



Seattle City Light

Low Impact Hydropower Institute  
Re-certification Application  
LIHI Certificate# 5

Skagit River Hydroelectric Project  
(FERC#553)

Seattle City Light  
June 2017

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## PART 1. FACILITY DESCRIPTION

The Skagit River Hydroelectric Project (Project) is located in the upper Skagit River basin, in the North Cascade Mountains of Washington State. The Skagit River originates in Canada and drains into northeastern Puget Sound (Figure 1). The Skagit River basin, the third largest in Washington, drains 3,140 square miles, including about 390 square miles in Canada. The river and its tributaries drain mountain areas from east to west, entering the United States from British Columbia at river mile (RM) 127 and flows a total of 162 river miles to Puget Sound near Mount Vernon, Washington. The basin is characterized by rugged mountain topography in the central and eastern parts, and by level floodplains and rolling uplands in the western part.

The Project is owned and operated by Seattle City Light (City Light) and almost entirely within the Ross Lake National Recreation Area (NRA), which is managed by the National Park Service (NPS) as part of the North Cascades National Park Complex (Figure 2). The Skagit River downstream of the NRA, from Bacon Creek to Sedro-Wooley, is classified as scenic and recreational under the Wild and Scenic Rivers Act and is managed by the U.S. Forest Service (USFS).

The Project is operated under a license from the Federal Energy Regulatory Commission (FERC) that was issued in 1995, extends to 2025 and was most recently amended in 2013. The license incorporates multiple Settlement Agreements, the result of a collaborative negotiation process between City Light and 12 stakeholders (federal and state resource agencies and tribes), that was intended to fully mitigate Project effects on natural and cultural resources in the Project area.

The Project consists of three developments; Ross, Diablo, and Gorge, which are hydraulically coordinated and supply approximately one-fifth of City Light's power requirements, while maintaining instream flows beneficial to salmon and steelhead reproduction and rearing. In addition, the Project provides flood control storage and a variety of high-quality recreational opportunities, including hiking, sport fishing, boating, and guided tours. The fish resources and the area's scenic qualities are integral in the lives of Native American tribes who have occupied the basin for millennia. Many historic cultural sites can be found throughout the basin. There are also two towns, Newhalem and Diablo within the Project boundary. Originally construction camps, the towns continue to provide housing for City Light employees and are listed on the National Register of Historic Places.

Dams for the Ross, Diablo, and Gorge developments are located at RMs 105, 101, and 97, respectively. Combined total power generating capacity is about 690 MW, as reported to the FERC. Project hydropower development spanned four decades, with the completion of the first Gorge Dam in 1924, Diablo Dam in 1936, Ross Dam in 1952, and the current Gorge Dam in 1961. Each of the Project developments is briefly described below; summary information is provided in Table 1).

- **Ross Dam**, the Project's uppermost facility, impounds the Skagit River, glacial, and tributary stream runoff in Ross Lake, a 24-mile-long reservoir that extends about 1½ miles north of the U.S.-Canada border. Ross Lake is the primary storage reservoir for the Project; it is used for flood control as well as power generation.

Water level fluctuations in Ross Lake vary annually and may range from 1,602.5 ft. above mean sea level (MSL) at full pool, to 1,475 ft. MSL at minimum operating pool. Average daily

fluctuations are minimal because of its use as a storage and flood control reservoir. Water resources are allocated for flood storage, power production, fisheries resources, and recreation.

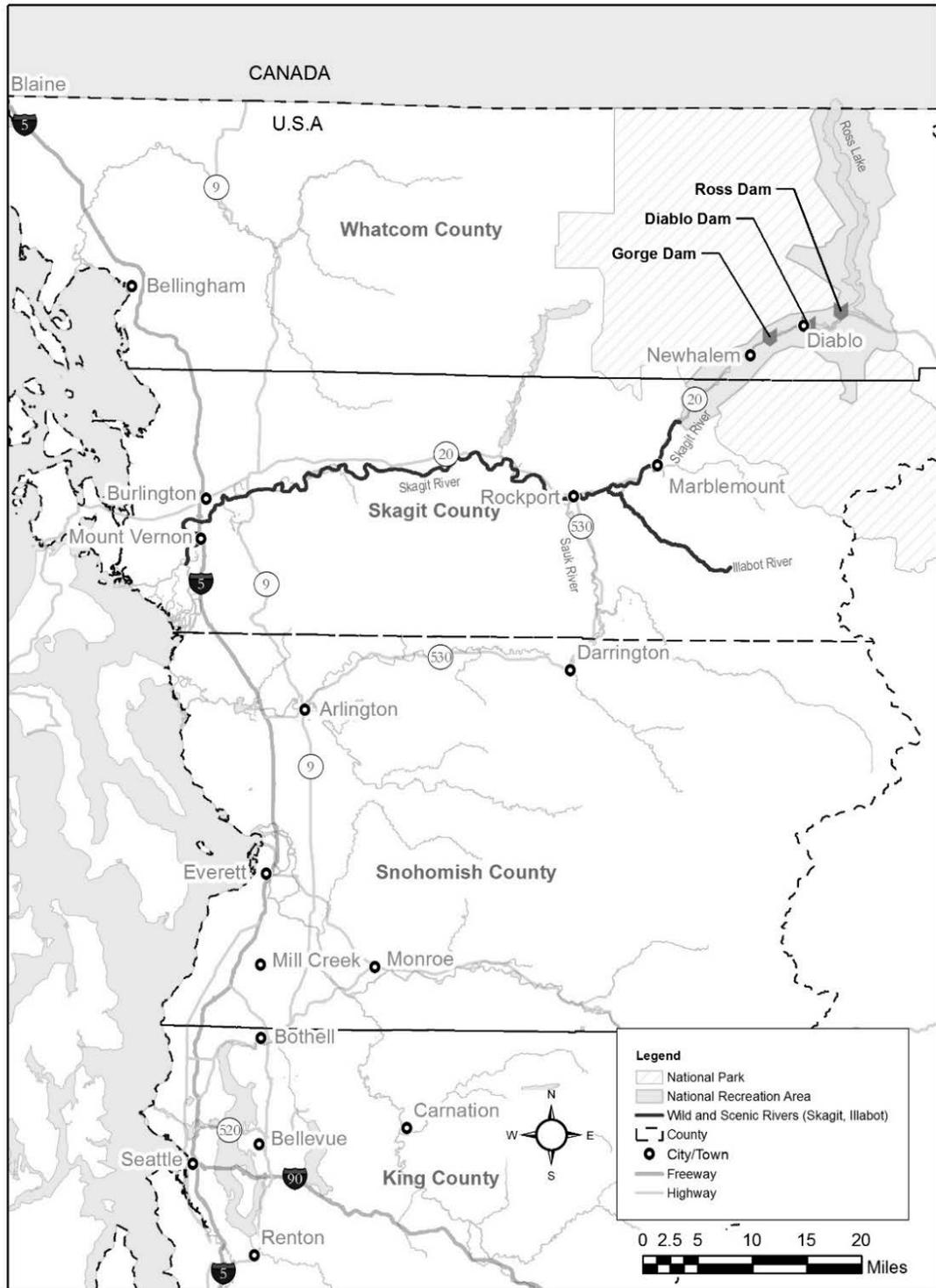
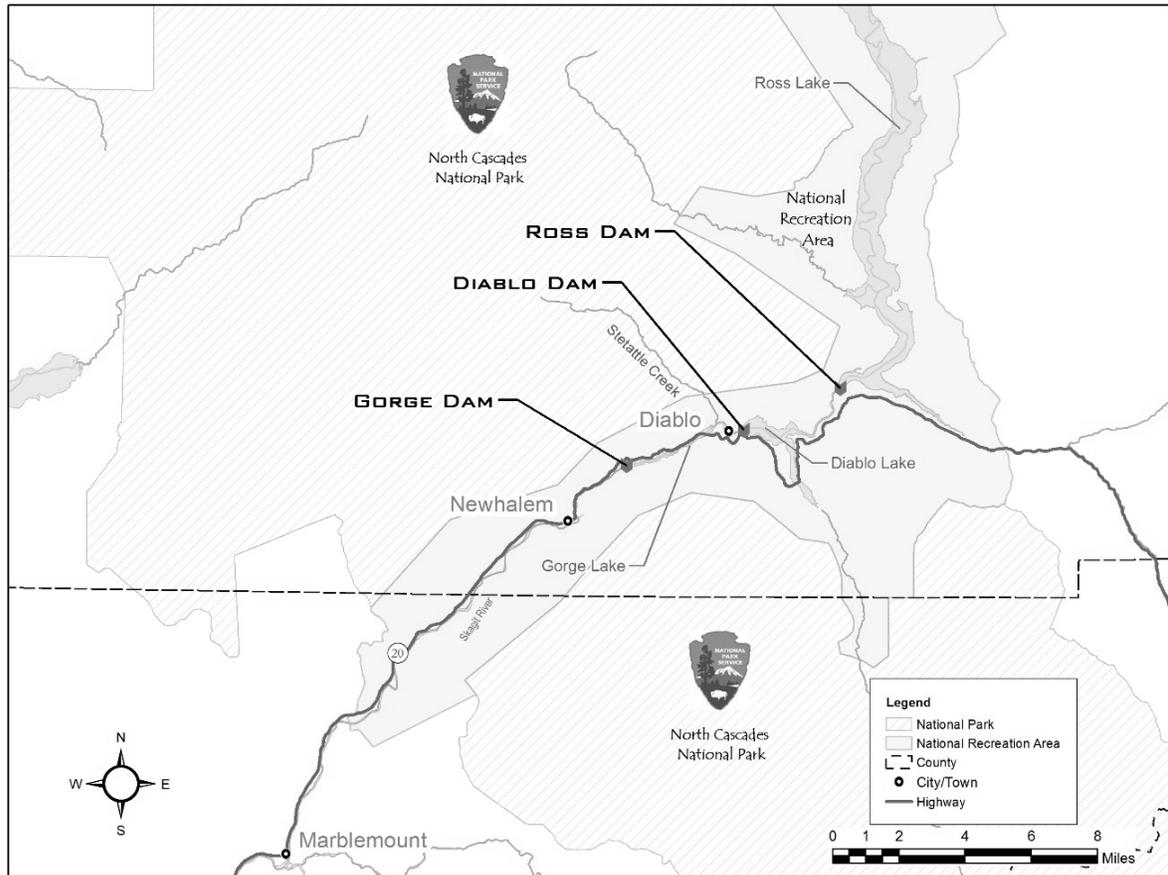


Figure 1. Skagit River Project location in Washington State.



**Figure 2. Skagit River Project and adjacent federal lands.**

Reservoir elevations remain high through the migratory and spawning periods of native char (Bull Trout and Dolly Varden) and Rainbow Trout, allowing these species access from the lake to high-quality spawning grounds in the tributaries. City Light maintains the reservoir near full-pool elevations in July and August for recreational purposes. Lands bordering Ross Lake are moderately to steeply sloped and forested; glaciers draining to the basin contribute cool waters that provide excellent summer habitat for native Bull Trout and Rainbow Trout. Major tributaries to Ross Lake include Big Beaver, Little Beaver, Ruby, Lightning, and Devil’s creeks and the upper Skagit River (British Columbia) (Seattle City Light 2011).

- **Diablo Dam**, located downstream from the Ross development, creates Diablo Lake which is 4½ miles long and used primarily for daily and weekly regulation of discharge from Ross. Full pool elevation is 1,205 ft. MSL and annual water level fluctuations range from 10 to 12 ft. Average daily fluctuations are on the order of 5 ft. Thunder Creek is the major tributary to Diablo Lake but most of the inflow into the reservoir is from water released through Ross Powerhouse. Reservoir storage is limited. Much of the land surrounding Diablo Lake is moderately to steeply sloped and forested; portions of the lake are bordered by exposed rock or talus covered with patches of conifers and shrubs.

- The most downstream generating facility consists of **Gorge Dam** and powerhouse; the dam is located about 4 miles to the southwest of Diablo Dam. Gorge Lake is the smallest of the three Skagit reservoirs and fluctuates only a few feet from its full pool elevation of 875 ft. MSL under normal operations. Inflow to the reservoir is from water released through Diablo Powerhouse or spill; Stetattle Creek is the only significant tributary. There is very limited storage in the Gorge reservoir. Gorge Lake is aptly named for the cliffs and talus slopes comprising much of the area bordering the reservoir. The few flat areas adjacent to the reservoir are developed, and the remaining steep areas are forested.

The Skagit River gorge downstream of Gorge Dam marks the historical limit of anadromous salmon migrations in the upper river (Smith and Anderson 1921, NMFS 2012, USFWS 2013, Pflug et al. 2013). River reaches immediately downstream of the Gorge Powerhouse are most affected by Project operations. Project influences on river flows decrease progressively downstream, and are moderated by inflows from major tributaries, including the Cascade (RM 77), Sauk (RM 66), and Baker (RM 56) rivers.

City Light operates the Skagit Project on a “Fish First” philosophy and all downstream releases are planned with this policy in mind. There are legal mandates that may supersede this objective such as flood control during a high flow event (supervised by the US Army Corps of Engineers), power grid reliability, and to a lesser extent, service area load and recreation. This list is not exhaustive but covers the most common interests influencing City Light’s operations outside of fisheries resources.

Seasonal Project operations and associated fish-flow management objectives are summarized below:

- Starting in the winter, Gorge Powerhouse releases are structured to minimize the stranding of salmon fry on gravel bars and to facilitate fry emergence from the gravel and outmigration to Puget Sound. Diablo and Gorge reservoirs follow service area load and reregulate river flow for salmon downstream. Ross reservoir is drawn down to provide flood storage and to make room for the spring snow melt.
- In the spring, flows from the Gorge Powerhouse are altered to provide for steelhead spawning and continuing salmon fry emergence and outmigration. Gorge and Diablo reservoirs continue to follow the load for service area and reregulate flow for instream flows. Ross reservoir begins filling as the snow melts. After the steelhead spawning period City Light often needs to spill water at Diablo and Gorge dams to manage high inflow from snow melt and spring rains. Spills typically range from a few days to a several weeks.
- During the summer Gorge Powerhouse releases flows for steelhead incubation, Chinook salmon spawning, and in odd years, Pink salmon spawning. Gorge and Diablo reservoirs continue to follow service area load and reregulate for instream flows. Ross Lake is at full pool to provide for recreation activities and usually only fluctuates a few feet. Recreation opportunities in dry years may be impacted by lower pool levels and/or early draw down to benefit downstream fisheries resources.
- In the autumn releases from Gorge Powerhouse are managed for Chinook, Pink (odd years), and Chum salmon spawning and egg incubation. Gorge and Diablo reservoirs continue to follow the service area load and reregulate for instream flows. Drawdown of Ross reservoir begins to create flood storage for the fall rains and to prepare for the next year’s snow pack.

**Table 1. Facility Description Information for Skagit Hydroelectric Project, LIHI #5.**

<i>Information Type</i>	<i>Variable Description</i>	<i>Response (and reference to further details)</i>
<b>Name of the Facility</b>	Facility name (use FERC project name if possible)	<b>Skagit River Hydroelectric Project</b>
<b>Location</b>	River name (USGS proper name)	Skagit River
	River basin name	Skagit River
	Nearest town, county, and state	Newhalem, Whatcom County, WA
	River mile of dam above next major river	96.6
	<b>Gorge Powerhouse</b>	
	Geographic latitude	N 48° 40'32"
	Geographic longitude	W 121° 14'26"
	<b>Gorge Dam</b>	
	Geographic latitude	N 48° 41'52"
	Geographic longitude	W 121° 12'30"
	<b>Diablo Dam and Powerhouse</b>	
	Geographic latitude	N 48° 42'57"
	Geographic longitude	W 121° 08'24"
	<b>Ross Dam and Powerhouse</b>	
	Geographic latitude	N 48° 43'51"
Geographic longitude	W 121° 04'13"	
<b>Facility Owner</b>	Application contact names:	Larry Weis, General Manager & Chief Executive Officer Mike Haynes, Generation Officer Lynn Best, Chief Environmental Officer
	- Facility owner (individual and company names)	<b>City of Seattle, City Light Department</b>
	- Operating affiliate (if different from owner)	n/a
	- Representative in LIHI certification	Erin Lowery
<b>Regulatory Status</b>	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates	P-553 Issued: May, 16 1995 Expires: May, 15 2025
	FERC license type or special classification (e.g., "qualified conduit")	FERC License, 1995; amended in July 2013.
	Water Quality Certificate identifier and issuance date, plus source agency name	NA – Washington Department of Ecology waived the 401 Water Quality Certification (See Appendix)
	Hyperlinks to key electronic records on FERC e-library website (e.g., most recent Commission Orders, WQC, ESA documents, etc.)	Current License: <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3012739">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=3012739</a> Current Fisheries Settlement Agreement: <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12741739">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12741739</a> Incidental Take Statement for Bull Trout: <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13822730">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13822730</a>

<b>Information Type</b>	<b>Variable Description</b>	<b>Response (and reference to further details)</b>
		<p>Incidental Take Statement for Chinook salmon and steelhead:  <a href="https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13823418">https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13823418</a>,</p> <p>License and associated settlement agreements can be found here as well:  <a href="http://www.seattle.gov/light/skagit/license.asp">http://www.seattle.gov/light/skagit/license.asp</a></p>
<b>Gorge Power Plant Characteristics</b>	Date of initial operation (past or future for operational applications)	Gorge 1924
	Total name-plate capacity (MW)	190.6
	Average annual generation (MWh)	1,028,527
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	4, vertical-type, Francis turbines, Maximum hydraulic capacity 7,440 cfs
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	Re-regulation; peaking
	Dates and types of major equipment upgrades	High Gorge Dam 1961 (replaced original dam)
	Dates, purpose, and type of any recent operational changes	All operations are governed by the Revised Fisheries Settlement Agreement (2011).
	Plans, authorization, and regulatory activities for any facility upgrades	10/20/14: Updated limiting rating to that of nameplate capacity based on new generator relay upgrade.
	Water discharge location or facility	Skagit River – Skagit RM 94.2
<b>Diablo Power Plant Characteristics</b>	Date of initial operation (past or future for operational applications)	Diablo 1936
	Total name-plate capacity (MW)	190.4
	Average annual generation (MWh)	863,919
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	4, vertical-type, Francis turbines, Maximum hydraulic capacity 7,130 cfs
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	Re-regulation; peaking
	Dates and types of major equipment upgrades	None
	Dates, purpose, and type of any recent operational changes	All operations are synchronized with Ross and Gorge Powerhouses which are governed by the Revised Fisheries Settlement Agreement (2011).
	Plans, authorization, and regulatory activities for any facility upgrades	3/1/17-9/30/17: Generator Rewind 3/1/18-9/30/18: Generator Rewind
	Water discharge location or facility	Gorge Lake – Skagit RM 101

<b>Information Type</b>	<b>Variable Description</b>	<b>Response (and reference to further details)</b>
<b>Ross Power Plant Characteristics</b>	Date of initial operation (past or future for operational applications)	Ross 1952
	Total name-plate capacity (MW)	450
	Average annual generation (MWh)	803,603
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	4, vertical-type, Francis turbines, Maximum hydraulic capacity 16,000 cfs
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	Seasonal storage and flood control
	Dates and types of major equipment upgrades	3 new transformers were installed in 2016; 3 more are planned for 2017.
	Dates, purpose, and type of any recent operational changes	All operations are governed by the Revised Fisheries Settlement Agreement (2011).
	Plans, authorization, and regulatory activities for any facility upgrades	None
	Water discharge location or facility	Diablo Lake - Skagit River RM 105
<b>Characteristics Of the Dam or Diversion: Gorge</b>	Date of construction	Original: Finished in 1924 Current: Finished 1961
	Dam height	300 ft.
	Spillway elevation and hydraulic capacity	825ft 89,000 cfs max output
	Tailwater elevation	495 ft.
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	There is one 20.5-ft diameter concrete lined tunnel power tunnel 11,000 ft long. There are four penstocks controlled by butterfly valves for each generator.
<b>Characteristics Of the Dam or Diversion: Diablo</b>	Date of construction	1929
	Dam height	389 ft.
	Spillway elevation and hydraulic capacity	1187ft 98,500 cfs max output
	Tailwater elevation	875ft
	Length and type of all penstocks and water conveyance structures between reservoir and Powerhouse	There is one 19.5-ft. diameter concrete lined power tunnel 1990 ft. long. The last 190 feet is steel lined. This tunnel feeds two 15-ft diameter 290-ft long steel lined penstocks.

<b>Information Type</b>	<b>Variable Description</b>	<b>Response (and reference to further details)</b>
<b>Characteristics Of the Dam or Diversion: Ross</b>	Date of construction	1949
	Dam height	540 ft.
	Spillway elevation and hydraulic capacity	1582ft 119,500 cfs max output
	Tailwater elevation	1205
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	There are two 24.5-ft diameter concrete lined power tunnels, each 1900 ft. long.
<b>Hydrologic Setting</b>	Location and name of relevant stream gauging stations above and below the facility	USGS 12178000 Skagit River at Newhalem, WA RM 93.7
	<b>Watershed area at the dam</b>	
	Upstream of Gorge	1,159 square miles
	Upstream of Diablo	1,125 square miles
	Upstream of Ross	999 square miles
<b>Designated Zones of Effect</b>	Number of zones of effect	4
	Upstream and downstream locations by river miles	Zone 1 RM 66-94.2, Zone 2 RM 94.2-96.6, Zone 3 RM 96.6-105.2, and Zone 4 RM 105.2-127.8
	Type of waterbody (river, impoundment, by-passed reach, etc.)	Zone 1 - regulated riverine reach Zone 2 - bypassed reach Zone 3 - re-regulating reservoirs (Gorge and Diablo) Zone 4 - flood control/storage reservoir (Ross)
	Delimiting structures	Zone 1 - Gorge Powerhouse Zone 2 - Gorge Powerhouse and Gorge Dam, Zone 3 - Gorge Dam and Ross Dam Zone 4 - Ross Dam
	Designated uses by state water quality agency	Ross Lake, Diablo Lake, and Gorge Lake are designated as "Core Summer Salmonid Habitat". The upper Skagit River downstream of the project is also designated as "Core Summer Salmonid Habitat". In addition, the upper Skagit River downstream of Gorge Powerhouse has a "supplemental spawning/incubation criteria" designation for salmon and steelhead spawning.  See references below:  Water Quality Standard <a href="http://www.ecy.wa.gov/biblio/0610091.html">http://www.ecy.wa.gov/biblio/0610091.html</a>

<b>Information Type</b>	<b>Variable Description</b>	<b>Response (and reference to further details)</b>
		Water Quality Supplement <a href="http://www.ecy.wa.gov/biblio/0610038.htm">http://www.ecy.wa.gov/biblio/0610038.htm</a> !
<b>Additional Contact Information</b>	Names, addresses, phone numbers, and e-mail for local state and federal resource agencies	Contacts are located at the end of this document.
	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	Contacts are located at the end of this document.
<b>Photographs and Maps</b>	Photographs of key features of the facility and each of the designated zones of effect	Figure 3. and See Attached Appendices.
	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	Figures 1 and 2.

\* Hyperlinks to facility FERC records on FERC e-library website are preferred whenever possible.

## PART 2. STANDARDS MATRICES

For this Low Impact Hydro certification application, the Project area has been divided into four distinct Zones of Effect (Zones). Zone 1 is the regulated riverine reach downstream of the Gorge Powerhouse; Zone 2 is the Gorge Bypass Reach; Zone 3 consists of the two re-regulating reservoirs—Gorge and Diablo lakes; and Zone 4 is Ross Lake, the flood control/storage reservoir (Figure 3). Each of these is addressed in the following sections.

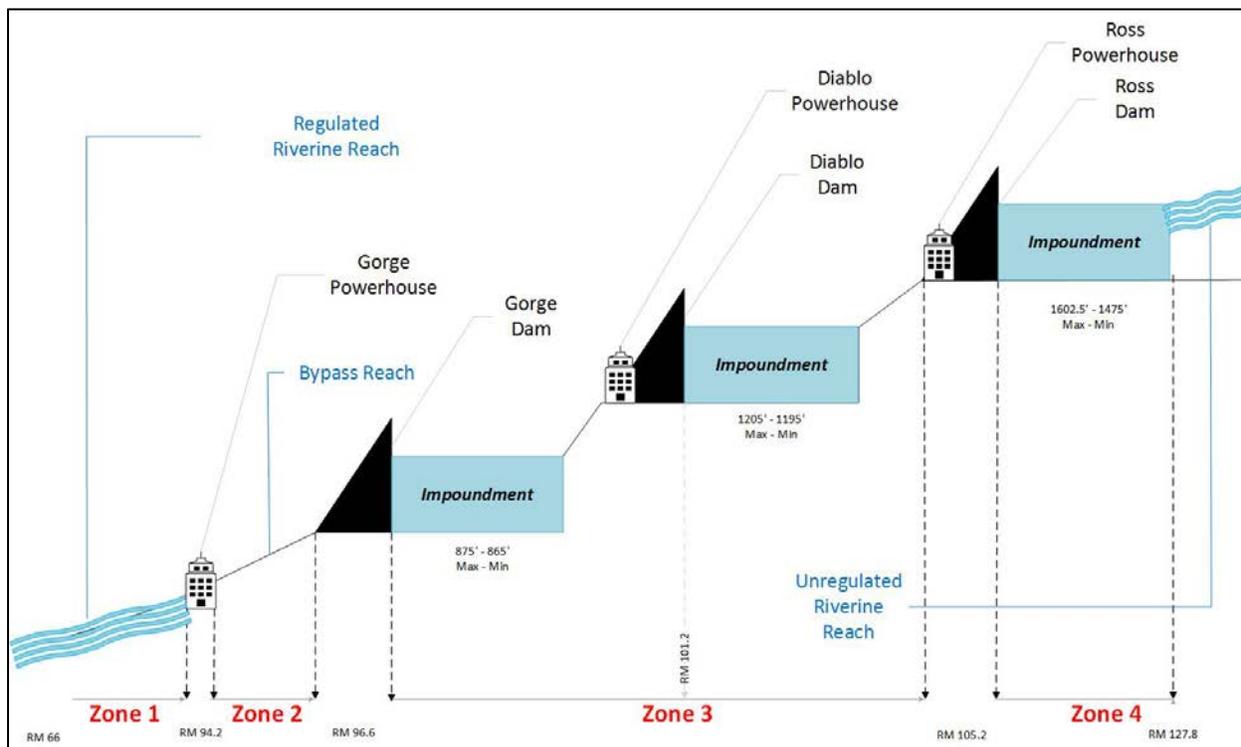


Figure 3. Schematic of the four designated Zones of Effect (Zones) for the Skagit Project.

### 2.1 Zone of Effect #1: Downstream of Gorge Powerhouse (Regulated Riverine Reach)

The standards applicable to each criterion for Zone 1 are summarized in Table 2 and described below. This Zone meets “plus” standards for four criteria.

**Table 2.** Zone of Effect 1 – Downstream of Gorge Powerhouse (Regulated Riverine Reach)

Criterion		Alternative Standards Applied *				
		1	2	3	4	Plus
A	Ecological Flow Regimes		X			X
B	Water Quality			X		
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				

Criterion		Alternative Standards Applied *				
		1	2	3	4	Plus
	m Fish Passage					
<b>E</b>	Watershed and Shoreline Protection		X			X
<b>F</b>	Threatened and Endangered Species Protection		X			X
<b>G</b>	Cultural and Historic Resources Protection		X			X
<b>H</b>	Recreational Resources		X			

\* Shading indicates that some standards are not available for some criteria.

### 2.1.1 Ecological Flow Standards

Criterion	Standard	Instructions
A	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).</li> <li>Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.</li> <li>Explain how the recommendation relates to agency management goals and objectives for fish and wildlife.</li> <li>Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).</li> </ul>

The Project flow requirements are determined by a series of calculations designed to provide protection for salmon and steelhead, and change from year to year, depending on precipitation and river levels. These flow requirements are conditioned by reservoir elevation, seasonal runoff, and episodic variations in runoff (including tributary outflows below the project) to provide the operational flexibility needed to provide the highest possible level of protection to all life stages of salmon and steelhead in the upper Skagit River. These calculations are detailed, and described in the appendices of the Revised Skagit Fisheries Settlement Agreement (2011; see <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12741739>).

The Skagit River basin currently supports the most abundant run of naturally spawning Chinook salmon in Puget Sound, with annual returns of summer/fall Chinook salmon averaging about 8,000 fish in the mainstem Skagit River below the Project (WDFW et al. 1993; Myers et al. 1998; NMFS 1999, NMFS Technical Review 2002, WDFW SCORE Database 2015). This stock has been rated as “healthy” by the WDFW (WDF et al. 1993). Although trends in Chinook salmon abundance throughout the Puget Sound region have been declining, the number of spawning Chinook salmon in the 25-mile reach of the Skagit River below the project has remained stable based on long-term spawning survey databases maintained by the WDFW since 1974 (Olsen and Knutzen 1997, Connor and Pflug 2004, WDFW SCORE Database 2015). The proportion of Skagit Chinook salmon spawning in the upper Skagit (25-mile reach between Newhalem and Rockport) has been increasing since 1991, with an average of 78% of all fall/summer Chinook spawning in this reach. Surveys have been conducted in the mainstem Skagit River in reaches most affected by project operations since 1991. There were three consecutive years, 2004, 2005, and 2006, where the annual return of summer/fall Chinook exceeded 20,000 fish. Annual returns at these levels were last recorded in 1980 and have not occurred since.

In 2007, steelhead populations, including the Skagit River population, were listed as threatened by NOAA Fisheries. City Light biologists have been closely tracking and analyzing trends in steelhead population abundance in the Skagit River and tributaries below the Project and have been actively engaged in discussing trends in steelhead abundance with agency, tribal, and NGO biologists, and identifying research and monitoring needs for steelhead stocks. As reported in the original questionnaire, City Light implemented a steelhead redd monitoring program in the upper Skagit River in 1995. Semi-annual flow reports are submitted to the FERC for the Salmon and Steelhead spawning and rearing periods. See: <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13861845> and <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14033569> as submitted in 2016.

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
A	PLUS	<p><u>Bonus Activities:</u></p> <ul style="list-style-type: none"> <li>• <i>If an adaptive management program is in place, provide sufficient information to understand.</i></li> <li>• <i>If non-flow habitat enhancements have been applied, explain what they are, how their benefits are being monitored, and how they are achieving a positive net benefit to fish and wildlife resources.</i></li> </ul>

Adaptive management and non-flow enhancements are cornerstones of the Revised Fisheries Settlement Agreement (2011) and the associated Revised Fisheries Resources Plan (October 2013). City Light biologists monitor the efficacy of the planned spawning flows by conducting a survey every 7-10 days during the salmon (August 20-January 6) and steelhead (March 15-June 15) spawning periods. Data collected during these surveys informs the fisheries co-managers (state and tribes) when making management decisions. These decisions allow for real time adjustments of flows to reduce or eliminate the risk of redd dewatering. This adaptive management approach provides City Light with flexibility in managing flows while exceeding the fish protection provisions in the license.

Over the last 20 years City Light has provided funding for, and participated in, research by the State, tribes, and universities to gain a better understanding of salmonid populations, habitat use, and life histories in the Skagit River downstream of the Project. Data from these non-flow studies have been

used to inform Project operations and local fisheries management decisions. Several of the recent studies are summarized below:

- University of Washington - Relationships between flows, food availability and Bull Trout predation on juvenile steelhead in the Skagit River downstream of the Project (Lowery and Beauchamp 2015).
- Upper Skagit Indian Tribe and the University of Washington - System wide assessment of stream-type juvenile steelhead and Chinook and Coho salmon (Lowery et al 2013).

### 2.1.2 Water Quality Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
B	3	<p><u>Site-Specific Monitoring Studies:</u></p> <ul style="list-style-type: none"> <li>• Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required.</li> <li>• Present recent water quality data, explain how it satisfies applicable water quality standards, and provide a letter from the appropriate state of other regulatory agency accepting these results.</li> </ul>

The upper Skagit River is in full compliance with the quantitative water quality standards established by the State of Washington (Washington administrative Code (WAC) 173-201) and supports the designated freshwater aquatic life uses.

The Washington State Department of Ecology (Ecology) revised the water quality standards for surface waters of the State in 2006, switching from a class-based system (e.g. Class “AA” formerly applied to the highest quality waters) to a system based upon freshwater aquatic life uses. The most stringent water quality standards are applied to water bodies used by native char (Bull Trout and Dolly Varden) for spawning and rearing (Ecology 2012). The freshwater aquatic life uses defined by Ecology are: 1) char spawning and rearing; 2) core summer salmonid habitat; 3) salmonid spawning, rearing, and migration habitat; 4) salmon rearing and migration only; 5) non-anadromous interior Redband Trout; and 6) indigenous warmwater species.

Ecology defines specific freshwater aquatic life uses for every major water body in the State of Washington. These designations are provided in Table 602 of the “Water Quality Standards for Surface Waters of the State of Washington” (Ecology 2012). The designated aquatic life use for the Skagit River in Water Resource Inventory Area (WRIA) 4 (Upper Skagit Watershed), which includes the entire mainstem reach downstream of the Project, is “core summer salmonid habitat”. For recreational uses (which applies only to the bacteria indicator water quality criteria), Ecology designated the Skagit River downstream of the project as “extraordinary primary contact recreation”.

Ecology also established supplemental spawning and incubation water temperature criteria for specific river and stream reaches that provide important spawning habitat for salmon, steelhead, trout, and native char. These supplemental standards are identified in detailed spawning distribution maps generated for each major watershed by Ecology (2011). Ecology also designates a spawning and incubation period for each mainstem reach or tributary when the spawning/incubation water temperature criteria are in effect.

The water quality criteria for the mainstem Skagit River downstream of the Project are as follows:

- *Temperature (summer core salmonid habitat standard)*. The highest allowable 7-day average of maximum daily temperatures (7-DADMax) is 16 °C. This standard applies from June 16 to August 31.
- *Temperature (supplemental spawning and incubation standard)*. The supplemental salmonid spawning and incubation standard applies to the mainstem Skagit River below the Project from September 1 through June 15. During this period, the water temperature criteria is a maximum 7-DADMax of 13 °C.
- *Dissolved Oxygen (core summer salmonid habitat)*. The lowest 1-day minimum allowable D.O. for the Skagit River downstream of the project is 9.5 mg/l, which is applicable year-round.
- *Turbidity (core summer salmonid habitat)*. Turbidity shall not exceed 5 nephelometric turbidity units (NTUs) when the background is 50 NTU or less, or a 10 percent increase when the background turbidity is greater than 50 NTU.
- *pH (core summer salmonid habitat)*. The pH for water bodies designated as core summer salmonid habitat shall be within the range 6.5 to 8.5, with human-caused variation less than 0.5 units.
- *Bacterial Criteria (extraordinary primary contact recreation)*. Fecal coliform organism levels shall not exceed a geometric mean value of 50 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points) obtained for calculating the geometric mean value exceeding 100 colonies/100mL.

The mainstem Skagit River downstream of the Project is compliant with all water quality standards, as demonstrated by a query of the Washington State Water Quality Assessment database (<https://fortress.wa.gov/ecy/approvedwqa/ApprovedSearch.aspx>) on December 6, 2016. This database has been updated to include the most recent biennial water quality assessment which was completed in June 2016. Only three possible water quality impairment listings were found for the Skagit River at RM 78.7 downstream of the Project, and all were designated as Category 1 based on quantitative testing meaning that the water body meets the tested standards for each parameter. Thus, the Skagit River downstream of the Project is a Category 1 water body, and complies with all tested standards for clean waters.

Zone #1 is characterized by cold and clean water throughout the year. The upper Skagit River watershed is largely protected from development and land-management disturbance, as most of the watershed is located within the boundaries of North Cascades National Park, the Pasayten Wilderness Area, and Upper Skagit and Manning's Provincial Parks in British Columbia. The Project has a cooling effect on waters released from the reservoirs into the river during the late summer and fall. The power intakes at Ross Dam are located about 140 ft. below the surface of the reservoir, and withdraws water that is approximately 7 °C throughout the year. This cold water quickly passes through Diablo and Gorge reservoirs downstream and is then released into the Skagit River at Gorge Powerhouse. The cold and clean waters released from the Project support the largest population of Bull Trout in western Washington, a fish species listed as threatened under the Endangered Species Act (ESA) that requires cold and pristine water quality conditions. The excellent water quality also supports the largest native steelhead and Chinook salmon runs in Puget Sound, and the largest Chum salmon run in the coterminous United States.

### 2.1.3 Upstream Fish Passage Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
C	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

Zone 1 is downstream of the Skagit Project dams and powerhouses so the upstream fish passage is not an issue. Fish are readily able to move upstream throughout Zone 1. The upstream end of Zone 1 ends near the historic extent of the anadromous reach of the Skagit River. A natural barrier to fish migration at RM 95, about 0.5-mile upstream of Gorge Powerhouse, was documented by Smith and Anderson (1921) who conducted the first known investigation of the Skagit River above the location of the Gorge Powerhouse. They also recorded numerous other barriers to fish migration upstream from RM 95. The only fishes documented in their report were Rainbow and Cutthroat trout and Dolly Varden; they noted that no anadromous (migratory) fishes were observed above that barrier (Smith and Andersen 1921).

During the process of relicensing the Skagit River Project, the FERC requested technical information to support the validity of the Smith and Anderson report (1921). The resulting investigation by EnviroSphere (1989) determined there is a large barrier in the river channel near Falls Creek with no plunge pool beneath it to facilitate fish movement upstream, which supported the claims made in Smith and Anderson (1921). The [Skagit 2003 Certification Final Staff Report](#) and 2008 Final Report (<http://lowimpacthydro.org/wp-content/uploads/2008/08/SkagitRECERTfinalreport.pdf>) indicates there were no reliable or significant historic reports of anadromous fishes above the identified natural barriers near the Gorge Powerhouse. See Section 2.2.3 for a more detail on the natural barrier to fish passage at the lower end of Zone 2. See the Ecological Flows (2.1.2) and Threatened and Endangered Species (2.1.6) sections for information on the health and productivity of fish populations below the Project.

### 2.1.4 Downstream Fish Passage and Protection Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).</li> <li>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> </ul> <p>If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</p>

Zone 1 is downstream of all three Skagit Project powerhouses and dams and contains no natural or anthropogenic barriers to fish passage. The flow regime out of the Skagit Project is designed to facilitate fishes throughout their lifecycles including; spawning, incubation/emergence, and, for this criterion, outmigration. City Light does this by controlling downramp rates during times where fishes are vulnerable to stranding on gravel bars and during the spring outmigration period (see the FSA referenced in Table 1). This allows the Project to generate while providing flows adequate to meet the needs of newly emerged fishes and fry as they migrate to the marine environment.

**2.1.5 Shoreline and Watershed Protection Standards**

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
<i>E</i>	<i>2</i>	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li> <li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li> </ul>

Watershed protection actions by City Light in and near the Skagit River basin fall under three programs: Fisheries, Wildlife Mitigation Lands, and the Endangered Species Early Action Program (EAP). Under these programs City Light owns, protects and manages approximately 13,830 acres of habitat. All this land is downstream of the Project and in the nearby Nooksack River basin. The Fisheries and Wildlife Mitigation Land programs are guided by the Settlement Agreements included in the Skagit Project License. The EAP was City Light’s response to a charge from Seattle City Council Resolution 29905 (2001) to develop and implement actions to protect Puget Sound Chinook Salmon and Puget Sound Bull Trout, which had just been listed as threatened species under the federal ESA. One of the five commitments in the EAP is habitat acquisition and restoration within and outside the City of Seattle in locations offering the greatest benefit to salmonids. The original intent was to keep the EAP separate from the FERC License, however, after the Gorge Second Tunnel License Amendment, a portion of the funding for the EAP for land acquisition and restoration was included as a conservation measure in the Biological Opinion for the Project. See the sections relating to Threatened and Endangered species protection for more information. Watershed protection was summarized in the 2008 LIHI certification and no material changes have been made to the programs that address this issue <http://lowimpacthydro.org/wp-content/uploads/2008/08/SkagitRECERTfinalreport.pdf>.

The Erosion Control Plan developed with the NPS for the Project is focused primarily on controlling shoreline erosion around Ross Lake (Zone 4), but there are several provisions related to Project roads in Zone 1. As much as practical, City Light follows the guidelines in the Erosion Control Plan in the design, maintenance and rehabilitation of Project roads.

Although not a requirement of the Settlement Agreements or the Skagit License, City Light works closely with the NPS, non-profits and local weed boards on removal of invasive, non-native, species such as Scot’s broom, Japanese knotweed, and clematis, from in and around the Project area. Most of the weed control efforts in Zone 1 are focused along the Skagit River and the transmission line rights-of-way (ROWs) through Newhalem. Preventing the spread of invasive species downstream of the Project and onto adjoining federal lands is critical for watershed and shoreline protection.

### 2.1.6 Threatened and Endangered Species Standards

Criterion	Standard	Instructions
F	3	<p><u>Recovery Planning and Action:</u></p> <ul style="list-style-type: none"> <li>• <i>If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.</i></li> <li>• <i>Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.</i></li> </ul>

Within Zone 1 there are three terrestrial and three aquatic species listed as “Threatened” or “Endangered” under the ESA.

#### Terrestrial Species

Grizzly bear, northern spotted owl, and marbled murrelet, all federally listed Threatened Species, and the grey wolf, a federally listed Endangered Species, potentially occur in the Project area. Of these, only the northern spotted owl and marbled murrelet would be likely to occur in Zone #1. Neither of these species has been documented recently in the Ross Lake National Recreation Area or on nearby U.S. Forest Service lands but suitable habitat does exist, particularly in the forested drainages of the tributaries to the Skagit River downstream of the Project. Consultation with the USFWS during the relicensing process found that the Project was *not likely to adversely affect* grizzly bears, spotted owls or marbled murrelets.

#### Aquatic Species

There are three fish species listed as threatened under the endangered species act in Zone 1; Bull Trout, Chinook salmon, and steelhead. Puget Sound Chinook salmon, which were listed as a threatened species by the National Marine Fisheries Service (NMFS) on March 24, 1999, are present in the Skagit River downstream of the Project. Bull Trout were listed as a threatened species by the USFWS throughout their range within the coterminous United States on June 10, 1998. Healthy populations of Bull Trout are present in the upper and middle Skagit basin below Gorge Powerhouse. Puget Sound steelhead were listed as a threatened species by the NMFS on May 11, 2007. Steelhead occur in the Skagit River basin downstream of the Project. An example of the research and management activities conducted on an annual basis under the Skagit Project license can be seen here:

<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13932992>.

Biological Opinions for Chinook salmon and steelhead were issued by the NMFS in 2012 , [http://www.seattle.gov/light/skagit/docs/Biological%20Evaluation\\_2011-06-07\\_FINAL\\_MASTER.pdf](http://www.seattle.gov/light/skagit/docs/Biological%20Evaluation_2011-06-07_FINAL_MASTER.pdf), and for Bull Trout by USFWS in 2013, [http://www.seattle.gov/light/skagit/docs/Gorge%20Second%20Tunnel%20Supplement\\_Final.pdf](http://www.seattle.gov/light/skagit/docs/Gorge%20Second%20Tunnel%20Supplement_Final.pdf), as part of a license amendment process for the Gorge Second Tunnel. Because the Fisheries Settlement Agreement was developed prior to any fish listings, this license amendment provided an opportunity for the USFWS and NMFS to consult on monitoring and adaptive management actions to minimize and/or mitigate for the effects of Project actions. For Chinook salmon and steelhead, in Zone 1 NMFS requires a monitoring plan that and annual take report. The USFWS determined there was no take due to Project actions in Zone 1. All actions described and reporting requirements in these opinions were developed to align with those prescribed in the Fisheries Settlement Agreements (1991, 2011 revised). Each year

after the issuance of the biological opinions for Chinook salmon and steelhead, City Light has submitted take reports to the NMFS and FERC, <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13823418>.

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
<i>F</i>	<i>PLUS</i>	<p><u><i>Bonus Activities:</i></u></p> <ul style="list-style-type: none"> <li>• <i>Describe any enforceable agreement that the facility has with resource agencies to operate the facility in support of rare and endemic species.</i></li> <li>• <i>Describe any enforceable agreement that the facility has with resource agencies to take proactive measures in the vicinity of the facility to substantially minimize impacts on species that are at risk of becoming listed species.</i></li> <li>• <i>Describe any enforceable agreement that the facility has with resource agencies to be a significant participant in a species recovery effort.</i></li> </ul>

The Fisheries Settlement Agreement contains best efforts and adaptive management articles designed to quickly modify project operations in response to real-time monitoring data. In addition to the FERC License, City Light, tribal, and agency biologists conduct weekly spawning ground surveys in Zone 1 to determine the efficacy of our ecological flow measures. The data collected are used in real-time and post-season to modify our operations to optimize the ecological benefits to spawning fish and incubating eggs. The actions are voluntary and typically designed to protect fish that spawned under high flow conditions outside City Light control, thereby exceeding the requirements of the Fisheries Settlement Agreement.

As part of the EAP, City Light has developed an aquatic endangered species research program. Under this program, City Light funds research and monitoring activities that benefit Chinook salmon, steelhead, and Bull Trout downstream of the Project. An average of \$180,000 is spent annually under this program. This program was originally created by City Ordinance as described in section 2.1.5. Currently City Light is operating under two biological opinions (see above in this section) which mandate that the utility conduct monitoring and evaluation of our operations. The BO's provide a legal instrument for the perpetuity of this program. However, City Light policy dictates that the biologists operating under this program improve and inform our understanding of biological process to refine our science based policies. Therefore, City Light continues to conduct research beyond the minimum requirements of the two BO's.

The most recent 5-year wildlife report was filed with the FERC on May 19, 2016. The Wildlife Program has purchased approximately 10,300 acres of land to date. Of this amount, about 1,000 acres provide roosting and foraging habitat for bald eagles, which were federally listed as threatened until 2007. The Skagit River downstream of the Project to Rockport supports one of the largest wintering populations of bald eagles in the coterminous United States. A significant portion of the acquired lands also provides potential northern spotted owl foraging habitat near federal lands.

Under License Article 410, City Light has funded 47 separate wildlife research grants totaling \$1.1 million for species found in the North Cascades Ecosystem. While not all of the research has specifically addressed ESA-listed wildlife species, a several projects have studied gray wolves and Canada lynx, listed as endangered and threatened, respectively.

In addition to the \$100,000 of annual habitat restoration and acquisition funding included as a conservation measure in the Biological Opinion for Chinook salmon and steelhead, City Light commits approximately \$400,000 annually in additional funding to the EAP. Some of this funding has been applied to purchasing and improving habitat for Chinook salmon and steelhead along the Skagit River downstream of the Project.

### 2.1.7 Cultural and Historic Resources Standards

Criterion	Standard	Instructions
G	2	<p><u>Approved Plan:</u></p> <ul style="list-style-type: none"> <li>• Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.</li> <li>• Document that the facility is in compliance with all such plans.</li> </ul>

The Project is in compliance with the May 16, 1995 FERC License #553’s Article 414; the Settlement Agreement Concerning Cultural Resources (Archaeological and Historic Resources) (April 1991); the Memorandum of Agreement (MOA; 1991) between the City of Seattle, State Historic Preservation Officer (SHPO), and the NPS; and the MOA (1994) between the FERC, Washington SHPO, the Advisory Council on Historic Preservation, NPS, Upper Skagit Indian Tribe, Swinomish Indian Tribal Community, and Sauk-Suiattle Indian Tribe. Compliance involves implementation of a Historic Resources Mitigation and Management Plan (HRMMP) and Archaeological Resources Mitigation and Management Plan (ARMMP) (filed with FERC January 31, 2014). During previous LIHI certifications the ARMMP was not finalized. It was only recently that the details of the ARMMP were settled. However, most components of the ARMMP were in practice prior to submittal to FERC. The HRMMP was developed in consultation with the Washington Department of Archeology and Historic Preservation (DAHP) and the NPS. Both agencies are signatories to the MOA. The ARMMP was developed in consultation with the DAHP, NPS, and the three tribes.

#### Historic Resources

The HRMMP provides policy direction and review for historic architectural and engineering resources within the boundaries of the Skagit Project and has been in effect since 1991. The management program outlined in the HRMMP runs for the term of the current license and applies to all historic buildings, structures, and features designated as Contributing Resources within the Skagit Project and those determined eligible for listing in the National Register of Historic Places during periodic updates (most recently in 2010).

Additionally, periodic reports on HRMMP activities are issued by City Light under the terms of the MOA to FERC, NPS and DAHP. Reports have been issued approximately every five years starting in 1996 and continuing in 2000, 2005, 2010, and 2015.

Zone 1 includes the town of Newhalem, located just downstream of Gorge Powerhouse. Gorge Powerhouse and many structures in Newhalem are listed on the National Register of Historic Places (NRHP). Ladder Creek Gardens, immediately adjacent to Gorge Powerhouse, is one of the few designated Historic Gardens in the United States. The oldest portion of Newhalem is designated as a Historic District. All capital and maintenance projects conducted in Newhalem follow the HRMMP.

#### Archeological Resources

The ARRMP is focused on the Upper Skagit River Valley Archaeological District, in Zone 4, which has the greatest number of documented archeological sites. Surveys conducted throughout the other portions of the FERC Project Area during relicensing did not document any known cultural resource sites. Nonetheless, City Light continually conducts surveys and consultation with federal and state agencies and tribes for all capital improvement projects in the Zones 1-3 that risk affecting cultural resources. These surveys found several previously unknown buried archaeological sites in the Skagit Valley downstream of Gorge Powerhouse and in Newhalem. These have been documented and addressed through consultation with the NPS, Washington SHPO, and tribes. City Light complies with all applicable federal and state laws concerning cultural resources for any ground disturbing activities that occur downstream of the Project.

As part of the FERC License, City Light has funded the three U.S. Native American tribes the Nlaka’pamux Nation of Canada to complete their own inventories of Traditional Cultural Properties in the Project area so that they can be better protected. These inventories are confidential to the tribal entities and conceivably contain properties within and outside of the project area. In practice, if City Light is to pursue a capital project, the Tribes are consulted on the proposed project and they provide feedback on potential impacts to Traditional Cultural Properties.

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
<i>G</i>	<i>PLUS</i>	<p><u><i>Bonus Activities:</i></u></p> <ul style="list-style-type: none"> <li>• <i>Document any substantial commitment that the facility has made to restoring one or more significant cultural or historical resource in the vicinity, beyond what is required in existing plans such as a Historic Resources Management Plan.</i></li> <li>• <i>Document any significant new educational opportunity about cultural or historical resources in the area that the Facility has created, including contractual obligations that guarantee that this opportunity will exist for the duration of the LIHI certification.</i></li> </ul>

In 2008, City Light began a long-term program to rehabilitate several of the historic buildings in Newhalem and Diablo. It is anticipated that this program will continue beyond the term of the current FERC License, which expires in May of 2025. As of 2016, the rehabilitated buildings in Newhalem include:

- **Gorge Inn:** Constructed in 1920, Gorge Inn is one of four buildings in Newhalem that dates from the earliest camp construction era. It was used as a cookhouse, first for City Light work crews building the Skagit Project dams and powerhouses and later for tourists attending the Skagit Tours. Gorge Inn finally closed in the late 1970s/early 1980s and remained so until 2011 when rehabilitation work began on the building. By this time, Gorge Inn was in very poor condition. Rehabilitating Gorge Inn involved lifting the entire historic building to install a new continuous concrete foundation; adding a new commercial kitchen wing, new roof, insulation and bathrooms; while also repairing the wood floor, restoring the original windows and reusing the historic light globes. Today, the Gorge Inn is once again being used as a cookhouse for City Light employees and visitors.
- **Bunkhouses 17 and 31:** Bunkhouses 17 and 31 are the only two remaining buildings used as communal housing for City Light employees constructing the Skagit Project and later for tourists.

Both are on the NRHP. The buildings were rehabilitated in 2008-2009 to include ADA-approved bathrooms and ramps as well as new exits and stairs that meet fire and safety codes, while preserving important historic characteristics.

- **General Store (aka Newhalem Commissary):** Listed on the NRHP in 1991, City Light operates the Newhalem Commissary year-round. It is open to the public and is a popular mid-way stopping point for travelers on State Route 20 between Interstate-5 and Winthrop, a distance of 132 miles. Select areas of the building were remodeled in 2012-2013 to update and add energy efficiency improvements. The exterior received new intake and exhaust roof fans on the east side (rear) for the new mechanical and commercial kitchen equipment. The interior was remodeled to reconfigure an existing deli and added a sitting area, enlarge the kitchen area, and improve workflow in the office and utility spaces.
- **Ladder Creek Falls** – Ladder Creek Gardens includes a trail along spectacular waterfalls and through a forested area accented with pools, lights and benches. It was once a highlight of Skagit Tours. While the trail remained, the lights and other structures had fallen into disrepair over the years. In 2010 City Light rehabilitated the pathways and main stairway adjacent to the Upper and Lower Falls, as well as the interpretive signage along this area. This project replaced failing and outdated incandescent lighting for the falls with energy efficient LED technology with computer controls and repaired deteriorating pavers, wood planked and gravel paths, handrails and posts in the area. It received the 2012 IES Paul Waterbury Award for Outdoor Lighting Design - Illumination Award Excellence.

**2.1.8 Recreational Resources Standards**

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
H	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>• Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li> <li>• Document that the facility is in compliance with all such recommendations and plans.</li> </ul>

A Recreation and Aesthetics Settlement Agreement provides the structure for City Light’s recreation program both within the Skagit Project boundary and on surrounding federal lands. The settlement agreement includes several measures to support recreational, educational, and interpretive facilities and services. In addition to measures implemented by City Light on Project lands, City Light provides funds to the NPS to construct and maintain facilities in the Ross Lake NRA, and to the USFS to construct and maintain facilities along the Skagit River Wild and Scenic River and the State Route 20 corridor.

Every six years, most recently in 2015, City Light files a Form 80 recreation report with FERC to document whether public recreation needs are being accommodated by the Project, and to determine whether additional efforts could be made to meet future needs. Extensive consultation with agencies and organizations such as the NPS, USFS, and the North Cascades Institute (NCI) has occurred and continues to occur in the planning and implementation phases of many projects.

The recreation measures in the Settlement Agreement range across the four Zones of Effects described in this application. Within Zone 1, the regulated riverine reach downstream of the Gorge Powerhouse,

provides funding to the NPS and USFS to construct and maintain recreation facilities, including boat ramps, trailheads and trails, interpretive signage, and campground improvements. Sample projects include boat access sites at Goodell Creek, Marblemount, Howard Miller Steelhead Park along the Skagit River, and at several locations along the lower Sauk River; ADA-accessible trails at Rockport State Park and at the Old Sauk River Trail; and the completion of recreation needs assessments. Additionally, the USFS uses Skagit Project recreation funds to support the Bald Eagle Festival every January, including staffing, brochures, eagle counts, portable toilets, boater surveys, and interpretive signs.

Immediately downstream of the Gorge Powerhouse, in the town of Newhalem itself, City Light has implemented and maintains several recreational facilities aimed at serving tourists and travelers along the State Route 20 corridor. A Landscape Master Plan for Newhalem, outlining improvements in directional signage, parking, visitor circulation and access to amenities for the public was completed in 1998. In 2000, City Light completed construction of a new visitor contact station, the Skagit Information Center, which is currently staffed by employees from City Light, the NPS and NCI to provide information to visitors and showcase City Light’s history in the North Cascades. Also in the early 2000’s, new interpretive signs were installed in Newhalem and a self-guided walking tour brochure was developed to comply with license measures for both cultural resource and recreation. Several interpretive signs that had deteriorated since 2000 were replaced in 2015 and 2016.

Two 230-kV dedicated transmission lines from the Skagit Project run along State Route 20 and the Skagit Wild and Scenic River in Zone 1. During the relicensing process, seven target areas in the associated ROWs that are highly visible to the public were identified for specific aesthetic improvements. A Rights-of-Way Vegetation Management Plan was developed to guide these improvements, which involved planting low-growing (<12 ft. at maturity) native trees and shrubs and allowing existing trees to grow taller through more frequent ROW inspection and clearing cycles in the seven target areas.

City Light is currently in the process of updating and improving several facilities in Newhalem to better serve visitors to the area and provide more information on Skagit Project history. In 2011, City Light restored the historic lights at Ladder Creek Falls, improved the trail and installed new interpretive panels. In 2016 new interpretive displays were installed in the Gorge Powerhouse Visitors’ Gallery and new playground equipment was installed in Newhalem to meet current safety and ADA standards. New interpretive displays will be installed in the Gorge Inn in 2017. City Light continues to update and install additional interpretive displays and exhibits throughout Newhalem. None of these facility and signage improvements are specifically required by the license, but are generally addressed in a measure that calls for “interpretive exhibit revitalization”; all represent significant investments.

## 2.2 Zone of Effect 2: Gorge Bypass Reach

The standards applicable to each criterion for Zone 2 are summarized in Table 3 and described below.

**Table 3.** Zone of Effect 2 – Gorge Bypass Reach

<b>Criterion</b>		<b><i>Alternative Standards Applied *</i></b>				
		<b><u>1</u></b>	<b><u>2</u></b>	<b><u>3</u></b>	<b><u>4</u></b>	<b><u>Plus</u></b>
<b>A</b>	Ecological Flow Regimes		X			
<b>B</b>	Water Quality		X			
<b>C</b>	Upstream Fish Passage		X			
<b>D</b>	Downstream Fish Passage		X			

<b>E</b>	Watershed and Shoreline Protection	X				
<b>F</b>	Threatened and Endangered Species Protection		X			
<b>G</b>	Cultural and Historic Resources Protection	X				
<b>H</b>	Recreational Resources	X				

\* Shading indicates that some standards are not available for some criteria.

### 2.2.1 Ecological Flow Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
A	2	<p><u>Agency Recommendation (see Appendix A for definitions):</u></p> <ul style="list-style-type: none"> <li>Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).</li> <li>Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.</li> <li>Explain how the recommendation relates to agency management goals and objectives for fish and wildlife.</li> <li>Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).</li> </ul>

The bypass reach of the Skagit River between Gorge Dam and Powerhouse is 2.7 miles long. Under the Skagit License and Settlement Agreement, City Light is not required to release any flow into the Gorge bypass reach. Other than accretion flow and tributary input, this reach is dewatered due to flow diversion unless water is being spilled at Gorge Dam. Most of this reach is upstream of several natural barriers to anadromous fish passage; the furthest downstream of these barriers is located 0.5 mile upstream of Gorge Powerhouse at RM 95 (Smith and Anderson 1921).

The flow regimes within the Gorge Bypass Reach are governed by the Fisheries Settlement Agreement. All parties to the Fisheries Settlement Agreement determined that City Light is obviated from providing flows in the bypass reach (Revised Fisheries Settlement 2011). In return, all water can be stored and used adaptively to provide ecological flows downstream of the Gorge Powerhouse (Zone 1) in support of mainstem spawning fish populations.

### 2.2.2 Water Quality Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
B	3	<p><u>Site-Specific Monitoring Studies:</u></p> <ul style="list-style-type: none"> <li>Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required.</li> <li>Present recent water quality data, explain how it satisfies applicable water quality standards, and provide a letter from the appropriate state of other regulatory agency accepting these results.</li> </ul>

The Gorge bypass reach has a special condition status under State water quality standards, which mandates that water temperatures are not to exceed 21° C due to human activities (Ecology 2012, Table 602). Monitoring conducted by City Light indicates that temperatures in the 2.7-mile bypass reach do not exceed this value.

Supersaturation with atmospheric gas, primarily nitrogen, can occur when water spills over high dams, but this does not appear to be a problem at the Project dams, including Gorge Dam. Total dissolved gas (TDG) monitoring conducted on July 10, 1997, revealed nitrogen saturation did not exceed the water quality standard of 110 percent saturation. Five spill conditions were tested in 1997 and readings for TDG were taken in the Ross Dam forebay and downstream of Gorge Dam powerhouse. The highest measurement, 110.4 percent of saturation, was taken downstream of the Gorge Dam powerhouse. However, a lower reading of 107.4 percent of saturation was taken on the opposite bank from water flowing through the bypass reach. The three Project developments (Ross, Gorge, and Diablo) were not determined to have a cumulative effect on nitrogen saturation (Parametrix 1997). Even during spill events the bypass reach is shallow and turbulent. Consequently, water is expected to quickly attain normal TDG values within this 2.7 mile reach.

### 2.2.3 Upstream Fish Passage Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
C	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

The Gorge Bypass Reach (Zone 2) of the Skagit River, which is located immediately above Gorge Powerhouse, is a steep and narrow canyon that is a natural barrier to the upstream passage of all salmon species present in the river. Historic records indicate that a few steelhead trout may have occasionally migrated upstream through the narrow gorge under certain flow conditions to Stetattle Creek, which is about 2 miles above Gorge Dam. These accounts were reviewed and vetted during the initial certification in the [Skagit 2003 Certification Final Staff Report](#) and 2008 Final Report (<http://lowimpacthydro.org/wp-content/uploads/2008/08/SkagitRECERTfinalreport.pdf>) where the conclusion was that there were no reliable or significant historic reports of anadromous fishes above the identified natural barriers near the Gorge Powerhouse. This conclusion is supported by genetic studies of Skagit River steelhead (Pflug et al. 2013) where Rainbow Trout in Stetattle Creek were found to be residents and genetically different from steelhead in the Skagit River downstream of the Project. The Rainbow Trout in the three reservoirs were also found to be genetically similar. This supports the hypothesis that steelhead have not been able to access this portion of the river in recent geologic time.

During fisheries mitigation negotiations in the late 1920s, the Washington Department of Fisheries suggested that small numbers of spring Chinook salmon might have moved upstream through the Gorge based upon their swimming abilities. However, there are no accounts of spring Chinook salmon successfully ascending the Gorge reach. Early residents stated that salmon did not migrate any farther upstream in the Skagit River than Newhalem (Envirosphere 1989). Spring Chinook salmon are stronger

swimmers than other salmon, but do not have the same ability as steelhead to leap barriers such as falls and to negotiate fast currents (Bell 1991).

Mandatory fish passage prescriptions were not issued by the agencies for the Skagit River Project as part of the licenses issued in 1927 and 1995. Section 18 of the Federal Power Act requires the construction, maintenance, and operation of fishways prescribed by the NMFS or USFWS. Neither agency prescribed a fishway, or requested a reservation of fishway prescription authority, in the Settlement Agreement or in the FERC License. Under the Settlement Agreement, both NMFS and USFWS, along with other signing parties, agreed that "all issues concerning the environmental impacts from relicensing of the project, as currently constructed, are satisfactorily resolved by these Agreements" (Fisheries Settlement Agreement 2011).

#### 2.2.4 Downstream Fish Passage and Protection Standards

Criterion	Standard	Instructions
D	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).</li> <li>Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.</li> <li>Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.</li> </ul>

Skagit Project operations are covered by biological opinions issued by the USFWS for Bull Trout on February 12, 2013, and by NMFS for Chinook salmon and steelhead on November 21, 2012. Downstream passage has not been identified as necessary for any migratory fishes in the Project area because of the natural migration barrier in the Gorge bypass reach. Genetic analyses of Bull Trout and Rainbow Trout populations in the Skagit River basin have determined that the populations above the historic migratory barrier in Zone 2 are distinct from those below the barrier indicating very little genetic exchange between the two geographic areas (Smith and Naish 2010; Pflug et al. 2013). See the Threatened and Endangered Species sections in Zones 3 and 4.

#### 2.2.5 Shoreline and Watershed Protection Standards

Criterion	Standard	Instructions
E	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li><i>If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).</i></li> <li><i>Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.</i></li> </ul>

Under the Fisheries Settlement Agreement, both NOAA Fisheries and USFWS, along with other signing parties, agreed that "all issues concerning the environmental impacts from relicensing of the project, as currently constructed, are satisfactorily resolved by these Agreements". Any concerns over the

ecological impacts of the Gorge bypass reach did not raise to the level of an actionable item by City Light. Although this reach is in public ownership and bordered by State Route 20 and a transmission line, much of the shoreline is relatively inaccessible and is closed to the public due to safety concerns. The shoreline includes pockets of riparian vegetation in areas that are not solid bedrock and the steep canyon walls support patches of conifer. There is no shoreline management plan or requirements from the USFS or NPS regarding this Zone.

### 2.2.6 Threatened and Endangered Species Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
F	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.</li> <li>• If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.</li> <li>• If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.</li> </ul>

As previously described, there are several natural barriers to upstream fish migration in in the Gorge bypass reach and none of the three currently ESA-listed fish species would have been expected to inhabit this area. The reach has been essentially dry since the current Gorge Dam was completed in the early 1960's, with the only water provided by tributary streams and runoff and occasional spills. There is too little water to support any threatened and endangered fishes. During relicensing, it was the consensus of the agencies and tribes that the benefits of providing water to the bypass reach were greatly outweighed by the flow measures taken by City Light optimize protections for fishes downstream in Zone 1 (Revised Fisheries Settlement Agreement 2011, D. Pflug and S. Walsh Personal Communications).

There is very little habitat available for any threatened and endangered wildlife in the bypass reach. The USFWS has determined that there is “no effect” to gray wolf, Canada lynx, grizzly bear, and bull trout critical habitat and “may affect, but is not likely to adversely affect” the marbled murrelet and northern spotted owl (USFWS 1994, 2011).

### 2.2.7 Cultural and Historic Resources Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
G	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility.</li> <li>• Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on facility lands.</li> </ul>

The Gorge bypass reach is located just upstream of Newhalem and is not explicitly included in any recognized plan regarding Cultural and Historic Resources.

### 2.2.8 Recreational Resources Standards

Criterion	Standard	Instructions
H	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.</li> </ul>

The Gorge bypass reach is not accessible to the public for safety reasons; if a spill occurs people can be trapped or swept away by rapidly rising water. The entire reach is posted as a hazardous area and no one is allowed in without complying with a Lock Out/Tag Out procedure. If a spill is planned, the entire reach is searched and cleared of people that may be in the reach illegally.

Under the terms of the Settlement Agreement, City Light provided funding for the construction of the Gorge Creek Overlook, which is along State Route 20 and above the river channel. This site includes parking, restrooms, trails, interpretive displays, and viewing platforms overlooking the bypass reach and Gorge Dam. The site is located on land administered by the NPS and was completed in 1999.

### 2.3 Zone of Effect #3: Gorge and Diablo Reregulating Reservoirs

The standards applicable to each criterion for Zone 3 are summarized in Table 4 and described below. This Zone meets “plus” standards for one criteria.

**Table 4.** Zone of Effect 3 – Gorge and Diablo Reregulating Reservoirs

Criterion		Alternative Standards Applied *				
		1	2	3	4	Plus
A	Ecological Flow Regimes	X				
B	Water Quality			X		
C	Upstream Fish Passage	X				
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection		X			
F	Threatened and Endangered Species Protection	X				
G	Cultural and Historic Resources Protection		X			X
H	Recreational Resources		X			

\* Shading indicates that some standards are not available for some criteria.

#### 2.3.1 Ecological Flow Standards

Criterion	Standard	Instructions
A	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.</li> <li>If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.</li> <li>In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.</li> <li>For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – <b>NOTE:</b> this is required information, but it will not be used to determine whether the Ecological Flows criterion</li> </ul>

		<i>has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.</i>
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Both Gorge and Diablo reservoirs and the associated Ross and Diablo powerhouses are operated synchronously to re-regulate downstream flows for fisheries resources. The three reservoirs are in a series with no bypassed reaches downstream of Ross and Diablo dams (Figure 3). Ross Powerhouse is located at the upstream end of Diablo reservoir, very close to the base of Ross Dam. Diablo Powerhouse is at the upstream end of Gorge reservoir but about 1 mile downstream of Diablo Dam. However, this reach is inundated by backwater from the reservoir and the tailrace. There is flowing water within the tailraces of both Diablo and Ross powerhouses sufficient to maintain head and ensure generation efficiency is optimized. These tailraces are not large enough to constitute riverine reaches and are managed as part of the impoundments. All other portions of the reservoirs are used to follow load and therefore fluctuate in elevation daily.

Zone 3 is located within the Ross Lake National Recreation Area and is managed by the NPS; adjacent lands are within North Cascades National Park, also under the jurisdiction of the NPS. Fish and wildlife resources and habitat in and adjacent to the reservoirs are managed by the NPS in conjunction with WDFW. City Light participates in water and fisheries resources monitoring in both Gorge and Diablo lakes.

### 2.3.2 Water Quality Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
B	3	<u>Site-Specific Monitoring Studies:</u> <ul style="list-style-type: none"> <li>• Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required.</li> <li>• Present recent water quality data, explain how it satisfies applicable water quality standards, and provide a letter from the appropriate state of other regulatory agency accepting these results.</li> </ul>

Both Gorge and Diablo dams impound clean and cold water that originates from the federally protected lands (national park and wilderness) in the North Cascade mountains. Water remains cold throughout the year due to the inflow of snow and glacial runoff into these reservoirs. The Skagit River watershed possesses the largest number of glaciers in the coterminous United States. The cold water in these reservoirs is sustained by the operation of the Ross hydroelectric facility, which withdraws water from the deep and cold areas of Ross Lake. Diablo Lake supports one of the largest Dolly Varden populations in the United States. This native char species (closely related to Bull Trout) requires pristine and very cold water throughout the year. Diablo and Gorge lakes are classified as Category 1 water bodies by the Washington Department of Ecology (State of Washington Water Quality Assessment, June 2016), which means that it meets all tested standards for clean water.

### 2.3.3 Upstream Fish Passage Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
C	1	<u>Not Applicable / De Minimis Effect:</u>

		<ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>
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The native fishes found in Zone 3 (and 4) are: Rainbow Trout, Bull Trout, and Dolly Varden,. Non-native fishes found are: Westslope Cutthroat Trout, Brook Trout, and Redside Shiner.

There are no applicable upstream fish passage standards for Zone 3. See the description of the natural fish migration barrier in Zone 2, Section C. See the description of the fish community in section 2.3.1. Of all the native fishes present in Zones 3 and 4, Bull Trout are the most likely to be migratory. Monitoring of the fish communities in the reservoirs was first conducted by the WDFW (Downen 2014) and is now being conducted by the NPS. Part of this monitoring effort is a genetic assessment of all char collected. The results of this genetic assessment and others conducted by the University of Washington (Smith and Naish 2010) have determined that the Bull Trout in Zones 3 and 4 are distinct from those found in Zone 1 and no evidence of past or contemporary migration has been detected in these populations.

#### 2.3.4 Downstream Fish Passage and Protection Standards

Criterion	Standard	Instructions
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).</li> <li>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

See the description of the natural fish migration barrier in Zone 2, Section D. See section C above regarding migration within and without of this zone. The fishes in Zones 3 and 4 are considered resident and are managed based on that consideration.

#### 2.3.5 Shoreline and Watershed Protection Standards

Criterion	Standard	Instructions
E	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li> <li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li> </ul>

There are no Shoreline Management Plans for any of the Skagit River Project reservoirs because nearly the entire Project area is in federal ownership and managed by the NPS. However, this area is covered by the General Management Plan for the Ross Lake NRA (NPS 2011). The land within about 200 ft. of Gorge and Diablo reservoirs is classified as the “Hydroelectric Zone”; NPS management of natural resources in this zone recognizes some alteration of habitat, vegetation, and ecological processes from the Skagit Project but strives to minimize impacts and protect resource values. City Light routinely consults with the NPS on any activities that could affect natural or cultural resources and jointly determines appropriate mitigation and best management practices (BMPs).

Zone 3 includes a short segment of shoreline (<1 mile) in City Light ownership along the upper portion of Gorge Lake in the town of Diablo. Diablo provides housing for about 15 City Light employees and their families. The shoreline in this area is steep and access to the water is very limited.

It is important to note that City Light observes permitting requirements of Whatcom County’s Critical Areas Ordinance, Shorelines Management Program, and all applicable regulations, and uses BMPs concerning necessary maintenance, repair and other activities associated with Project facilities within the shoreline zone (200 ft.).

**2.3.6 Threatened and Endangered Species Standards**

Criterion	Standard	Instructions
F	2	<p><u>Finding of No Negative Effects:</u></p> <ul style="list-style-type: none"> <li>• Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies.</li> <li>• Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.</li> </ul>

**Terrestrial Species**

Habitat for threatened or endangered wildlife species in Zone 3 is very limited. State Route 20 runs along Gorge reservoir and much of Diablo Lake. This zone includes the town of Diablo, two powerhouses and dams, several NPS campgrounds, and an environmental learning center. The expansive wilderness surrounding this zone, however, has suitable habitat for the federally listed grizzly bear, northern spotted owl, and grey wolf and it is possible that these species could occasionally move through the area. Zone 3 is more than 100 miles from the coast—too far to provide marbled murrelet habitat. There is no critical habitat for any ESA-protected species in Zone 3 and no Project impacts.

Bald eagles and peregrine falcons were listed under the ESA at the start of the current license term but have since been delisted. Both species have been observed foraging in Zone 3. Surveys by City Light biologists routinely document three pairs of peregrine falcons nesting on the cliffs along Diablo and Gorge reservoirs. The USFWS Letter dated December, 30 2011 stated that there was “no effect” on terrestrial species as determined by the FERC and therefore did not need to consult on those listed species.

**Aquatic Species**

Bull Trout are present in small numbers in Zone 3. In the Biological Opinion for Bull Trout (2013), issued when the Skagit License was amended, the USFWS focused on Project effects to Bull Trout in Zones 3 and 4, primarily from spill and turbine mortality at Diablo and Ross facilities. The USFWS determined that project actions were, “not likely to result in jeopardy to the species, or destruction or adverse

modification of critical habitat”, (USFWS 2013). Each year City Light evaluates the number and duration of spill events from Ross and Diablo dams and data from tagged fish in the associated reservoirs and estimates take. To date, City Light has not exceeded the take limits prescribed by the USFWS. See the attached take statement (Seattle City Light 2016) for further information on the methods used and results.

### 2.3.7 Cultural and Historic Resources Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
G	2	<u>Approved Plan:</u> <ul style="list-style-type: none"> <li>• Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.</li> <li>• Document that the facility is in compliance with all such plans.</li> </ul>

The Diablo Historic District, which consists of mostly of houses built in the 1950’s is in Zone 3. Other NRHP-listed structures in this zone include a lodge, water tower, Diablo Dam and Powerhouse and Ross Powerhouse. All maintenance activities on these structures are reviewed under the Project HRMMP.

No archaeological sites eligible for listing on the National Register of Historic Places have been found in Zone 3 during surveys and there is not an archaeological resource protection plan specific to this area. However, any ground disturbing activities in Zone 3 are evaluated by City Light’s archeologist with input from the NPS and tribes for monitoring or the need for other measures to protect cultural resources. City Light consults with NPS, the State Historic Preservation Officer (SHPO) with the Washington Department of Archaeology and Historic Preservation (DAHP) and potentially affected tribes to ensure that tribal concerns are addressed and resources protected.

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
G	PLUS	<u>Bonus Activities:</u> <ul style="list-style-type: none"> <li>• Document any substantial commitment that the facility has made to restoring one or more significant cultural or historical resource in the vicinity, beyond what is required in existing plans such as a Historic Resources Management Plan.</li> <li>• Document any significant new educational opportunity about cultural or historical resources in the area that the Facility has created, including contractual obligations that guarantee that this opportunity will exist for the duration of the LIHI certification.</li> </ul>

In the last several years City Light embarked on an effort to rehabilitate the buildings in the Diablo Historic District. This program is expected to continue for the duration of the LIHI certification period and into the next FERC License period.

- **Diablo - Ross Lodge:** Recipient of a 2014 Historic Preservation Award, Ross Lodge is an example of the 1930’s Rustic style architecture in the Project, as well as the one of two extant buildings dating to the first planned period of development (the 1930’s) in the Diablo residential area that came to be known as Hollywood. Originally Ross Lodge consisted of the main building which had the common kitchen, dining and lounge facilities along with a caretaker’s apartment.

Attached to the main building was a long dormitory wing with 12 bedrooms and 6 shared bathrooms. This building, like Gorge Inn, had been empty and unused for many years. The rehabilitation project undertaken between 2012-2013 repaired the cracked foundation, restored the wood windows and interior wood finishes, installed a new roof, utility connections, updated the kitchen and added an ADA bathroom while also repairing the fireplace and chimney. A new coat of paint and landscaping completed the work.

- Diablo - Hollywood Houses:** In 1950, City Light saw the need for additional housing in Diablo while preparing for the completion and operation of Ross Dam. These homes were constructed in 1952 and reflect the stripped-down style of mid-century design. In 2010 City Light began replacing the original furnaces and windows, making insulating, painting, and other repairs. The houses are being retrofitted in phases. Many have already received new insulation, heat pumps, and custom fitted dual pane windows to match the original opening and pane configuration. These houses were also painted inside and out, and interior mid-century fixtures salvaged and reused, with the new ones matching the originals.

**2.3.8 Recreational Resources Standards**

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li> <li>Document that the facility is in compliance with all such recommendations and plans.</li> </ul>

Since the last LIHI certification, there have been no material changes in recreation management. All recreation management activities will continue for the term of the next LIHI certificate. As noted above, a Recreation and Aesthetics Settlement Agreement provides the basis for City Light’s recreation program at the Skagit Project. Within Zone 3, which includes Gorge and Diablo Lakes, perhaps the most significant recreational facility is the North Cascades Environmental Learning Center (ELC). The ELC is located on the north shore of Diablo Lake in the Ross Lake National Recreation Area. This environmental education facility opened in 2005 and was awarded Silver Certification under the Leadership in Energy and Environmental Design Green Building Rating System in 2009. The facility has 16 buildings including multimedia classrooms, a research library, aquatic and terrestrial labs, overnight lodging for up to 92 guests and housing for graduate students and staff, and a lakeside dining hall with recycling and composting center. There is also an outdoor amphitheater, outdoor learning shelters, a dock on Diablo Lake, and various trails and paths.

The ELC is the result of a partnership between City Light, the NPS, and the NCI, in which City Light funded the construction and owns the buildings, the NPS provided the land and participates in education programs, and the NCI operates the facility and provides day-to-day maintenance. City Light provided an endowment for operating the ELC and continues to provide electricity and ongoing funding for vehicles, major building maintenance and wildlife education.

One of the key recreational services provided by City Light to visitors to the Skagit Project and Ross Lake NRA occurs primarily in Zone 3. The Skagit Tours, which in one form or another have been offered to the public since the 1920s (with limited exceptions), are based on Diablo Lake and involve a guided boat

trip. Currently, the tours are a partnership between City Light, the NPS, and NCI, and focus on the history of the Skagit Project as well as the natural and cultural resources of the North Cascades region. In 2016, City Light launched a new 45-passenger boat specifically for the tours and served approximately 4,000 visitors during the July to September recreation season.

Another ongoing recreation measure stipulated by the Settlement Agreement is the Diablo Lake tugboat/ferry service, which provides hundreds of visitors with passage from Diablo Dam to Ross Lake and the Ross Lake Resort every year. Additionally, City Light has also provided funding for boat ramps at the Gorge Lake and the Colonial Creek campgrounds, an ADA accessible fishing dock at the Colonial Creek Campground, construction of the Thunder Knob trail on the south side of Diablo Lake, and other projects related to the operations and maintenance of NPS facilities in this zone.

## 2.4 Zone of Effects #4: Ross Flood Control Reservoir

The standards applicable to each criterion for Zone 4 are summarized in Table 5 and described below.

**Table 5.** Zone of Effect 4 – Ross Reservoir

Criterion		Alternative Standards Applied *				
		1	2	3	4	Plus
<b>A</b>	Ecological Flow Regimes	X				
<b>B</b>	Water Quality			X		
<b>C</b>	Upstream Fish Passage	X				
<b>D</b>	Downstream Fish Passage	X				
<b>E</b>	Watershed and Shoreline Protection		X			
<b>F</b>	Threatened and Endangered Species Protection				X	X
<b>G</b>	Cultural and Historic Resources Protection		X			
<b>H</b>	Recreational Resources		X			

\* Shading indicates that some standards are not available for some criteria.

### 2.4.1 Ecological Flow Standards

Criterion	Standard	Instructions
A	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.</li> <li>• If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.</li> <li>• In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.</li> <li>• For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – <b>NOTE:</b> this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.</li> </ul>

Ross Reservoir is operated for water storage and flood protection. In general, Ross Lake is operated synchronously with the re-regulation reservoirs to provide downstream flows for fisheries resources. See the description in Zone 3 Section 2.3.1.

Like Zone 3, Zone 4 is entirely within the Ross Lake National Recreation Area and is managed by the NPS. Adjacent lands to the west are part of North Cascades National Park; lands to the east are within the Pasayten Wilderness. The NPS, in conjunction with the WDFW, manages fish and wildlife resources in the RLNRA. City Light participates in water and fisheries resources monitoring in Ross Lake.

#### 2.4.2 Water Quality Standards

Criterion	Standard	Instructions
B	3	<p><u>Site-Specific Monitoring Studies:</u></p> <ul style="list-style-type: none"> <li>• Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required.</li> <li>• Present recent water quality data, explain how it satisfies applicable water quality standards, and provide a letter from the appropriate state or other regulatory agency accepting these results.</li> </ul>

Ross Lake is a large storage reservoir that has excellent water quality. The lake is classified as a Category 1 water body by Ecology (Washington State Water Quality Assessment, June 2016). This means that the reservoir meets the all tested standards for clean water. Ross Lake is oligotrophic (clean and cold) due to its location in the headwaters of the north Cascade Mountains, and because most of the upper Skagit watershed is situated within lands protected by the NPS (North Cascades National Park and Ross Lake NRA), USFS (Pasayten Wilderness), and British Columbia Ministry of Environment (Skagit Valley and Manning’s provincial parks).

Ross reservoir is thermally stratified during the summer and early fall, with water in the middle below 13 °C; water in the lower strata remains below 10 °C even during the warmest periods of the year. During the period of peak summer warming, 60 percent of the volume of the reservoir is between 6 and 13 °C in temperature. The storage of large volumes of cold water over the summer and fall by the Project is one of the reasons why Ross Lake supports one of the largest Bull Trout populations in the United States. The reservoir also supports a healthy population of Dolly Varden, a native fish species that requires extremely cold and pristine water. The reservoir “turns over” during the late fall, and has a uniform temperature of about 7 °C from late October through early June.

City Light conducts a water quality monitoring program in Ross Lake in partnership with the NPS. This monitoring program was established through a 2014 Memorandum of Agreement (MOA) between City Light and the NPS. This monitoring program includes an extensive network of water temperature loggers in all three Skagit reservoirs that measure water temperature profiles every 20 minutes. NPS and City Light biologists also obtain water quality profiles in Ross Lake during the spring, summer, and fall. The water quality parameters measured as part of this program include temperature, turbidity, pH, chlorophyll-a, nutrients, and dissolved oxygen. In addition, City Light and NPS have established a network of temperature monitoring stations throughout major tributaries to the three reservoirs.

#### 2.4.3 Upstream Fish Passage Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
C	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

The native fishes found in Zone 4 are: Rainbow Trout, Bull Trout, and Dolly Varden. Non-native fishes found are: Westslope Cutthroat Trout, Brook Trout, and Redside Shiner. There are no applicable upstream fish passage standards for Zone 4. See the description of the natural fish migration barrier in Zone 2 section C. See the description of migratory fishes within Zones 3 and 4 in Section 2.3.3 and 2.3.4 of Zone 3.

#### 2.4.4 Downstream Fish Passage and Protection Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <li>• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).</li> <li>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.</li> <li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>• If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

There are no applicable upstream fish passage standards for Zone 4. See the description of the natural fish migration barrier in Zone 2 section D. See the description of migratory fishes within Zones 3 and 4 in Section 2.3.3 and 2.3.4 of Zone 3.

#### 2.4.5 Shoreline and Watershed Protection Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
E	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>• Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).</li> <li>• Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.</li> </ul>

Zone 4 is entirely within the Ross Lake NRA; the land and water in this zone is managed by the NPS. City Light activities in this area involve managing lake levels and controlling erosion around the shoreline.

The Settlement Agreement for erosion control at the Project is focused on Ross Lake and establishes City Light's obligations relating to soils and slope stability affected by Project operations, as currently constructed. It also establishes the NPS's obligations to support the Erosion Control Plan.

Under the Erosion Control Plan, City Light funds the NPS to control erosion annually at high-priority sites along the Ross Lake shoreline, including camp sites and trails. With City Light funds, the NPS constructed and maintains greenhouse facilities and a native plant propagation program for use at erosion control sites. Five biennial and ten annual reports outlining progress and compliance have been submitted to FERC as required in the Erosion Control Settlement Agreement. These reports can be found at: [http://elibrary.ferc.gov/idmws/file\\_list.asp?document\\_id=14459197](http://elibrary.ferc.gov/idmws/file_list.asp?document_id=14459197).

#### 2.4.6 Threatened and Endangered Species Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
F	4	<p><u>Acceptable Mitigation:</u></p> <ul style="list-style-type: none"> <li>• <i>If newly listed species are present for which environmental requirements have not been fully determined, describe any significant measures that the facility is implementing to avoid or minimize the impacts on such newly <b>listed species</b>.</i></li> <li>• <i>Document that the mitigation measures for newly listed species are being implemented to the interim satisfaction of applicable resource agencies.</i></li> </ul>

#### Terrestrial Species

Ross Lake is surrounded by the North Cascades National Park, which transitions into the Steven Mather Wilderness Area to the west and the Pasayten Wilderness Area to the east; the northern tip of the lake in British Columbia is protected by two provincial parks. This vast protected area provides habitat for four species protected under the ESA—the grey wolf, grizzly bear, northern spotted owl, and Canada lynx. Grey wolf tracks are frequently observed in on the Ross Lake shoreline north of Lightning Creek during the winter when the reservoir is drawdown. There are no recent observations of spotted owls or grizzly bears near Ross Lake; the Canada lynx is restricted primarily to the high elevation habitats on the peaks and ridges primarily to the east of the reservoir. Ross Lake operations do not impact any of these species and no mitigation measures have been proposed by the USFWS.

#### Aquatic Species

Bull Trout were not listed at the beginning of the current FERC License. After the revision of the Fisheries Settlement Agreement (2011), USFWS determined there were three different life history forms of Bull Trout present in the upper Skagit River drainage above Ross Dam: 1) resident forms, which spend their entire lives in headwater streams; 2) fluvial forms, which reside as adults in larger rivers and streams and then spawn and rear in smaller tributary streams; and 3) adfluvial forms, which reside in lakes as adults and spawn in tributary streams and rivers. Adfluvial Bull Trout are present in Ross Lake, and likely became established in this reservoir from fluvial fish originating from the Skagit River and tributaries following completion of the dam and filling of the reservoir in 1951.

Bull Trout in Ross Lake attain relatively large sizes, with adults ranging from 40 to 90 cm (16 to 35 inches) in length. Adfluvial Bull Trout typically reside as juveniles in tributary streams for two to three years prior to emigrating. These fish then migrate downstream into the reservoir, and become sexually mature at five to six years of age. Adfluvial Bull Trout typically become piscivorous (fish predators) prior

to maturity, and prey upon Rainbow Trout and other fish species within Ross Lake. Bull Trout in Ross Lake have a lifespan that probably exceeds 10 years.

The results of several research projects suggest that Bull Trout are abundant in the upper Skagit River drainage including Ross Lake. The upper Skagit River drainage possesses excellent habitat conditions for Bull Trout, including cold water temperatures in Ross Lake and tributaries (many of which are glacially fed), an abundant food supply (i.e., smaller Rainbow Trout and cyprinids), and good access to high quality spawning and juvenile rearing areas in the upper watershed. The results of underwater fish counts conducted within a 32 km (19 mi) section of the Skagit River just upstream of Ross Lake indicated that Bull Trout populations increased almost 10-fold in adult abundance from the late 1990s through the 2010. Based upon these annual fish counts, the total population of adult Bull Trout in the upper Skagit River drainage including Ross Lake was estimated to be 6,000 fish (City Light 2012). Thus, this drainage supports one of the largest fluvial Bull Trout populations in the United States. Ross Lake provides migratory Bull Trout access to two major drainage systems, Big Beaver Creek and Lightning Creek, that were not accessible to upstream migration due to natural barriers (bedrock falls) prior to the filling of this reservoir.

City Light implemented a monitoring program to identify potential impacts of reservoir drawdown on the upstream migration of spawning Bull Trout. The upstream migration of adult Bull Trout from the reservoir to their spawning areas in the upper tributaries does not appear to be adversely affected by project operations under most hydrological conditions. During drought years such as 2001, the migration of spawning Bull Trout may be temporarily blocked by early reservoir drawdown in those tributaries including Lightning Creek and Big Beaver Creek that were naturally inaccessible prior to the construction of the Ross Dam. Radio telemetry studies conducted in Ross Lake during the drought of 2001 found that adult Bull Trout will migrate to other tributaries to spawn in the presence of upstream migration blockages (e.g., waterfalls) formed during early drawdown.

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
<i>F</i>	<i>PLUS</i>	<p><u>Bonus Activities:</u></p> <ul style="list-style-type: none"> <li>• Describe any enforceable agreement that the facility has with resource agencies to operate the facility in support of rare and endemic species.</li> <li>• Describe any enforceable agreement that the facility has with resource agencies to take proactive measures in the vicinity of the facility to substantially minimize impacts on species that are at risk of becoming listed species.</li> <li>• Describe any enforceable agreement that the facility has with resource agencies to be a significant participant in a species recovery effort.</li> </ul>

City Light has been conducting ground-breaking research for the past three years on Bull Trout populations in the upper Skagit River above Ross Dam in partnership with the NPS, USFS, and British Columbia Ministry of Water, Land, and Air Protection. This research is being conducted to better understand the life history, habitat requirements, and migratory behavior of Bull Trout in Ross Lake and the upper Skagit River drainage. The results of this joint research project will provide the key biological information required for the development of the recovery plan for Bull Trout in the upper Skagit Watershed. It will also be used to provide City Light and NPS with information that could be useful in managing the species and its associated habitat in Ross Lake.

Based upon the initial results of radio telemetry and acoustic tag tracking studies to date, most Bull Trout in the Ross Lake are highly migratory and possess dynamic life history patterns (e.g., individuals will spawn in different tributaries from one year to the next). There appear to be high levels of genetic interchange among Bull Trout spawning areas within the upper Skagit River because of these dynamic life history traits that provide a high level of population stability over time.

#### 2.4.7 Cultural and Historic Resources Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
G	2	<p><u>Approved Plan:</u></p> <ul style="list-style-type: none"> <li>• Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.</li> <li>• Document that the facility is in compliance with all such plans.</li> </ul>

The Upper Skagit River Valley Archaeological District, which is located entirely in Zone 4, was determined eligible for the NRHP by the Washington State Historic Preservation Officer on November 4, 2004. Sixteen archaeological sites are regarded as contributing resources based on testing of 36 sites between 1989 and 1993. A seventeenth site was tested and determined to be an eligible contributing element to the District in 2016. Additional sites remain to be tested for eligibility. The sites in the District are prehistoric sites that pre-date European contact and the treaty period. The archeological record reveals 8,000-10,000 years of settlement, subsistence, travel, and exchange in the district by indigenous people.

As described in the ARMMP that was originally filed in April 2011 and amended in June 2013, each of the 17 sites has potential to yield information on 3 or more of the 7 research domains that have been identified for the Ross Lake area: subsistence, lithic procurement, settlement, stone-tool technology, exchange, chronology, and past climates. The deep annual drawdowns that can exceed 100 feet, the wilderness character of the reservoir, and the lack of road access limit stabilization techniques options. Therefore, stabilization (retaining wall, rock fill) was recommended for 2 sites while data-recovery excavation was recommended for 13 sites and monitoring was recommended for 2 sites that lack evidence of ongoing erosion effects. See the attached five-year report on Historic and Cultural resources for a more complete description of our activities to date.

<https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13958151>

#### 2.4.8 Recreational Resources Standards

<b>Criterion</b>	<b>Standard</b>	<b>Instructions</b>
H	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> <li>• Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.</li> <li>• Document that the facility is in compliance with all such recommendations and plans.</li> </ul>

The Recreation and Aesthetics Settlement Agreement includes measures to mitigate for the impacts of fluctuating water surface elevations on the Ross Lake reservoir. City Light is required to fill Ross Lake as early and as full as possible after April 15 each year, subject to anadromous fish protection flows. Full pool is to be achieved by July 31 and maintained as close to full pool as possible through Labor Day,

dependent on adequate runoff and anadromous fish protection flows downstream. One of the initial projects undertaken by City Light under the current license was to provide funding to the NPS to modify and improve the boat ramp at the Hozomeen Campground, located at the north end of Ross Lake, so that boats could access the lake over a wider elevational range and a longer season. Hozomeen Campground is the only recreational facility on Ross Lake accessible by vehicle and is therefore the only place to launch a motorized boat.

Other recreational facilities in Zone 4 include boat ramps and docks, backcountry campgrounds, and trails along the shoreline of Ross Lake. These are operated by the NPS with funding from the Recreation Settlement Agreement used for maintenance and improvements. Funding provided to the NPS by City Light has been used to improve boat facilities and dispersed campsites along the reservoir (animal-proof food storage units, tent pads, restrooms, etc.) and design and install interpretive signage at these facilities. Other recreation-related projects implemented on Ross Lake under the Settlement Agreement include completion of a new water distribution system and a new trail at Hozomeen Campground.

### PART 3. REFERENCES

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<https://fortress.wa.gov/dfw/score/score/>

## PART 4. CONTACTS FORM

### FACILITY CONTACTS FORM

1. All applications for LIHI Certification must include complete contact information to be reviewed.

<b>Project Owner:</b>	
Name and Title	City of Seattle
Company	City Light Department
Phone	206-684-3000
Email Address	No main address but, <a href="mailto:SCL_Environmental@seattle.gov">SCL_Environmental@seattle.gov</a> , is the contact for environmental communications.
Mailing Address	700 5 <sup>th</sup> Ave, Suite 3200 Seattle, WA 98124
<b>Project Operator (if different from Owner):</b>	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
<b>Consulting Firm / Agent for LIHI Program (if different from above):</b>	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
<b>Compliance Contact (responsible for LIHI Program requirements):</b>	
Name and Title	Lynn Best Chief Environmental Officer
Company	City Light Department
Phone	206-386-4586

Email Address	Lynn.Best@seattle.gov
Mailing Address	700 5 <sup>th</sup> Ave, Suite 3200, P.O. Box 34023, Seattle, WA 98124
<b>Party responsible for accounts payable:</b>	
Name and Title	Erin Lowery
Company	City Light Department
Phone	206-727-8733
Email Address	Erin.Lowery@seattle.gov
Mailing Address	700 5 <sup>th</sup> Ave, Suite 3200, P.O. Box 34023, Seattle, WA 98124

\_\_\_\_\_

**Project Owner/Authorized Representative Signature**

\_\_\_\_\_

**Date**

<b>Agency Contact</b> (Check area of responsibility: Flows <input checked="" type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input checked="" type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input checked="" type="checkbox"/> , Cultural/Historic Resources <input type="checkbox"/> , Recreation <input 114="" 606="" 751"="" 889="" data-label="Table" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;Skagit River System Cooperative&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Stan Walsh, Environmental Services Manager&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;360-466-1512&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;swalsh@skagitcoop.org&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Mailing Address&lt;/td&gt; &lt;td&gt;P.O. Box 368&lt;br/&gt;LaConner, WA 98257&lt;/td&gt; &lt;/tr&gt; &lt;/table&gt; &lt;/div&gt; &lt;div data-bbox="/> <table border="1"> <tr> <td colspan="2"><b>Agency Contact</b> (Check area of responsibility: Flows <input checked="" type="checkbox"/>, Water Quality <input type="checkbox"/>, Fish/Wildlife Resources <input checked="" type="checkbox"/>, Watersheds <input type="checkbox"/>, T/E Spp. <input checked="" type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input 114="" 778="" 889="" 905"="" data-label="Table" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;Washington Department of Fish and Wildlife&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Brett Barkdull, Fisheries Biologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;360-789-3805&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;Brett.Barkdull@dfw.wa.gov&lt;/td&gt; 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<b>Agency Contact</b> (Check area of responsibility: Flows <input checked="" type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input checked="" type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input checked="" type="checkbox"/> , Cultural/Historic Resources <input type="checkbox"/> , Recreation <input mailto:keith.kirkendall@noaa.gov"="" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;National Marine Fisheries Service&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Keith Kirkendall, Fisheries Biologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;(503) 230-5431&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;&lt;a href="/> keith.kirkendall@noaa.gov	
Mailing Address	

<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input checked="" type="checkbox"/> , Watersheds <input checked="" type="checkbox"/> , T/E Spp. <input checked="" type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input mailto:paul.debruyn@dfw.wa.gov"="" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;Washington Department of Fish and Wildlife&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Paul DeBruyn, Wildlife Biologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;(360) 466-4345 Ext. 281&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;&lt;a href="/>Paul.DeBruyn@dfw.wa.gov</input>	
Mailing Address	111 Sherman Street La Conner, WA 98257

<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input checked="" type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input mailto:richard.yarborough@dfw.wa.gov"="" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;Washington Department of Fish and Wildlife&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Fenner Yarborough, District Wildlife Biologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;(360) 466-4345 Ext. 281&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;&lt;a href="/>Richard.Yarborough@dfw.wa.gov</input>	
Mailing Address	111 Sherman Street La Conner, WA 98257

<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input checked="" type="checkbox"/>, Recreation <input mailto:kim_kwarsick@nps.gov"="" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;National Park Service&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Kimberly Kwarsick Archaeologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;(360) 854-7341&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;&lt;a href="/>kim_kwarsick@nps.gov</input>	
Mailing Address	North Cascades National Park Complex 810 State Route 20 Sedro Woolley, WA 98284

<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input checked="" type="checkbox"/>, Recreation <input mailto:rob.whitlam@dahp.wa.gov"="" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;Department of Archeology and Historic Preservation&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Robert Whitlam, State Archeologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;(360) 586-3080&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;&lt;a href="/>Rob.Whitlam@dahp.wa.gov</input>	
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Mailing Address	P.O. Box 48343 Olympia, WA 98504-8343
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<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources <u>X</u> , Recreation __):	
Agency Name	Department of Archeology and Historic Preservation
Name and Title	Nicholas Vann, Historical Architect
Phone	(360) 586-3079
Email address	<a href="mailto:Nicholas.Vann@dahp.wa.gov">Nicholas.Vann@dahp.wa.gov</a>
Mailing Address	P.O. Box 48343 Olympia, WA 98504-8343

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	National Park Service
Name and Title	Denise Shultz, Chief of Education and Interpretation
Phone	(360) 854-7302
Email address	denise_m_shultz@nps.gov
Mailing Address	North Cascades National Park Complex 810 State Route 20 Sedro Woolley, WA 98284

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources <u>X</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	National Park Service
Name and Title	Jason Ransom
Phone	(360) 854-7320
Email address	jason_i_ransom@nps.gov
Mailing Address	North Cascades National Park Complex 7280 Ranger Station Road Marblemount, WA 98267

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources <u>X</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation <u>X</u> ):	
Agency Name	National Forest Service
Name and Title	Stella Torres, Recreation Specialist, Skagit Wild and Scenic River Program Manager
Phone	(360) 436-2316 x 7213

Email address	stellaitorres@fs.fed.us
Mailing Address	US Forest Service Darrington Ranger District 1405 Emens Avenue Darrington, WA 98241

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources <u>X</u> , Recreation __):	
Agency Name	Swinomish Indian Tribal Community
Name and Title	Josephine Jefferson
Phone	(360) 466-7352
Email address	jpeters@swinomish.nsn.us
Mailing Address	11430 Moorage Way LaConner, WA 98257

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources <u>X</u> , Watersheds __, T/E Spp. __, Cultural/Historic Resources <u>X</u> , Recreation __):	
Agency Name	Upper Skagit Indian Tribe
Name and Title	Scott Schuyler, Cultural Policy & Natural Resources Director
Phone	360-854-7009
Email address	SSchuyler@upperskagit.com
Mailing Address	25944 Community Plaza Way Sedro-Woolley, WA 98184-9739

<b>Agency Contact</b> (Check area of responsibility: Flows __, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources <u>X</u> , Recreation __):	
Agency Name	Sauk-Suiattle Indian Tribe
Name and Title	Ben Joseph, Tribal Historic Preservation Officer
Phone	360-436-0131
Email address	bjoseph@sauk-suiattle.com
Mailing Address	5318Chief Brown Lane Darrington, WA 98241

<b>Agency Contact</b> (Check area of responsibility: Flows <u>X</u> , Water Quality __, Fish/Wildlife Resources <u>X</u> , Watersheds <u>X</u> , T/E Spp. <u>X</u> , Cultural/Historic Resources __, Recreation __):	
Agency Name	U.S. Fish and Wildlife Service
Name and Title	Tim Romanski, Fish and Wildlife Biologist
Phone	360-753-5823
Email address	tim_romanski@fws.gov

Mailing Address	510 Desmond Dr. SE, Suite 102 Lacey, WA 98503
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<b>Agency Contact</b> (Check area of responsibility: Flows <input checked="" type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input checked="" type="checkbox"/> , Watersheds <input checked="" type="checkbox"/> , T/E Spp. <input checked="" type="checkbox"/> , Cultural/Historic Resources <input type="checkbox"/> , Recreation <input 114="" 423="" 568"="" 889="" data-label="Table" type="checkbox/&gt;):&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Agency Name&lt;/td&gt; &lt;td&gt;U.S. Fish and Wildlife Service&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Name and Title&lt;/td&gt; &lt;td&gt;Jeff Chan, Fish and Wildlife Biologist&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Phone&lt;/td&gt; &lt;td&gt;360-753-9542&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Email address&lt;/td&gt; &lt;td&gt;Jeffrey_Chan@fws.gov&lt;/td&gt; &lt;/tr&gt; &lt;tr&gt; &lt;td&gt;Mailing Address&lt;/td&gt; &lt;td&gt;510 Desmond Dr. SE, Suite 102&lt;br/&gt;Lacey, WA 98503&lt;/td&gt; &lt;/tr&gt; &lt;/table&gt; &lt;/div&gt; &lt;div data-bbox="/> <table border="1"> <tr> <td colspan="2"><b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/>, Water Quality <input type="checkbox"/>, Fish/Wildlife Resources <input type="checkbox"/>, Watersheds <input checked="" type="checkbox"/>, T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input type="checkbox"/>):</input></td> </tr> <tr> <td>Agency Name</td> <td>Skagit Watershed Council</td> </tr> <tr> <td>Name and Title</td> <td>Richard Brocksmith, Executive Director</td> </tr> <tr> <td>Phone</td> <td>360-419-9326</td> </tr> <tr> <td>Email address</td> <td>rbrocksmith@skagitwatershed.org</td> </tr> <tr> <td>Mailing Address</td> <td>P.O. Box 2856 Mount Vernon, WA 98273</td> </tr> </table>		<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input checked="" type="checkbox"/> , T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input type="checkbox"/>):</input>		Agency Name	Skagit Watershed Council	Name and Title	Richard Brocksmith, Executive Director	Phone	360-419-9326	Email address	rbrocksmith@skagitwatershed.org	Mailing Address	P.O. Box 2856 Mount Vernon, WA 98273
<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input checked="" type="checkbox"/> , T/E Spp. <input type="checkbox">, Cultural/Historic Resources <input type="checkbox"/>, Recreation <input type="checkbox"/>):</input>													
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Name and Title	Richard Brocksmith, Executive Director												
Phone	360-419-9326												
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<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input checked="" type="checkbox"/> , T/E Spp. <input type="checkbox"/> , Cultural/Historic Resources <input type="checkbox"/> , Recreation <input type="checkbox"/> ):	
Agency Name	Washington Department of Fish and Wildlife
Name and Title	Bob Warinner
Phone	(360) 466-4345 Ext
Email address	robert.warinner@dfw.wa.gov
Mailing Address	111 Sherman Street La Conner, WA 98257

<b>Agency Contact</b> (Check area of responsibility: Flows <input type="checkbox"/> , Water Quality <input checked="" type="checkbox"/> , Fish/Wildlife Resources <input type="checkbox"/> , Watersheds <input type="checkbox"/> , T/E Spp. <input type="checkbox"/> , Cultural/Historic Resources <input type="checkbox"/> , Recreation <input type="checkbox"/> ):	
Agency Name	Washington Department of Ecology
Name and Title	Buck Smith
Phone	(425)649-7147
Email address	Buck.smith@ecy.wa.gov
Mailing Address	Department of Ecology

	NW Regional Office 3190 160 <sup>th</sup> Ave SE Bellevue, WA 98008
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## PART 5. SWORN STATEMENT

### SWORN STATEMENT

As an Authorized Representative of Seattle City Light, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

Company Name: Seattle City Light

Authorize Representative Name: Lynn Best Title: Chief Environmental Officer

X *Lynn Best*

State of: Washington

County of: King

On this, the 13 day of June, 2017, before me a notary public, the undersigned officer, personally appeared Lynn Best, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained. In witness hereof, I hereunto set my hand and official seal.

Notary Public: *Mary Louise Davis*  
Mary Louise Davis

*My Commission Expires 11/30/2017*

