proposed Action*, City Light proposes to decommission and remove most of the project features and to retain other features considered to be historically important. The disposition of the various project features is provided in Table 1. Deconstruction activities are anticipated to be completed over a six-month timeframe. Construction related to decommissioning would occur entirely on federal lands, under the proposed action. The full removal alternative would include the removal of the penstock, powerhouse, and the transmission and electrical service line poles on both sides of the Skagit River affecting both NPS and City Light-owned lands.

Potential effects on the natural and human environment from decommissioning the project are identified and discussed throughout this document. Factors that could affect environmental justice communities include construction traffic and temporary road and trail closures (see section 6.3.5, *Recreation, Land Use and Aesthetics*). These potential effects are addressed in greater detail in the associated sections of this EA. Potential effects on environmental justice communities are not present for other resource areas such as geology and soils, water quality, fisheries, terrestrial resources, and cultural resources.

No entity provided comments or recommendations regarding the effects of the proposed amendment on environmental justice communities in response to the Commission's public notice.

The single identified block group is located in Whatcom County, Washington, which has a population of 317. The area where deconstruction activities would occur is surrounded by federal land, while the nearest residences within the identified block group are located on the opposite (north) side of the Skagit River. The only deconstruction activity that would occur on the north side of the Skagit River is the removal of several transmission line poles under the full removal alternative, a process that would cause only a low level of noise for a short duration.

[55] See *Promising Practices* at 33 (stating that "an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA" and in other circumstances "an agency may determine that an impact is both disproportionately high and adverse and significant within the meaning of NEPA").

Deconstruction of the diversion dam, tailrace barrier, and powerhouse (if the powerhouse were removed, which is not part of the proposed action but has been recommended by several stakeholders) are the activities with the greatest potential to affect nearby residences due to construction noise and dust. These three project features are located approximately 4,330, 340, and 775 feet from the nearest residences within Census Tract 101.03; Block Group 2. The severity of the effects of construction noise and dust on these residences would be reduced due to their distance from the deconstruction activity, especially for the diversion dam where the most extensive deconstruction activities would occur.

As discussed in section 6.3.5, *Recreation, Land Use, and Aesthetics*, the proposed deconstruction activities would have limited, short-term adverse effects on recreation and nearby residents. During deconstruction activities, noise, dust, and additional traffic caused by construction may affect environmental justice communities who live closest to the facilities that would be removed. Construction traffic on the access road would affect few if any local residents, but there would be a minor, short-term increase in traffic on State Route 20 (North Cascades Scenic Highway), which could delay or increase travel times for members of the identified environmental justice community. The proposed action would result in some short-term, adverse effects on recreation, including increased traffic and noise from equipment and removal activities. Increased noise and vehicle use may occur during the peak recreational season, and construction activities may require some temporary trail closures that could affect some members of the identified environmental justice community who recreate in the project area. Due to protection measures proposed during construction activities, the effects to identified environmental justice community are not expected to be significant, as effects would be temporary and minor.

After deconstruction is complete the project area would return to natural conditions. Long-term effects of the proposed action would be positive, including a return to unregulated flows, removal of the human-made facilities, a restoration of the pre-project natural setting, increase in available aquatic and riparian habitat; therefore, increasing the overall natural, aesthetic, and recreational value of the area to the benefit of the local environmental justice communities.

Commission staff recommends limiting construction activities between the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday, to eliminate construction noise at night and on the weekend when noise effects would be the most disruptive to residents. Further, Commission staff recommends City Light provide public notice (e.g., town website, local newspaper, mailers, etc.) at least two weeks prior to the start of the higher noise volume construction actions of removing the dam and tailrace barrier. These noise levels would have a temporary adverse effect on residences within environmental justice communities that are close to the construction site. Nonetheless, because of the short duration of the proposed construction activities and staff's recommendation to limit the hours and days of construction, the noise effects of project construction on nearby residents within environmental justice communities would be less than significant.

Based on the above findings regarding recreation, land use and aesthetic effects, Commission staff concludes that any adverse effects of the proposed action, as well as the full removal alternative, to members of environmental justice communities, residing nearby or

visiting the area, would be temporary and not significant. Additionally, in consideration of the included census data and the limited and temporary scope of the proposed deconstruction activities, Commission staff concludes that the proposed action would not result in disproportionately high and adverse effects on environmental justice communities.

6.3.8 Air Quality and Climate Change

6.3.8.1 Affected Environment

Air Quality

Air quality is considered good to moderate in the vicinity of Newhalem Creek based on the Air Quality Index (AQI), as measured at Washington DOE's monitoring station in Darrington, Washington, approximately 40 miles from Newhalem Creek.[56] EPA has set National Ambient Air Quality Standards (NAAQS) for six common air pollutants including carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution (PM2.5 and PM10), and sulfur dioxide.[57] Washington DOE monitors air quality statewide, and except for a small portion of Whatcom County (near Cherry Point, Washington), most of the state currently meets air quality standards.[58] Commission staff have identified no areas at risk of nonattainment, i.e., not meeting national air quality standards, in the project area.

Greenhouse Gases and Climate Change

The term "greenhouse gases" (GHGs) refers to certain gases and aerosols that occur in the atmosphere both naturally and because of human activities, such as the burning of fossil fuels. GHGs are non-toxic and non-hazardous at normal ambient concentrations; however, they were identified as pollutants by the EPA because the agency determined that the current and projected concentrations of these gases in the atmosphere threaten the public health and welfare of current and future generations through climate change. There are six long-lived and directly emitted GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxides (NO_x), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Of these, CO_2, CH_4, and NO_x would have been emitted during project construction due to the burning of fossil fuels for operation of construction equipment. There are no NAAQS or other significance thresholds for GHGs.

The most recent report on Washington's greenhouse gas emissions (Washington DOE, 2022a), indicates that emissions rose 6.9 percent from 2018 to 2019, reaching a total of 102.1 million metric tons carbon dioxide equivalent (MMT CO_2e). This was the highest total for the state since 2007. Emissions in 2019 were 8.7 MMT CO_2e (9.3 percent) higher than the 1990 baseline of 93.5 MMT CO_2e. The transportation sector remains the largest source of emissions at 40.3 MMT CO_2e in 2019. The transportation sector's share of statewide emissions decreased

[56] https://aqicn.org/city/usa/washington/darrington/fir-st/ . Accessed March 2024.

[57] https://www.epa.gov/criteria-air-pollutants. Accessed March 2024.

[58] https://ecology.wa.gov/regulations-permits/plans-policies/areas-meeting-and-not-meeting-air-standards. Accessed March 2024.

from 44.9 percent in 2018 to 39 percent in 2019 as the share from the electricity sector increased. Washington DOE is currently updating its existing statewide plan (Washington DOE, 2012) offering recommendations on how existing state policies and programs can better prepare the state to respond to impacts of climate change.[59]

City Light states that the power originally produced by the project has been replaced by energy generated at the Skagit River Project, other facilities and/or conservation.

6.3.8.2 Environmental Effects

Air Quality

Construction activities related to the decommissioning and removal of structures would use various construction equipment. The use of this equipment would result in temporary localized emissions of criteria pollutants through fugitive dust and vehicle exhaust. Vehicle emissions would also emit greenhouse gas emissions. Given the temporary and intermittent nature of construction-related emissions, and City Light's proposed adherence to best management practices and measures to be required in any 401 certification, Commission staff find that removal of project features under both the proposed action and full removal alternative would not cause or significantly contribute to violations of any applicable ambient air quality standards, or significantly affect local or regional air quality.

Greenhouse Gases and Climate Change

Decommissioning the project would result in the loss of 12,000 megawatt hours of lost generation. However, staff recognize the project has not generated for more than 10 years and there is no record of when it served as backup power for the City of Newhalem or the Gorge Development of the Skagit River Project. According to City Light, generation has already been replaced by other means and a separate upgrade to equipment at the Gorge Development would not involve the installation of a diesel generator. The vehicles and equipment used for removal of project features would result in short-term, temporary increases in greenhouse gas emissions. However, these activities would not significantly add traffic capacity to the Newhalem area or increase vehicular emissions over the long term. Commission staff find that any contributions to greenhouse gases during project removal would be insignificant.

6.4 No-Action Alternative

Under the no-action alternative, City Light would maintain the project features in their current condition and in a safe and secure manner. Ultimately, the project would have to be either relicensed, decommissioned, or licensed by another entity because perpetual annual licensing is not authorized under the FPA. Until the ultimate disposition of the project is determined, no archaeological sites or historic structural properties would be adversely affected. However, restoration of Newhalem Creek aquatic and terrestrial habitat would not occur, and the

[59] See https://ecology.wa.gov/air-climate/responding-to-climate-change/washingtons-climate-strategy. Accessed March 27, 2024.

project facilities would require continued maintenance. Management of cultural resources would not change compared to current conditions, and historic districts would remain intact. Federal jurisdiction would continue. Potential project-related effects to TCP 45WH450 as identified by the USIT, would continue under this alternative.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusion

A summary of our findings of effects under each resource area for the partial removal, full removal, and removal with staff recommended alternatives can be found in Table 9. Overall, each of these alternatives would include removal of the dam, and its associated infrastructure, resulting in the reestablishment of a natural flow regime in the lower reach of Newhalem Creek. We find this to be an overall beneficial effect under each alternative, except for the no-action alternative.

The effects of each alternative, identified in Section 6 of this EA and summarized in Table 9, include the temporary adverse construction-related effects of project removal, on geology and soils, water quality, vegetation, wildlife, listed species, recreation, aesthetics, cultural and historic resources, environmental justice communities, and air quality. We have considered the complexities of removing the penstock, and the adverse effects of not only a loss of federal jurisdiction, but of the physical removal of the National-register eligible properties under each alternative. We have considered the comments on the need for a grade control structure, as well as the recommendation to assess the extent of the unstable landslide area to include photogrammetric surveys in efforts to evaluate effects of decommissioning activities.

We have also considered the Park Service's comments to allow time for the plans proposed by City Light to be fully developed in consultation with the stakeholders and that Commission staff should delay the NEPA analysis until that consultation is complete. We recognize the USIT's request to be involved in the further development of decommissioning and management plans. We recommend below that all of the proposed plans be developed in consultation with these consulting parties. We also find that we have sufficient information to develop a NEPA document at this time.

Based on our independent review and evaluation of the environmental effects of the proposed action (partial removal of project facilities), full removal (removal of all aboveground facilities), the proposed action with staff modifications, and the no-action alternative, we recommend the proposed action with staff modifications, as the preferred alternative. We recommend this alternative because the environmental protection, mitigation, and enhancement measures proposed by City Light, along with staff's additional recommendations which would serve to minimize construction-related effects, would adequately protect most environmental resources, and would restore project lands to a more natural state.

7.2 Commission Staff Recommendations

As discussed in Section 6.0 of this EA, we recommend that partial decommissioning be implemented as proposed by City Light with the following additional measures:

- Limit construction activities to occur only between the hours of 7 a.m. to 7 p.m., Monday through Saturday.

- Provide public notice (e.g., town website, local newspaper, mailers, etc.) at least two weeks prior to the start of the higher noise volume construction actions of removing the diversion dam and tailrace barrier.

- Develop all management plans (hazardous waste substance plan, road decommissioning plan, invasive plant management plan, sediment and erosion control plan, restoration plan, CRMMP, and spill plan) in consultation with stakeholders, including the Tribes, the Park Service, the National Marine Fisheries Service (NMFS), FWS, and Washington DFW. Commission staff find that monitoring for three years post removal, rather than five years as proposed by City Light, would be adequate.

- Identify any roadway repairs, safety measures, or road closures if needed during the decommissioning, including to the one-lane bridge that provides access to the project from State Route 20.

- Follow guidance outlined in the publication, *Preservation Brief 31: Mothballing Historic Structures* (Park Service, 1993) in plans for decommissioning the project powerhouse.

- Conduct three years of monitoring post-dam removal to identify and address any barriers to fish passage that may develop due to sediment movement that have the potential to impede the passage of salmon, steelhead, bull trout or Dolly Varden into or within the lower 0.65-mile section of Newhalem Creek.

7.3 Finding of No Significant Impact

In conclusion, Commission staff finds the proposed surrender and decommissioning of the Newhalem Project would create a natural, free-flowing condition in Newhalem Creek, where a diversion dam and small impoundment now exists. While some temporary minor adverse effects are expected to result from the construction activities during removal, permanent adverse effects are expected for removal of historic structures listed on the National Register, including the Newhalem Project's diversion dam and the Skagit River and Newhalem Creek Hydroelectric Projects Historic District. Implementation of a Memorandum of Agreement requiring the development and implementation of a CRMMP, proposed to be developed by City Light, would effectively mitigate the adverse effects identified in section 6.0 of this EA. With implementation of the licensee's proposed mitigation measures and staff's recommended measures, we find that the proposed surrender and decommissioning of the project would not constitute a major federal action significantly affecting the quality of the human environment.

APPENDIX A: STATUTORY AND REGULATORY REQUIREMENTS

Clean Water Act

Under section 401(a)(1) of the Clean Water Act (CWA),[60] any applicant for a federal license or permit to conduct activities that may result in a discharge into United States waters, must obtain either a water quality certification (WQC or certification) from the appropriate state pollution control agency verifying that any discharge from the project would comply with applicable provisions of the CWA or a waiver of such certification. If the state "fails or refuses to act on a request for certification, within a reasonable period of time (which shall not exceed one year) after receipt of such a request," then certification is deemed waived.

By letter issued February 10, 2023, Commission staff requested that City Light provide either: (1) a copy of any water quality certification received from Washington Department of Ecology (Washington DOE); (2) a copy of the request for certification, including proof of the date on which the certifying agency received the request; or (3) evidence of waiver of water quality certification. City Light filed a response on April 10, 2023, stating that it consulted with Washington DOE on March 2, 2023, and that both parties agreed that City Light should postpone submission of the application for water quality certification until the proposed action for decommissioning the project is more clearly defined. City Light further stated that it anticipates that it will request these certifications following additional engagement with federal and state resource agencies and once 60% design drawings have been developed.

In a letter issued February 23, 2024, Commission staff requested another status update on the schedule for obtaining a certification. On March 11, 2024, City Light responded that it now intends to file its request for water quality certification after the decommissioning scope is finalized and 30% design drawings have been finalized.

Coastal Zone Management Act

Under section 307I(3)(A) of the Coastal Zone Management Act (CZMA),[61] the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state's CZMA agency concurs with the license 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.

By letter issued February 10, 2023, Commission staff notified City Light that CZMA consistency certification is warranted prior to Commission action on the surrender application and requested that City Light submit a request for CZMA consistency certification to Washington DOE and file the request and any response received from Washington DOE. City Light filed a response on April 10, 2023, stating that it consulted with Washington DOE on March 2, 2023, and that both parties agreed that City Light should postpone submission of the request for CZMA consistency certification until the proposed action for decommissioning the project is more clearly defined. City Light further stated that it anticipates that it will submit a

[60] 33 U.S.C. § 1341(a)(1).

[61] 16 U.S.C. § 1456(c)(3)(A).

CZMA consistency request to Washington DOE, with a copy to the Commission, after the section 401 request has been submitted.

In a letter issued February 23, 2024, Commission staff requested another status update on the consistency certification. On March 11, 2024, City Light responded that it now intends to file its CZMA consistency request after the decommissioning scope is finalized and 30% design drawings have been finalized.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the Magnuson-Steven's Fishery Conservation and Management Act (MSA)[62] requires federal agencies to consult with the Secretary of Commerce regarding action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. Under section 305(b)(4)(A) of the Magnuson-Stevens Act, the National Marine Fisheries Service (NMFS) is required to provide EFH conservation recommendations for actions that would adversely affect EFH.[63] Under section 305(b)(4)(B) of the Act, an agency must within 30 days after receiving recommended conservation measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on EFH.[64] The lower reach of Newhalem Creek extending downstream from a 14-foot natural waterfall at River Mile (RM) 0.65 to its confluence with the Skagit River contains designated EFH for Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (Oncorhynchus kisutch), and pink salmon (*Oncorhynchus gorbuscha*).

Our description of these species is in section 6.3.2.1, *Aquatic Resources, Affected Environment*, and we further describe Chinook salmon in section 6.3.4.1, *Threatened and Endangered Species, Affected Environment*. Our analysis of project effects on EFH for Chinook salmon, coho salmon, and pink salmon is in section 6.3.4.2, *Threatened and Endangered Species, Environmental Effects, Essential Fish Habitat*. We conclude that decommissioning the project, as proposed by City Light and with the staff-recommended measures in the EA, may affect, and is likely to adversely affect, EFH in lower Newhalem Creek. The temporary, episodic effects on these species from the transport of accumulated sediment under the proposed action are expected to be sublethal in nature and will primarily affect the behavior of mobile juveniles and adults in occupied reaches of Newhalem Creek. Sediment transport and deposition is expected to reach equilibrium over approximately 10 years.

We conclude that decommissioning the project, as proposed by City Light and with the staff-recommended measures in the EA, may affect, but is not likely to adversely affect, EFH in

[62] 16 U.S.C. § 1855(b)(2).

[63] *Id*. § 1855(b)(4)(A).

[64] *Id*. § 1855(b)(4)(B). These measures recommended by the Secretary of Commerce are advisory, not prescriptive. However, if the federal agency does not agree with the Recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

the Skagit River. For individual fish that spawn or migrate in the Skagit River, increased levels of turbidity from the transport of accumulated sediment are unlikely to be discernible from background levels beyond the immediate confluence with Newhalem Creek.

As such, we intend to consult with NMFS on appropriate EFH conservation recommendations.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940, as amended, provides for protection of the bald and golden eagle (*Haliaeetus leucocephalus* and *Aquila chrysaetos*) by prohibiting the take, possession, sale, "purchase, barter, offer to sell, purchase or barter, transport, export, or import, at any time or in any manner any bald eagle commonly known as the American eagle or any golden eagle, alive or dead, or any part, nest, or egg" unless allowed by permit (16 U.S.C. 668). It also covers human-induced impacts around a previously used nest site during a time when eagles are not present. Civil and criminal penalties may be applied for violation of the act.

As described in Special Status Wildlife, the FWS lists the bald eagle as potentially occurring in the project area with moderate to high probability of occurrence late December through mid-June and low probability of occurrence July through October.

Endangered Species Act

Section 7 of the Endangered Species Act of 1973 (ESA)[65] 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 the critical habitat of such species.

On March 25, 2024, staff accessed the U.S. Fish and Wildlife Service's (FWS) Information for Planning and Consultation (IPaC) database to determine federally listed species that could occur in the project vicinity The IPaC search identified the following species: threatened bull trout (*Salvelinus confluentu*s), proposed similarity of appearance threatened Dolly Varden (*Salvelinus malma*), threatened whitebark pine (*Pinus albicaulis*), endangered gray wolf (*Canis lupus*), threatened North American wolverine (*Gulo gulo luscus*) threatened marbled murrelet (*Brachyramphus marmoratus*), threatened northern spotted owl (*Strix occidentalis caurina*), threatened yellow-billed cuckoo (*Coccyzus americanus*), and candidate monarch butterfly (*Danaus plexippus*). City Light accessed Salmonscape (Washington DFW, 2021a) to identify the following additional listed species that could be affected by the proposed action: threatened Puget Sound steelhead (*Oncorhynchus mykiss*) and threatened Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*). Critical habitat for Puget Sound steelhead and bull trout is designated within the project boundary.

Our analysis of project effects on threatened and endangered species is presented in section 6.3.4, *Threatened and Endangered Species*, and our recommendations are included in section 7.2, *Commission Staff Recommendations*. Based on the available information, we

[65] 16 U.S.C. § 1536(a).

conclude that decommissioning the project as proposed with staff-recommended measures is likely to adversely affect Puget Sound steelhead, Puget Sound Chinook salmon, bull trout, and Dolly Varden because of temporary, episodic turbidity effects on individuals from the transport of accumulated sediment after dam removal. Effects are expected to be sublethal in nature and will primarily affect the behavior of mobile juveniles and adults in occupied reaches. We conclude that decommissioning the project as proposed with staff-recommended measures is likely to adversely affect designated critical habitat for Puget Sound steelhead and bull trout in Newhalem Creek due to temporary, episodic increases in turbidity levels from sediment transport after dam removal.

As such, we intend to consult with NMFS and FWS regarding these findings. We intend to pursue formal consultation for those findings where we have determined that adverse effects to species would occur, whereas we intend to seek concurrence for those findings where we have determined that the proposed action may affect, but is not likely to adversely affect, those species.

Wild and Scenic Rivers Act

Section 7(a) of the Wild and Scenic Rivers Act[66] provides that the Commission "shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works . . . on or directly affecting any river which is designated" as a component of the wild and scenic rivers system. Public Law 95-111 (November 10, 1978) designated a 12-mile segment of the Skagit River as a Wild and Scenic River. The Skagit River from the confluence of Bacon Creek downstream to the pipeline crossing at Sedro-Wooley is classified as recreational.

Newhalem Creek, located upstream of the Skagit River and about 9 miles from the confluence of Bacon Creek, has not been listed as a Wild and Scenic River or classified as suitable for designation as a Wild and Scenic River. The proposed action to decommission Newhalem Creek is not expected to cause any adverse effects to recreation or any other resource on the designated or eligible segments of the Skagit River.

National Historic Preservation Act

Under section 106 of the National Historic Preservation Act (NHPA),[67] and its implementing regulations,[68] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register), defined as historic properties, and afford the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation officer (SHPO) or, where a project will be located on Tribal lands, the Tribal Historic Preservation Officer, to

[66] 16 U.S.C. § 1278(a).

[67] 54 U.S.C. § 306108.

[68] 36 C.F.R. pt. 800.

determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

The Advisory Council on Historic Preservation defines an area of potential effect (APE) as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for the Newhalem Project includes: (a) lands enclosed by the project boundary; and (b) lands or properties outside the project boundary in which project operations or project-related actions may cause changes in the character or use of historic properties, if any exist. Specific to the Newhalem Project, the APE includes all lands within the project boundary with a buffer around the boundary to account for any visual, auditory, or atmospheric effects that could occur as a result of decommissioning and facility removal. On August 12, 2022 (filed by City Light on December 12, 2022), the Washington SHPO concurred with this definition of the APE.

The proposed decommissioning of the Newhalem Project, including the removal of the diversion dam, would adversely affect both individual historic structures and the larger Skagit River and Newhalem Creek Hydroelectric Projects Historic District, a property that is listed on the National Register. Archaeological resources that may be located in as-yet unsurveyed areas may also be affected. Decommissioning effects on TCP 45WH450, a historic property of traditional importance to the Upper Skagit Indian Tribe (USIT), have not yet been assessed. The Washington SHPO has not commented on effects associated with the proposed decommissioning of the project. Regardless, we conclude that decommissioning of the project would have adverse effects on historic properties.

Tribal Consultation

There are no Tribal lands within the project APE. In response to City Light's application for surrender of license, several Tribes filed motions to intervene. These Tribes were the USIT (letter filed May 31, 2022), Sauk-Suiattle Indian Tribe (letter filed May 31, 2022), and Swinomish Tribe (letter filed June 1, 2022).

Under the Commission's Tribal Consultation Policy,[69] Commission staff consulted with the federally recognized Tribes that have interests within the project's APE. On November 21, 2022, Commission staff sent a letter to multiple Tribes,[70] including intervenors, requesting comments on the City Light's proposal to decommission the project. No comments from the consulted Tribes have been received. However, on December 12, 2022, the USIT filed its summary description of TCP 45WH450 and also the status of City Light's continued consultation with the participating Tribes regarding the potential effects of the proposed decommissioning on this property.

[69] https://www.ferc.gov/industries/hydropower/indus-act/order-2002/tribal policy.pdf

[70] Addressees included: Addressees included: Sauk-Suiattle Indian Tribe, Swinomish Tribe, the Upper Skagit Indian Tribe, Nooksack Indian Tribe, Lummi Tribe of the Lummi Reservation, Samish Indian Nation, Snoqualmie Indian Tribe, and the Confederated Tribes of the Warm Springs Reservation.

Memorandum of Agreement

To meet the requirements of section 106 of the NHPA, we intend to execute a Memorandum of Agreement (MOA) with the Washington SHPO for the protection of historic properties from the proposed decommissioning of the Newhalem Project. The terms of the MOA would require City Light to develop and implement a CRMMP in consultation with the Washington SHPO, the Park Service, the Sauk-Suiattle Indian Tribe, Swinomish Tribe, and the USIT as a stipulation of any license surrender order issued for the project.

In general, the terms of the MOA would serve to protect historic properties that would be adversely affected by activities associated the proposed decommissioning.

A-8 Executive Orders 12898 and 14008

The Commission follows Executive Order 12898, which directs federal agencies to identify and address "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[71] Executive Order 14008 also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[72]

Environmental justice is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2022).

Staff identified one census block group that qualifies as an environmental justice community within a 1-mile radius of the project boundary and considered how the communities may be affected by noise, air quality, visual, and traffic impacts of the proposed de-construction activities including removal of the diversion dam, tailrace barrier, and transmission lines and decommissioning the upper portion of the road used to access the diversion dam. Our analysis of the project's impacts on these communities are presented in section 6.3.7, *Environmental Justice*. We conclude that decommissioning the project, as proposed with staff's recommended modifications, would not result in disproportionately high and adverse impacts on the identified environmental justice population.

[71] Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses environmental justice in its analysis, in accordance with our statutory duties.

[72] Exec. Order No. 14,008, 86 Fed. Reg. 7619 (Feb. 1, 2021). The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution. *Id*. § 219, 86 Fed. Reg. 7619, 7629. The term also includes, but may not be limited to, minority populations, low-income populations, or indigenous peoples (EPA, 2022).

APPENDIX B: AFIGURES

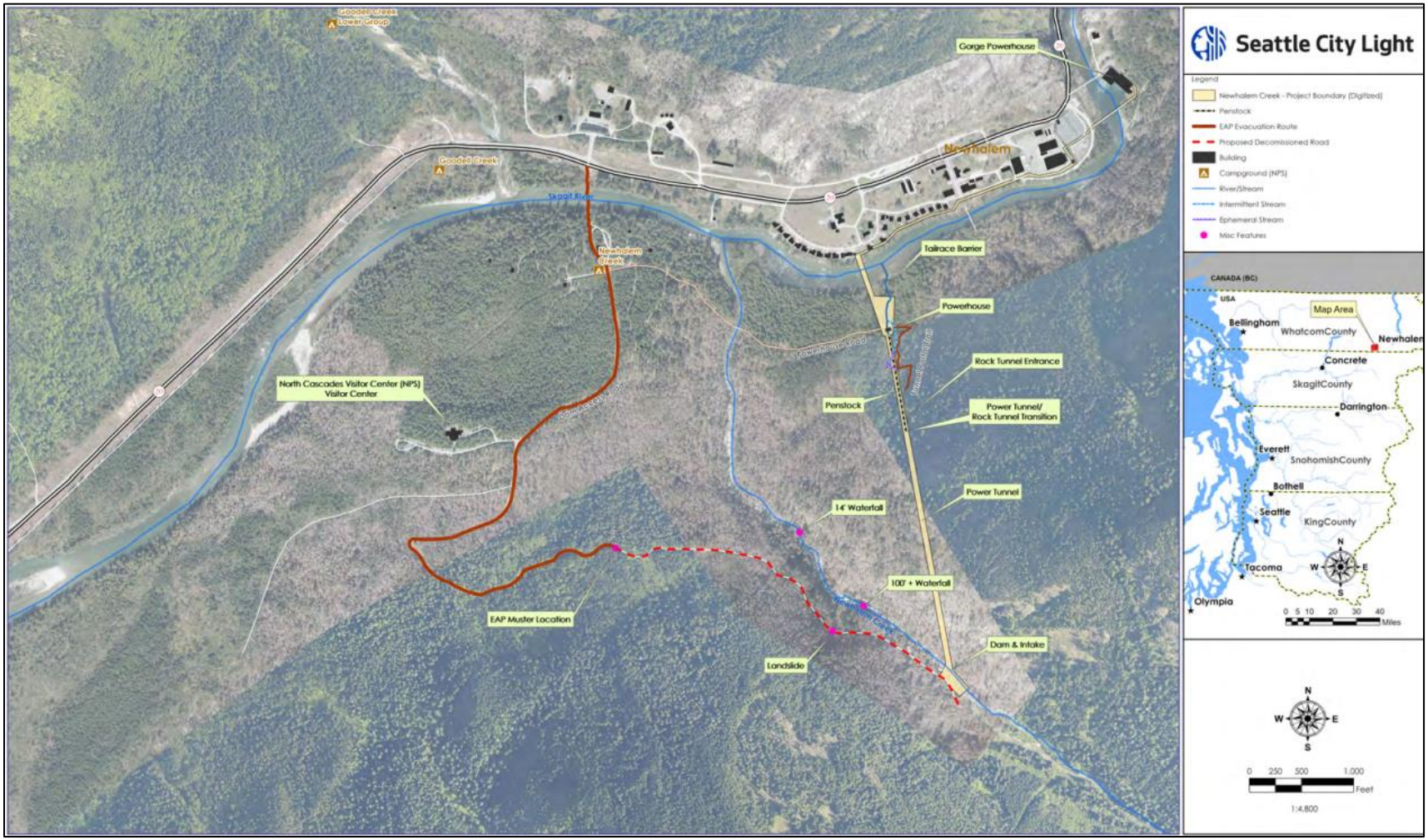


Figure 1. Newhalem Creek Hydroelectric Project, location of existing facilities (Source: City Light, 2022a).

Figure 2. Water diversion structure including dam and impoundment and also showing location where cofferdam would be placed during dam removal. (Source: City Light, 2022a).

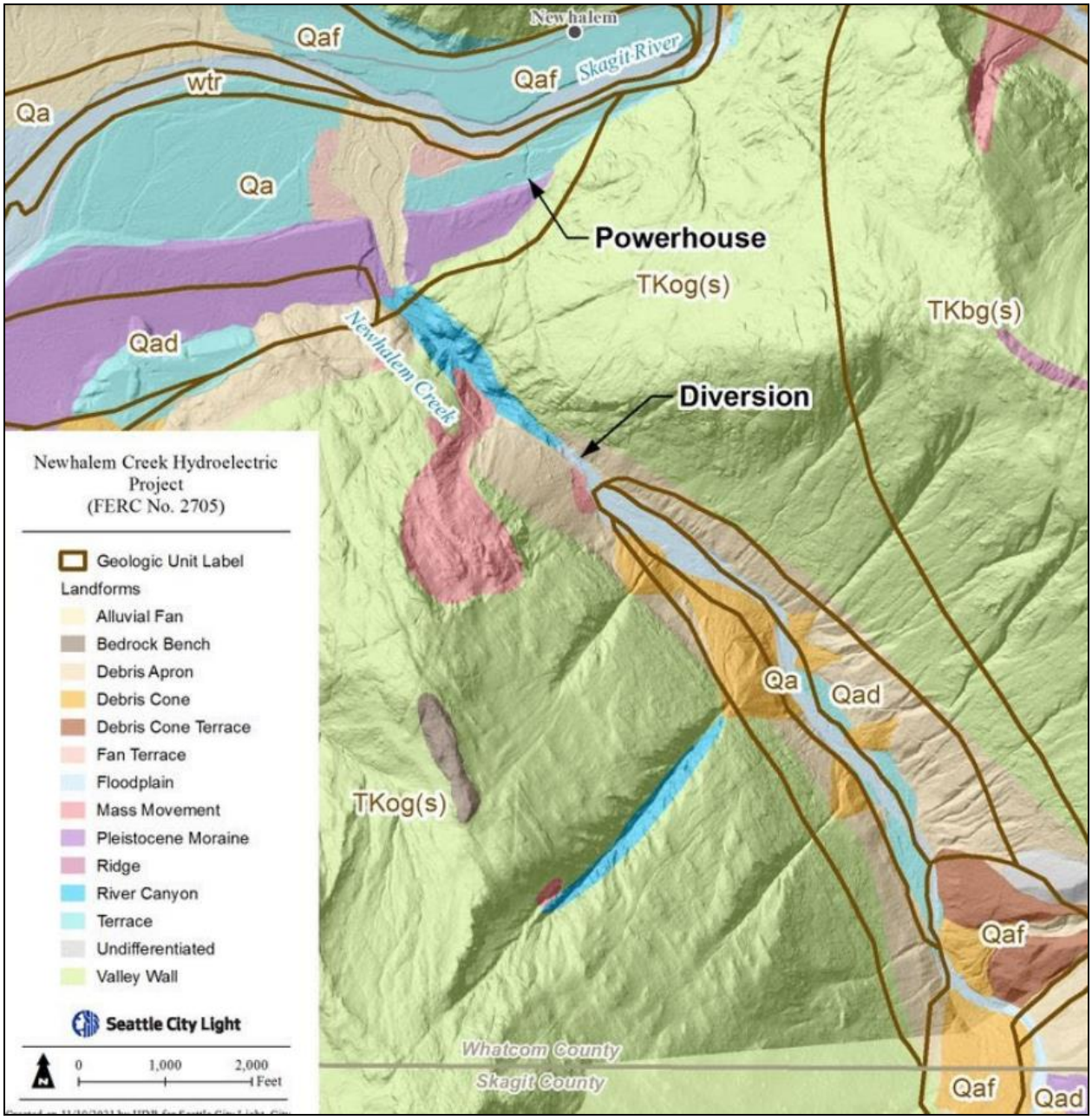


Figure 3. Geologic units and landforms in the Newhalem Project vicinity, including an area with an older, larger debris slide scar (Sources: Modified after Dubé [2021] and Golder Associates [2021]).

Figure 4. Rock slides along the dam access road. Older debris slide deposits are exposed in the right lateral scarp in the middle distance. (Source: City Light, 2022a).

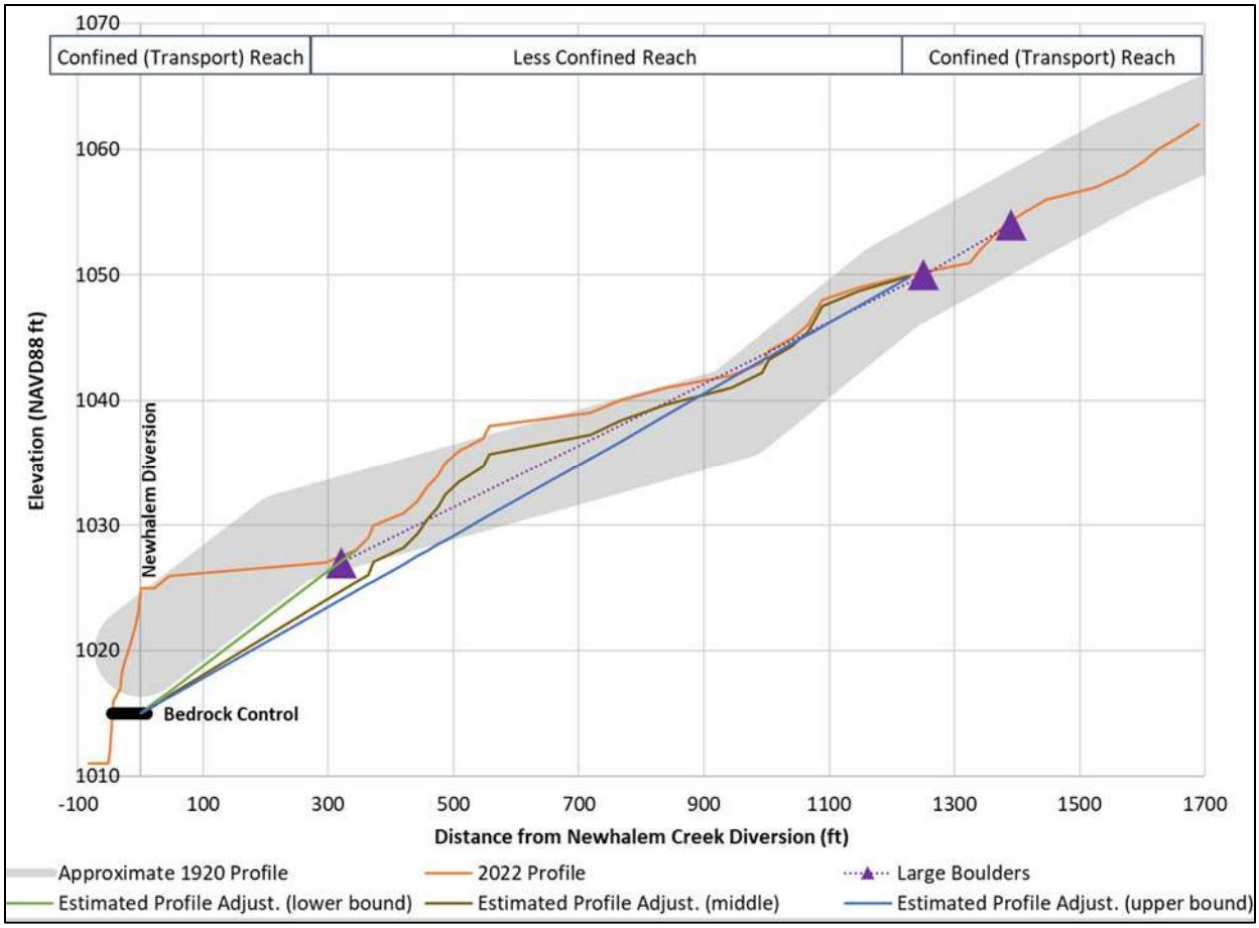


Figure 5. Longitudinal profile of Newhalem Creek upstream from the diversion dam with potential profile adjustments (Source: Dubé, 2023).

Figure 6. Annual excavation and downstream placement of accumulated sediment upstream of the diversion dam (year 2005) (Source: City Light, 2022d).

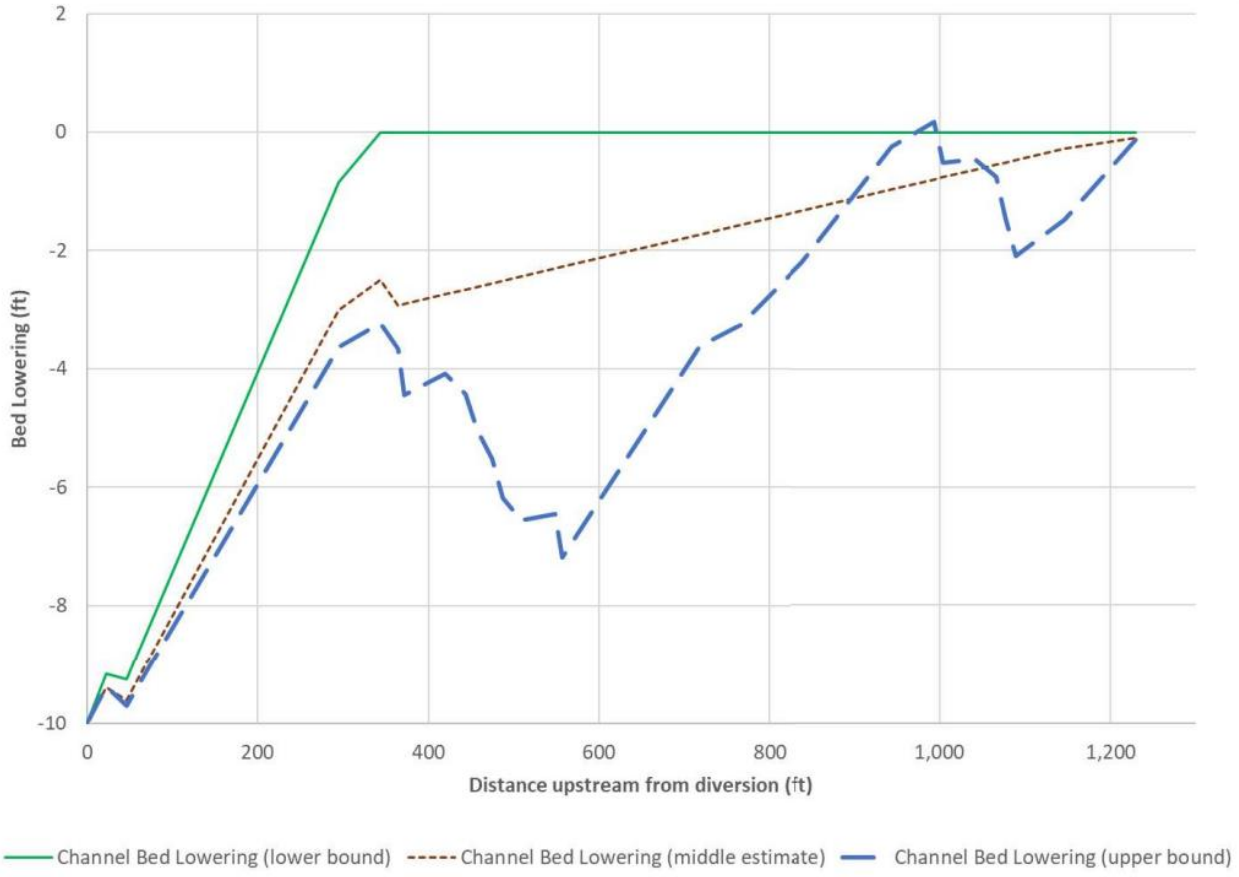


Figure 7. Estimated amount of bed lowering upstream from the diversion dam with potential profile adjustment (Source: Dubé, 2023).

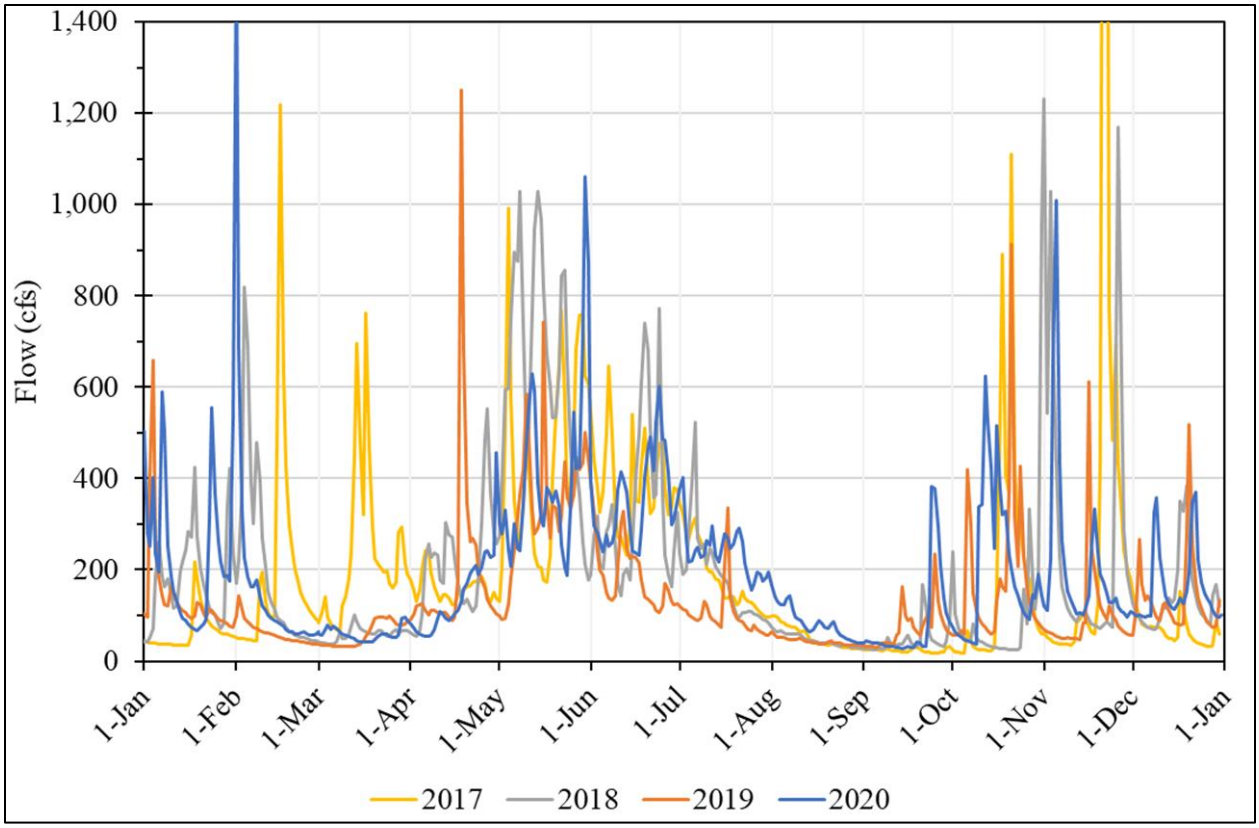


Figure 8. Daily mean flow time series for Newhalem Creek, 2017–2020 (Source: USGS, 2022a).

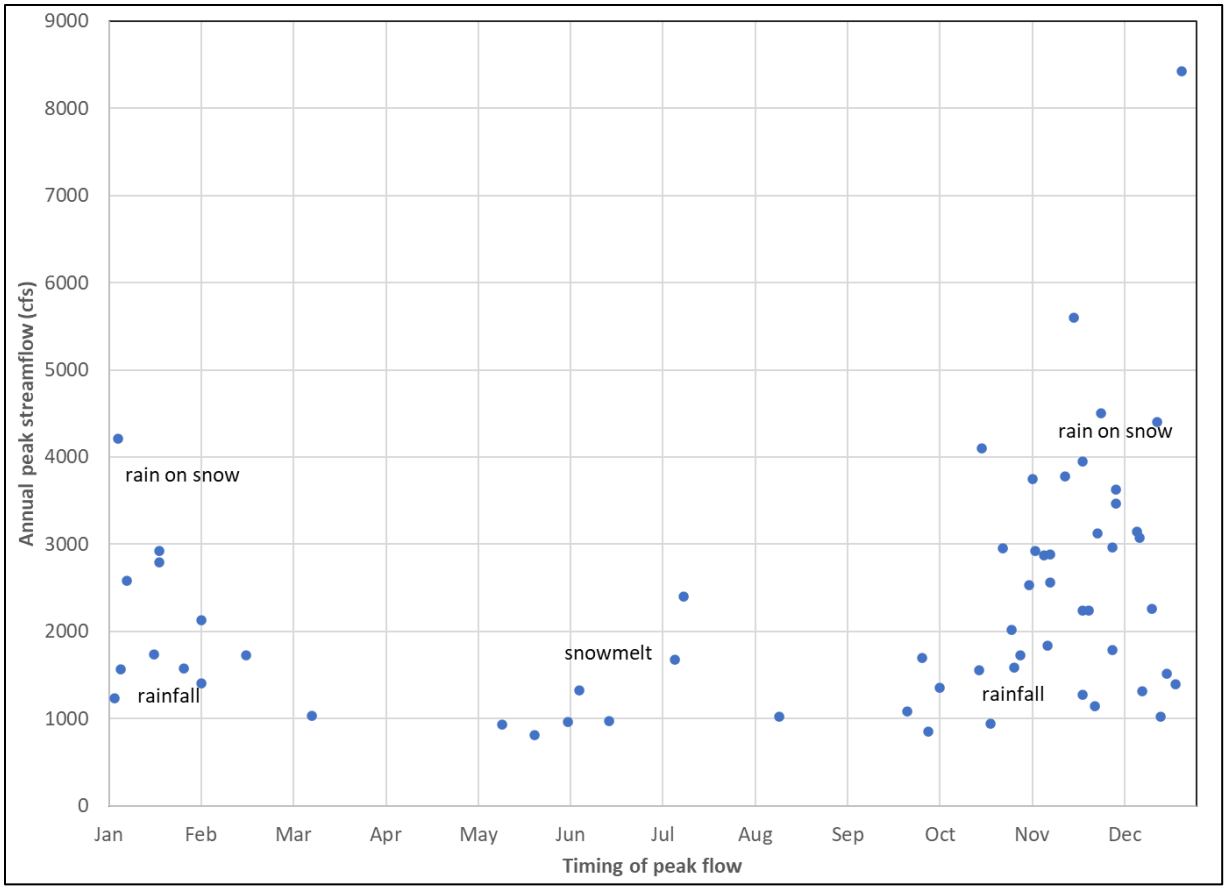
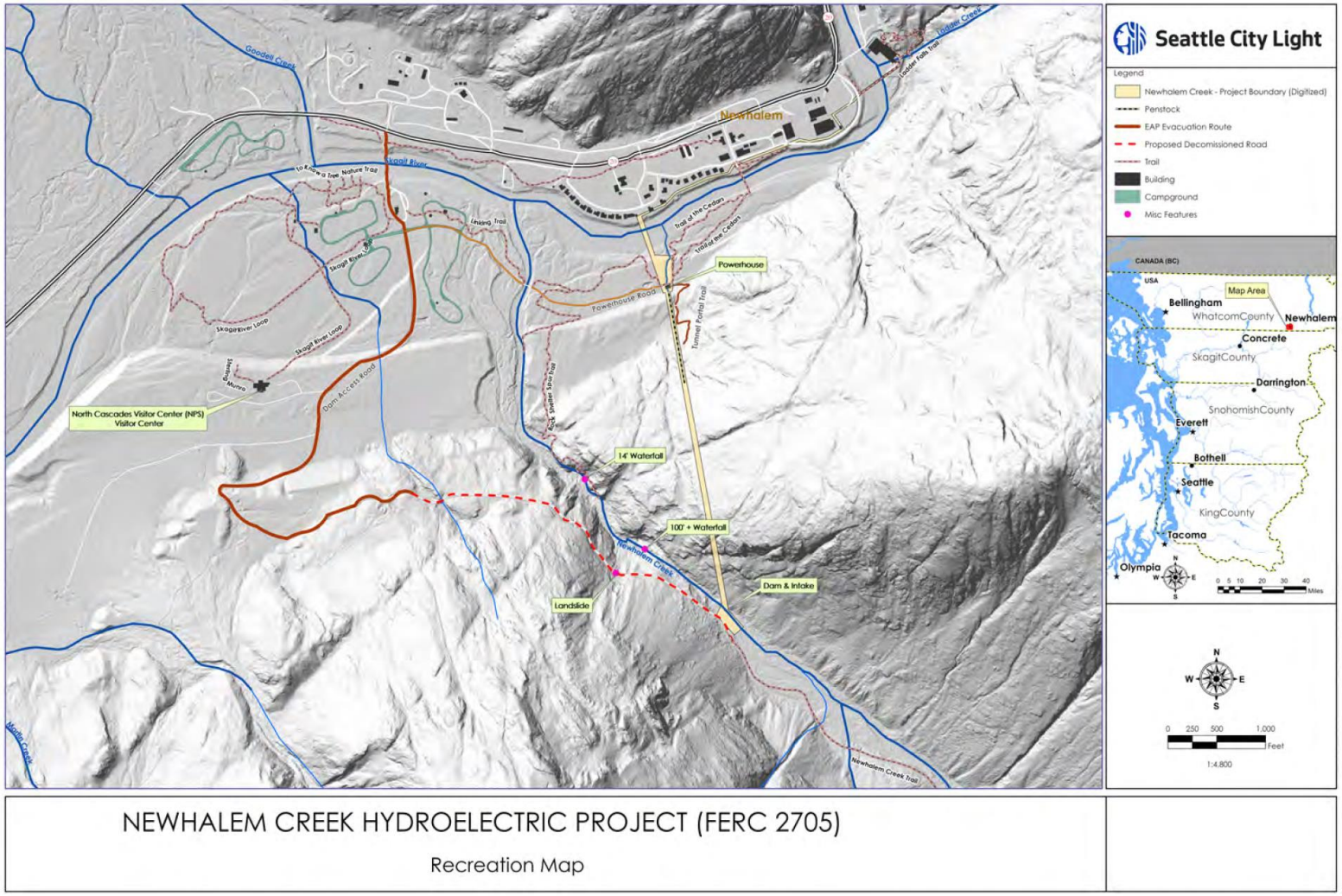


Figure 9. Timing and cause of peak stream flows in Newhalem Creek near Newhalem, Washington (USGS Gage No. 12178100), 1961–2020 (Source: Dubé, 2021).



NEWHALEM CREEK HYDROELECTRIC PROJECT (FERC 2705)

Recreation Map

Figure 10. Recreation facilities and trails in the project vicinity (Source: City Light, 2022a).

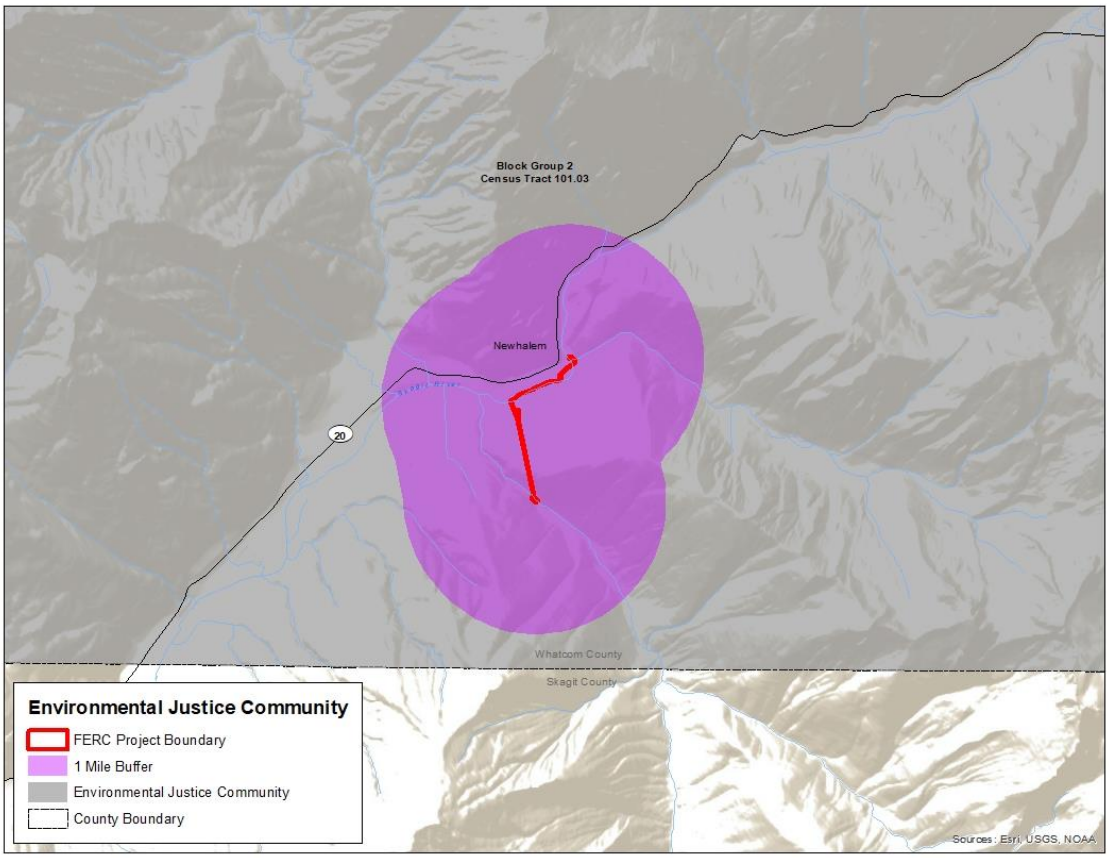


Figure 11. Environmental justice communities within the area of analysis. The identified environmental justice community based on the low-income and minority thresholds Census Tract 101.03; Block Group 2 located within 1 mile of the proposed project boundary. (Source: City Light, 2022d).

APPENDIX C: TABLES

Table 1. Features to be removed, abandoned, and retained under the proposed action (Source: City Light, 2022b).

Project Features to be Removed	Project Features to be Abandoned	Project Features to be Retained
• Diversion dam, sluiceway, and intake • Gatehouse • Pedestrian bridge over creek near dam • Tailrace fish barrier and riprap • Overhead transmission lines • Transformer	• Power tunnel • Underground utilities • Dam access road above elevation 840 feet	• Powerhouse • Penstock and saddles • Tailrace • Electrical service line to powerhouse • Emergency evacuation trail/route along penstock (Skagit Emergency Action Plan [EAP] route) • Dam access road below elevation 840 feet North American Vertical Datum (Skagit EAP route)

Table 2. Monthly metrics for flow (cfs) in Newhalem Creek and Skagit River, including percent of Newhalem Creek inflow to Skagit River, February 1, 1961–September 30, 2021. (Source: USGS, 2022a,b).

Station/Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Newhalem Creek (USGS Gage No. 12178100 Newhalem Creek, located approximately 0.5 miles upstream of the diversion dam)												
Mean	146	121	113	153	291	352	250	112	86	136	200	157
Median	95	81	84	127	249	320	220	89	63	84	124	95
Maximum	2,920	1,570	1,460	1,250	1,190	1,680	1,420	605	907	2,060	2,640	5,300
10% Exceedance (Wet)	280	220	196	271	506	560	428	210	147	289	400	292
90% Exceedance (Dry)	44	46	48	72	130	188	105	47	35	35	55	51
Minimum	20	20	29	39	64	83	27	18	18	18	21	32
Count	1,860	1,723	1,891	1,830	1,891	1,830	1,891	1,891	1,830	1,860	1,800	1,860
Skagit River (USGS Gage No. 12178000 Skagit River, located 0.4 miles upstream from confluence with Newhalem Creek)												
Mean	5,386	5,422	4,789	3,972	3,816	5,430	5,804	3,656	3,113	3,331	4,826	4,629
Median	5,540	5,490	4,655	3,900	3,430	4,360	5,150	3,450	3,150	3,170	4,260	4,350
Maximum	15,600	15,800	12,300	12,000	20,700	31,600	22,300	14,000	6,960	32,700	26,700	28,200
10% Exceedance (Wet)	7,020	7,116	6,840	5,640	5,950	9,733	10,100	5,220	4,310	4,591	7,310	6,210
90% Exceedance (Dry)	3,370	3,200	2,650	2,360	2,110	2,220	2,760	2,220	1,860	1,770	2,490	2,900
Minimum	1,190	1,930	1,130	1,050	1,030	1,000	1,390	980	963	1,010	1,060	1,460
Count	1,829	1,695	1,862	1,830	1,891	1,830	1,891	1,891	1,830	1,860	1,800	1,829
Percentage of Skagit River Flow Provided by Inflow from Newhalem Creek (based on data from the two USGS gaging stations above)												
Mean	2.7%	2.2%	2.5%	4.0%	7.6%	7.4%	4.4%	3.0%	2.8%	3.8%	4.0%	3.1%

Station/Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Median	1.8%	1.6%	1.9%	3.3%	7.0%	6.7%	3.9%	2.7%	2.2%	2.8%	2.8%	2.2%
Maximum	25.5%	21.4%	19.3%	17.3%	23.2%	24.5%	26.1%	13.2%	17.3%	22.3%	26.8%	33.1%
10% Exceedance (High)	5.7%	4.2%	4.6%	7.3%	13.0%	12.5%	6.4%	4.5%	5.0%	8.0%	8.3%	6.3%
90% Exceedance (Low)	0.8%	0.8%	0.9%	1.6%	3.1%	3.2%	2.6%	1.5%	1.1%	1.2%	1.4%	1.1%
Minimum	0.3%	0.4%	0.3%	0.6%	1.3%	1.6%	0.8%	0.7%	0.5%	0.5%	0.4%	0.4%
Count	1,829	1,695	1,862	1,830	1,891	1,830	1,891	1,891	1,830	1,860	1,800	1,829

Note: Based on daily mean flows in Newhalem Creek about 0.5 miles upstream of the diversion dam and in the Skagit River 0.4 miles upstream of the confluence with Newhalem Creek.

Table 3. Selected water quality criteria (Source: WAC 173-201A-200; Washington DOE, 2011).

Constituent	Newhalem Creek	Upper Skagit River [a]
Temperature	Maximum 7-day average of the daily maximum temperatures (7-DADMax) is 12°C at a probability frequency of more than once every 10 years on average.	Maximum 7-DADMax is of 13°C from September 1 to June 15 for spawning/incubation and 16°C for the remainder of the year at a probability frequency of more than once every 10 years on average.
Dissolved Oxygen	1-day minimum of 9.5 milligrams per liter at a probability frequency of more than once every 10 years on average.	Same
pH	Shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.	Same
Turbidity [b]	Shall not exceed 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less; or a 10 percent increase when the background is more than 50 NTU.	Same

Notes:
WAC 173-201A-200 is available at https://www.epa.gov/sites/default/files/2014-12/documents/wawqs.pdf. Accessed June 24, 2022.

[a] From Ladder Creek confluence to the Boyd Creek confluence.

[b] The turbidity criteria are modified to allow a temporary area of mixing during and immediately after necessary in-water construction activities that result in the disturbance of in-place sediments. This temporary area of mixing can occur only after the activity has received all other necessary local and state permits and approvals, and after the implementation of appropriate BMPs to avoid or minimize disturbance of in-place sediments and exceedances of the turbidity criteria.

Table 4. Monthly water temperature metrics for Newhalem Creek and Skagit River, October 1, 2017–September 30, 2021 (Source: USGS, 2022a).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
USGS Gage No. 12178100 Newhalem Creek near Newhalem, WA												
Mean	3.5	2.6	3.5	5.0	6.5	8.0	10.5	11.7	10.3	7.2	5.1	3.8
Median	3.7	2.8	3.6	5.1	6.4	7.9	10.7	11.7	10.3	7.2	5.0	3.9
Max	4.4	4.5	4.9	6.2	9.5	11.2	12.9	13.4	12.5	9.9	7.7	5.7
10% Exceedance (Warm)	4.2	3.8	4.4	5.7	7.5	9.5	12.0	12.7	11.6	8.6	6.5	4.6
90% Exceedance (Cool)	2.9	1.0	2.4	4.2	5.6	6.4	8.5	10.7	9.0	5.6	4.1	2.9
Min	0.5	0.5	1.2	3.6	4.9	5.5	7.1	9.8	7.6	4.1	2.2	1.6
Count	124	109	122	120	124	120	124	124	106	124	120	124
USGS Gage No. 12178000 Skagit River at Newhalem, WA												
Mean	4.9	4.1	4.1	5.3	7.3	8.6	9.9	11.0	10.5	9.9	8.6	6.5
Median	5.0	4.1	4.0	5.3	7.4	8.6	9.9	10.9	10.4	9.8	8.7	6.4
Max	6.5	5.5	5.8	7.2	9.7	10.7	11.7	15.2	12.1	11.7	10.6	8.4
10% Exceedance (Warm)	5.7	4.8	4.9	6.4	8.2	9.6	10.9	11.7	11.2	10.5	9.6	7.4
90% Exceedance (Cool)	4.1	3.5	3.4	4.3	6.2	7.9	8.7	10.3	9.9	9.1	7.6	5.5
Min	3.5	2.4	2.6	3.7	5.3	7.2	8.1	9.4	8.8	8.3	6.1	5.0
Count	601	523	586	588	620	600	620	591	597	620	600	594

Note: Based on daily mean temperatures in Newhalem Creek about 0.5 miles upstream of the diversion dam and in the Skagit River 0.4 miles upstream of the confluence with Newhalem Creek. No temperature data were reported prior to October 1, 2017.

Table 5. Special status wildlife species with potential to occur in the project area (Source: City Light, 2022c).

Species Name	State Status	Habitat	Occurrence in the Project Area
Western toad (*Anaxyrus boreas*)	Candidate	Variety of upland habitats; slow-moving waters, particularly wetlands for egg deposition and larval development	Documented near Newhalem and at various locations along the Skagit River
Northern goshawk (*Accipiter gentillis*)	Candidate	Old-growth and mature forests	Nearest documented use near Diablo Powerhouse, 7 miles northeast of the project
Townsend's big-eared bat (*Corynorhinus townsendii*)	Candidate	Roosts in caves, buildings, and natural cavities	No documented occurrences

Table 6. Typical and approximate spawning periods for migratory salmonids in the lower portion of Newhalem Creek (Source: City Light, 2022c).

Species	Spawning Period[1]	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Chum	Nov. 1 – Jan. 6	■										■	■
Coho	Nov. 1 – Mar. 31	■	■	■								■	■
Pink	Sept. 12 – Oct. 31									■	■		
Steelhead	Mar. 15 – June 15				■	■	■						
Bull Trout	Sept. 15 – Nov. 30									■	■	■	
Chinook	Aug. 20 – Oct. 15								■	■	■		

Table 7. Fish species and life-history stages with designated EFH in the Newhalem project area (Source: City Light, 2022c).

Species	Adult Migration or Presence		Spawning		Eggs		Juvenile Rearing	
	Skagit River	**Newhalem Creek**	**Skagit River**	**Newhalem Creek**	**Skagit River**	**Newhalem Creek**	**Skagit River**	**Newhalem Creek**
Chinook Salmon (summer)	X	X	X		X		X	Possible
Coho Salmon	X	Presumed	X		X		X	Possible
Pink Salmon	X	X	X	X	X	X	X	X

Table 8. American Community Survey information for census tracts within 1-mile of the project boundary (Source: Census, 2022; City Light, 2022d).

Demographic Composition within the one-mile buffer of the Newhalem Project Boundary											
		Race and Ethnicity Columns									Low-Income Column
Geographic Area	**Total Population (Count)**	**White (Count)**	**African American/ Black (Count)**	**American Indian/ Alaska Native (Count)**	**Asian (Count)**	**Native HI & Other Pacific Islander (Count)**	**Some Other Race (Count)[a]**	**Two or More Races (Count)[a]**	**Hispanic Origin (Any Race) (Count)[a]**	**Total Minority Population (%)[b]**	**Households in Poverty (%)[a]**
Washington	7,688,549	65.5%	3.8%	0.9%	9.1%	0.67%	0.46%	0.46%	13.5%	28.9%	9.6%
Whatcom County*	226,523	76.8%	0.9%	1.9%	4.4%	0.24%	0.35%	5.33%	10.1%	23.2%	13.1%
Block Group 2, Census Tract 101.03, Whatcom County, Washington	317	74.4%	0.0%	0.0%	1.9%	0.0%	0.0%	13.9%	9.8%	**25.6%**	**40.8%**

Notes: Low-income or minority populations exceeding the established thresholds are indicated by an * in bold, red type and blue shading.

* = reference community

[a] Source: Census, 2022.

[b] Total Minority Population is the percent of the population that is not categorized as “White Alone” (not Hispanic or Latino).

Table 9. Comparison of Effects (Source: Staff).

Resource Area	**Proposed Action (Partial Removal)**	**Full Removal**	**Proposed Action w/Staff Modifications**
Geology and Soils:			
Streambed Mobilization	Short term minor adverse effects resulting from dam removal	Short term minor adverse effects resulting from dam removal	Short term adverse effects resulting from dam removal
Rock scaling	No adverse effects to lands near access road	No adverse effects to lands near access road	No adverse effects to lands near access road
Tunnel Leakage	Would prevent erosion and movement of any contaminants	Moderate permanent adverse effects resulting from erosion from tunnel leakage, unless properly mitigated.	Would prevent erosion and movement of any contaminants
Disturbance of Soil Containing Contaminants	No negative effects expected since soil disturbance along the penstock route would be minimal.	Moderate, temporary adverse effects due to disturbance of soils potentially containing hazardous substances. Overall, a beneficial effect if potentially hazardous soils are removed during construction.	No negative effects expected since soil disturbance along the penstock route would be minimal.
Aquatic Resources:			
Water Quantity	Long term beneficial effect by restoring natural flow in the bypassed reach.	Long term beneficial effect by restoring natural flow in the bypassed reach.	Long term beneficial effect by restoring natural flow in the bypassed reach.
Water Quality	Short term minor adverse effects resulting from dam removal	Short term minor adverse effects resulting from dam removal	Short term minor adverse effects resulting from dam removal
Habitat	Short term minor adverse effects in the area of the dam during construction; long term beneficial effect by restoring natural habitat.	Short term minor adverse effects in the area of the dam during construction; long term beneficial effect by restoring natural habitat.	Short term minor adverse effects in the area of the dam during construction; long term beneficial effect by restoring natural habitat.

Resource Area	**Proposed Action (Partial Removal)**	**Full Removal**	**Proposed Action w/Staff Modifications**
Aquatic Species	Short term minor adverse effects resulting from dam removal; long term beneficial effect.	Short term minor adverse effects resulting from dam removal; long term beneficial effect.	Short term minor adverse effects resulting from dam removal; long term beneficial effect.
Terrestrial Resources:			
Vegetation	Short term adverse effect due to loss of vegetation in areas used for staging equipment and in areas disturbed during removal and road decommissioning activities.	Short term adverse effect due to loss of vegetation in areas used for staging equipment and in areas disturbed during removal and road decommissioning activities. Additional adverse effects realized along the penstock route and in the powerhouse area.	Short term adverse effect due to loss of vegetation in areas used for staging equipment and in areas disturbed during removal and road decommissioning activities.
Wildlife	Short term minor adverse effect due to avoidance of area. No long term effects.	Short term minor adverse effect due to avoidance of area. No long term effects.	Short term minor adverse effect due to avoidance of area. No long term effects.
Transmission Lines/Electrical Service Lines	Long term minor adverse effect with overhead lines. Mitigation reduces risk.	Long term beneficial effect that would eliminate risk.	Long term minor adverse effect with overhead lines. Mitigation reduces risk.
Threatened and Endangered Species:	Puget Sound Steelhead and Puget Sound Chinook Salmon and Critical Habitat: Short term adverse effects due to sediment transport. Long term beneficial effect to critical habitat by restoring natural sediment transport. Bull Trout and Dolly Varden and Critical Habitat for Bull Trout in Newhalem Creek: Similar to above. Critical Habitat in the Skagit River may see an effect, but would not be adversely affected. Gray Wolf and Wolverine: Short term avoidance during construction if in the area. May affect, but not likely to be adversely affected.	Puget Sound Steelhead and Puget Sound Chinook Salmon and Critical Habitat: Short term adverse effects due to sediment transport. Long term beneficial effect to critical habitat by restoring natural sediment transport. Bull Trout and Dolly Varden and Critical Habitat for Bull Trout in Newhalem Creek: Similar to above. Critical Habitat in the Skagit River may see an effect, but would not be adversely affected. Gray Wolf and Wolverine: Short term avoidance during construction if in the area. May affect, but not likely to be adversely affected.	Puget Sound Steelhead and Puget Sound Chinook Salmon and Critical Habitat: Short term adverse effects due to sediment transport. Long term beneficial effect to critical habitat by restoring natural sediment transport. Bull Trout and Dolly Varden and Critical Habitat for Bull Trout in Newhalem Creek: Similar to above. Critical Habitat in the Skagit River may see an effect, but would not be adversely affected. Gray Wolf and Wolverine: Short term avoidance during construction if in the area. May affect, but not likely to be adversely affected.

Resource Area	**Proposed Action (Partial Removal)**	**Full Removal**	**Proposed Action w/Staff Modifications**
Threatened and Endangered Species (con't):	Marbled Murrelet and Spotted Owl: No effect. Whitebark Pine: No effect. Due to elevation, species presence in area is unlikely. Yellow-billed Cuckoo: No effect. Species not expected to be found in project area. Monarch Butterfly: No effect. Species not expected to be found in project area.	Marbled Murrelet and Spotted Owl: No effect. Whitebark Pine: No effect. Due to elevation, species presence in area is unlikely. Yellow-billed Cuckoo: No effect. Species not expected to be found in project area. Monarch Butterfly: No effect. Species not expected to be found in project area.	Marbled Murrelet and Spotted Owl: No effect. Whitebark Pine: No effect. Due to elevation, species presence in area is unlikely. Yellow-billed Cuckoo: No effect. Species not expected to be found in project area. Monarch Butterfly: No effect. Species not expected to be found in project area.
Essential Fish Habitat:	Newhalem Creek: Short term minor adverse effect. Long term beneficial effect from restoration of natural sediment transport. Skagit River: May affect, but not likely to adversely affect.	Newhalem Creek: Short term minor adverse effect. Long term beneficial effect from restoration of natural sediment transport. Skagit River: May affect, but not likely to adversely affect.	Newhalem Creek: Short term minor adverse effect. Long term beneficial effect from restoration of natural sediment transport. Skagit River: May affect, but not likely to adversely affect.
Recreation, Land Use, and Aesthetics: Recreation, Land Use, and Aesthetics (cont'd):	Construction related effects: Short term minor adverse effects due to noise, traffic, construction activities, and related closures of trails. Removal of project features: Permanent adverse effect due to removal of historically important features that are considered an important part of the landscape. Some historical contexts would remain with preservation of penstock and powerhouse. Wild and Scenic River Designation of the Skagit River: No effect.	Construction related effects: Short term minor adverse effects due to noise, traffic, construction activities, and related closures of trails. Removal of project features: Permanent adverse effect due to removal of all historically important features that are considered an important part of the landscape. Wild and Scenic River Designation of the Skagit River: No effect.	Construction related effects: Short term minor adverse effects due to noise, traffic, construction activities, and related closures of trails. Removal of project features: Permanent adverse effect due to removal of historically important features that are considered an important part of the landscape. Some historical contexts would remain with preservation of penstock and powerhouse. Wild and Scenic River Designation of the Skagit River: No effect.

Resource Area	Proposed Action (Partial Removal)	Full Removal	Proposed Action w/Staff Modifications
Cultural and Historic Resources	Overall permanent adverse effect due to loss of federal jurisdiction.	Overall permanent adverse effect due to loss of federal jurisdiction.	Overall permanent adverse effect due to loss of federal jurisdiction.
Archaeological Resources	Potential for adverse effects in the event of unanticipated recovery.	Potential for adverse effects in the event of unanticipated recovery.	Potential for adverse effects in the event of unanticipated recovery.
Historic Built Resources	Permanent adverse effect of removal of historic structures, including the dam.	Permanent adverse effect of removal of all historic structures, including the dam, penstock, and powerhouse.	Permanent adverse effect of removal of historic structures including the dam.
Traditional Cultural Properties	Continued presence of certain project features would continue to adversely affect known TCPs. Temporary adverse effects expected during construction. Long term beneficial effect of removing some project features.	Continued presence of certain project features would continue to adversely affect known TCPs. Temporary adverse effects expected during construction. Long term beneficial effect of removing all above ground project features.	Continued presence of certain project features would continue to adversely affect known TCPs. Temporary adverse effects expected during construction. Long term beneficial effect of removing certain project features.
Environmental Justice			
Recreation related construction impacts	Temporary minor adverse effects to environmental justice communities who live closes to the facilities being removed due to construction related effects and trail closures. Long term beneficial effects, by returning to natural conditions, except for the removal of certain historic features which may remove historical context. Overall, implementation of the proposed action would not result in disproportionately high and adverse impacts on environmental justice communities.	Temporary minor adverse effects to environmental justice communities who live closes to the facilities being removed due to construction related effects and trail closures. Long term beneficial effects, by returning to natural conditions, except for the removal of certain historic features which may remove historical context. Overall, implementation of the proposed action would not result in disproportionately high and adverse impacts on environmental justice communities.	Temporary minor adverse effects to environmental justice communities who live closes to the facilities being removed due to construction related effects and trail closures. Long term beneficial effects, by returning to natural conditions, except for the removal of certain historic features which may remove historical context. Overall, implementation of the proposed action would not result in disproportionately high and adverse impacts on environmental justice communities.

Resource Area	Proposed Action (Partial Removal)	Full Removal	Proposed Action w/Staff Modifications
Air Quality and Climate Change			
Air Quality	Short-term, localized, intermittent effects that would not significantly contribute to violations of ambient air quality standards, or significantly affect local or regional air quality.	Short-term, localized, intermittent effects that would not significantly contribute to violations of ambient air quality standards, or significantly affect local or regional air quality.	Short-term, localized, intermittent effects that would not significantly contribute to violations of ambient air quality standards, or significantly affect local or regional air quality.
Climate Change/Greenhouse Gases	Insignificant.	Insignificant.	Insignificant.

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APPENDIX E: LIST OF PREPARERS

FEDERAL ENERGY REGULATORY COMMISSION

Diana Shannon—Project Coordinator (Environmental Biologist; M.S. Biology; B.A. Biology)

WSP

Fred Winchell—Project Manager, Quality Assurance (Fisheries Biologist; M.S., Fisheries Biology)

Latisha Crawford—Environmental Justice (Transportation Planner; Master of City and Regional Planning; B.S., Economics; B.A., International Studies)

Bernward Hay—Geology and Soils (Lead Environmental Scientist; Ph.D., Oceanography (Marine Geology); M.S., Geological Sciences and Remote Sensing)

Kenneth Hodge—Engineering (Lead Engineer; B.S., Civil Engineering)

Robert Klosowski—Engineering (Senior Consultant; B.S., Electrical Engineering)

Ann Gray Koch—Aquatic Resources (Aquatic Biologist; B.S., Biological Science; B.S., Civil Engineering)

Alison Macdougall—Cultural Resources (Senior Environmental Manager; B.A., Anthropology)

Deborah Mandell—Editorial Reviewer (Senior Technical Editor; M.B.A, Finance and Marketing; B.A., Government)

Brian Mattax—Water Quantity and Quality, and Contaminants (Senior Aquatic Scientist; B.S., Biology)

Leslie Pomaville—Recreation, Land Use and Aesthetics (Recreation/Environmental Planner; M.S., Recreation Parks Tourism Management; B.S. Environmental and Natural Resources).

Tyler Rychener—Terrestrial Resources (Senior Environmental Scientist/GIS; M.S., Plant Biology; B.S., Biology)

Denise Short—Editorial Reviewer (Senior Technical Editor; M.S., Agricultural and Environmental Policy; B.A., English)

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