FINAL LICENSE APPLICATION EXHIBIT E

APPENDIX P

RESERVOIR FISHERIES MANAGEMENT PLAN

RESERVOIR FISHERIES MANAGEMENT PLAN DRAFT

SKAGIT RIVER HYDROELECTRIC PROJECT FERC NO. 553

Seattle City Light

April 2023

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City Light	.Seattle City Light
FERC	Federal Energy Regulatory Commission
NPS	National Park Service
PIT	Passive Integrated Transponder (tags)
Plan	Reservoir Fisheries Monitoring Study Plan.
Project	.Skagit River Hydroelectric Project
PWE	problematic water surface elevation.
RFMP	Reservoir Fish Management Plan.
SRCC	Skagit Resource Coordinating Committee.
WDFW	Washington Department of Fish and Wildlife

1.0 INTRODUCTION

This document describes Seattle City Light's (City Light) proposed Reservoir Fisheries Management Plan (RFMP) for the Skagit River Hydroelectric Project (Project or Skagit River Project), Federal Energy Regulatory Commission (FERC) No. 553. The RFMP will provide information to support the management of native fishes residing in Project Reservoirs upstream of Gorge Dam.

City Light will integrate the efforts required under this RFMP with other license article obligations, including Fish Passage Program, Flood Risk Management Operations, the Riverscape Ecosystem Plan, and other license article obligations included in the new license. These obligations are described in the FLA and are not included in this document, however they, and other related license measures, are anticipated to be included within the scope of the Ecosystem Monitoring and Adaptive Management Program (EMAMP) discussed herein.

2.0 PURPOSE AND SCOPE OF THE PLAN

The RFMP will provide information to support the management of native fishes residing in Project Reservoirs upstream of Gorge Dam. Information obtained through the implementation of the RFMP will be used to inform decision-making of reservoir fisheries in an adaptive management context over the term of the Project license.

2.1 Goals and Objectives

The goal of the RFMP is to monitor and evaluate the status of reservoir fish communities in all three Project reservoirs to provide federal, state, and Tribal agencies with demographic and population information of fish species to inform future management decisions. Specific objectives of the RFMP are as follows:

- Evaluate the health and status (size, structure, genetic viability, and ecology) of reservoir fish populations and monitor changes to those populations.
- Monitor, and mitigate as necessary, reservoir fish stranding and trapping risk by identifying problem water surface elevations (PWE) where risk is elevated and assessing potential impacts to native fish fry.
- Monitor and provide reservoir tributary access for native fish.
- Using information gathered to assess the health and status of reservoir fish populations, evaluate the appropriateness of continuing the existing Rainbow Trout Broodstock Program.

2.2 Scope of the Plan

City Light proposes to monitor fisheries populations within the Project reservoirs (Ross, Diablo, and Gorge lakes) through evaluation of direct fisheries assessments, genetic health, risk of stranding and trapping related to Project operations, and spawning and rearing habitat accessibility. Most RFMP activities will fall within the boundaries of the Project reservoirs; however, genetic sampling may include sampling juveniles on spawning grounds within tributaries to the Project reservoirs. All management plan activities would occur above Gorge Dam.

3.0 RESOURCE MANAGEMENT PROGRAMS

3.1 Reservoir Fisheries Monitoring

In consultation with the Skagit Resource Coordinating Committee (SRCC), a Reservoir Fisheries Monitoring Study Plan (Plan) will be developed within two (2) years of license issuance and implemented over ten (10) years upon FERC approval of the Plan. Plan activities will support an assessment of the status of reservoir fish communities in all three Project reservoirs and include monitoring of these communities over the license term. Specific elements of the Plan to support the status assessment may include tagging/mark-recapture, fish sampling, genetic monitoring, monitoring Redside Shiner and additional assessments of food web/bioenergetic implications, and analyses of monitoring data to determine reservoir fish life history information.

Other elements of the RFMP that are not addressed in the Plan include a Reservoir Stranding and Trapping Monitoring Program, a Reservoir Tributary Access Monitoring Program, and a Rainbow Trout Broodstock Program for Project reservoirs (see Sections 3.2 through 3.4 below).

3.1.1 Fish Population Monitoring

Population assessment and monitoring are key elements in evaluating the health and status of the fish community and protected species in Project reservoirs. These proposed activities will support the establishment of a baseline for reservoir fish populations and inform their management through the term of the next Project license. As part of a suite of analytical tools, City Light will also develop and implement population models. Fish population monitoring activities that may be implemented as part of the Plan include:

- Implementing a mark-recapture tagging program (e.g., PIT tags) and/or expanding the active tagging program (acoustic, radiotelemetry) for resident salmonid fish species in Ross, Diablo and Gorge lakes.
- Implementing a sampling program to recapture fish to support population estimation through fisheries monitoring activities and the establishment of monitoring locations at select tributary mouths in reservoirs.
- Conducting population monitoring activities for resident fish species that could include, but would not be limited to, spawning ground surveys, fyke netting, snorkeling, and gillnetting. This program may also be used to recapture tagged fish as part of population estimation objectives.
- Building from the results and recommendations of the Food Web Study, periodically implement recommended activities to monitor Redside Shiner status and the species' effect on native fish populations.
- Utilizing monitoring information and population modeling to determine habitat use, periodicity of habitat use, and migration timing of reservoir fish species and life history stages toward understanding species use of Project reservoirs.
- Implementing genetic monitoring to assess potential changes in population structure viability, relatedness/gene flow among reservoirs, the need for targeted translocation, and levels of hybridization among and between native and non-native salmonids. Activities will be

determined as part of the development of the Plan, but could include continued sampling of juveniles on spawning grounds (to improve upon effective population size and viability estimates for native species), opportunistic tissue collection and analysis associated with fish population sampling programs, monitoring hybridization and other non-native species genetic effects, and additional modeling and monitoring to assess whether the Rainbow Trout Broodstock Program should be continued.

In Year 13 of the license, City Light will develop a Plan report summarizing the findings of information collected over the 10-year reservoir fisheries monitoring period. In consultation with the SRCC, City Light will also develop an Updated Reservoir Fisheries Monitoring Study Plan with appropriate evaluation milestones, reporting, and (if appropriate), monitoring recommendations for the remainder of the license term. The Updated Reservoir Fisheries Monitoring Study Plan will be filed with FERC in Year 14 of the license and implemented upon their approval.

3.2 Reservoir Stranding and Trapping Monitoring

City Light will implement a Reservoir Stranding and Trapping Monitoring Program to prevent and/or minimize the potential for negative impacts of Project operational and maintenance activities on fisheries resources due to stranding and trapping.

3.2.1 Ross Lake

- Conduct two programmatic stranding and trapping surveys per year on Ross Lake during the reservoir's drawdown cycle when salmonid fry are likely to be using the shallow water habitat and stranding and trapping features are exposed in the littoral zone (i.e., spring, late summer/fall).
- Conduct one fish stranding and trapping survey coinciding with the release of channel maintenance flows during years when channel maintenance flows are provided in the Skagit River.

3.2.2 Diablo and Gorge lakes

- Establish low-risk elevation zones where no monitoring or rescue is necessary; establish highrisk problem water surface elevations (PWEs) and locations where surveillance will be conducted.
- At times when the intersection of PWEs and periodicity occur, survey for stranded and/or trapped salmonids with comparison with reservoir operations to refine understanding of stranding and trapping risk.
- Conduct native fish salvage when drawdown is expected to reach PWEs when native species are likely present in at-risk habitats.
- Identify potential engineering solutions to address high-risk stranding/trapping sites for native salmonid populations.

In Year 4 of the license, City Light will develop a Stranding and Trapping Report summarizing the results of the three (3) year monitoring effort. Monitoring results shall include (but will not be limited to) numbers of fish observed stranded or trapped, related operations information, sites

sampled, and species observed. In consultation with the SRCC, City Light will develop recommendations for future stranding and trapping activities based upon the Report's findings. The Stranding and Trapping Report will include recommendations for additional stranding and trapping monitoring and mitigation measures and will be filed with FERC and implemented upon their approval. Approval and implementation are anticipated to occur no later than Year 5 of the license.

3.3 Reservoir Tributary Access Monitoring

Access to spawning tributaries are critical to the survival and reproduction of native reservoir fishes in the Project reservoirs. Due to ongoing Skagit Project operations, especially in Ross Lake, sediment and wood can form transitory barriers in the drawdown zone to native fish spawning migrations at some reservoir tributaries on an annual basis. Activities under the Reservoir Tributary Access Monitoring Program include:

- Implementing a transitory barrier monitoring and removal program to maintain reservoir tributary access for native resident trout and char species at various pool levels in consideration of reservoir management.
- Conduct tributary transitory barrier surveys twice annually (spring/fall) within the reservoir operations zones of Ross Lake tributaries. Tributaries to be surveyed will be determined in consultation with the SRCC.
- Conduct tributary transitory barrier surveys twice annually (spring/fall) within the reservoir drawdown zones and at the mouths of Diablo and Gorge lakes tributaries. Tributaries to be surveyed will be determined in consultation with the SRCC.
- Implement a barrier removal plan to facilitate fish spawning migrations, as appropriate, and in consultation with the SRCC.

In Year 6 of the license, City Light will develop a Reservoir Tributary Access Report. The Report will summarize results of the tributary transitory barrier surveys which have occurred during the previous five (5) years and will include:

- (1) the numbers of tributaries surveyed;
- (2) photos/photo log documenting tributary condition;
- (3) date and time of survey;
- (4) the survey team participants;
- (5) status of access/description of transitory barrier;
- (6) details of barrier removals, if required;
- (7) the results of follow-up monitoring if appropriate; and
- (8) associated reservoir elevation/operations information.

In consultation with the SRCC, City Light will develop recommendations for future reservoir tributary access monitoring activities to be implemented based upon the findings conducted over the five (5) year period. Recommendations may include modifications to the tributary transitory

barrier surveys including modification to the list of reservoir tributaries surveyed, the survey frequency, and data collected. The Reservoir Tributary Access Report will include recommendations for additional monitoring and mitigation measures and will be filed with FERC and implemented upon their approval. Approval and implementation are anticipated to occur no later than Year 7 of the license.

3.4 Rainbow Trout Broodstock Program

The 1991 Settlement Agreement for relicensing the Skagit River Project (City Light 1991) provided for the creation of a native Rainbow Trout Broodstock Program, which involved collection of fish from Ross Lake to produce hatchery fish to supplement the Diablo and Gorge lakes Rainbow Trout fisheries. The rationale for this program was to compensate for lost habitat in the bypass reach downstream of Diablo Dam as stated in the current Project license order. The Washington Department of Fish and Wildlife (WDFW) began collecting broodstock annually from Roland and Dry creeks for the stocking program in 2002 as a component of City Light's resident fish mitigation program. The stated goal was to produce 400,000 fingerling Rainbow Trout each year. Actual annual releases of Upper Skagit hatchery Rainbow Trout have ranged from 1,000 to 286,000 fish into Diablo Lake and 2,040 to 4,000 fish into Gorge Lake to enhance the popular recreational fishery (Downen 2014). Starting in 2010, an updated production target was agreed upon by City Light, the National Park Service (NPS), and WDFW. These goals were to (1) annually produce 265,000 Rainbow Trout fry (1,200/lb) to be stocked in September of each year in Diablo (N=170,000) and Gorge (N=95,000) lakes, (2) annually produce 95,000 Rainbow Trout fingerlings (200/lb) to be stocked in May of each year into Diablo (N=75,000) and Gorge (N=20,000) lakes, and (3) to maintain the broodstock to support the program.

Given the findings of the FA-06 Reservoir Native Fish Genetics Baseline study (City Light 2023) and a paucity of reservoir fish population information, additional monitoring and evaluation is necessary to understand the genetic structure and overall population health and status of Rainbow Trout in the Upper Skagit (above the Gorge Dam) prior to implementing any future broodstock/stocking program. City Light proposes to suspend current program implementation upon new license issuance until an evaluation can be conducted to identify any potential biological or ecological effects to Rainbow Trout of program implementation.

Management goals of any future program will be developed by the federal, state, and Tribal resource managers (i.e., co-managers), in consultation with City Light. Monitoring data collected as part of Plan activities (described in Section 3.1) as well as other relevant monitoring data (e.g., collected by other entities in the Skagit River, as part of fish passage evaluation studies, etc.) will be used to support an evaluation of whether continuing a broodstock program is consistent with established management goals. The evaluation will be conducted no later than Year 13 after license issuance when the initial phase of data collection from the Plan is complete but can be conducted earlier if the SRCC determines that sufficient data from fewer years of monitoring can support such an evaluation. Based upon the results of the evaluation, City Light, in consultation with the SRCC, may reinstate the Rainbow Trout Broodstock Program, implement a modified program, or terminate the program.

City Light will develop a Rainbow Trout Broodstock Evaluation Report and consult with the SRCC on recommendations for future implementation of the program, if any. These

recommendations will be based upon the ability to implement a program consistent with Rainbow Trout management goals while minimizing biological impacts to Rainbow Trout and effects to the Skagit River ecosystem and will be based upon the findings of relevant data collected during monitoring conducted over the ten (10) year period. The Rainbow Trout Broodstock Evaluation Report will include recommendations for a future program, if appropriate, and will be filed with FERC and implemented upon their approval. Approval and implementation are anticipated to occur no later than Year 14 of the license.

4.0 MONITORING, REPORTING, AND COMMUNICATIONS

4.1 Implementation and Monitoring Schedule

Implementation of the RFMP will begin upon license issuance and continue through the license term. The schedule for specific measures is shown in Table 4.1.

Timeline	Protection and Enhancement Monitoring Activity			
Reservoir Fisheries Monitoring				
Within two (2) years of license issuance	Develop a Reservoir Fisheries Monitoring Study Plan (Plan) in consultation with the SRCC.			
For ten (10) years following FERC approval of the Plan	Conduct fish population monitoring activities in accordance with the duration and frequency established in the Plan.			
Year 13	Report on the findings of Plan activities and determine potential future steps for the remainder of the license term, in consultation with the SRCC. Future steps will be detailed in an Updated Reservoir Fisheries Monitoring Study Plan. The Plan Report and the Updated Reservoir Fisheries Monitoring Study Plan will be filed with FERC for approval.			
Year 14	Upon FERC approval, implement recommendations of Year 13 Updated Reservoir Fisheries Monitoring Study Plan for the remainder of the license term.			
Stranding and Trapping Monitoring				
Annually for three (3) years upon license issuance	Conduct spring and fall stranding and trapping surveys on Diablo and Gorge lakes and two annual surveys during the drawdown cycle on Ross Lake.			
Year 4	Development of a Stranding and Trapping Report and consult with the SRCC on recommendations for stranding and trapping activities to be implemented.			
No Later than Year 5	Upon FERC approval, implement recommendations of Year 4 Stranding and Trapping Report.			
Reservoir Tributary Access Mon	itoring and Transitory Barrier Removal			
Twice-annually for five (5) years upon license issuance upon license issuance	Survey tributary mouths in the spring and fall for access barriers			
Year 6	Development of a Reservoir Tributary Access Report and consultation with the SRCC on recommendations for reservoir tributary access monitoring activities to be implemented.			
No later than Year 7	Upon FERC approval, implement recommendations of Year 6 Reservoir Tributary Access Report.			
Rainbow Trout Broodstock Prog	ram			
Within thirteen (13) years of license issuance ¹	Using information available from the 10-year reservoir fish monitoring activities implemented under the Plan and other information, as appropriate, develop a Rainbow Trout Broodstock Program Evaluation Report to determine the fate of the Rainbow Trout Broodstock Program.			
Year 14	Upon FERC approval, implement the recommendations from the Rainbow Trout Broodstock Program Evaluation Report.			
1 Evaluation can be conducted ea can support a robust, scientifica	arlier if the SRCC determines that sufficient data from fewer years of monitoring ally rigorous analysis.			

 Table 4.1-1.
 Timeline for Reservoir Fisheries Management Plan Activities.

4.2 Reporting Schedule

RFMP activities will be developed into a report that summarizes the analysis of monitoring results from the preceding year. This annual report will be provided to the SRCC and filed with FERC during the first quarter of each year to document compliance with RFMP requirements.

4.3 Adaptive Management and Plan Review

Over the course of its implementation this management plan will be updated and revised as necessary to support adaptive management and implementation. Recommendations for fisheries management upstream of Gorge Dam will be proposed based on a consolidated review of available information from the Plan.

Data collected according to the protocol outlined in the RFMP will be applied in the context of the Ecosystem Monitoring and Adaptive Management Program, as appropriate. Determinations regarding which data are applicable, and how they are to be used, will be made in consultation with the SRCC.

5.0 **REFERENCES**

- Downen, M. 2014. Final report: Ross Lake Rainbow Broodstock Program, upper Skagit reservoir fish community surveys and management plan, dated September 2014. Washington Department of Fish and Wildlife (WDFW). Shelton, Washington.
- Seattle City Light (City Light). 1991. Offer of Settlement, Skagit River Hydroelectric Project, FERC No. 553. Seattle, WA. April 1991.
- . 2023. FA-06 Reservoir Native Fish Genetics Baseline Study Report for the Skagit River Hydroelectric Project, FERC Project No. 553. Prepared by Cramer Fish Sciences, Inc. March 2023.