

125 FERC ¶ 62,065
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Symbiotics, LLC

Project No. 11945-001

ORDER ISSUING ORIGINAL LICENSE

(Issued: October 17, 2008)

INTRODUCTION

1. On June 30, 2004, Symbiotics, LLC (Symbiotics) filed, pursuant to Part I of the Federal Power Act (FPA),¹ an application for an original license to construct, operate, and maintain the 8.3-megawatt (MW) Dorena Lake Dam Project (project). The proposed project would be located at the U.S. Army Corps of Engineers' (Corps) Dorena Lake Dam on the Row River, near the city of Cottage Grove, in Lane County, Oregon. The proposed project would occupy 0.125 acre (5,455 square feet) of federal land administered by the Corps downstream of and adjacent to the dam, and 0.0046 acre (200 square feet) of federal land administered by the U.S. Bureau of Land Management (BLM).² As discussed below, I am issuing an original license for the project.

BACKGROUND

2. Public notice of the filing of the application was published in the Federal Register on June 30, 2004. Public notice that the application was accepted was published in the Federal Register on May 3, 2005.

3. In response to public notice of the filing of the application, the Oregon Water Resources Department (Oregon WRD), Oregon Department of Fish and Wildlife (Oregon DFW), Oregon Department of Environmental Quality (Oregon DEQ), National Marine Fisheries Service (NMFS), and U.S. Department of the Interior (Interior) filed motions to intervene, which were timely and unopposed and therefore automatically granted 15 days after they were filed, pursuant to Rule 214(c)(1) of the Commission's Rules of Practice

¹16 U.S.C. §§ 791a-825r (2006).

² Because the project would use surplus water from a government dam, it is required to be licensed. See section 23(b)(1) of the FPA, 16 U.S.C. § 817(1) (2006).

and Procedure.³ The Coast Fork Coalition filed a late motion to intervene, which was granted on March 1, 2007. None of the intervenors oppose the project.

4. On February 3, 2006, the Commission issued notice in the Federal Register that the project was ready for environmental analysis, and solicited comments, recommendations, terms and conditions, and prescriptions. In response, comments and recommendations were filed by Interior, NMFS, Oregon DFW, Oregon WRD, and Oregon DEQ.

5. On September 1, 2006, the Commission issued a draft environmental assessment (EA), followed by a final EA on January 19, 2007.

6. The motions to intervene, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

A. Project Facilities

7. The project will use the existing reservoir, Dorena Lake, and Dorena Lake Dam, owned and operated by the Corps. The proposed project consists of the following facilities to be constructed: (1) a 9-foot-diameter steel pipe (penstock), about 350 feet long, extending from the reservoir through the north dam abutment; (2) a new siphon house, at the apex of the penstock, with siphon equipment and shutoff valve, for directing flow to the generators or to close off flow from the penstock; (3) a new powerhouse, 250 feet downstream from the concrete section of the dam, with one 3.8-MW horizontal-shaft, Kaplan-type generating unit and one 4.5-MW vertical shaft, Francis-type generating unit; (4) a new concrete-lined channel (tailrace) to discharge flows into the river channel immediately below the existing stilling basin; (5) a fish tailrace barrier; (6) a new 15-kilovolt transmission line that will be about 500 feet long, connecting to PacifiCorp's existing distribution system; (7) a new access road, about 200 feet long; and (8) appurtenant facilities. The estimated average annual generation will be 17,500 megawatt-hours (MWh).

8. The project boundary will include 0.125 acre (5,455 square feet) of federal land managed by the Corps, including the land encompassing the penstock, powerhouse, and tailrace adjacent to and downstream of the north abutment of the existing Dorena Lake Dam. In addition, the project boundary will include 0.0046 acre (200 square feet) of

³ 18 C.F.R. § 385.214(c)(1) (2008).

BLM-managed federal lands where the transmission line will cross the Row River Trail.^{4,5}

9. The existing Dorena Lake Dam is an earth-filled, gravel embankment structure with a crest length of 2,600 feet and a structural height of 145 feet. Appurtenant features of the dam include a concrete spillway with a 200-foot crest length at elevation 835 feet above National Geodetic Vertical Datum that discharges into a stilling basin constructed with concrete retaining walls and located within the concrete tailrace channel. The dam effectively raises the water level 114.5 feet above the stream bed of the Row River, creating a 1,749-acre reservoir that provides 70,500 acre-feet of storage. The Dorena Lake Dam and reservoir are federal facilities and thus will not be part of the proposed project.

B. Project Operation

10. The project will be fully automated and will operate by using the release of stored water from Dorena Lake in accordance with the Corps-specified rule curves. The project will use only the available water released from the reservoir by the Corps and will not change the operation of the Corps' facility. The dam was designed and built in 1949 under the direction of the Corps to provide flood control, irrigation, water-based recreation, and improved navigation downstream of the dam. When flow releases are below the lower limit of the turbine operation (260 cfs), all flows will be diverted to the existing outlet works until sufficient flows are again available for generation. Flow releases in excess of turbine capacity (812 cfs) will be diverted directly to the Row River via the existing outlet works.

11. Water will flow into the powerhouse through the penstock, located upstream of Dorena Lake Dam. During periods of low head (lower reservoir elevation), water will flow through the Kaplan-type turbine in the powerhouse to generate electricity. During periods of high head (higher reservoir elevation), water will flow through the Francis-type turbine in the powerhouse. Only one turbine will operate at a time. After flowing through one of the turbines, the water will be aerated in the draft tube by an air admission system, exit the powerhouse through the tailrace, and re-enter the Row River. There will be no bypassed reach, as the tailrace is located immediately below the Dorena Lake Dam and flows will be released back into the Row River at the base of the existing spillway.

⁴ The Row River Trail is a multi-purpose, non-motorized recreation trail managed by the BLM. The trail was formerly a railroad right of way. (*See* the final EA at 78.)

⁵ It appears the BLM land occupied by the project is public land, as defined in FPA section 3(1), 16 U.S.C. §796(1) (2000).

WATER QUALITY CERTIFICATION

12. Under section 401(a) of the Clean Water Act (CWA),⁶ the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency has either issued a water quality certification for the project or has waived certification. Section 401(d) of the CWA provides that any conditions of the certification shall become conditions of any federal license that authorizes construction and operation of the project.⁷

13. On January 19, 2007, Symbiotics applied to Oregon DEQ for water quality certification under section 401 of the CWA. Oregon DEQ received the request on January 22, 2007. In a letter dated January 18, 2008, and filed by Symbiotics on January 22, 2008, Oregon DEQ issued water quality certification for the project. The conditions of the certification are set forth in Appendix A to this order and are included in the license by ordering paragraph D.

14. The certification requires that Symbiotics: apply to Oregon DEQ for a water quality certification for project construction activities; operate the project in a run-of-release mode as dictated by the Corps' operations at Dorena Lake dam; develop and implement a dissolved oxygen and total dissolved gas monitoring plan; discontinue project operations if the project is contributing to violations of state water quality standards; develop and implement a water quality monitoring equipment malfunction prevention and response plan; discontinue project operations if water quality monitoring equipment malfunctions; implement a hazardous substance spill prevention plan; obtain all necessary state permits and authorizations, and a National Pollution Discharge Elimination System permit; and develop and implement an adaptive water quality monitoring and reporting plan. The certification also reserves authority to Oregon DEQ to modify the conditions of the certification to address future changes in water quality standards or project operations, and any project-related unanticipated adverse effects on water quality.

15. Article 401(a) requires the licensee to file, for Commission approval, the plans required by the certification conditions. Article 401(b) requires the licensee to file an application to amend the license if any plans or measures of the certification include any changes to approved project operations, plans, or facilities. Article 401(c) requires the licensee to notify the Commission if project operations are temporarily modified.

⁶33 U.S.C. § 1341(a)(1) (2006).

⁷33 U.S.C. § 1341(d) (2006).

16. The certification was filed after issuance of the final EA and includes some environmental measures (conditions 5 and 9) that were not addressed in the final EA. Below, I discuss my findings pursuant to section 10(a)(1) of the FPA with respect to conditions 5 and 9.

17. Condition 5 of the certification would require Symbiotics to submit for Oregon DEQ approval, no later than three months prior to the start of project operations, a monitoring equipment malfunction prevention and response plan to address any potential water quality monitoring equipment malfunctions that might occur during project operations. Oregon DEQ's requirement for an equipment malfunction prevention plan would minimize the risk of equipment failure so that aquatic resources would continually be protected.

18. Condition 9 would require Symbiotics to submit for Oregon DEQ approval, within one year of license issuance, a proposed adaptive water quality monitoring and reporting plan that would include provisions for as yet undefined future measures to address and correct violations of State of Oregon water quality criteria. Commission staff typically does not recommend open-ended provisions to be included in a license; however, because such a provision is a condition in the certification, it is included in this license. I note, however, that Article 401(b) requires Symbiotics to file an application to amend the license if the plan includes any changes to approved project operations, requirements, or facilities.

COASTAL ZONE MANAGEMENT ACT

19. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),⁸ the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

20. The Oregon Department of Land Conservation and Development manages the Coastal Management Program, which was created by the state and approved by the National Oceanic and Atmospheric Administration in the early 1970's, pursuant to the Coastal Zone Management Program. Oregon's coastal zone boundary extends from the Washington border to the California border, from the crest of the Coast Range Mountains west to about 3 miles out to sea to the outer limits of Oregon's territorial sea. In the final EA,⁹ staff made the finding that the project would not affect resources located within the

⁸16 U.S.C. § 1456(c)(3)(A) (2006).

⁹ See the final EA at 19.

state's designated coastal zone boundary. The State of Oregon was served a copy of the final EA, but did not comment on staff's finding. I find that the project will not affect resources located within the coastal zone boundary.

SECTION 18 FISHWAY PRESCRIPTIONS

21. Section 18 of the FPA¹⁰ provides that the Commission shall require construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretaries of Commerce or the Interior, as appropriate.

22. In a letter filed March 24, 2006, Interior requested that authority be reserved to the FWS to prescribe fishways under section 18 of the FPA during the term of the license. In a letter filed March 27, 2006, NMFS requested that authority be reserved to NMFS to prescribe fishways under section 18 of the FPA during the term of the license. Consistent with Commission policy, Article 410 of this license reserves the Commission's authority to require fishways that may be prescribed by FWS or NMFS for the project.

THREATENED AND ENDANGERED SPECIES

23. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)¹¹ requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. When a federal agency determines that a proposed action may affect a threatened or endangered species, it must consult with FWS or NMFS and obtain a biological opinion on whether the action is likely to result in a violation of the ESA. After the initiation of formal consultation, section 7(d) of the ESA¹² prohibits an agency from making any irreversible or irretrievable commitment of resources that would foreclose the formulation or implementation of any reasonable and prudent alternative measures that would not violate section 7(a)(2).

24. Federally listed species that occur in the area of the Dorena Lake Dam Hydroelectric Project include the threatened Upper Willamette River Chinook salmon, threatened northern spotted owl, and endangered Oregon chub. The final EA found that licensing the project would have no effect on the Oregon chub, and would not be likely to adversely affect the northern spotted owl and Upper Willamette River Chinook salmon

¹⁰16 U.S.C. § 811 (2006).

¹¹ 16 U.S.C. § 1536(a) (2006).

¹² 16 U.S.C. § 1536(d) (2006).

and its designated critical habitat.¹³

A. U.S. Fish and Wildlife Service

25. On February 6, 2007, Commission staff requested FWS' concurrence on staff's finding of "not likely to adversely affect" for the northern spotted owl and its critical habitat. On March 7, 2007, FWS filed a letter stating that it needed additional information on the anticipated effects of the project on the species. On June 11, 2007, staff provided the additional information to FWS in a biological assessment. Subsequently, Symbiotics prepared a Bald Eagle and Northern Spotted Owl Management Plan, containing measures to protect bald eagles and northern spotted owls in the project area, which it provided to FWS on August 2, 2007.¹⁴ On September 6, 2007, FWS concurred with staff's findings that the project would not be likely to adversely affect the northern spotted owl or its designated critical habitat provided that seasonal restrictions for construction activities are incorporated into any license issued for the project.

26. To minimize the likelihood of disturbance of spotted owls, the Symbiotics management plan contains a measure prohibiting blasting or dam boring during the spotted owl sensitive nesting season (March 1 through June 30). FWS based its concurrence on Symbiotics' proposal that the project construction activities that would create the most noise and physical disturbance would not occur when spotted owls are nesting in the project area. This measure would ensure that project construction does not adversely affect spotted owls. Article 415 approves Symbiotics' Bald Eagle and Northern Spotted Owl Management Plan.

27. In its March 24, 2006 filing, Interior recommends that the Commission retain the authority to comply fully with the requirements of the ESA during the term of any license issued. Standard Article 15 can be used to require changes to project operations or facilities upon the motion of the Commission or as recommended by the fish and wildlife agencies, after notice and opportunity for hearing.

B. National Marine Fisheries Service

28. On February 6, 2007, Commission staff requested NMFS' concurrence under section 7(a)(2) of the ESA on staff's finding of "not likely to adversely affect" for Upper

¹³ In the final EA, Commission staff also analyzed the project's effects on the bald eagle, which at the time, was federally listed as threatened. The bald eagle has since been delisted effective August 8, 2007.

¹⁴ Symbiotics did not file its Bald Eagle and Northern Spotted Owl Management Plan with the Commission until June 11, 2008.

Willamette River Chinook salmon and its designated critical habitat. NMFS responded on March 9, 2007, by stating that it did not concur, and concluded that formal consultation for a “likely to adversely affect” finding was necessary and that the information included in the EA was sufficient to initiate consultation.

29. On August 21, 2008, NMFS filed a biological opinion with its determinations that the project is not likely to jeopardize the continued existence of Upper Willamette River Chinook salmon. NMFS also concluded that the project is not likely to adversely modify or destroy critical habitat for Upper Willamette River Chinook salmon. NMFS’ biological opinion includes an incidental take statement with reasonable and prudent measures to minimize take of listed Upper Willamette River Chinook salmon along with terms and conditions to implement the measures.

30. The articles of this license address NMFS’ reasonable and prudent measures and terms and conditions by requiring the licensee to implement the following measures relating to the protection of Upper Willamette River Chinook salmon: implement Best Management Practices during construction activities to avoid or minimize adverse effects on water quality and aquatic resources (Article 302); protect listed fish during construction and maintenance operations (Ordering Paragraph (E) and Appendix B.2); construct and monitor a tailrace barrier screen to minimize the potential for powerhouse false attraction, delay, and mortality of adult migrating salmon (Ordering Paragraph (E) and Appendix B.3); ensure the project’s automated equipment is adequately maintained to avoid malfunction (Ordering Paragraph (E) and Appendix B.4.a); implement an annual monitoring and reporting program to confirm that license conditions minimize incidental take of listed salmon (Ordering Paragraph (E) and Appendix B.5.a); and notify NMFS of all project-related observations of dead or injured salmon (Ordering Paragraph (E) and Appendix B.5.b).

31. Condition 5.b of NMFS’ biological opinion requires the licensee to notify NMFS, within two days of observance, of all observations of dead or injured salmon or steelhead. Requiring the licensee to also notify the Commission would assist the Commission in tracking compliance with the authorized take included in the incidental take statement, thereby ensuring that the project protects ESA-listed Chinook salmon. Accordingly, Article 405 of the license requires the licensee to notify the Commission if dead or injured salmon or steelhead are observed at the project.

ESSENTIAL FISH HABITAT

32. Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Act),¹⁵ requires federal agencies to consult with the Secretary of

¹⁵ 16 U.S.C. § 1855(b)(2) (2006).

Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. Under section 305(b)(4)(A)¹⁶ of the Act, NMFS is required to provide EFH Conservation Recommendations for actions that would adversely affect EFH. Under section 305(b)(4)(B) of the Act,¹⁷ an agency must, within 30 days after receiving recommended conservation measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on the EFH.¹⁸

33. The Pacific Fisheries Management Council has designated EFH for the following federally managed Pacific salmon: Chinook, coho, and Puget Sound pink salmon. Freshwater EFH for these Pacific salmon includes all streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable artificial (human-made) barriers, and longstanding naturally impassable barriers.

34. Staff concluded in the final EA that the project would not have an adverse effect on Chinook and coho salmon EFH. NMFS included an analysis of effects on EFH in its biological opinion for the project, concluding that the project would have some minor adverse effects on EFH. NMFS adopted the terms and conditions of the biological opinion's incidental take statement (discussed above) as conservation measures to minimize effects on EFH. As noted above, this license includes these measures and terms and conditions.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

A. Recommendations Pursuant to Section 10(j) of the FPA

35. Section 10(j)(1) of the FPA¹⁹ requires the Commission, when issuing a license, to include conditions based on recommendations by federal and state fish and wildlife

¹⁶ 16 U.S.C. § 1855(b)(4)(A) (2006).

¹⁷ 16 U.S.C. § 1855(b)(4)(B) (2006).

¹⁸ The measures recommended by the Secretary of Commerce are advisory, not prescriptive. However, if the federal agency does not agree with the recommendations of the Secretary of Commerce, the agency must explain its reasons for not following the recommendations.

¹⁹ 16 U.S.C. § 803(j)(1) (2006).

agencies submitted pursuant to the Fish and Wildlife Coordination Act,²⁰ to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

36. In response to the January 26, 2006, public notice that the project was ready for environmental analysis, Interior and Oregon DFW filed seven and 16 recommendations, respectively, for the project on March 24, 2006. NMFS filed eight recommendations on March 27, 2006. Seven of Oregon DFW’s and four of NMFS’ recommendations were determined to be outside the scope of section 10(j) and are discussed in the next section of this license order.

37. This license includes conditions consistent with six of seven of Interior’s recommendations, six of nine of Oregon DFW’s recommendations, and all four of NMFS’ recommendations that are within the scope of section 10(j).²¹ These include recommendations to: (1) comply with the Corps’ ramping operations²² or, if more protective (i.e., if a lower ramping rate), then ramp no more than 1 inch per hour from March 1–September 30, and 2 inches per hour from October 1–February 28/29 (Article 406); (2) conduct a ramping rate evaluation (Article 407); (3) install a gaging station and monitor streamflows at a location approximately 300 feet downstream of Dorena Lake Dam (Article 408); (4) construct and operate a tailrace barrier screen (Ordering Paragraph (E) and Appendix B.3); (5) maintain all fish passage facilities Standard Article 4 of Form L-2);²³ (6) develop and implement a soil erosion control plan (Article 302); and (7) implement avian protection measures (Article 416).

38. If the Commission believes that any such recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.²⁴ If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of

²⁰ 16 U.S.C. § 661 *et seq.* (2006).

²¹ Many of the agency recommendations within the scope of section 10(j) overlap.

²² *See* the final EA at 38 for a summary of the Corps ramping operations.

²³ Although this recommendation is rendered moot by the lack of a license condition requiring fish passage, I note that Standard Article 4 of Form L-2 requires the licensee to provide for the maintenance of all project works.

²⁴ 16 U.S.C. § 803(j)(2) (2006).

the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

39. Commission staff made an initial determination that Interior and Oregon DFW's recommendation for intake screening, and Oregon DFW's recommendations for upstream fish passage and a post-licensing entrainment/mortality study may be inconsistent with sections 4(e) and 10(a) of the FPA.

40. Staff sent letters to Interior and Oregon DFW on September 20, 2006, informing them of the inconsistencies. On November 15, 2006, representatives from the Commission, FWS, Oregon DFW, Oregon WRD, NMFS, and Symbiotics met to discuss the inconsistencies, but no resolution was reached. Oregon DFW filed additional information in support of its recommendation for upstream passage on December 11, 2006. Below I discuss staff's findings with respect to the inconsistencies.

Intake Screening

41. Interior and Oregon DFW recommend that Symbiotics screen the turbine intake to prevent entrainment of fish and other aquatic organisms into the project power intake facilities. Interior and Oregon DFW also recommend that Symbiotics develop a monitoring plan to assess the performance of the exclusion screens.

42. As discussed in the final EA,²⁵ staff found no evidence to suggest that downstream migration of fish from Dorena Lake currently is occurring in large numbers, or that loss of fish through the dam is currently having a negative effect on populations of fish in the lake. The presence of relatively low numbers of warmwater species, such as bluegill, largemouth bass, and black crappie, compared to resident trout downstream of the dam indicates current recruitment from lake populations is low. For these reasons, staff concluded that there would be little biological benefit associated with installing an exclusion screen on the intake and subsequently performing a performance evaluation, and therefore, the measures would not justify an annualized cost of \$56,240. I concur with staff's findings.

Dorena Lake Fish Entrainment Monitoring Plan

43. Oregon DFW recommends that Symbiotics develop and implement a three-year monitoring plan to determine the fish entrainment, mortality, and injury rate associated with the project penstock and powerhouse.

²⁵ See final EA at 57.

44. In regard to entrainment rates, as discussed in the final EA,²⁶ Symbiotics' proposed project operations would not change the existing flow regime at Dorena Lake Dam, but rather would route existing flow releases through a penstock and powerhouse and discharge flows into the tailrace below the dam. Because project operations would not alter the existing flow regime, the rate of fish entrainment through the dam would not change as compared to existing conditions. Therefore, monitoring entrainment rates during project operations would have only limited benefits.

45. In regard to mortality rates, the final EA found that the mortality rate of fish passing through the existing regulating outlets at the similar Corps' Fall Creek Dam was estimated at about 70 percent, while the average mortality rate for salmonid and non-salmonid species passing through Francis and Kaplan turbines was typically less than 30 percent.²⁷ Based on these data, it is reasonable to conclude that the mortality rates of fish passing through the project's Francis and Kaplan turbines would be less than the existing mortality rate of fish that pass through the existing regulating outlets. Therefore, because mortality rates under existing operations would be higher than under proposed project operations, there would be little to no benefit of conducting post-licensing mortality monitoring.

46. For these reasons, I conclude that sufficient information already exists on the potential effects of entrainment and mortality at the project, and conducting post-licensing entrainment and mortality monitoring would have only limited biological benefits that would not justify an annualized cost of \$4,230 for the recommended monitoring activities.

Upstream Fish Passage

47. Oregon DFW recommends that Symbiotics consult with the Corps to negotiate construction of a fish ladder passage facility or present a proposal to the Corps for alternative mitigation that would benefit the species affected in the Row River.

48. As discussed in the final EA,²⁸ construction of a fish ladder would allow for the potential reintroduction of anadromous fish in Dorena Lake and upstream tributaries that were lost when the Corps constructed the dam in 1949. Spring Chinook salmon and steelhead trout that would pass up the ladder might successfully spawn in tributaries upstream of the dam. Currently, the nearest potentially self-sustaining, naturally

²⁶ See final EA at 10.

²⁷ See the final EA at 59.

²⁸ See final EA at 55.

spawning population of Upper Willamette River Chinook salmon is in the McKenzie River. Oregon DFW stocks Mosby Creek, a tributary of the Row River downstream of the project, with surplus hatchery spring Chinook salmon; however, the success of the Mosby Creek introduction has yet to be determined. Absent some other agency action to introduce spawning populations in the Row River, the potential for Chinook salmon to be present in the river and to use the fish ladder is low. Similarly, there are no known spawning populations of wild steelhead in the Row River that would benefit from the provision of passage to upstream habitats.

49. Further, as stated in the final EA,²⁹ if upstream fish passage facilities were constructed and spawning populations of anadromous salmonids were introduced upstream of the dam, the progeny of these fish could be susceptible to predation from northern pikeminnow and largemouth bass, as well as predation and genetic introgression with stocked rainbow trout in Dorena Lake. For these reasons, there appear to be only limited benefits associated with constructing upstream fish passage facilities. I agree with staff that these limited benefits would not justify an annualized cost of \$1,962,700 to construct, operate, and maintain upstream fish passage facilities at the project.

Finding Pursuant to Section 10(j)(2)(B)

50. Although I am not adopting recommendations for an exclusion screen, entrainment and mortality monitoring, or upstream passage facilities, this license includes measures to implement a sediment and erosion control plan to prevent adverse effects on water quality (Articles 302), monitor water quality prior to and during project construction and operation to ensure protection of water quality and fisheries (Article 404), install a tailrace barrier screen (Ordering Paragraph (E) and Appendix B.3), implement certain ramping rates to ensure protection of juvenile salmonids (Article 406), monitor the effectiveness of the ramping rates (Article 407), install a new gaging station to monitor minimum flows downstream of the dam (Article 408), and develop and implement an operation monitoring plan (Article 408). In accordance with section 10(j)(2)(B) of the FPA, I find that these measures required by this license will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by the project.

B. Recommendations Pursuant to Section 10(a)(1) of the FPA

51. Oregon DFW made seven recommendations and NMFS made four recommendations that are either not specific measures to protect, mitigate damage to, or enhance fish and wildlife; or attempt to reserve final authority to the agencies. Consequently, I do not consider these recommendations under section 10(j) of the FPA.

²⁹ See final EA at 56.

Instead, I consider these recommendations under the broad public-interest standard of FPA section 10(a)(1).³⁰

52. This license includes conditions consistent with three of Oregon DFW's recommendations and two of NMFS' recommendations. These include recommendations to require Symbiotics to do the following: (1) prepare draft and final tailrace barrier screen designs after consultation with Oregon DFW, NMFS, and FWS (Article 401(a));³¹ (2) notify the Oregon Emergency Response System within 24 hours of a spill or emergency (Ordering Paragraph (D) and Appendix A.7); (3) notify Oregon DFW, NMFS, and FWS within 24 hours of an emergency situation that may affect fish and wildlife (Article 409); and (4) consult with NMFS on erosion control measures at least 90 days prior to commencing any ground-disturbing activities (Article 302).

53. Because this license does not require fish passage, I did not adopt Oregon DFW's recommendation that would require Symbiotics to maintain all fish passage facilities as required by state law.

54. I did not adopt Oregon DFW's and NMFS' recommendations to take action at the direction of the agencies to prevent adverse effects on fish and wildlife populations and habitat during unanticipated or emergency situations. I also did not adopt Oregon DFW's recommendation to develop a plan and implement measures for assessing the immediate and long-term effects on environmental resources resulting from unanticipated or emergency events. The final EA concluded that the recommendations are too vague regarding the type of measures recommended and therefore they could not be evaluated.³² Therefore, I have no justification for including these recommendations as requirements in the license.

³⁰ 16 U.S.C. § 803(a)(1) (2006). Section 10(a)(1) requires that any project for which the Commission issues a license shall be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

³¹ See the final EA at 100 and 111.

³² See the final EA at 106.

PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ACT

55. In 1980, Congress enacted the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act).³³ This act created the Northwest Power Planning Council (now known as the Northwest Power and Conservation Council) and directed it to develop a Columbia River Basin Fish and Wildlife Program. The Program is to protect, mitigate, and enhance fish and wildlife resources affected by the development and operation of hydroelectric projects on the Columbia River and its tributaries, while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply.³⁴ Section 4(h)(11)(A) of the Northwest Power Act,³⁵ provides that federal agencies operating or regulating hydroelectric projects within the Columbia River Basin shall exercise their responsibilities to provide equitable treatment for fish and wildlife resources with other purposes for which the river system is utilized and shall take the Council's Program into account "at each relevant stage of decision-making processes to the fullest extent practicable."

56. To mitigate harm to fish and wildlife resources, the Council has adopted specific provisions to be considered in the licensing or relicensing of non-federal hydropower projects (Appendix B of the Program). The requirements of this license, including sediment and erosion control (Article 302 and 402), water quality monitoring (Article 404), constructing and operating a tailrace barrier screen (Ordering Paragraph (E) and Appendix B.3), implementing certain ramping rates (Article 406), installing a new gaging station (Article 408), developing and implementing an operations monitoring plan (Article 408), implementing measures to protect northwest pond turtles³⁶ (Article 414), implementing measures to protect spotted owls and the bald eagle (Article 415), and implementing avian protection measures (Article 416) are consistent with applicable provisions of the Program, as discussed in more detail in the final EA. As part of the Program, the Council has designated over 40,000 miles of river in the Pacific Northwest region as not being suitable for hydroelectric development ("protected area"). The project is not located within a protected area designated under Appendix B of the Program. Further, Article 411 reserves to the Commission the authority to require future

³³ 16 U.S.C. §§ 839 (b) *et seq.* (2006).

³⁴ 16 U.S.C. § 839b(h)(5) (2006).

³⁵ 16 U.S.C. § 839b(h)(11)(A) (2006).

³⁶ The northwestern pond turtle is a federal species of concern and an Oregon Natural Heritage Program sensitive species, discussed *supra*.

alterations in project structures and operations to take into account, to the fullest extent practicable, the applicable provisions of the program.

NATIONAL HISTORIC PRESERVATION ACT

57. Under section 106 of the National Historic Preservation Act (NHPA),³⁷ and its implementing regulations,³⁸ federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register (defined as historic properties) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

58. The Dorena Lake Dam, constructed in 1949, is eligible for listing in the National Register, and is a contributing element to the Corps' Willamette Basin Project, which includes 15 dams, reservoirs, and related hydropower facilities. In the final EA,³⁹ staff concluded that construction of the project would not have an adverse effect on the historic structure, because the work at the dam will be done below the existing water surface elevation, and will not alter the overall characteristic or design of the historic dam. The Oregon SHPO concurred with this finding on October 20, 2005.⁴⁰ Article 417 provides for cultural resource protection in the event of the discovery of any previously unidentified archeological or historic properties.

OTHER ISSUES

Erosion and Sediment Control

59. The potential exists for some erosion and sedimentation to occur during project construction, operation, and maintenance. Symbiotics proposes to implement a soil erosion control plan to limit erosion and sedimentation into Dorena Lake and the Row River during project construction, operation, and maintenance. FWS, NMFS, and Oregon DFW provided numerous detailed recommendations for erosion control, including revegetation of disturbed areas after project construction. Further, NMFS and Oregon DFW recommended that Symbiotics prepare a final erosion control plan based on

³⁷16 U.S.C. § 470 *et seq.* (2006).

³⁸36 C.F.R. Part 800 (2008).

³⁹ See the final EA at 87.

⁴⁰ Symbiotics filed a copy of the SHPO's concurrence on November 1, 2005.

the final project design. NMFS also provided detailed best management practices for project construction as part of its biological opinion.

60. In the final EA,⁴¹ staff found that Symbiotics' proposals, with the inclusion of the agencies' recommendations, would be adequate to protect resources from erosion and sedimentation. However, because Symbiotics' plan for construction activities, when the likelihood of erosion and sedimentation would be greatest, could be improved by site-specific information obtained during final project design, Article 302 requires a new sediment control and soil erosion control plan, specific to project construction, that is based upon final project design and includes the modifications recommended by the agencies, including the best management practices provided by NMFS. Article 402 requires implementation of Symbiotics' previously filed erosion control plan, with the modifications recommended by the agencies, for project operation and maintenance. Articles 302 and 402 will ensure that the effects of erosion and sedimentation from project construction, operation, and maintenance are minimized to the extent practicable.

Dissolved Oxygen Enhancement

61. One of the provisions of condition 3 of the water quality certification would require Symbiotics to implement corrective measures to prevent violations of state water quality criteria for dissolved oxygen or total dissolved gas if the monitoring program indicates that such violations are occurring. To comply with this condition, Symbiotics submitted a draft water quality monitoring and management plan (draft plan) to Oregon DEQ and filed it with the Commission on June 11, 2008. The draft plan provides for the installation and operation of an air admission system to increase dissolved oxygen levels in the project tailrace during periods of low concentrations.⁴²

62. In the final EA,⁴³ staff concluded that project operations have the potential to lower dissolved oxygen concentrations relative to existing conditions. Water currently discharges from the Corps outlet structures under turbulent conditions, which tend to entrain atmospheric gases, thus increasing dissolved oxygen concentrations relative to Dorena Lake's background levels. In contrast, discharging water through a powerhouse would reduce the capacity for dissolved oxygen entrainment. The absolute magnitude of

⁴¹ See the final EA at 29.

⁴² Symbiotics did not propose the air admission system as part of its license application, but rather proposed it as part of its application for section 401 water quality certification. See Symbiotics' draft water quality monitoring and management plan filed on June 11, 2008, at page 18.

⁴³ See the final EA at 42.

dissolved oxygen reduction as a consequence of project operations is not known; however, in the final EA,⁴⁴ staff found that the potential to discharge water with reduced dissolved oxygen concentrations would be greatest in September and October, when: (1) all available flows are diverted for power generation (when inflows are between 260 cfs and 812 cfs); and (2) the dissolved oxygen concentrations at the bottom of Dorena Lake (at the intake elevation) would be expected to be at the lowest levels of the year. Once the lake “turns over” (and becomes well mixed) later in the season, or flows increase to the point where they are diverted through both the turbines and the outlet gates simultaneously (at flows above 812 cfs), dissolved oxygen concentrations would be expected to be comparable to current conditions.

63. Construction and operation of the air admission system would facilitate an increase in dissolved oxygen in the project tailrace by up to 3.5 milligrams per liter during the period when dissolved oxygen levels would likely be at the lowest levels of the year. Article 403 requires Symbiotics to install an air admission system.

Wildlife Protection

64. Symbiotics proposes measures to protect wildlife during project construction. These measures include: (1) replacing all riprap and boulder habitats that are disturbed by project construction activities to restore reptile habitat; (2) completing construction in a timely manner to avoid prolonged disruption of wildlife in the area; (3) avoiding leaving trenches or pits overnight that might trap wildlife; and (4) limiting construction activities in the transmission line corridor to avoid disturbance to denning western rattlesnakes. In the final EA,⁴⁵ staff found that these measures would minimize adverse impacts of project construction on wildlife. Article 412 requires Symbiotics to implement these measures.

Noxious Weed Management

65. Noxious weeds occurring near Dorena Lake Dam include Himalayan blackberry and Scot’s broom, which are the most common shrubs in the project area and appear to be spreading. Without proper management, the soil disturbance caused by project construction could enhance the growth of these and other noxious weed species, which are of lower wildlife habitat value than native species. Symbiotics proposes to restore 5,533 square feet of wildlife habitat near the north abutment of Dorena Lake Dam by replacing noxious weeds with appropriate native species. Symbiotics further proposes to

⁴⁴ See the final EA at 42-43.

⁴⁵ See the final EA at 68 and 72.

develop a plan to control noxious weeds. In the final EA,⁴⁶ staff recommended that Symbiotics revegetate disturbed areas with native species, control weeds, and restore native species on 5,533 square feet of land. Article 413 requires the filing of a noxious weed management plan that includes the restoration of 5,533 square feet of wildlife habitat and the control of noxious weeds in other areas.

Northwestern Pond Turtle Protection

66. Lands within the project boundary support potential nesting habitat for the northwestern pond turtle, a federal species of special concern and an Oregon Natural Heritage Program sensitive species. Turtles could be injured or killed by motor vehicles or heavy equipment if nests occur within the project construction areas or turtles migrate through the construction areas to get to their nesting or over-wintering habitat. Symbiotics proposed developing a plan to minimize construction effects of the northwestern pond turtle. In the final EA,⁴⁷ staff recommended that Symbiotics develop a plan to minimize construction effects on northwestern pond turtles. Article 414 requires the filing of a northwestern pond turtle protection plan.

Bald Eagle Protection During Project Construction

67. Two bald eagle nesting territories and one winter roosting site are known to exist in the Dorena Lake area, although all known nesting and roosting trees are outside of the proposed project boundary. Bald eagles forage for fish in the Dorena Lake Dam discharge. To avoid project construction from disturbing bald eagles, Symbiotics' Bald Eagle and Northern Spotted Owl Management Plan, filed on June 11, 2008, contains the following measures: (1) limiting heavy equipment operation to the hours of 10:00 a.m. to 4:00 p.m. during the critical nestling feeding period of March 1 through August 31; and (2) conducting in-stream work during the autumn to avoid temporary disturbance to the eagles' prey base during the nesting season. In the final EA,⁴⁸ staff recommended that Symbiotics schedule project construction activities to minimize effects on foraging and nesting bald eagles. Article 415 approves Symbiotics' Bald Eagle and Northern Spotted Owl Management Plan.

Avian Protection During Project Operation

68. The majority of the project transmission line will be underground or in a conduit. The short length of above-ground transmission line, however, may pose a collision or

⁴⁶ See the final EA at 68.

⁴⁷ See the final EA at 71-72.

⁴⁸ See the final EA at 77.

electrocution hazard for bald eagles and other raptors that forage near Dorena Lake Dam. In the final EA,⁴⁹ staff recommended that Symbiotics develop and implement an avian protection plan. Article 416 requires the development and implementation of an avian protection plan.

Consultation with the U.S. Fish and Wildlife Service

69. Interior filed a recommendation under section 10(a) of the FPA that Symbiotics be required to consult directly with FWS regarding the completion of project plans and designs for measures to protect, mitigate damages to, and enhance fish and wildlife resources. The following articles require the licensee to consult with FWS: Article 302 (soil erosion and sediment control plan), Article 401 (dissolved oxygen and total dissolved gas monitoring plan, hazardous substances and spill prevention and cleanup plan, adaptive water quality monitoring and reporting plan, and tailrace barrier screen design), Article 402 (any failure of initial revegetation success), Article 403 (adaptive water quality monitoring and reporting plan), Article 407 (ramping rate effectiveness evaluation), Article 408 (operational compliance monitoring plan), Article 413 (noxious weed management), Article 414 (northwestern pond turtle protection), and Article 416 (avian protection plan). Therefore, the license requires consultation with FWS regarding the completion of all project plans and designs to be prepared for measures to protect, mitigate damages to, and enhance fish and wildlife resources.

Ongoing and Unavoidable Losses

70. Interior filed a recommendation under section 10(a) of the FPA that Symbiotics be required to develop a plan to compensate for ongoing and unavoidable losses associated with the project. Interior cites negative impacts such as fish entrainment, losses of birds due to transmission line impacts, and disruption of wildlife foraging, roosting, and breeding opportunities. As stated in the section on Recommendations of Federal and State Fish and Wildlife Agencies, the mortality rates of fish entrained into the project turbines would be less than the present mortality rate of fish that pass through the dam's existing outlets. Further, this license requires protection measures that will ensure that fish species in Dorena Lake are not significantly adversely affected by the construction, operation, and maintenance of the project. As stated below, although the above-ground section of project transmission line would be short, Article 416 requires an avian protection plan that would reduce to a minimum the potential adverse effects of the project on birds. Article 412 requires measures to avoid or limit the effects of project construction on wildlife habitat, Article 414 requires protection of the northwestern pond turtle during construction, and Article 415 requires the construction schedule be restricted in order to avoid adverse effects on nesting raptors. I find that the conditions of this

⁴⁹ See the final EA at 70-71 and 105.

license adequately address the adverse effects of project construction, operation, and maintenance. Therefore, I am not including this provision.

Emergency or Special Conditions

71. Interior filed a recommendation under section 10(a) of the FPA that if, at any time, unanticipated circumstances or emergency situations arise where fish or wildlife are being killed, harmed, or endangered by any of the project facilities or as a result of project operation, the licensee shall immediately take appropriate action to prevent further loss. Further, Interior recommends that the licensee shall immediately notify FWS, and, to the extent practicable, implement any reasonable restorative measures recommended by FWS. Article 409 requires the licensee to notify the Commission and FWS of any unanticipated or emergency situation arising during project construction or operation that may be detrimental to fish and wildlife. The Commission retains exclusive authority to implement and enforce the terms of the license, including requirements for the licensee to take any additional action to correct instances of non-compliance with license requirements. Therefore, I am not including the provision.

Requirement to Obtain a BLM Special-Use Authorization

72. As noted, the proposed powerhouse would occupy 0.0046 acre (200 square feet) of land managed by BLM. Interior filed recommended conditions under the comprehensive-development provisions of section 10(a)(1) of the FPA,⁵⁰ which included, on behalf of BLM, a condition requiring Symbiotics to obtain from BLM, pursuant to section 501(a)(4) of the Federal Land Policy Management Act,⁵¹ a right-of-way authorization for the construction of the project's proposed transmission line on BLM-managed lands, and to obtain such authorization prior to initiating any ground-disturbing activities that could affect those lands.⁵²

73. Article 418 requires that Symbiotics obtain and file with the Commission a BLM-issued special-use right-of-way authorization.

⁵⁰ 16 U.S.C. § 803(a) (1) (2000).

⁵¹ 43 U.S.C. § 1716(a)(4).

⁵² See Interior's filing of March 24, 2006, at 11-12.

Administrative Conditions

Annual Charges

74. The Commission collects annual charges from licensees for administration of the FPA. Article 201 provides for the collection of funds for administration of the FPA.

Amortization Reserve

75. The Commission requires that for major licenses, licensees must set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

Headwater Benefits

76. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 205 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

Start of Construction and Review of Final Plans and Specifications

77. Article 301 requires the licensee to start construction of the project works within two years, and complete construction within five years, from the issuance date of the license.

78. Article 302 requires the licensee to provide final contract drawings and specifications prior to the start of construction.

79. Article 303 requires the licensee to provide the Commission with revised drawings of project features as built.

80. To ensure there are sufficient funds available for project construction, Article 304 requires the licensee to provide the Commission with a project financing plan at least 90 days prior to the start of project construction.

81. Pursuant to a 1981 Memorandum of Understanding between the Commission and the Department of the Army, seven special articles are included in licenses for hydroelectric projects to be developed at Corps facilities. The articles are incorporated in this license as Articles 305 through 311.

Use and Occupancy of Project Lands and Waters

82. Requiring a licensee to obtain prior Commission approval for every non-project use or occupancy of project land would be unduly burdensome. Therefore, Article 419

allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands, other than public lands and reservations of the United States, for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

Exhibit F and G Drawings

83. The Exhibit F drawings do not conform to the Commission's regulations. The drawings do not identify all project works properly, are not properly named and consecutively labeled, and do not comply with the formatting requirements of the Commission's regulations. Therefore, I am not approving the drawings at this time. Article 202 requires the filing of revised Exhibit F drawings.

84. The Exhibit G drawings do not conform to the Commission's regulations. The drawings do not identify all project works properly, are not properly named and consecutively labeled, and do not comply with the formatting requirements of the Commission's regulations. Further, the Exhibit G drawings do not show the appropriate federal land boundaries for the Corps and BLM. Therefore, I am not approving the drawings at this time. Article 203 requires the filing of revised Exhibit G drawings.

STATE AND FEDERAL COMPREHENSIVE PLANS

85. Section 10(a)(2)(A) of the FPA⁵³ requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.⁵⁴

86. Under section 10(a)(2) of the FPA, staff reviewed 22 comprehensive plans to determine whether the Dorena Lake Dam Project would be consistent with their provisions. Out of the 22 relevant plans, staff found there would be inconsistencies with two of the plans if the project were licensed under the Staff Alternative: (1) Oregon Comprehensive Waterway Management Plan, and (2) Oregon Wildlife and Commercial Fishing Codes.⁵⁵

87. Sections 509.585 and 509.615 of the Oregon Wildlife and Commercial Fishing Codes require those in Oregon who construct or operate dams to provide upstream and downstream passage for fish, and those in Oregon who divert flows of 30 cfs or more to

⁵³ 16 U.S.C. § 803(a)(2)(A) (2006).

⁵⁴ Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2008).

⁵⁵ The list of comprehensive plans can be found on pages 117-18 of the final EA.

screen their intakes to prevent the entrainment of fish. The Oregon Comprehensive Waterway Management Plan adopts these two provisions of the wildlife and commercial fishing codes.

88. The license does not require Symbiotics to construct a fishway or intake screen for the Dorena Lake Dam Project; therefore, the project, as licensed herein, would be inconsistent with the Oregon Wildlife and Commercial Fishing Codes and the Oregon Comprehensive Waterway Management Plan.

89. Although these inconsistencies would exist, the license need not be denied. In the preamble to Order No. 481-A, the Commission noted that Congress, in enacting the Electric Consumers Protection Act of 1986, affirmed the Commission's responsibility to resolve competing demands in the public interest, and that while the Commission must give full consideration to recommendations submitted in a licensing proceeding, no one recommendation or comprehensive plan is dispositive. Section 10(a)(2)(A), therefore, does not limit the Commission's ability to carry out its broad responsibilities under sections 10(a)(1) and 4(e) to consider and balance all aspects of the public interest in determining whether and under what conditions a license should be issued.

90. As discussed in the final EA,⁵⁶ staff concluded that constructing the project without upstream fishways or intake screens would have only minor adverse effects on fish in the project area and that the anticipated minor benefits of constructing new fishways and fish screens would not justify the high costs. I adopt staff's findings, and therefore this license does not require Symbiotics to provide upstream fish passage or intake screens.

91. As discussed herein, the license includes conditions that would protect fish in Dorena Lake and in the Row River downstream of the project and would ensure that fish populations are not significantly adversely affected by the construction, operation, and maintenance of the project.

SAFE MANAGEMENT, OPERATION, AND MAINTENANCE OF THE PROJECT

92. Staff reviewed Symbiotics' preliminary plans to build the project as described in the license application. The project will be safe when constructed, operated, and maintained in accordance with the Commission's standards and the provisions of this license.

⁵⁶ See the final EA at 55-59 and 103-04.

NEED FOR POWER

93. To assess the need for power, staff looked at the needs in the operating region in which the Dorena Lake Dam Project is located. The project is located in the Northwest Power Pool (NWPP) 57 region of the Western Electricity Coordinating Council of the North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the nation and region for a ten-year period. NERC's most recent report on annual supply and demand projections indicates that, for the period 2007-2016, total winter internal demand for the NWPP region is projected to increase from 39,777 MWh to 45,658 MWh (increasing at an annual rate of 1.5 percent). Staff concludes that the proposed Dorena Lake Dam Project would provide hydroelectric generation to meet part of Oregon's power requirements, displace non-renewable fossil-fired generation, contribute to the region's resource diversity and help meet the capacity needs for power in the region. The project would have an installed capacity of 8.3 MW and generate approximately 17,500 MWh per year.

PROJECT ECONOMICS

94. In determining whether to issue a license for a hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,⁵⁸ the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

95. In applying this analysis to the Dorena Lake Dam Project, we have considered two options: Symbiotics' proposed action and the project as licensed herein. As proposed by Symbiotics, the levelized annual cost of operating the project is about \$1,078,828,⁵⁹ or \$61.65/MWh. The proposed project will generate about 17,500 MWh of energy annually. Multiplying the estimated average annual generation by the alternative power

⁵⁷ The NWPP area is composed of all or major portions of the states of Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming; a small portion of northern California; and the Canadian provinces of British Columbia and Alberta.

⁵⁸ 72 FERC ¶ 61,027 (1995).

⁵⁹ This number was incorrectly calculated as \$1,019,290 in the final EA at 90.

cost of \$39.60/MWh⁶⁰ results in a total value of the project's power of \$693,000 in 2006 dollars. To determine whether the project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power.⁶¹ Therefore, in the first year of operation, the project, as proposed by Symbiotics, will cost \$385,828, or \$22.05/MWh more than the likely alternative cost of power.

96. As licensed herein with the mandatory conditions and staff measures, the levelized annual cost of operating the project would be about \$1,090,977,⁶² or \$62.34/MWh. Based on an estimated average generation of 17,500 MWh as licensed, the project will produce power valued at \$693,000 when multiplied by the \$39.60/MWh value of the project's power. Therefore, in the first year of operation the project power will cost \$397,977, or \$22.74/MWh more than the likely cost of alternative power.

97. Although the staff's analysis shows that the project as licensed herein will cost more to operate than the estimated cost of alternative power, it is the applicant who must decide whether to accept this license and any financial risk that entails.

98. Although staff does not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is relatively insensitive to inflation compared to fossil-fuel generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public interest factors the Commission considers in determining whether or not, and under what conditions, to issue a license.

⁶⁰ The alternative power cost of \$39.60 per MWh is based on a weighted average of on-peak and off-peak energy values provided by PacifiCorp in an April 1, 2005, filing for the Klamath Project No. 2082, based on average rates for California-Oregon Border and Mid-Columbia values in 2005.

⁶¹ Further details of staff's economic analysis for the project as licensed herein and for various alternatives are included in the final EA, at 92-98. The economic analysis was recalculated for this order to take into account additional measures adopted as a result of the section 401 water quality certification issued by the State of Oregon and section 10(j) recommendations from NMFS that were filed subsequent to the issuance of the final EA.

⁶² This cost includes an estimate of \$500,000 capital cost and \$50,000 operating and maintenance cost for installation and operation of an air admission system and the costs of increased monitoring that were not calculated in the final EA.

COMPREHENSIVE DEVELOPMENT

99. Sections 4(e) and 10(a)(1) of the FPA⁶³ require the Commission, in acting on license applications, to give equal consideration to the developmental and environmental uses of the waterway on which a project is located. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

100. The final EA for the project and this order contain background information, analysis of effects, and support for related license articles. I conclude, based on the record for this proceeding, including the EA and the comments thereon, that licensing the Dorena Lake Dam Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if constructed, operated, and maintained in accordance with the requirements of this license.

101. Based on the staff's independent review and evaluation of the Dorena Lake Dam Project, recommendations from resource agencies and other stakeholders, and the No-Action Alternative, as documented in the EA, I have selected the proposed Dorena Lake Dam Project, with staff-recommended measures, including mandatory conditions, and find that it is best adapted to a comprehensive plan for improving or developing the Row River.

102. I selected this alternative because: (1) issuance of an original license will serve to provide a beneficial, dependable source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the 8.3 MW of capacity from renewable resources may offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution.

LICENSE TERM

103. Section 6 of the FPA⁶⁴ provides that hydroelectric licenses shall be issued for a period not to exceed 50 years. It is Commission policy to issue a 50-year license for a

⁶³16 U.S.C. §§ 797(e) and 803(a)(1) (2006).

⁶⁴ 16 U.S.C. § 799 (2006).

project located at a federal dam.⁶⁵ Accordingly, I will issue this license for a term of 50 years.

The Director orders:

(A) This license is issued to Symbiotics, LLC (licensee) for a period of 50 years, effective the first day of the month in which this order is issued, to construct, operate, and maintain the Dorena Lake Dam Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, described in the project description and the project boundary discussion of this order.

(2) Project works consisting of: (a) a new 9-foot-diameter steel pipe (penstock), approximately 350 feet long, extending from the reservoir through the north dam abutment, bifurcating into two penstocks at the powerhouse; (2) a new 10-foot-long by 12-foot-wide siphon house, near the existing spillway, with siphon equipment and shutoff valve at the apex of the penstock, for directing flow to the generators or to close off flow from the penstock; (3) a new 40-foot-long by 50-foot-wide concrete powerhouse, near the existing spillway stilling basin, 250 feet downstream from the concrete section of the dam, with one 3.8-MW horizontal-shaft, Kaplan-type generating unit and one 4.5-MW vertical shaft, Francis-type generating unit, having a total installed capacity of 8.3 MW; (4) an approximately 100-foot-long by 45-foot-wide new concrete-lined channel (tailrace) to discharge flows into the river channel immediately below the existing stilling basin; (5) a 1-inch-spaced steel bar fish tailrace barrier, approximately 45 feet long by 16 feet high, to prevent entrainment of fish moving upstream toward the reservoir from the Row River; (6) a new 15-kilovolt transmission line approximately 500 feet long connecting to the PacifiCorp distribution system; (7) a proposed approximately 200-foot-long by 25-foot-wide access road; and (8) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibit A shown below:

Exhibit A: The following sections of exhibit A of the license application filed on September 9, 2004:

⁶⁵ See *City of Danville, Virginia*, 58 FERC ¶ 61,318 at 62,020 (1992).

Section A-2, pages A-1 through A-4, entitled "Proposed Modifications and New Facilities," and section A-4, page A-4, entitled "Description of Transmission Lines."

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibit A described above is approved and made part of the license. The exhibit F and G drawings filed as part of the application for license do not conform to Commission regulations as set forth in 18 CFR § 4.39, § 4.41, and § 4.61, and are not approved.

(D) This license is subject to the certification submitted by the Oregon Department of Environmental Quality under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1431(a)(1) (2006), as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the incidental take terms and conditions of the biological opinion submitted by the U.S. Department of Commerce, National Marine Fisheries Service under section 7 of the Endangered Species Act, as those terms and conditions are set forth in Appendix B to this order.

(F) This license also is subject to the articles set forth in Form L-2 (October 1975), entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Lands of the United States," and to the following additional articles:

Article 201. Administrative Annual Charges. The licensee shall pay the United States annual charges, effective as of the date of commencement of project construction, and as determined in accordance with the provisions of the Commission's regulations in effect from time to time for the purposes of :

(1) reimbursing the United States for the cost of administration of Part 1 of the Federal Power Act. The authorized installed capacity for that purpose is 8.3 megawatts.

(2) recompensing the United States for the use, occupancy, and enjoyment of 0.0046 acre of its lands for transmission line right-of-way; and

(3) recompensing the United States for the utilization of surplus water or water power from a government dam.

Article 202. Exhibit F Drawings. Within 90 days of the effective date of the license, the licensee shall file, for Commission approval, revised Exhibit F drawings

showing the project features necessary for operation and maintenance of the project. The Exhibit F drawings must comply with sections 4.39, 4.41 and 4.61 of the Commission's regulations.

Article 203. Exhibit G Drawings. Within 90 days of the effective date of the license, the licensee shall file, for Commission approval, revised Exhibit G drawings enclosing within the project boundary all principal project works necessary for operation and maintenance of the project. The Exhibit G drawings must comply with sections 4.39, 4.41, and 4.61 of the Commission's regulations.

Article 204. Amortization Reserve. Pursuant to section 10(d) of the FPA, after the first 20 years of operation of the project under license, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated after the first 20 years of operations under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account at the end of each fiscal year. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year after the first 20 years of operation under the license, the amount of that deficiency shall be deducted from the amount of any surplus earnings subsequently accumulated, until absorbed. One-half of the remaining surplus earnings, if any, cumulatively computed, shall be set aside in the project amortization reserve account. The amounts established in the project amortization reserved account shall be maintained until further order of the Commission.

The annual specified reasonable rate of return shall be the sum of the annual weighted costs of long-term debt, preferred stock, and common equity, as defined below. The annual weighted cost for each component of the reasonable rate of return is the product of its capital ratio and cost rate. The annual capital ratio for each component of the rate of return shall be calculated based on an average of 13 monthly balances of amounts properly includable in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for long-term debt and preferred stock shall be their respective weighted average costs for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. Headwater Benefits. If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater

improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 301. Start of Construction. The licensee shall commence construction of the Dorena Lake Dam Project works within two years from the issuance date of the license and shall complete construction of the project within five years from the issuance date of the license.

Article 302. Contract Plans and Specifications. At least 60 days prior to the start of construction, the licensee shall submit one copy of its plans and specifications and supporting design document to the Commission's Division of Dam Safety and Inspections (D2SI)--Portland Regional Engineer, and two copies to the Commission (one of these shall be a courtesy copy to the Director, D2SI). The submittal must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI--Portland Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

The Soil Erosion and Sediment Control Plan required by this article shall include at a minimum all of the Best Management Practices and environmental measures included as items 1.a through 1.v of Appendix B to this order, and the following additional measures: (1) a cofferdam shall be utilized at all excavation sites; (2) all topsoil and spoil materials shall be isolated; (3) a tarpaulin shall be maintained over the topsoil stockpile when warranted by weather conditions to prevent wind erosion; (4) all topsoil shall be replaced following construction; (5) sedimentation basins shall be created; and (6) a written record of construction site inspections after storm events shall be maintained.

The licensee shall prepare the Soil Erosion and Sediment Control Plan after consultation with the U.S. Army Corps of Engineers, Bureau of Land Management, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Oregon Department of Environmental Quality, and Oregon Department of Fish and Wildlife. The Soil Erosion and Sediment Control Plan shall include copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before submitting it, along with the other documents required by this article, to D2SI—Portland Regional Engineer and the Commission. If the licensee does not adopt an agency recommendation concerning the Soil Erosion and

Sediment Control Plan, the plan shall include the licensee's reasons, based on project-specific information.

Article 303. *As-built Drawings.* Within 90 days of completion of all construction activities authorized by this license, the licensee shall file for Commission approval revised exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's Division of Dam Safety and Inspections (D2SI)--Portland Regional Engineer, the Director, D2SI, and the Director, Division of Hydropower Administration and Compliance.

Article 304. *Project Financing Plan.* At least 90 days before starting project construction, the licensee shall file, for Commission approval, three copies of a project financing plan. The plan must show that the licensee has acquired the funds, or commitment for funds, necessary to construct the project in accordance with this license. The licensee shall not start any project construction or ground-disturbing activities that are inseparably associated with the project, before the project financing plan is approved.

Article 305. *Facility Design and Construction.* The design and construction of those permanent and temporary facilities, including reservoir impounding cofferdams and deep excavations, that would be an integral part of, or that could affect the structural integrity or operation of the Government project shall be done in consultation with and subject to the review and approval of the Corps' Portland District Engineer. The Corps' review of the cofferdams will be in addition to the licensee's review and approval of the final plans, and shall in no way relieve the licensee of responsibility and liability regarding satisfactory performance of the cofferdams. Within 90 days from the issuance date of the license, the licensee shall furnish the Corps' Portland District Engineer and the Commission's Division of Dam Safety and Inspections--Portland Regional Engineer, a schedule for submission of design documents and the plans and specifications for the project. The schedule shall provide sufficient time for review and approval by the Corps. If the schedule does not afford sufficient review and approval time, the licensee, upon request of the Corps, shall meet with the Corps' Portland District Engineer and the Commission's staff to revise the schedule accordingly.

Article 306. *Review of Contractor Designs.* The licensee shall review and approve the design of contractor-designed cofferdams and deep excavations, other than those approved according to Article 305, prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design. At least 30 days prior to start of construction of the cofferdam, the licensee shall file with the Director, Division of Dam Safety and Inspections, with a copy to the Commission's Portland Regional Engineer and the Corps' Portland District Engineer, one copy of the approved cofferdam construction drawings and specifications and a copy of the letter(s) of approval.

Article 307. Agreement with the Corps. The licensee shall, within 90 days from the issuance date of the license, enter into an agreement with the Corps' Portland District Engineer to coordinate its plans for access to and site activities on lands and property administered by the Corps so that the authorized purposes, including operation of the Federal facilities, are protected. In general, the agreement shall not be redundant with the Commission's requirements contained in this license, shall identify the facility, and the study and construction activities, as applicable, and terms and conditions under which studies and construction will be conducted. The agreement shall be mainly composed of reasonable arrangements for access to the Corps site to conduct studies and construction activities, such access rights to be conditioned by the Corps as may be necessary to protect the federally authorized project purposes and operations. Should the licensee and the Corps fail to reach an access agreement, the licensee shall refer the matter to the Commission for resolution.

Article 308. Periodic and Continuous Inspections by the Corps. The construction, operation and maintenance of the project works that, in the judgment of the Corps may affect the structural integrity or operation of the Corps project, shall be subject to periodic or continuous inspections by the Corps. Any construction, operation, and maintenance deficiencies or difficulties detected by the Corps' inspection shall be immediately reported to the Division of Dam Safety and Inspections (D2SI)--Portland Regional Engineer. Upon review, the D2SI--Portland Regional Engineer shall refer the matter to the licensee for appropriate action. In cases when construction, operation, or maintenance practices or deficiencies may create a situation posing imminent danger to the structural integrity and safety of the Corps' project, the Corps inspector has the authority to stop construction or maintenance while awaiting the resolution of the problem. The licensee shall immediately inform the D2SI--Portland Regional Engineer of the circumstances surrounding the cessation of construction, operation, or maintenance activities. The licensee shall not resume construction, operation, or maintenance activities until notified by the D2SI – Portland Regional Engineer that the problem or situation has been resolved.

Article 309. Operating Plan. The licensee shall, at least 60 days prior to start of construction, submit for approval a regulating plan to the Corps, describing (a) the designed mode of hydropower operation, (b) reservoir flow diversion and regulation requirements for operation of the Corps project during construction as established by the Corps, and (c) integration of the operation of the hydroelectric facility into the Corps' emergency action plan. In addition, the licensee, prior to start of power plant operation, shall enter into an operating Memorandum of Agreement (MOA) with the Corps describing the detailed operation of the powerhouse acceptable to the Corps. The MOA shall specify any restrictions needed to protect the primary purposes of the Corps project for navigation, recreation, water quality, and flood control. The Division of Dam Safety and Inspection (D2SI)--Portland Regional Engineer shall be invited to attend meetings regarding the agreement. The MOA shall be subject to revision by mutual consent of the

Corps and licensee as experience is gained by actual project operation. Should the licensee and the Corps fail to reach an agreement, the matter will be referred to the Director, Office of Energy Projects for resolution. Copies of the regulating plan and signed MOA between the Corps and the licensee and any revision thereof shall be furnished to the Director, Office of Energy Projects, D2SI and the D2SI--Portland Regional Engineer.

Article 310. No Claim. The licensee shall have no claim under this license against the United States arising from the effect of any changes made in the operation or reservoir levels of the Corps project.

Article 311. Corps' Written Approval. The licensee shall provide the Division of Dam Safety and Inspection (D2SI)--Portland Regional Engineer two copies of all correspondence between the licensee and the Corps. The D2SI--Portland Regional Engineer shall not authorize construction of any project work until the Corps' written approval of construction plans and specifications has been received by the D2SI - Portland Regional Engineer.

Article 401. Scheduling and Reporting Requirements.

(a) Requirement to file plans for Commission approval and requirement to consult

Various conditions of this license required by the appendices require the licensee to prepare plans and drawings for environmental measures. The following table indicates the agencies that the licensee shall consult with before preparing the plans and drawings along with the deadline for filing the plans and drawings with the Commission for approval.

Condition	Plan	Consulting Agencies	Due Date
Appendix A, condition 3	Dissolved oxygen and total dissolved gas monitoring plan	Oregon Department of Environmental Quality, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service	Within one year of license issuance
Appendix A , condition 5	Water quality monitoring equipment malfunction prevention	Oregon Department of Environmental Quality	No later than three months prior to start of project operations.

	and response plan		
Appendix A, condition 7	Hazardous substances and spill prevention and cleanup plan	Oregon Department of Environmental Quality, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service	Within three months of license issuance
Appendix A, condition 9	Adaptive water quality monitoring and reporting plan	Oregon Department of Environmental Quality, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service	Within one year of license issuance
Appendix B, term and condition 3	Tailrace barrier screen design	U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service	Within one year of license issuance

In addition to an implementation schedule, the licensee shall include with each plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing each plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information.

The Commission reserves the right to require changes to the plans. Implementation of each plan and associated schedule shall not begin until the plan and schedule are approved by the Commission. Upon Commission approval, the licensee shall implement each plan and schedule, including any changes required by the Commission.

(b) Requirement to file amendment applications

Various conditions of this license found in the appendices contemplate unspecified long-term changes to approved project operations, requirements, or facilities for the purpose of ensuring water quality standard compliance and protection of listed species. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. The conditions are listed below.

Condition	Description
Appendix A, condition 3	Modifications to approved dissolved oxygen and total dissolved gas management plan
Appendix A, condition 5	Modifications to approved water quality monitoring equipment malfunction prevention and response plan
Appendix A, condition 7	Modifications to approved hazardous substances and spill prevention and cleanup plan
Appendix A, condition 9	Modifications to approved adaptive water quality monitoring and reporting plan
Appendix B, term and condition 4	Measures taken to reduce the likelihood of ramping rate exceedances

(c) Requirement to notify Commission of planned and unplanned deviations from license requirements

Various conditions of this license found in the Oregon Department of Environmental Quality's water quality certification (Appendix A) would allow the licensee to modify project operations under certain conditions. The Commission shall be notified prior to implementing such modifications, if possible, or in the event of an emergency, as soon as possible, but no later than 10 days after each such incident. Each such condition is listed below.

Condition	Description
Appendix A, condition 4	Project shutdown due to dissolved oxygen or total dissolved gas violations
Appendix A, condition 6	Project shutdown due to water quality monitoring equipment malfunctions

Article 402. Operation and Maintenance Erosion and Sediment Control Plan. The Soil Erosion Control Plan, filed on November 24, 2004, as Appendix M of Addendum No. 2 and consisting of 20 pages and five figures, is approved and made part

of this license insofar as it relates to project operation and maintenance, including landscaping. The plan shall be implemented with the following additions: (1) monitoring of revegetation success annually for five years in the spring and fall, and every fifth year thereafter for the term of the license; (2) submittal of an annual written report of revegetation success to the U.S. Army Corps of Engineers (Corps), U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), Oregon Department of Environmental Quality (Oregon DEQ), and the Oregon Department of Fish and Wildlife (Oregon DFW) within three months of the final survey for a given year; (3) if native species do not become established within three years after initial revegetation efforts, consultation with the Corps, FWS, NMFS, Oregon DEQ, and Oregon DFW to identify and implement additional contingency measures; and (4) filing with the Commission, within three months of the final survey for the fifth year, a summary report of the success of the first five years of revegetation efforts, including a description of any remedial measures undertaken in response to item (3) above.

Article 403. *Turbine Air Admission System.* The licensee shall include in the Dissolved Oxygen and Total Dissolved Gas Management Plan required by Ordering Paragraph (D) and Appendix A, condition 3, a provision to install, operate, and maintain a Turbine Air Admission System within the project powerhouse for purposes of enhancing dissolved oxygen concentrations downstream of the project.

Article 404. *Water Quality Protection.* The licensee shall incorporate into the adaptive water quality monitoring and reporting plan required by condition 9 of the water quality certification (Appendix A), the following additional measures:

- (1) provisions to monitor turbidity, water temperature, dissolved oxygen, and mercury concentrations prior to construction;
- (2) provisions to monitor mercury concentrations and water temperature for two years following commencement of project operations;
- (3) a provision to define the entrainment and degassing zone to assist in determining the effect of the project on TDG; and
- (4) a provision to conduct all in-water construction in Dorena Lake behind a bulkhead when the lake is at its lowest level, and conduct all work in the tailrace area within a cofferdam.

In addition to an implementation schedule, the licensee shall include with the plan documentation of consultation with the Oregon Department of Environmental Quality, U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service; copies of comments and recommendations on the completed plan after it has been prepared and provided to the

agencies; and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan and associated schedule shall not begin until the plan and schedule are approved by the Commission. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 405. Injury and Mortality Notification. In addition to the notification requirements contained in Appendix B, term and condition 5.b, the licensee shall also notify the Commission within two days of observance of dead or injured salmon or steelhead adults or juveniles.

Article 406. Ramping Rates. The licensee shall operate the project to comply with the ramping operations of the U.S. Army Corps of Engineers (Corps) or, if more protective (i.e., if a lower ramping rate), then ramp no more than 1 inch per hour from March 1-September 30, and 2 inches per hour from October 1-February 28/29.

The ramping rate requirements may be temporarily modified if required by operating emergencies beyond the control of the licensee; for short periods upon agreement among the licensee, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Oregon Department of Environmental Quality, or as directed by the Corps.

Article 407. Ramping Rate Effectiveness Evaluation. Within one year of license issuance, the licensee shall file for Commission approval a ramping rate evaluation plan for purposes of evaluating the effectiveness of the ramping rates required by Article 406 at protecting aquatic resources downstream of Dorena Lake Dam. The plan shall include provisions to file with the Commission (1) documentation of any identified adverse effects on aquatic resources due to the ramping rates required by Article 406 and (2) proposed measures to avoid any future adverse effects.

In addition to an implementation schedule, the licensee shall include with the plan documentation of consultation with the U.S. Army Corps of Engineers, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, and U.S. Fish and Wildlife Service; copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies; and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the

plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan and associated schedule shall not begin until the plan and schedule are approved by the Commission. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 408. Operational Compliance Monitoring Plan. Within one year of license issuance, the licensee shall file with the Commission, for approval, an operational compliance monitoring plan. The plan at a minimum shall include:

(1) provisions to install a gaging station and monitor streamflows at 15-minute intervals at a location approximately 300 feet downstream of the dam; correlate the stage-discharge relationship of the gaging station with that of U.S. Geological Survey gage no. 14155500; and install radio, telephone, or other telemetry systems to provide recording and transmission of 15-minute streamflow data to the project control room and the public via the Internet;

(2) provisions to prepare an annual monitoring report that includes any conflicts between recorded flow releases and the U.S. Army Corps of Engineers (Corps) flow change orders; flow records of every ramping rate event to ensure compliance with the ramping rates stipulated in Article 406; the frequency of ramping rate exceedances (if any); documentation of any known effects on aquatic resources due to any ramping rate exceedances; the margin of error for the recorded information; and proposed measures to avoid any future exceedances (if any);

(3) provisions to file the annual monitoring report and recommendations (if any) with the Commission, for approval, and to provide to the Corps and the National Marine Fisheries Service (NMFS), and other agencies as requested, the annual monitoring report by March 1 of each license year;

(4) a provision to notify the Commission, Oregon Department of Fish and Wildlife, NMFS, and U.S. Fish and Wildlife Service as soon as possible, but no later than 24 hours, after an unanticipated event or emergency situation where fish and wildlife are being harmed;

In addition to an implementation schedule, the licensee shall include with the plan, documentation of consultation with the Corps, Oregon Water Resources Department, Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and U.S. Geological Survey; copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies; and specific descriptions of how the agencies' comments are accommodated by

the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan and associated schedule shall not begin until the plan and schedule are approved by the Commission. Upon Commission approval, the licensee shall implement the plan and schedule, including any changes required by the Commission.

Article 409. Notification of Unanticipated Events or Emergencies. The licensee shall notify the Commission, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the Oregon Department of Fish and Wildlife of any unanticipated or emergency situations at the project where fish and wildlife or their habitats are being harmed as soon as possible but no later than 24 hours after becoming aware of such harm.

Article 410. Reservation of Authority to Prescribe Fishways. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretaries of the Interior and/or Commerce pursuant to section 18 of the Federal Power Act.

Article 411. Columbia River Basin Fish and Wildlife Program. The Commission reserves the authority to order, upon its own motion or upon the recommendation of federal and state fish and wildlife agencies, affected Indian Tribes, and the Northwest Power and Conservation Council, alterations of project structures and operations to take into account to the fullest extent practicable the regional fish and wildlife program developed and amended pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

Article 412. Wildlife Resource Protection. The licensee shall implement the following measures to minimize the effects of project construction on wildlife resources: (1) replacing all riprap and boulder habitats that are disturbed by project construction activities to restore reptile habitat; (2) completing construction in a timely manner to avoid prolonged disruption of wildlife in the area; (3) avoiding leaving trenches or pits overnight that might trap wildlife; and (4) limiting construction activities in the transmission line corridor to avoid disturbance to denning western rattlesnakes.

Within three years of license issuance, the licensee shall file a report with the Commission and the U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Army Corps of Engineers, and the Oregon Department of Fish and Wildlife detailing the results of the above measures for the protection of vegetation and wildlife resources and provide specific details for each of the required measures, including the results of any

habitat restoration efforts.

Article 413. Noxious Weed Management. Within one year of license issuance, the licensee shall file with the Commission, for approval, a plan to manage noxious weeds at the project, including replacing 5,533 square feet of habitat near the north abutment of the dam by replacing noxious weeds with appropriate native species, and controlling noxious weeds in other areas.

The plan shall be prepared after consultation with the U. S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Bureau of Land Management, and Oregon Department of Fish and Wildlife. The filing shall include a monitoring schedule, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 414. Northwestern Pond Turtle Protection. Within six months of license issuance, the licensee shall file with the Commission, for approval, a plan to minimize project construction effects on northwestern pond turtle. The plan shall be prepared after consultation with the U. S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Oregon Department of Fish and Wildlife. The filing shall include documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 415. Bald Eagle and Northern Spotted Owl Management. The Bald Eagle and Northern Spotted Owl Management Plan filed on June 11, 2008 and consisting of 10

pages and four figures is approved and made part of this license.

Article 416. Avian Protection Plan. Within six months of license issuance, the licensee shall file with the Commission, for approval, an avian protection plan to protect birds from collision hazards and electrocution caused by above-ground portions of the project transmission line. The plan shall provide site-specific practices to reduce the potential for adverse effects on bald eagles and other birds in accordance with the following raptor protection guidelines: *Avian Protection Plan Guidelines: A Joint Document prepared by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service*, and *APLIC's Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*, or the most current editions of these documents.

The plan shall be prepared after consultation with the U. S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Oregon Department of Fish and Wildlife. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 417. Cultural Resource Protection. The licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, shall consult with the Oregon State Historic Preservation Officer (SHPO).

If the licensee discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities at the project, the licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the properties and consult with the SHPO.

If the identified cultural resource is eligible for the National Register of Historic Places, the licensee shall file for Commission approval a historic properties management plan (plan) prepared by a qualified cultural resource specialist after having consulted with the SHPO. In crafting the plan, the licensee will use the Advisory Council on Historic

Preservation and Commission's *Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects* (dated May 20, 2002). The plan shall include the following items: (1) a description of each discovered property indicating whether it is listed on or eligible to be listed on the National Register of Historic Places; (2) a description of the potential effect on each discovered property; (3) proposed measures for avoiding or mitigating effects; (4) documentation of the nature and extent of consultation; and (5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

The licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a property discovered during construction, until informed that the requirements of this article have been fulfilled.

Article 418. *Bureau of Land Management Special-Use Authorization.* Within six months following the date of issuance of this license, and before commencing project construction or any ground-disturbing activity, the licensee shall file the special-use right-of-way authorization for the occupancy and use of project lands managed by the United States Bureau of Land Management.

Article 419. *Use and Occupancy.* (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article.

If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said

facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements.

Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction; (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline.

To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69 kilovolt or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that

discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must submit a letter to the Director, Office of Energy Projects, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G drawings would be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(G) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(H) This order is final unless a request for rehearing is filed within 30 days of the date of its issuance, as provided in section 313 of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

J. Mark Robinson
Director
Office of Energy Projects

Form L-2
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR
UNCONSTRUCTED MAJOR PROJECT AFFECTING
LANDS OF THE UNITED STATES**

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may

direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any features or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties

shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the state and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character and locations of gages, meters, or other measuring devices, and the method of operation

thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per

specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal Agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for

Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statues and regulations.

Article 21. Timber on lands of the United State cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee: Provided, That timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 22. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 23. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial,

used by the Licensee in the operation of the project works covered by the license.

Article 24. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 25. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 26. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 27. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 28. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction

of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 29. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of July 31, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice and opportunity for hearing.

Article 30. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 31. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 32. The terms and conditions expressly set forth in the license shall not be

construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

APPENDIX A

Clean Water Act § 401 Certification Conditions For the Operation of Dorena Dam Hydroelectric Project (FERC No. 11945) Willamette River Basin Lane County, Oregon January 18, 2008

Upon Federal Energy Regulatory Commission (FERC) issuance of a license for the Dorena Dam Hydroelectric Project (Project), Symbiotics, LLC (Symbiotics) shall comply with the following § 401 certification conditions:

1. Project Construction: Upon applying for a federal permit or permits for Project construction, including a dredge and fill permit from the U.S. Army Corps of Engineers (Corps) pursuant to Section 404 of the Clean Water Act (§ 404 permit), Symbiotics shall provide written notice to ODEQ of such application and shall also apply to ODEQ for a § 401 certification for Project construction activities in accordance with OAR 340-48.
2. Run-of-Release Operations: Throughout the life of the FERC license, Symbiotics shall operate its hydroelectric facilities in a “run-of-release” mode, whereby Symbiotics will neither cause deviation from requirements dictated by the Corps for magnitude, frequency, and ramping rates of streamflow, nor adversely impact the Corps’ management of water quality being discharged from Dorena Dam. Symbiotics shall operate its hydroelectric facilities in a manner that does not interfere with the Corps’ efforts to implement modified operations or structures at Dorena Dam and Reservoir to comply with Total Maximum Daily Load implementation or management plans for temperature or other water quality parameters approved by ODEQ.
3. Dissolved Oxygen and Total Dissolved Gas Management Plan: Within 12 months of FERC license issuance, Symbiotics shall submit for ODEQ approval a proposed adaptive Dissolved Oxygen and Total Dissolved Gas Management Plan. Upon ODEQ approval, Symbiotics shall implement the plan. The plan shall specify Symbiotics’:
 - A. Data collection and reporting methods and procedures;
 - B. Procedures for reviewing data to identify any Project-related contributions to dissolved oxygen and total dissolved gas violations of the dissolved oxygen, total dissolved gas and antidegradation standards;
 - C. Corrective measures that will be implemented to prevent additional dissolved oxygen, total dissolved gas, or antidegradation violations;
 - D. Plan and schedule for implementation of corrective measures;
 - E. Procedures for notifying ODEQ of any violations, subsequent shutdowns, and recommencement of operations following implementation of corrective measures.

4. Project Shutdown due to Dissolved Oxygen or Total Dissolved Gas Violations: If either ODEQ or Symbiotics determine that Project operations are contributing to downstream dissolved oxygen or total dissolved gas violations of the dissolved oxygen standard, total dissolved gas standard or the antidegradation standard, Symbiotics shall immediately discontinue Project operations. Recommencement of operations shall not take place until corrective measures have been successfully implemented.
5. Monitoring Equipment Malfunction Prevention and Response Plan: No later than three (3) months prior to the commencement of Project operation, Symbiotics shall submit for ODEQ approval a Monitoring Equipment Malfunction Prevention and Response Plan to address water quality monitoring equipment malfunctions that might occur during Project operations. Upon ODEQ approval, Symbiotics shall implement the plan. The plan shall specify the following:
 - A. Procedures and measures that will be implemented to prevent monitoring equipment malfunctions;
 - B. Procedures for identifying the occurrence and nature of any monitoring equipment malfunctions that may occur;
 - C. Plan, schedule, and corrective measures that will be implemented to address monitoring equipment malfunctions;
 - D. Procedures for notifying ODEQ of the occurrence and nature of monitoring equipment malfunctions, corrective measures implemented, and recommencement of operation.
 - E. Procedures and timelines for Project shutdown as may be necessitated by Condition 6, below;
 - F. Plan and schedule for maintenance and calibration of field test equipment.
6. Project Shutdown due to Monitoring Equipment Malfunctions: Symbiotics shall notify ODEQ immediately in the event of field instrumentation failure. Upon evaluation of the condition, ODEQ may direct Symbiotics to suspend operation of the Project until instrumentation may be repaired or replaced. Symbiotics shall receive written authorization from ODEQ prior to resuming Project operations. ODEQ may condition authorization to restart the facility on a review of the response to the malfunction which provides ODEQ with reasonable assurance that an adequate remedial solution has been implemented.
7. Symbiotics shall maintain and implement the Hazardous Substances and Spill Prevention and Cleanup Plan (June 2007) or future ODEQ-approved revisions thereof. In the event of a spill or release or threatened spill or release to the Row River, Symbiotics shall immediately implement the plan and notify the Oregon Emergency Response System (OERS) at 1-800-452-0311.
8. Prior to operating the Project, Symbiotics shall obtain all necessary NPDES and state permits and authorizations.
9. Operations - Water Quality Monitoring and Reporting
Within 12 months of FERC license issuance, Symbiotics shall submit for ODEQ approval a proposed Adaptive Water Quality Monitoring and Reporting Plan (AWQMRP). Upon ODEQ approval, Symbiotics shall implement the plan. The plan

shall identify that ODEQ may require modifications to the AWQMRP as it deems appropriate to assess or confirm water quality standard compliance. Symbiotics may request modifications to the AWQMRP, subject to ODEQ written approval. All monitoring shall be performed in accordance with an ODEQ-approved Quality Assurance Plan.

10. General Conditions

A. § 401 Certification Modification

ODEQ, in accordance with OAR Chapter 340, Division 48, and, as applicable, 33 USC 1341, may modify this Certification to add, delete, or alter Certification conditions as necessary and feasible to address:

- i. Adverse or potentially adverse Project effects on water quality or designated beneficial uses that did not exist or were not reasonably apparent when this Certification was issued;
- ii. TMDLs;
- iii. Changes in water quality standards;
- iv. Any failure of Certification conditions to protect water quality or designated beneficial uses as expected when the Certification was issued; or
- v. Any change in the Project or its operations that was not contemplated by this Certification that might adversely affect water quality or designated beneficial uses.

B. Project Changes

Symbiotics shall notify ODEQ of any change in ownership or Project scope. Symbiotics shall obtain ODEQ review and approval before undertaking any change to the Project that might significantly affect water quality, including changes to Project structures, construction, operations, and flows.

C. Project Repair or Maintenance

Symbiotics shall obtain ODEQ review and approval before undertaking Project repair or maintenance activities that might significantly affect water quality. ODEQ may, at Symbiotics' request, approve specified repair and maintenance activities on a periodic or ongoing basis.

D. Project Inspection

Symbiotics shall allow ODEQ such access as necessary to inspect the Project area and Project records required by this Certification at reasonable times as necessary to monitor compliance with § 401 certification conditions.

D. Posting of § 401 Certification

Symbiotics shall post a copy of these certification conditions in a prominent location at the Dorena Dam Powerhouse.

E. Water Quality Standards Compliance

Notwithstanding the conditions of this certification, no wastes shall be discharged and no activities shall be conducted which will violate state water quality standards.

G. Project Specific Fees

In accordance with ORS 543.080, Symbiotics shall pay a Project-specific fee for ODEQ's costs of overseeing implementation of the adaptive management conditions of this Certification. The fee shall be \$8,000.00 annually (2008 dollars adjusted according to the formula, below), made payable to "State of Oregon, Department of Environmental Quality", and due on July 1 of each year after issuance of the FERC License. Symbiotics shall pay an initial prorated payment within 60 days of license issuance for the period from the date of license issuance to the first July 1 that follows license issuance. ODEQ and Symbiotics shall review the need, if any, to modify, extend, or terminate the fee, in accordance with ORS 543.080. Symbiotics shall continue to pay any Project-specific fee required after such review.

$$AD = D \times (CPI-U)/(CPI-U\text{-January } 2008)$$

Where:

AD = Adjusted dollar amount payable to ODEQ.

D = Dollar amount prior to adjustment.

CPI-U = the most current published version of the Consumer Price Index-Urban.

The CPI-U is published monthly by the Bureau of Labor Statistics of the federal Department of Labor. If that index ceases to be published, any reasonably equivalent index published by the Bureau of Economic Analysis may be substituted by written agreement between ODEQ and Symbiotics, LLC.

APPENDIX B

U.S. Department of Commerce, National Marine Fisheries Service Biological Opinion, Terms and Conditions

1. To implement reasonable and prudent measure #1, FERC must ensure that best management practices for construction activities to control sediment, disturbance, and other potential detrimental effects to listed salmonids and critical habitat, described below, are followed.
 - a. Minimize areas impacted by construction. Construction impacts will be confined to the minimum area necessary to complete the project. Boundaries of clearing limits associated with site access and construction will be marked to avoid or minimize disturbance of riparian vegetation, wetlands and other sensitive sites.
 - b. Alteration or disturbance of the streambanks and existing riparian vegetation will be minimized to the greatest extent possible.
 - c. Mechanical removal of undesired vegetation and root nodes is permitted, but herbicides may be used as part of habitat restoration work, provided no herbicide will be applied within 100 ft of the edge of bank.
 - d. Except within the exact footprint of the construction zone, all existing vegetation within 150 ft of the edge of bank should be retained, to the greatest extent possible.
 - e. In-water work. Work below the bankfull elevation⁶⁶ will be completed during the proposed in-water work period from July 1 to October 31, unless otherwise approved in writing by NMFS. Symbiotics must notify NMFS 1 week before in-water work begins and again 1 day prior to the anticipated start, and within 1 week after in-water work is completed.
 - f. Cessation of work. Construction project activities will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage. All materials, equipment, and fuel must be removed if flooding of the area is expected to occur within 24 hours.
 - g. Fish screens. All water intakes used for a construction project, including pumps used to isolate an in-water work area, will have a fish screen installed,

⁶⁶ “Bankfull elevation” means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such as average bank height, scour lines and vegetation limits.

operated, and maintained according to NMFS' fish screen criteria. This clause does not authorize screens for any permanent use.

- h. Construction activities associated with habitat enhancement and erosion control measures must meet or exceed best management practices and other performance standards contained in the applicable state and Federal permits.
- i. Pollution and Erosion Control Plan. Prepare, with review and approval by NMFS, and carry out a Pollution and Erosion Control Plan to prevent pollution caused by survey, construction, operation, and maintenance activities. NMFS may approve a plan that meets the intent of this condition but does not specifically include each requirement, if the licensee so requests and demonstrates that the alternative plan sufficiently prevents pollution and erosion caused by project activities. The Plan will be available for inspection upon request by NMFS.
- j. Plan Contents. The Pollution and Erosion Control Plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
 - 1. The name and address of the party(s) responsible for accomplishment of the Pollution and Erosion Control Plan.
 - 2. Practices to prevent erosion and sedimentation associated with access roads, decommissioned roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, and staging areas.
 - 3. Practices to confine, remove, and dispose of excess concrete, cement, and other mortars or bonding agents, including measures for washout facilities.
 - 4. A description of any regulated or hazardous products or materials that will be used for the Project, including procedures for inventory, storage, handling, and monitoring.
 - 5. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
 - 6. Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

7. Erosion control materials (e.g., silt fence, straw bales, aggregate) in excess of those installed must be available on site for immediate use during emergency erosion control needs.
 8. Temporary erosion and sediment controls will be used on all exposed slopes during any hiatus in work exceeding 7 days.
- ii. Inspection of erosion controls. During construction, the operator must monitor instream turbidity and inspect all erosion controls daily during the rainy season (October through May) and weekly during the dry season (June through September), or more often as necessary, to ensure the erosion controls are working adequately.⁶⁷
 1. If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.
 2. Remove sediment from erosion controls once it has reached one-third of the exposed height or capacity of the control.
 - j. Construction discharge water. Treat all discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows:
 - i. Water quality. Design, build, and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals, and other pollutants likely to be present.
 - ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities will not exceed 4 fps, and the maximum size of any aperture will not exceed one inch.

⁶⁷ “Working adequately” means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity-causing activity. This standard may be adjusted by NMFS based on review of the final water quality monitoring plan, and in coordination with Oregon Department of Environmental Quality and the licensee.

- iii. Spawning areas. Do not release construction discharge water within 300 ft upstream of spawning areas. Clean construction discharge may be released.
- iv. Pollutants. Do not allow pollutants, including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain, except cement or grout when abandoning a drill boring or installing instrumentation in the boring.
- v. Drilling discharge. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.
 - (1) All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.
 - (2) Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.
 - (3) When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (e.g., by pumping) to reduce turbidity when the sleeve is removed.
- k. Piling installation: Install temporary and permanent pilings as depicted on NMFS approved design drawings. Sound attenuation measures, including vibration dampeners, and unconfined or confined bubble curtains, will be used when impact driving steel pilings. Approval by NMFS of the measures is required before construction.
- l. Piling removal: If a temporary or permanent piling will be removed from water containing fish, the following conditions apply.
 - i. Dislodge the piling with a vibratory hammer.
 - ii. Once loose, place the piling onto the construction barge or other appropriate dry storage site.
 - iii. If a treated wood piling breaks during removal, either remove the stump by breaking or cutting 3 feet below the sediment surface or push the stump in to that depth, then cover it with a cap of clean substrate appropriate for the site.
- m. During completion of habitat enhancement activities, no pollutants of any kind (sewage, waste spoils, petroleum products, etc.) should come in contact

with the water body or wetlands nor their substrate below the mean high-high water elevation or 10-year flood elevation, whichever is greater.

- n. Treated wood.
 - i. Projects using treated wood that may contact flowing water or that will be placed over water where it will be exposed to mechanical abrasion or where leachate may enter flowing water will not be used, except for pilings installed following NMFS' guidelines.
 - ii. Visually inspect treated wood before final placement to detect and replace wood with surface residues and/or bleeding of preservative.
 - iii. Projects that require removal of treated wood will use the following precautions:
 - 1. Treated wood debris. Take care to insure that no treated wood debris falls into the water. If treated wood debris does fall into the water, remove it immediately.
 - 2. Disposal of treated wood debris. Dispose of all treated wood debris removed during a project, including treated wood pilings, at an upland facility approved for hazardous materials of this classification. Do not leave treated wood pilings in the water or stacked on the streambank.
- o. Preconstruction activity. Complete the following actions before significant alteration of the Project area:
 - i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands, and other sensitive sites beyond the flagged boundary. Construction activity or movement of equipment into existing vegetated areas must not begin until clearing limits are marked.
 - ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are on site:
 - 1. A supply of sediment control materials (e.g., silt fence, straw bales).
 - 2. An oil-absorbing, floating boom whenever surface water is present.
 - iii. Temporary erosion controls. All temporary erosion controls will be in place and appropriately installed downslope of project activity within the riparian buffer area until site rehabilitation is complete.
- p. Temporary access roads.

- i. Steep slopes. Do not build temporary roads mid-slope or on slopes steeper than 30 percent.
- ii. Minimizing soil disturbance and compaction. Low-impact, tracked drills will be walked to a survey site without the need for an access road. Minimize soil disturbance and compaction for other types of access whenever a new temporary road is necessary within 150 ft of a stream, water body, or wetland by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NMFS.
- iii. Temporary stream crossings.
 1. Do not allow equipment in the flowing water portion of the stream channel where equipment activity could release sediment downstream, except at designated stream crossings.
 2. Minimize the number of temporary stream crossings.
 3. Design new temporary stream crossings as follows:
 - a) Survey and map any potential spawning habitat within 300 ft downstream of a proposed crossing.
 - b) Do not place stream crossings at known or suspected spawning areas, or within 300 ft upstream of such areas if spawning areas may be affected.
 - c) Design the crossing to provide for foreseeable risks (e.g., flooding and associated bedload and debris) to prevent the diversion of stream flow out of the channel and down the road if the crossing fails.
 - d) Vehicles and machinery will cross riparian buffer areas and streams at right angles to the main channel wherever possible.
 4. Obliteration. When the project is completed, obliterate all temporary access roads, stabilize the soil, and revegetate the site. Abandon and restore temporary roads in wet or flooded areas by the end of the in-water work period.
- q. Vehicles and heavy equipment. Restrict use of heavy equipment as follows:

- i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (e.g., minimally sized, low ground pressure equipment).
- ii. Vehicle and material staging. Store construction materials and fuel, operate, maintain, and store vehicles as follows:
 1. To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored onsite.
 2. Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage, except for that needed to service boats, in a vehicle staging area placed 150 ft or more from any stream, water body, or wetland, unless otherwise approved in writing by NMFS.
 3. Inspect all vehicles operated within 150 ft of any stream, water body, or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by NMFS.
 4. Before activities begin and as often as necessary during construction activities, steam clean all equipment that will be used below the bankfull elevation until all visible external oil, grease, mud, and other visible contaminants are removed. Any washing of equipment must be conducted in a location that will not contribute untreated wastewater to any flowing stream or drainage area.
 5. Diaper all stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 ft of any stream, waterbody, or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream, water body, or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or water body.
 6. At the end of each work shift, vehicles must not be stored within or over the waterway.
- r. Site preparation. Conserve native materials for site rehabilitation.
 - i. If possible, leave native materials where they are found.
 - ii. If materials are moved, damaged, or destroyed, replace them with a functional equivalent during site rehabilitation.

- iii. Stockpile any large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site rehabilitation.
- s. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, or if the work area is less than 300 ft upstream of spawning habitats, completely isolate the work area from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NMFS.
- t. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling, and compacting) as quickly as possible.
 - i. Excavation. Material removed during excavation will only be placed in locations where it cannot enter sensitive aquatic resources. Whenever topsoil is removed, it must be stored and reused on site to the greatest extent possible. If riprap is used for protecting a culvert inlet or outlet, it will be class 350 metric or larger, and topsoil will be placed over the rock and planted with native woody vegetation.
 - ii. Drilling and sampling. If drilling, boring, or jacking is used, the following conditions apply.
 - 1. Isolate drilling operations from stream channels using a steel pile, sleeve, or other appropriate isolation method to prevent drilling fluids from contacting water.
 - 2. If it is necessary to drill through a bridge deck, use containment measures to prevent drilling debris from entering the stream channel.
 - 3. If directional drilling is used, the drill, bore, or jack hole will span the channel migration zone and any associated wetland or wetted stream channel.
 - 4. Sampling and directional drill recovery/recycling pits, and any associated waste or spoils, will be completely isolated from surface waters, offchannel habitats, and wetlands. All drilling fluids and waste will be recovered and recycled or disposed of to prevent future entry into flowing water.
 - 5. If a drill boring conductor breaks and drilling fluid or waste is visible in water or a wetland, all drilling activity will cease, pending written approval from NMFS to resume drilling.

- iii. Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work, unless construction will resume within 4 days.
- iv. Source of materials. Obtain boulders, rock, woody materials, and other natural construction materials used for the project outside the riparian buffer area. Spawning gravel for augmentation of spawning habitats must be washed (i.e. cleaned, rinsed rock) river rock, of suitable size for UWR spring Chinook spawning or for UWR winter steelhead spawning (as appropriate by location), and if possible, from a source within the local watershed.
- u. Stormwater management: Prepare and carry out a stormwater management plan for any project that will produce a new impervious surface or a land cover conversion that slows the entry of water into the soil. The plan must be available for inspection on request by NMFS.
 - i. Plan contents. The goal is to avoid and minimize adverse effects due to the quantity and quality of stormwater runoff for initial construction, and throughout the life of the project by maintaining or restoring natural runoff conditions. The plan will meet the following criteria and contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
 - 1. A system of management practices and, if necessary, structural facilities, designed to complete the following functions:
 - a. Minimize, disperse and infiltrate stormwater runoff onsite using sheet flow across permeable vegetated areas to the maximum extent possible without causing flooding, erosion impacts, or long-term adverse effects to groundwater.
 - b. Pretreat stormwater from pollution generating surfaces, including bridge decks, before infiltration or discharge into a freshwater system, as necessary to minimize any nonpoint source pollutant (e.g., debris, sediment, nutrients, petroleum hydrocarbons, metals) likely to be present in the volume of runoff predicted from a 6-month, 24-hour storm.
 - 2. Document completion of the following stormwater management activities according to a regular schedule for the operation, inspection and maintenance of all structural facilities and conveyance systems, in a log available for inspection on request by NMFS.
 - a. Inspect and clean each facility as necessary to ensure that the design capacity is not exceeded, heavy sediment discharges are

prevented, and whether improvements in operation and maintenance are needed.

- b. Promptly repair any deterioration threatening the effectiveness of any facility.
 - c. Post and maintain a warning sign on or next to any storm drain inlet that says, as appropriate for the receiving water, 'Dump No Waste - Drains to Ground Water, Streams, or Lakes.'
 - d. Only dispose of sediment and liquid from any catch basin in an approved facility.
- ii. Runoffs/discharge into a freshwater system. When stormwater runoff will be discharged directly into fresh surface water or a wetland, or indirectly through a conveyance system, the following requirements apply.
1. Maintain natural drainage patterns and, whenever possible, ensure that discharges from the project site occur at the natural location.
 2. Use a conveyance system comprised entirely of manufactured elements (e.g., pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.
 3. Stabilize any erodible elements of this system as necessary to prevent erosion.
 4. Do not divert surface water from, or increase discharge to, an existing wetland if that will cause a significant adverse effect to wetland hydrology, soils or vegetation.
 5. The velocity of discharge water released from an outfall or diffuser port may not exceed 4 feet per second.
 6. Waste anesthetic-laden water must be disposed of in accordance with applicable laws.
- v. Construction monitoring and reporting. FERC will ensure that the licensee submits an annual report to NMFS describing the status of Project construction and, if completed, the success in meeting the reasonable and prudent measures and associated terms and conditions of the Opinion. The report will include the following:
- i. Project identification.
 1. Project implementer name, project name, detailed description of the

project.

2. Project location by 5th or 6th field HUC and by latitude and longitude as determined from the appropriate U.S. Geological Survey 7-minute quadrangle map.
 3. Starting and ending dates for the work completed, or expected completion date for ongoing projects.
- ii. Photo documentation. Photo documentation of habitat conditions at the project site before, during, and after project completion.
1. Include general views and close-ups showing details of the project and project area, including pre- and post-construction.
 2. Label each photo with date, time, project name, photographer's name, and documentation of the subject activity.
- iii. Project data:
1. Work cessation. Dates work ceased because of high flows, if any.
 2. Pollution and Erosion Control Plan. A summary of pollution and erosion control inspections, including any erosion control failures, contaminant releases, and correction efforts.
 3. Description of site preparation.
 4. Isolation of inwater work area, capture, and release of fish.
 - a) Supervisory fish biologist's name and address.
 - b) Methods of work area isolation and take minimization.
 - c) Stream conditions before, during, and within 1 week after completion of work area isolation.
 - d) Means of fish capture.
 - e) Number of fish captured by species.
 - f) Location and condition of all fish released.
 - g) Any incidence of observed injury or mortality of listed species.
 6. Streambank protection.

- a) Type and amount of materials used.
 - b) Project size – one bank of two, width, and linear feet.
7. Site rehabilitation. Photo or other documentation that site rehabilitation performance standards were met.

NMFS will be reviewing the detailed construction plans submitted to advise FERC regarding whether or not those plans are likely to meet the “best management practices” articulated in this incidental take statement’s terms and conditions, or such additional best management practices that NMFS deems appropriate.

2. To implement reasonable and prudent measure #2, FERC must ensure that any fish trapped or captured during construction and maintenance operations are protected by carrying out the following:
 - a. Before and intermittently during pumping to isolate an inwater work area, attempt to capture fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury, then release them at a safe and suitable release site.
 - i. The entire capture and release operation will be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.
 - ii. If backpack electrofishing methods are used, workers must comply with NMFS’ Guidelines for Electrofishing (NMFS 2000) and summarized below.
 1. Do not electrofish near adult salmon in spawning or condition or near redds containing eggs.
 2. Keep equipment in good working condition. Complete manufacturers’ preseason checks, follow all provisions, and record major maintenance work in a log.
 3. Train the crew by a crew leader with at least 100 hours of electrofishing experience in the field using similar equipment. Document the crew leader’s experience in a logbook. Complete training in waters that do not contain listed fish before an inexperienced crew begins any electrofishing.
 4. Measure conductivity and set voltage as follows:

Conductivity ($\mu\text{S}/\text{cm}$)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

5. Use direct current (DC) at all times.
 6. Begin each session with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with a pulse width of 500 μs and do not exceed 5 milliseconds. Pulse rate should start at 30 Hz and work carefully upward. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.
 7. The zone of potential fish injury is 0.5 meters from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated, because in such areas the fish are more likely to come into close contact with the anode.
 8. Work the monitoring area systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.
 9. Have crew members carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. End sampling if injuries occur or abnormally long recovery times persist.
 10. Whenever possible, place a block net below the area being sampled to capture stunned fish that may drift downstream.
 11. Record the electrofishing settings in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, with observations on fish condition, will improve technique and form the basis for training new operators.
- iii. Do not use seining or electrofishing if water temperatures exceed 18°C unless no other more suitable and effective method of capture is available.
 - iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures, to prevent the added stress of out-of-water handling.
 - v. Transport fish by providing circulation of clean cold water in aerated

buckets, tanks, or in sanctuary nets that hold water during transfer.
Minimize holding times.

- vi. Release fish into a safe and appropriate release site as quickly as possible, and as near as possible to the original capture sites.
 - vii. Do not Do not transfer ESA-listed fish to anyone except NMFS personnel, unless otherwise approved in writing in advance of the transfer.
 - viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.
 - ix. Allow NMFS or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.
 - x. Submit an electronic copy of the Salvage Report Form to NMFS within 1-calendar days of completion of the salvage operations, noting the quantities and species of fish salvaged.
 - xi. Fish salvage operations must be re-conducted should the isolated construction areas be temporarily hydraulically re-connected to the adjacent waterway, such as after a high-water event or cofferdam failure.
3. To implement reasonable and prudent measure #3, FERC must ensure that the tailrace barrier is designed, constructed, and operated as follows:
- a. The licensee or FERC must seek NMFS review and approval of all design and construction plans for the tailrace barrier to minimize fish attraction, delay, injury, and mortality. The review period must be no less than 30 days, unless agreed to in advance by NMFS.
 - b. If the tailrace barrier is not designed to meet NMFS hydraulic design criteria (NMFS 2008c), then FERC will require post-construction monitoring for at least 5 years to assess hydraulic and biological effects on anadromous fish. FERC must ensure that the post-construction monitoring plan is reviewed and approved by NMFS prior to carrying out the plan.
 - c. If post-construction monitoring indicates that take of UWR Chinook is likely to exceed that anticipated as described in section 9.1.2 above, then FERC must reinitiate consultation and identify alternatives to reduce take.
4. To implement reasonable and prudent measure #4, FERC must ensure that automated equipment to handle Project shutdown and startup is maintained and operated to minimize the frequency and duration of malfunctions as follows:

- a. The licensee or FERC must test automated equipment on a regular schedule to ensure that transfer of flow from the Project intakes to USACE outlets is achieved within proposed ramping rates of 100 cfs per half hour.
 - b. The licensee or FERC must monitor and report the frequency with which ramping rates are exceeded. Such reports must be filed at least annually and must describe the reason for exceedence event and measures that were taken to reduce the likelihood of similar events in the future.
 - c. If the frequency of equipment malfunctions resulting in exceedances of ramping rates is greater than anticipated and authorized take is exceeded, then FERC must work with the licensee to modify equipment or operations and reinitiate consultation.
5. To implement reasonable and prudent measure #5, FERC must ensure that monitoring reports are completed and filed as follows:
- a. All design, monitoring and evaluation plans required by FERC or by this Opinion to protect anadromous fish and aquatic habitat must be reviewed and approved by NMFS prior to carrying out the plan. Work will be conducted by FERC, the licensee, or their contractors. Annual monitoring reports will be sent to NMFS in draft by December 1 of each year; revised based on comments received from NMFS; and submitted to FERC, NMFS, and other affected parties by January 30 of the following year (unless other agreements for completion are reached among FERC, NMFS, and the licensee). These monitoring reports will fulfill the FERC's requirements for notifying NMFS when the amount or extent of incidental take is approached or exceeded (50 CFR §402.14(i)(1)(iv) and (i)(3)).
 - b. Within 2 days of observance, FERC or the licensee must report all observations of dead or injured salmon adults or juveniles coincident with carrying out the terms and conditions of the above measures (noting whenever possible the species of these individuals) to NMFS within 2 days of their observance, and include a concise description of the causative event (if known), and a description of any resultant corrective actions taken (if any) to reduce the likelihood of future mortalities or injuries.
Reports of dead or injured salmon or steelhead should be sent to:

Willamette Project Staff Lead
Hydropower Division
National Marine Fisheries Service
1201 NE Lloyd Blvd., Suite 1100
Portland, Oregon 97232
(503) 736-4720