

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Woronoco Hydro, LLC

Project No. 2631-007

ORDER ISSUING NEW LICENSE
(Major Project)

(Issued April 30, 2002)

INTRODUCTION

On August 31, 1999, International Paper Company (International Paper) filed a license application, under Sections 15 and 4(e) of the Federal Power Act (FPA) ¹ to continue to operate and maintain the existing 2.7 megawatt (MW) Woronoco Hydroelectric Project No. 2631. ² The Woronoco Project is located on the Westfield River, a waterway subject to the jurisdiction of Congress under its authority to regulate interstate commerce, ³ in the town of Russel, Hampden County, Massachusetts. The applicant, Woronoco Hydro, proposes no new capacity at the project, but does propose to rehabilitate two non-functional turbine/generator units. ⁴ The project does not occupy any federally owned lands.

¹16 U.S.C. §§ 797(e) - 808.

²On May 22, 2001, the Commission issued an order approving substitution of relicense applicant and transferring the Woronoco Project license from International Paper to Woronoco Hydro, LLC (Woronoco Hydro, or the applicant). See 95 FERC ¶ 62,153.

³The changes to the project since 1935 significantly modified the project's pre-1935 design and increased the project's generating capacity. The energy developed at this project is integrated into an interconnected system which transmits electrical energy across state lines. Thus, Section 23(b) of the FPA (16 U.S.C. §817) requires that the project be licensed.

⁴On January 18, 2002, Woronoco Hydro filed, with the Commission, a request to delay processing of the license application to allow time for it to amend the license application submitted by International Paper. Among other things, the amendment would allow Woronoco Hydro to install an additional 4th turbine/generator unit. On March 13, 2002, the Director, Office of Energy Projects (Director) dismissed Woronoco Hydro's amendment request without prejudice, citing the timeliness of the request.

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Based on my review of the agency and public comments, and evaluation of the developmental and environmental effects of the proposed project and its alternatives, I conclude that relicensing the project would be in the public interest. Therefore, this order issues a new license for the Woronoco Project.

BACKGROUND

The original license for the project was issued on June 2, 1981. The license expired on September 1, 2001, and since then, Woronoco Hydro has operated the project under an annual license pending the disposition of the application for a new license.

Notice of the application was published on December 15, 1999. The U.S. Department of the Interior (Interior) and Trout Unlimited (TU) filed timely motions to intervene, none in opposition.⁵ The Commission issued a second public notice on December 7, 2000, indicating that the project was ready for environmental analysis and soliciting comments, recommendations, and terms and conditions. In response, the Commission received comments and recommendations from Interior and TU.

On February 21, 2002, the Commission staff issued, for public comment, an environmental assessment (EA). The EA recommended that the project be licensed with certain environmental measures, and found that licensing the project would not constitute a major federal action significantly affecting the quality of the human environment. In response to the Commission's Notice of Availability, issued February 27, 2002, the Massachusetts Division of Fisheries and Wildlife (MDFW), Woronoco Hydro, TU, and TU-Pioneer Valley Chapter filed comments on the EA.

The motions to intervene and comments received from interested agencies and individuals throughout the proceeding (including the comments filed on the EA) have been fully considered and addressed in this order in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

The Woronoco Project is located at river mile (RM) 18.5 on the Westfield River. The project's principal features consist of: (1) two non-contiguous dam sections and an earthen dike; (2) an intake area leading to a powerhouse, which contains three turbine/generator units with an installed capacity of 2.7 MW; (3) a downstream fish passage

⁵Based on my review of TU's intervention, I do not construe TU's intervention to be in opposition to the project.

facility; (4) a 43-acre impoundment at the normal pool elevation; (5) a bypassed reach with three channels, varying in length from 200 to 1,000 feet; and (6) appurtenant facilities. A more detailed project description is contained in ordering paragraph (B)(2).

The project is configured with three generating units. Currently, the project operates with only one unit (Unit 3, which has a rated installed capacity of 1.9 MW). As part of its relicense application, the applicant proposes to rehabilitate the two non-functioning units (Units 1 and 2), which have a rated installed capacity of 0.4 MW each. With the rehabilitated units, the project would generate at its full capacity of 2.7 MW and, with the applicant's proposed and staff's recommended minimum flow, would generate an average of about 6,700 megawatt-hours (MWh) of electricity annually.

The project is currently, and would continue to be, operated in a run-of-river mode, such that outflows from the project are approximately equal to the sum of the inflows to the project impoundment on an instantaneous basis. Woronoco Hydro would operate the project to minimize fluctuations to the impoundment water surface elevation.

APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10(a)(2)(C) and 15(a) of the FPA,⁶ staff has evaluated Woronoco Hydro's record as a licensee with respect to the following: (1) conservation efforts; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission services; (7) cost effectiveness of plans; and (8) actions affecting the public. I accept staff's finding in each of the following areas.

1. Conservation Efforts (Section 10(a)(2)(C))

Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. Woronoco Hydro is a private developer that sells all the power generated by the project, at wholesale, to the Western Massachusetts Electric Company (WMECO). Woronoco Hydro has no retail customers. Based on this information, staff concludes that section 10(a)(2)(C) of the FPA does not apply to Woronoco Hydro.

⁶16 U.S.C. § 803(a)(2)(C) and § 808(a).

2. Compliance History and Ability to Comply with the New License (Sections 15(a)(2)(A) and 15(a)(3)(A))

Staff reviewed the relicense application and Woronoco Hydro's compliance with the terms and conditions of the existing license. Staff finds that Woronoco Hydro's overall record of making timely filings and compliance with its license is satisfactory.

The Commission approved the transfer of license for the Woronoco Project from International Paper Company to Woronoco Hydro on May 22, 2001. Prior to the transfer of license, Woronoco Hydro was not a licensee and had no compliance history relative to the Woronoco Project.⁷ Review of our records, since that time however, shows that Woronoco Hydro has generally complied with the terms and conditions of its license. As of October 10, 2001, Woronoco Hydro had paid all annual charges for which it had been billed.

Staff concludes that Woronoco Hydro can comply with the conditions of a new license.

3. Plans and Abilities of the Applicant to Manage, Operate, and Maintain the Project Safely (Section 15(a)(2)(B))

Staff reviewed Woronoco Hydro's safety record for the Woronoco Project. The project operates, and would continue to operate, in a run-of-river mode, with limited impoundment water level fluctuations. The upstream Knightville Project, which is owned and operated by the U.S. Army Corps of Engineers, operates as a flood control structure. As a result, the Woronoco Project only passes inflow that has been released from the Knightville dam, and does not provide flow regulation downstream.

Based on dambreak analyses performed to assess the project's hazard potential, the Commission classifies the project as having low hazard potential. Therefore, the project is not subject to Part 12, Subpart D, of the Commission's regulations. Consequently, the project is exempt from filing an Emergency Action Plan. There is no record of any employee or public safety-related incidents associated with the project.

Staff concludes that the dam and other project works are safe, and that the applicant's record of managing, operating, and maintaining these facilities is adequate.

⁷However, Peter B. Clark, manager of Woronoco Hydro, was President of Swift River Company, Inc. during the time in which that company developed and held licenses for Project Nos. 2615, 2809, and 3133.

4. Plans and Abilities of the Applicant to Operate and Maintain the Project in a Manner Most Likely to Provide Efficient and Reliable Electric Service (Section 15(a)(2)(C))

Staff reviewed the project's past operational record, as well as Woronoco Hydro's plans and abilities to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. In the past 5 years, there have been three unscheduled outages at the project, which resulted in an insignificant loss of energy generation. Also, the applicant plans to rehabilitate two of the three generating units at the project. This would restore the project to its original design capacity of 2.7 MW. Based on its review, staff concludes that Woronoco Hydro has been operating the project in an efficient manner, within the constraints of the existing license, and is likely to continue to do so under a new license.

5. Need of the Applicant Over the Short and Long Term for the Electricity Generated by the Project to Serve Its Customers (Section 15(a)(2)(D))

The Woronoco Project has historically generated an average of 7,700 MWh of electricity annually. However, with only one functioning turbine, the project currently generates about 6,130 MWh annually. With the applicant's proposal to rehabilitate the two non-functioning generating units, and with the environmental conditions contained in this license, the proposed project would generate about 6,700 MWh annually.

Woronoco Hydro does not serve end use customers, but rather proposes to continue selling the power produced by the project to WMECO, which is an operating subsidiary of Northeast Utilities. The Woronoco Project is located in the New England area of the Northeast Power Coordinating Council (NPCC) region of the North American Electric Reliability Council (NERC). To see how the demand for electricity is expected to change in the future for the NPCC, staff looked at the regional self assessment published by NERC. In its 2001 Reliability Assessment, NPCC shows an electric energy growth rate of 1.2 percent for the New England area.

If licensed, the power from the Woronoco Project would help WMECO meet a small part of its need for generation in the short and long term. The project displaces fossil-fueled electric power generation that the regional utilities now use, and thereby would conserve non-renewable fossil fuels, reduce the emission of noxious by-products caused by the combustion of fossil fuels, and contribute to a diversified generation mix. Thus, staff concludes that there is a need for power generated by the project.

6. The Impact of Receiving or Not Receiving the Project License on the Operation, Planning and Stability of Applicant's Transmission System (Section 15(a)(2)(E))

Information required by this section is applicable primarily to utility transmission systems, and not to a project, whose transmission system ends at the substation connecting the project to the local utility's transmission system. The Woronoco Project does not include transmission facilities, other than a sub-station, as part of its project works. Based on this information, staff concludes that section 15(a)(2)(E) of the FPA does not apply to the Woronoco Project.

7. Whether the Plans of the Applicant Will be Achieved, to the Greatest Extent Possible, in a Cost Effective Manner (Section 15(a)(2)(F))

Woronoco Hydro proposes no new construction or changes in project operation. The project, under a new license, would continue to operate in a run-of-river mode, and the existing project, which has had its debt significantly reduced over the previous license, would continue to be a very valuable source of economical electric power. The project, with all the proposed and recommended enhancement measures included as part of this license, would produce about 6,700 MWh of power annually, at a cost of about 27.2 mills per kilowatt-hour.

Staff reviewed Woronoco Hydro's record as licensee for the Woronoco Project since the transfer of license in May 2001. Based on this review, staff concludes that the plans of the applicant would be achieved, to the extent possible, in a cost-effective manner.⁸

8. Actions Affecting the Public (Section 15(a)(3)(B))

The applicant has not taken any actions at the project that have had a negative effect on the public. Moreover, staff has no reason to doubt that Woronoco Hydro would follow through with its plans to rehabilitate the two non-functioning generating units, as well as implement the various environmental and recreation enhancement measures proposed in the application and approved in this license. These measures, discussed

⁸As previously noted, the Director, Office of Energy Projects, dismissed a request by the applicant to amend the project license to allow it to redevelop the project. The Director cited the timeliness of the applicant's request. However, in reviewing the request, Commission staff concluded that it appears that the project could be redeveloped to make better use of the water resources in the Westfield River.

elsewhere, herein, and in the EA, as well as the power to be generated by the project, would benefit the public.

ANCILLARY SERVICE BENEFITS

In analyzing public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary benefits). These benefits include their value as almost instantaneous load-following response to dampen voltage and frequency instability on the transmission system, system-power-factor-correction through condensing operations, and a source of power available to help in quickly putting fossil-fuel-based generating stations back on line following a major utility system or regional blackout.

Ancillary benefits are now mostly priced at rates that recover only the cost of providing the electric service at issue, which don't resemble the prices that would occur in competitive markets. In the competitive northeast market, the ability of hydropower projects to provide ancillary services to the system can increase the benefits derived from the project.

COMMENTS ON THE ENVIRONMENTAL ASSESSMENT

The MDFW filed comments on the EA on March 22, 2002. The MDFW requests that the Commission correct the record in this proceeding where it concerns its filing of Section 10(j) recommendations for the project. This Order considers the recommendations filed by the MDFW (see discussion of fish and wildlife recommendations below).

Woronoco Hydro filed comments on the EA on March 25, 2002. Woronoco Hydro concurs that the EA accurately assesses the environmental effects associated with the license application submitted by the project's previous owner, International Paper Company. Woronoco Hydro states that the enhancement proposals recommended by staff in the EA are consistent with the licensing proposal. Woronoco Hydro does not object to staff's recommended environmental enhancement measures. This license contains conditions consistent with the measures recommended by staff in the EA.

Trout Unlimited and TU-Pioneer Valley Chapter filed comments on the EA on March 25, 2002. Except for the issues discussed below, TU and TU-Pioneer Valley Chapter generally agree with the EA and the measures staff recommend for inclusion in any license issued for the project.

Upstream American eel passage – Trout Unlimited and TU-Pioneer Valley Chapter contend that three upstream eel ladders should be installed at the project. To support this position, TU and TU-Pioneer Valley Chapter state that relying on wetted rocks for upstream passage would pass substantially fewer eels than an unobstructed river, or a constructed eel ladder. TU and TU-Pioneer Valley Chapter assert that the additional eel ladders in the north and south channels would improve passage efficiency when compared to merely wetting rocks. Trout Unlimited also states that eels will use all three bypass channels when minimum flows in the three channels are established. Currently, eels have been observed only in the downstream fish bypass channel (plunge pool). Eels have not been observed in the north and south channels.

I do not necessarily disagree that upstream eel ladders could improve passage efficiency where obstructions to passage exist. Nor do I disagree that flow in the bypass channels could attract eel into, and enhance movement through, the bypass channels. In this case, however, neither TU nor TU-Pioneer Valley Chapter have provided sufficient evidence to show that the measures recommended by staff in the EA would be any less efficient at passing eels at the project than the recommended additional eel ladders.

In the EA, staff recommends that an upstream eel ladder be installed at the south dam (in the downstream fish bypass channel) and that additional measures be implemented in the north and south channels (i.e., changes and modifications to the vegetated rock ledges) to facilitate passage in those channels. Additionally, staff recommends that the upstream eel passage measures be monitored, once the measures are installed and/or implemented, and that additional measures be taken should the measures recommended by staff prove ineffective.

I conclude that staff's recommended measures represent a reasonable approach to improving upstream passage conditions for American eel at the project. Monitoring would address any concerns relative to the effectiveness of the recommended measures, and the need for any additional upstream eel passage measures at the project (e.g., eel ladders). Article 404 includes measures consistent with those recommended by staff in the EA.

Trout Unlimited recommends that the upstream eel passage facilities be operated from April 1 through October 31. Trout Unlimited supports its recommendation with data from the downstream West Springfield Project (P-2608; owned and operated by Rexam-DSI, Inc.) that shows upstream passage occurring from August 30 through

October 31;⁹ 96 percent of the eels using the eel ladder passed the West Springfield Project dam between September 24 and October 20.

The EA states that upstream ascent in freshwater rivers may last for many months or years, with active migration generally coinciding with warmer temperatures. Peak upstream movement occurs in July and August. Based on this information, it is unclear as to the benefit of operating upstream eel passage facilities beginning April 1. Nonetheless, Article 404 requires that the licensee develop an operation and maintenance plan, including a schedule for operating the licensee's proposed fish passage facilities. This would include an operational schedule for the upstream eel passage facilities.

Downstream American eel passage – Trout Unlimited states that protection for out-migrating eels is warranted, and that evaluation of eel movement at the project is only the first step toward providing this protection. Trout Unlimited further states that implementation of protection measures for out-migrating eels should be a part of staff's recommended comprehensive fish passage plan.

The monitoring provisions of Article 404 require that the licensee evaluate American eel out-migration at the project by monitoring the use of the downstream fish passage facility, and evaluate alternative downstream passage measures for eel. Also, Article 404 states that if the results of the monitoring indicate that changes in project structures or operations are necessary to facilitate fish passage, the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

Downstream resident fish passage – Trout Unlimited asserts that the license should require year-round downstream fish passage. Trout Unlimited supports its assertion with the following. First, TU states that operation of the downstream bypass for salmon passage in the spring and fall unnecessarily limits downstream protection for fish moving outside these periods. Second, although salmon restoration in the Westfield River is the main priority of the resource agencies, protection of resident fish is a part of the Anadromous Fish Management Plan for the Westfield River and should not be ignored, especially when the recommended protection has virtually no additional cost.¹⁰

⁹The upstream eel ladder at the West Springfield Project dam was constructed in the fall 2001.

¹⁰Trout Unlimited indicates that the downstream fish bypass facility has operated throughout the winter in the past, with no negative consequences for the project.

Finally, a notable trout fishery exists upstream of, and downstream from, the Woronoco Project. Protecting trout moving down-river past the project would enhance this fishery.

TU-Pioneer Valley Chapter asserts that year-round downstream passage merits additional consideration. TU-Pioneer Valley Chapter states that the EA is unclear when it comes to the additional expense required for year-round operation, and whether this additional expense would be a burden to the licensee.

In the EA, staff made several observations concerning resident fish passage. Among other things, the EA found that operating the downstream fish passage facility during the summer and fall (June 16 through October 31) would likely provide a route for some resident fish movement through the project area. However, the extent to which passage would benefit the resident fish community is unclear. The EA also found that operating the facility in the winter (January 1 through March 31) is not expected to provide any significant benefit, as fish and other aquatic organisms move little and are mostly dormant during this period. Finally, the EA acknowledged that a portion of the bypass flow could be used to operate the downstream fish passage facility.¹¹

Based on the aforementioned observations, staff concluded that year-round operation for resident fish was not warranted. Staff indicated, however, that the licensee was free to enter into an agreement to operate the downstream fish passage facility year-round, separate from its FERC license, but as part of the project's comprehensive fish passage plan.

After reviewing the record in this proceeding, I conclude that there is no evidence to suggest that the resident fishery in the project area is adversely affected by lack of year-round downstream fish passage. Nor do I find any evidence that providing year-round downstream passage would significantly benefit the resident fishery. I, therefore, agree with the EA's findings and do not recommend that year-round operation for resident fish be a requirement of this license. The provisions of Article 404, however, would not preclude year-round operation, should the licensee and the resource agencies agree to such a measure as part of the project's comprehensive fish passage plan.

Drawdown management plan – Trout Unlimited asserts that the EA does not recommend sufficient measures to eliminate dewatering of the project impoundment. Trout Unlimited states that the configuration of the project would allow for placement of

¹¹No additional flow would be necessary and no additional loss of generation would occur. The licensee, however, would likely incur some additional operation and maintenance expenses. The magnitude of this expense is not known at this time.

stop logs in front of the forebay. Trout Unlimited further states that this option should be required when maintenance of project structures is required.

In the EA, staff agreed that mussels can be, and are, exposed during maintenance drawdowns. To address the issue, staff recommended that the licensee develop and implement a drawdown management plan in consultation with the resource agencies. The plan would review alternatives to impoundment drawdowns (e.g., placement of stop logs, as recommended by TU), as well as evaluate the technical and economic feasibility of each such alternative. If no reasonable alternatives are identified, the drawdown management plan is to outline procedures to minimize effects on aquatic resources in the impoundment.

Article 406 adopts staff's recommendation for a drawdown management plan, as well as the provisions to be included in the plan. Additionally, Article 406 stipulates that, prior to filing the drawdown management plan, and subsequent action by the Commission, the licensee shall not conduct an impoundment drawdown, except where necessary for project or human safety, or for drawdowns authorized by the Commission. I conclude that staff's recommended measures, and those adopted in Article 406, represent a reasonable approach to protecting aquatic resources at the project.

WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act (CWA),¹² the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency either has issued a water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the State certification shall become a condition on any federal license or permit that is issued.¹³

The Massachusetts Department of Environmental Protection (MDEP) received IP's request for Section 401 water quality certification for the Woronoco Project on September 8, 1999. The MDEP issued a water quality certificate for the project on August 30, 2000, and subsequently amended the water quality certificate on September

¹²33 U.S.C. § 1341(a)(1).

¹³33 U.S.C. § 1341(d).

29, 2000. The water quality certificate includes 12 conditions which are set forth in Appendix A of this order, ¹⁴ and incorporated in the license (see ordering paragraph D).

COASTAL ZONE MANAGEMENT PROGRAM

The Woronoco Project is not located in the Commonwealth of Massachusetts' coastal zone boundary designated by the Coastal Zone Management Program. Nonetheless, Woronoco Hydro submitted a consistency certificate to the Commonwealth of Massachusetts, Executive Office of Environmental Affairs, Office of Coastal Zone Management for compliance with the Coastal Zone Management Act (CZMA). The Massachusetts Office of Coastal Zone Management concluded: (1) the activities associated with the proposed project fall outside the geographical boundaries of the Massachusetts Coastal Zone; and (2) the proposed relicensing of the Woronoco Project is not subject to federal consistency review by the Coastal Zone Management Office.

SECTION 18 OF THE FEDERAL POWER ACT (FISHWAYS)

Section 18 of the FPA provides that the Commission shall require a licensee, at its own expense, to construct, operate, and maintain such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate. ¹⁵ By letter dated February 8, 2001, the Secretary of the Interior requested reservation of its authority to prescribe, through the U.S. Fish and Wildlife Service (USFWS), the construction, operation, and maintenance of appropriate fishways at the Woronoco Project. Consistent with the Commission's policy, Article 405 reserves the Commission's authority to require such fishways that may be prescribed by Interior, through the USFWS, for the Woronoco Project.

¹⁴As the Commission has acknowledged in *Kennebec Water Power Company*, 81 FERC ¶ 61,254 (1997), it is required by the decision of the United States Court of Appeals in *American Rivers, et al. v. FERC*, 129 F.3d 99 (D.C. Cir. 1997), to accept all conditions in a water quality certification as conditions on a license, even if it believes that the conditions may be outside the scope of Section 401. While I have included certain of the provisions as license articles, all of the Section 401 conditions are conditions to this license. In any event, nothing in the conditions of the water quality certification shall be viewed as restricting the Commission's ability or the licensee's obligation, under the FPA, to take timely action necessary to protect human life or the environment.

¹⁵33 U.S.C. § 1341(a)(1).

ENDANGERED SPECIES ACT

Section 7(a)(2) of the Endangered Species Act of 1973 ¹⁶ 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 their critical habitat.

Except for occasional transient individuals, no federally listed species are known to occur in the project vicinity. ¹⁷ Therefore, no biological assessment or further consultation under Section 7 of the Endangered Species Act of 1973, as amended, is needed. ¹⁸

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA ¹⁹ requires the Commission, when issuing a license, to include license conditions based on the recommendations of the federal and state fish and wildlife 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."

By letter dated February 8, 2001, Interior, on behalf of the USFWS, submitted Section 10(j) recommendations for the project. Of the five measures submitted by Interior, staff determined that one condition was not within the scope of Section 10(j). ²¹

¹⁶16 U.S.C. § 1536(a).

¹⁷One mussel species recovered from the project area (squawfoot; *Strophitus undulatus*) is a species of Special Concern in Massachusetts, and survives only in the Connecticut and Housatonic River systems.

¹⁸See letter dated February 8, 2001, from Andrew L. Raddant, Regional Environmental Office, U.S. Department of the Interior, Boston, Massachusetts, to the Commission.

¹⁹16 U.S.C. § 803(j).

²⁰16 U.S.C. § 661 *et seq.*

²¹Interior recommended that the licensee evaluate the effectiveness of the existing
(continued...)

Staff determined that the remaining four conditions properly fall within the scope of Section 10(j) and are consistent with the purposes and requirements of the FPA and/or other applicable law. This license contains conditions consistent with Interior's five recommendations.

In the EA, Commission staff stated that the MDFW did not file 10(j) recommendations for the Woronoco Project. However, in commenting on the project EA, the MDFW informed staff that it filed 10(j) recommendations for the project by letter dated January 31, 2001. The MDFW noted that the filing containing its 10(j) recommendations cited the wrong project number (Project No. 2231-007 instead of the correct Project No. 2631-007), which may have resulted in the recommendations not being filed properly.

The MDFW's recommendations, filed pursuant to Section 10(j) of the FPA, were initially improperly filed. As the MDFW's recommendations have now been filed, they are addressed and fully considered, herein. Except as describe below, this license contains conditions consistent with the MDFW's recommendations.

The MDFW recommended the following environmental enhancement measures for the Woronoco Project:

- (1) release a minimum flow of 57 cfs to the bypassed reach, 22 cfs to the north channel (all through a notch cut in the North dam) and 35 cfs to the south channel (25 cfs through the downstream fish passage facility and 10-12 cfs through a notch cut in the South dam);
- (2) operate the project in a run-of-river mode, with impoundment elevations maintained at 229.0 feet National Geodetic Vertical Datum (NGVD);
- (3) provide year-round downstream fish passage for Atlantic salmon smolts, post-spawn adult salmon, American eel, and resident fish;
- (4) increase the depth of the existing downstream plunge pool to 5 feet and remove rock ledge from the plunge pool;

²¹(...continued)

downstream fish passage facility. This recommendation was considered and adopted under Section 10(a) of the FPA.

- (5) evaluate the effectiveness of the existing downstream fish passage facility for passing Atlantic salmon (adults and smolts), American eel, and resident species (including rainbow and brown trout, white sucker, and smallmouth bass);
- (6) install, operate, and evaluate, as appropriate, three upstream eel ladders in the bypassed reach, one each in the north, south, and bypass channels;
- (7) fund 1/3 of the cost to implement the MDFW's upstream trap and truck for Atlantic salmon on the Westfield River; and
- (8) develop and implement a plan to eliminate impoundment drawdowns.

The MDFW recommends two measures that differ somewhat from the measures recommended by staff in the EA and adopted, herein, as license conditions.²² First, the MDFW recommends that the licensee provide year-round downstream fish passage for resident fish, as well as Atlantic salmon and American eel. In the EA, staff concluded that year-round operation for resident fish was not warranted. Thus, staff did not recommend this measure be included in any license issued for the project. Staff indicated, however, that the licensee was free to enter into an agreement to operate the downstream fish passage facility year-round, separate from its FERC license, but as part of the project's comprehensive fish passage plan.

Second, the MDFW recommends that the licensee install, operate, and monitor, as appropriate, three upstream eel ladders at the project. In the EA, staff did not recommend installing three eel ladders. Rather, staff concluded that Woronoco Hydro's proposed eel ladder design for the downstream fish bypass channel, along with additional measures to facilitate upstream passage at the north and south dams, would effectively pass eels at the project. Staff recommended that such measures be included in any license issued for the project. To address concerns relative to the effectiveness of such measures, staff also recommended that eel passage at the upstream eel ladder and the vegetated rock ledges in the bypass be monitored after the measures are installed or implemented.

²²The MDFW also recommended that the licensee evaluate the effectiveness of the downstream fish passage facility for passing resident fish, as well as Atlantic salmon and American eel. Staff makes no specific recommendations in the EA for evaluating resident fish passage. Consistent with the MDFW's recommendation, Article 404 of this license requires that the downstream fish passage facility be monitored and evaluated as stipulated in Condition 11 of the Section 401 WQC, which includes resident species.

In commenting on the EA, the MDFW stated that "FERC staff endorsed all of its 10(j) recommendations (also conditions of the new 401 water quality certificate) and that they will be included in the new license." Also, the MDFW agrees with staff's conclusion that issuance of a new license for the Woronoco Project, with staff's recommended environmental measures, would not significantly affect the environment. In considering the MDFW's statements, it would appear that, currently, the MDFW agrees with staff's preferred licensing alternative, even though staff's recommended measures deviate somewhat from the MDFW's originally-filed recommendations. Therefore, I conclude that no further discussions with the MDFW are necessary.

HISTORIC PROPERTIES

The first dam built at the site of the existing Woronoco Project was a timber-crib structure constructed in 1879. The existing hydro station was completed in 1913 to supply power to two paper mills, located along the banks of the Westfield River. The two existing dams were constructed in 1938 and 1950.

The project powerhouse and the Strathmore Paper Mill complex are eligible for inclusion in the National Register of Historic Places. Besides these two properties, no other archeological or historic resources are known to exist within the project area.

In letters dated May 2, 1997, and May 18, 1999, the Massachusetts State Historic Preservation Office (SHPO) concluded that "the proposed project would have no effect on the significant architectural and historical characteristics of the National Register-eligible property." Nonetheless, Article 407 outlines requirements that the licensee must comply with, in the event that archeological or historic sites are discovered during operation or maintenance of the project, or during any construction at the project.

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA²³ 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.²⁴ Of the 16 comprehensive plans filed with the Commission, staff identified and reviewed nine plans

²³16 U.S.C. § 1536(a).

²⁴16 U.S.C. § 803(a)(2)(A).

relevant to the project.²⁵ No inconsistencies were found. Staff also reviewed one state plan relevant to the project, but that is not listed as a Commission-approved comprehensive plan; *Anadromous Fish Management Plan for the Westfield River, 2001-2010*.²⁶ No inconsistency with this plan was found.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a) of the FPA,²⁷ require the Commission to give equal consideration to the purposes of power development and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement would 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.

²⁵**Massachusetts:** (1) A Strategic Plan for the Restoration of Atlantic Salmon to the Connecticut River Basin, Policy Committee for Fisheries Management of the Connecticut River, September 1982 (Revised by the Connecticut River Atlantic Salmon Commission, July 1998); (2) Management Plan for American Shad in the Connecticut River Basin, Connecticut River Atlantic Salmon Commission, February 1992; (3) Massachusetts Outdoors for our Common Good: Open Space and Outdoor Recreation in Massachusetts, Massachusetts Department of Environmental Management, Division of Planning and Development, December 1988; and (4) Connecticut River Basin Water Quality Management Plan, Massachusetts Department of Environmental Quality Engineering Division of Water Pollution Control, June 1983.

Federal: (1) Silvio O. Conte National Fish and Wildlife Refuge, Final Action Plan and Environmental Impact Statement, U.S. Department of the Interior, October 1995; (2) Final Environmental Impact Statement Restoration of Atlantic Salmon to New England River, U.S. Department of the Interior, May 1989; (3) Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service, U.S. Fish and Wildlife Service, undated; (4) The Nationwide Rivers Inventory, National Park Service, 1982; and (5) North American Waterfowl Management Plan, U.S. Fish and Wildlife Service, May 1986.

²⁶Massachusetts Division of Fisheries & Wildlife. 2000. *Anadromous Fish Management Plan for the Westfield River, 2001-2010*. 21 pp.

²⁷16 U.S.C. §§ 797(e) and 803(a)(1).

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,²⁸ staff employs an analysis that uses current costs to compare the costs of the project and likely alternative power, with no forecasts for 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. In making its decision, the Commission considers the project power benefits, both with the applicant's proposed measures and with staff's modifications and additions to the applicant's proposal.

As proposed by Woronoco Hydro, staff estimates that the annual cost of the project would be about \$181,650 (27.1 mills/kWh). The annual power benefit, for the estimated annual generation of 6,700 MWh, would be \$230,010 (34.3 mills/kWh). The resulting annual net benefit would be \$48,360 (7.2 mills/kWh). The developmental changes and environmental enhancements proposed by Woronoco Hydro would increase annual costs by \$50,780 (including lost energy) and decrease the annual net benefit by \$31,210.

With staff recommended measures, staff estimates that the annual cost of the project would be about \$182,120 (27.2 mills/kWh). The annual power benefit, for the estimated annual generation of 6,700 MWh, would be \$230,010 (34.3 mills/kWh). The resulting annual net benefit would be \$47,890 (7.1 mills/kWh). The additional staff-recommended measures would increase annual costs by about \$470 above Woronoco Hydro's proposed action, and decrease the annual net benefit by the same amount.

Based on our independent review and evaluation of the Woronoco Project, recommendations from Interior and TU, and the no-action alternative, as documented in the EA, I have selected the Woronoco Project, with the additional staff-recommended measures, as the preferred alternative. I selected this alternative because: (1) issuance of the license would allow Woronoco Hydro to continue to operate the project as a beneficial, dependable, and inexpensive source of electric energy; (2) continued operation of the 2.7-MW project would avoid the need for an equivalent amount of fossil-fueled fired electric generation and capacity, continuing to help conserve these non-renewable energy resources and reduce atmospheric pollution; and (3) the recommended environmental measures would improve water quality and recreation, as well as protect and enhance fisheries, terrestrial and cultural resources at the project.

²⁸72 FERC ¶ 61,027 (1995).

The preferred alternative includes the following measures:

- (1) operate the project in a run-of-river mode by maintaining impoundment elevations at 229.0 feet NGVD, with minimal fluctuations (Article 401);
- (2) release a year-round flow of 57 cfs to the project's bypassed, with 22 cfs in the north channel and 35 cfs in the south channel and downstream fish bypass channel (Article 402);
- (3) prepare and implement a project operations monitoring plan (Article 403);
- (4) prepare and implement a fish passage plan that includes (a) operating the existing downstream fish passage facility, (b) installing an eel ladder at the south dam and providing upstream passage routes at two additional locations in the north and south channels, (c) providing funding support towards implementing the MDFW's upstream trap-and-truck program for Atlantic salmon on the Westfield River, (d) evaluating the effectiveness of the downstream fish passage facility for passing salmon smolts and post-spawn adult salmon, (e) evaluating eel out-migration movement at the project by monitoring the use of the downstream fish passage facility, and evaluating alternative downstream passage measures for eels, and (f) a provision for making changes to project structures and/or operations, as necessary based on monitoring, to facilitate passage of salmon and eel at the project (Article 404);
- (5) reserve Interior's authority to prescribe the construction, operation, and maintenance of fishways (Article 405);
- (6) develop and implement a drawdown management plan (Article 406);
- (7) consult with the Massachusetts SHPO and implement appropriate measures before (a) engaging in any activity that may result in an alteration of the National Register-eligible properties, and (b) if significant undiscovered properties are found in the project area during normal project operations (Article 407); and
- (8) develop and implement a final recreation enhancement plan for enhancing access in the project area that includes the three new carry-in boat access sites proposed by the applicant (Article 408).

LICENSE TERM

Pursuant to Section 15(e) of the FPA,²⁹ relicense terms shall not be less than 30 years nor more than 50 years from the date on which the license is issued. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental protection, mitigation, and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.³⁰

The amount of proposed new investment in equipment rehabilitation and environmental measures at the project is relatively moderate in nature. Accordingly, this license will have a term of 40 years.

SUMMARY OR FINDINGS

The EA for the Woronoco Project contains background information, analysis of effects, support for related license articles, and the basis for a finding that the project will not result in any major, long-term adverse environmental effects. The design of this project is consistent with the engineering standards governing dam safety. The project would be safe if operated and maintained in accordance with the requirements of this license.

Based on the review and evaluation of the project, as proposed by the applicant, and with the additional staff-recommended environmental measures, I conclude that the continued operation and maintenance of the project in the manner required by the license, would protect and enhance fish and wildlife resources, water quality, recreational, aesthetic, and cultural resources. The electricity generated from this renewable water power resource would be beneficial because it would continue to offset the use of fossil-fueled generating stations, thereby conserving non-renewable resources and reducing atmospheric pollution.

The Director Orders:

(A) This license is issued to Woronoco Hydro, LLC (licensee) for a period of 40 years, effective the first day of the month in which this order is issued, to continue to operate and maintain the Woronoco Hydroelectric Project. This license is subject to the

²⁹16 U.S.C. § 808(e).

³⁰See Consumers Power Company, 68 FERC ¶ 61,077 at pp. 61,383-84 (1994).

Federal Power Act (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, enclosed by the project boundary shown by Exhibit G, filed on August 31, 1999:

<u>Exhibit G Drawing</u>	<u>FERC No.</u>	<u>Showing</u>
1	2631-1006	Project Location & Boundary

(2) Project works consisting of: (a) two concrete-gravity dams and an earthen dike; (b) an intake area leading to a powerhouse; (c) an interim downstream fish passage facility; (d) an impoundment; (e) a bypassed reach; and (f) appurtenant facilities. In detail, the project's principal features consist of:

(a) two non-contiguous dam sections, with (i) a height of about 25 feet above the river bed, (ii) lengths of about 351 feet (south dam) and 307 feet (north dam), (iii) a steel sluice gate adjacent to the trashracks (south dam), (iv) a steel mud gate (north dam), (v) a 655-foot-long earthen dike with a sheet core, and (vi) a crest elevation of 229.0 feet National Geodetic Vertical Datum (NGVD);

(b) a 40-foot-wide by 15-foot-high intake structure, having trashracks with 1.25-inch clear bar spacing, and a 550-foot-long by 11-foot-diameter steel (with concrete liner) penstock;

(c) a 59-foot-long by 59-foot-wide concrete and brick powerhouse containing three Francis turbines and generating units, having (i) minimum and maximum hydraulic capacities of 130 cubic feet per second (cfs) and 710 cfs, respectively, (ii) a horsepower (hp) rating of 3,300 hp, (iii) a gross head of 55 feet and a design head of 50 feet at 710 cfs, (iv) a total installed capacity of 2,700 kilowatts (kW), and (v) a tailwater elevation of 174.0 feet NGVD;

(d) a downstream fish passage facility, located immediately in front of the trashracks (with its discharge at the base of the south dam);

(e) a 1.2-mile-long impoundment, with (i) a normal pool elevation of 229.0 feet (NGVD), (ii) a surface area of 43 acres, and (iii) negligible usable storage;

(f) a 3-channel bypassed reach, varying in length from 200 to 1,000 feet; and

(g) appurtenant facilities.

The project works generally described above are more specifically described in Exhibit A of the relicense application (pages A-1 to A-7) and shown by Exhibit F drawings, filed August 31, 1999:

<u>Exhibit F Drawing</u>	<u>FERC No. 2631-</u>	<u>Description</u>
F-1	1001	Site Plan
F-2	1002	Intake, Penstock, and Powerhouse Plan
F-3	1003	Intake Structure Plan and Section
F-4	1004	Dam Sections
F-5	1005	Powerhouse Plan and Sections

(3) All of the structures, fixtures, equipment, or facilities used or useful in the operation and maintenance of the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, as approved by the Commission, and all riparian or other rights that are necessary or appropriate in the operation and maintenance of the project.

(C) Exhibits A, F, and G, listed above, are approved and made part of this license.

(D) This license is subject to the water quality certification conditions submitted by the Massachusetts Department of Environmental Protection pursuant to Section 401(a) of the Clean Water Act, as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the articles set forth in Form L 10 (revised October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting the Interests of Interstate or Foreign Commerce," and the following additional articles.

Article 201. The licensee shall pay the United States an annual charge, effective the first day of the month in which the license is issued, for the purpose of reimbursing the United States for the cost of administering Part I of the Federal Power Act. The authorized installed capacity for that purpose is 2,700 kilowatts.

Article 202. Within 45 days of the date of issuance of this license, the licensee shall file one original and two duplicate sets of aperture cards of the drawings approved

in order paragraph (C). All aperture cards should be reproduced on silver or gelatin 35 mm microfilm. All microfilm must be mounted on Type D (3 1/4" x 7 3/8") aperture cards.

Prior to microfilming, the FERC Drawing Number (2631-1001 through 2631-1006) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license must be typed in the upper left corner of each aperture card.

The original and one duplicate set of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The remaining duplicate set of aperture cards shall be filed the Commission's New York Regional Office.

Article 203. Pursuant to Section 10(d) of the Federal Power Act, 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. The licensee shall set aside, in a project amortization reserve account at the end of each fiscal year, one-half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital rations developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such rations shall be the weighted average cost of long-term debt and preferred stock 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 4 percentage points (400 basis points).

Article 204. If the licensee's project was directly benefitted 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.³¹

Article 301. Within 90 days of completion of construction of the facilities authorized by this license (fish passage, minimum flow structures, recreation facilities, etc.), the licensee shall submit, for Commission approval, revised Exhibits A, F, and G, if necessary, to show those project facilities as built.

Article 401. The licensee shall operate the Woronoco Project in a run-of-river mode, with a target elevation of 229.0 feet National Geodetic Vertical Datum, for the protection and enhancement of water quality, fisheries, and aquatic resources in the Woronoco impoundment and the Westfield River downstream from the project.

The licensee shall, at all times, act to minimize the fluctuation of the impoundment water surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project impoundment.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the Massachusetts Department of Environmental Protection, the Massachusetts Division of Fisheries & Wildlife, and the U.S. Fish and Wildlife Service. If project operations are so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident, and shall provide the reason for the change in operation.

Article 402. The licensee shall release, from the Woronoco Project (north and south dams) a minimum flow of 57 cubic feet per second (cfs), or inflow, whichever is

³¹In an Order Determining Headwater Benefits in the Connecticut River, issued on August 4, 1998, the Commission required the licensee to pay for the headwater benefits received at its project. Therefore, the licensee is currently paying annual headwater benefits received from regulation of the U.S. Corps of Engineers' Knightville and Littleville storage projects.

less, as measured in the separate channels of the bypassed reach, for the protection and enhancement of water quality, fisheries, and aquatic resources in the bypassed section of the Westfield River. The 57-cfs minimum flow shall be released to the bypassed reach as follows: (1) 35 cfs in the south channel, as measured immediately downstream from the confluence of the south dam channel and downstream fish bypass channel; and (2) 22 cfs in the north channel, as measured immediately downstream from the north dam.

The licensee shall release the south channel flow (35 cfs) through either the downstream fish passage facility (20 cfs) and a notch cut in the center of the south dam (15 cfs), or the notch in the south dam when the downstream fish passage facility is not operating (35 cfs). The north channel flow (22 cfs) shall be released through a notch cut in the north dam. The licensee shall consult with the Massachusetts Department of Environmental Protection (MDEP), the Massachusetts Division of Fisheries & Wildlife (MDFW), the U.S. Fish and Wildlife Service (USFWS), and the Commission's New York Regional Office (Division of Dam Safety) regarding the timeframe, location, and design of notches to be installed. The licensee shall maintain the minimum flow release structures, as necessary, to ensure release of the 57-cfs minimum flow.

Releases from the Woronoco Project to the bypassed reach may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the MDEP, the MDFW, and the USFWS. If the flows are so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident, and shall provide the reason for the modified flow.

Article 403. Within 180 days from the effective date of this license, the licensee shall file, for Commission approval, a project operations monitoring plan to monitor run-of-river operations, as well as the minimum bypassed flow and downstream fish passage flow, as required by Articles 401 and 402, respectively.

The plan shall provide a means to: (1) independently verify compliance with run-of-river operation and the bypass minimum flow requirements of this license. The plan shall identify the monitoring methods and locations of monitoring devices necessary to ensure that the project is operated in a manner consistent with Article 401 and the bypass flow is released in a manner consistent with Article 402.

The plan shall include, at a minimum:

- (1) a provision for maintaining the impoundment elevation at 229.0 feet National Geodetic Vertical Datum (NGVD) and notifying the

Massachusetts Department of Environmental Protection (MDEP) when the impoundment elevation falls below 229.0 feet NGVD;

- (2) the planned locations of the elevation and flow measuring devices;
- (3) specific measures that would ensure that the monitoring system would operate under all conditions (including loss of external electric power to the project);
- (4) the design of the devices, including any pertinent hydraulic calculations, technical specifications of proposed instrumentation, erosion and sediment control measures, as appropriate, and design drawings of the system;
- (5) a description of the relative extent of manned versus automatic operation of the monitoring equipment;
- (6) a description of the methods and schedule for calibrating the monitoring equipment;
- (7) the method of flow data collection, a means for recording (hourly) and reporting (yearly) impoundment elevations, and provisions for providing data to the regulatory agencies in a timely manner; and
- (8) a schedule for installing all elevation and flow measuring devices, as appropriate, and implementing the plan.

The project operations monitoring plan shall include provisions consistent with the emergency notification requirements for run-of-river operation and the bypass minimum flow required by this license. In addition, should impoundment elevations or bypass minimum flows, as measured according to the approved monitoring plan, fall below the levels required by this license, the plan shall include a provision whereby the licensee files with the Commission a report of the incident within 30 days of the incident. The licensee shall prepare the report in consultation with the Massachusetts Division Fisheries & Wildlife (MDFW) and the U.S. Fish and Wildlife Service (USFWS).

The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also shall include: (1) operational data necessary to determine compliance with this article; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from

the MDFW and the USFWS regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.

The licensee shall prepare the project operations monitoring plan in consultation with the MDEP, the MDFW, the USFWS, and the U.S. Geological Survey (USGS). The licensee shall include, with the plan, documentation of agency 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 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. No ground disturbing or land-clearing activities for installation and use of monitoring devices shall begin until the licensee is notified the plan is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Article 404. The licensee shall develop a comprehensive fish passage plan. The plan shall include provisions to install, operate, maintain, and evaluate, as appropriate, upstream and downstream fish passage facilities at the Woronoco Project for Atlantic salmon and American eel passage at the project.

Within 180 days from the effective date of this license, the licensee shall file, for Commission approval, a comprehensive fish passage plan that includes, at a minimum:

- (1) a provision to continue operating and maintaining the existing downstream fish passage facility;
- (2) functional design drawings of the licensee's proposed upstream passage measures for American eel, which include (a) an eel ladder installed at the south dam, adjacent to the existing downstream fish passage facility; and (b) enhanced upstream passage routes at two additional locations within the north and south channels downstream from the north and south dams, in accordance with the plans filed June 6, 2000 (response to Additional Information Request Item 4);³²

³²Kleinschmidt Associates. 2000. Additional Information for new license for
(continued...)

- (3) quantification of the flows required to operate the licensee's proposed fish passage facilities;
- (4) an operation and maintenance plan, including a schedule for operating the licensee's proposed fish passage facilities;
- (5) funding support (\$4,970 in year 2001\$, and escalated annually based on the Consumer Price Index) towards implementing the Massachusetts Division of Fisheries & Wildlife's (MDFW) upstream trap-and-truck program for Atlantic salmon on the Westfield River; and
- (6) a schedule for implementing the plan.

The comprehensive fish passage plan also shall include provisions to: (1) evaluate the effectiveness of the existing downstream fish passage facility for passing salmon smolts, post-spawn adult salmon, and as stipulated in condition 11 of the Section 401 Water Quality Certification attached to this license as Appendix A; (2) evaluate the effectiveness of the licensee's proposed upstream eel passage measures; and (3) evaluate American eel out-migration at the project by monitoring the use of the downstream fish passage facility, and evaluate alternative downstream passage measures for eel. The monitoring provisions of the comprehensive fish passage plan shall include a description of the study methodology employed, as well as a schedule for: (1) implementing the monitoring provisions; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and licensee's response to agency comments with the Commission.

If the results of the monitoring indicate that changes in project structures or operations are necessary to facilitate fish passage (including any measures identified by the licensee or the agencies listed below that result from consultation required by this article), the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

The licensee shall prepare the comprehensive fish passage plan in consultation with the Massachusetts Department of Environmental Protection, the MDFW, and the U.S. Fish and Wildlife Service. The licensee shall include, with the plan, documentation

³²(...continued)

major water power project-five megawatts or less, Woronoco Project, FERC NO. 2631, Massachusetts. Prepared by Kleinschmidt Associates for International Paper Company. Pittsfield, Maine.

of agency 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 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 comprehensive fish passage plan. Implementation of any provision outlined in the plan shall not commence 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. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 301 of this license.

Article 405. Authority is reserved, by 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 Secretary of the Interior under Section 18 of the Federal Power Act.

Article 406. Within 180 days from the effective date of this license, the licensee shall file, for Commission approval, a drawdown management plan for the Woronoco Project. The plan shall describe what operational and maintenance, as well as structural, measures may be needed to protect and enhance mussels, recover stranded fish, and protect wetlands in the project impoundment.

The drawdown management plan shall include, at a minimum: (1) a review of alternatives to impoundment drawdowns that are required for project maintenance; and (2) an evaluation of the technical and economic feasibility of each such alternative. If no reasonable alternatives are identified, the drawdown management plan shall outline procedures to minimize effects on freshwater mussels and other aquatic life, including the timing, magnitude, frequency, and duration of any drawdowns.

The licensee shall prepare the drawdown management plan in consultation with the Massachusetts Department of Environmental Protection (MDEP), the Massachusetts Division of Fisheries & Wildlife (MDFW), and the U.S. Fish and Wildlife Service (USFWS). The licensee shall include, with the plan, documentation of agency 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 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 drawdown management plan. Implementation of any alternative or provision outlined in the plan shall not commence until the licensee is notified by the Commission that the filing is approved. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

Prior to filing the drawdown management plan, and subsequent action by the Commission, the licensee shall not conduct an impoundment drawdown, except where necessary for project or human safety or for drawdown events specifically authorized by the Commission. If a drawdown is required for project or human safety, or a drawdown is specifically authorized by the Commission, the licensee shall make every reasonable effort to survey the impoundment and re-locate all fish and mussels found in the de-watered zone. This activity shall be documented and reported to the Commission, the MDFW, and the USFWS as soon as possible, but no later than 20 days after each such incident. The report shall provide the reason for the drawdown, as well as document the efforts to recover stranded mussels and fish.

Article 407. The licensee shall consult with the Massachusetts State Historic Preservation Officer (SHPO), and file for Commission approval, an Historic Properties Management Plan (HPMP), in the event that a property or properties included in or eligible for inclusion in the National Register of Historic Places (Historic Property or Historic Properties) may be affected under any or all of the following circumstances: (1) before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, including recreation facilities at the project; (2) before altering the project powerhouse and the Strathmore Mill complex, or any of its contributing elements, in such a way as may diminish its integrity of design, materials, workmanship, setting, location, feeling, or association; and (3) if, while operating the project, the licensee discovers a previously unidentified Historic Property that may be affected by the operation of the project. In the event of such a discovery, the licensee shall make every reasonable effort to protect the property from any adverse effects and immediately consult with the SHPO.

The HPMP shall be prepared by a qualified specialist and filed after the licensee has consulted with the SHPO. The HPMP shall accurately reflect the results of such consultation. In addition, the HPMP shall identify the specific circumstance or circumstances that require that an HPMP be filed (*e.g.*, planned land-clearing or land-disturbing activities within the project boundaries, other than those authorized in this license; planned alteration of the project powerhouse and Strathmore Mill complex, or

any of its contributing elements; discovery of a previously unidentified Historic Property; or any combination thereof). Finally, the HPMP shall include the following items: (1) a description of the Historic Property or Historic Properties that may be affected; (2) a description of the potential effect or effects that may occur; (3) proposed measures for avoiding or mitigating any 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 HPMP. The licensee shall engage in no activities that may adversely affect a Historic Property or Historic Properties, nor resume any such activities, but shall make every reasonable effort to protect Historic Properties until informed by the Commission that the requirements of this article have been fulfilled.

Article 408. Within one year of license issuance, the licensee shall file, for Commission approval, a final recreational enhancement plan for the Woronoco Project. The plan shall provide details of the licensee's plans and schedules to construct, operate, and maintain the following recreational facilities at the project:

- (1) a put-in/take out for canoes and small, non-motorized boats, to be located at the southwest portion of the impoundment near U.S. Route 20, including an adjacent parking area for up to 15 vehicles;
- (2) a take-out area for canoes, located directly upstream of the project's two dams, on the impoundment's southeast shoreline;
- (3) a canoe portage path, which includes designated rest stops, racks, and signs directing persons to the downstream put-in;
- (4) a put-in area along the east shoreline of the Westfield River, a short distance downstream from the project powerhouse, for canoeists and persons with hand-carried boats; and
- (5) a parking area located near Bridge Street for approximately 15 vehicles with an associated trail for persons with canoes and hand-carried boats who desire to access the Westfield River downstream of the project powerhouse.

This plan should include, at a minimum, the following elements: (1) site designs, cost estimates, and a construction schedule for each of the facilities listed above; (2) specifications of the materials to be used and any special features and landscaping procedures that would enhance area aesthetics; (3) site-specific measures to control erosion and sedimentation during, and subsequent to, construction of the proposed

facilities; (4) an evaluation of how the facilities would or would not comply with existing standards of the Americans with Disabilities Act; and (5) a discussion of the entity, or entities, that will be responsible for operating and maintaining each facility listed above.

The licensee shall prepare the final recreational enhancement plan in consultation with the Massachusetts Department of Environmental Management, Massachusetts Division of Fisheries & Wildlife, the U.S. Fish and Wildlife Service, the town of Russell, Massachusetts, and the Westfield River Watershed Association. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations received on the plan after it has been prepared and provided to the entities listed above, and the licensee's specific responses to the recommendations provided by the consulted entities. The licensee shall allow a minimum of 30 days for the consulted entities to comment and to make recommendations on the final recreational enhancement plan before filing it with the Commission. If the licensee does not adopt an entity's 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. No ground-disturbing or land-clearing activities for new recreational facilities shall begin until the Commission notifies the licensee that the plan is approved. Upon approval, the licensee shall implement the plan, including any changes required by the Commission. Any facilities built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 301 of this license.

Article 409. (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 waters 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 water craft 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 reservoir 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-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. 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 water craft 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 Exhibit R or 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 shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or 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.

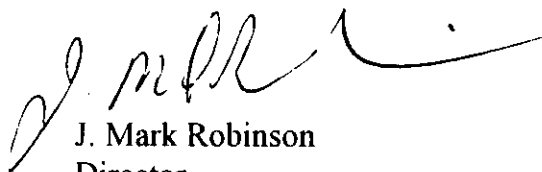
(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(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.

(F) 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.

(G) This order is issued under authority delegated to the Director and is final unless a request for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the Federal Power Act. 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 of this order shall constitute acceptance of this license.



J. Mark Robinson
Director
Office of Energy Projects

APPENDIX A

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
CERTIFICATION UNDER SECTION 401 OF THE
FEDERAL CLEAN WATER ACT

401 Water Quality Certification
Amendment

Applicant: International Paper Company
Woronoco Project (FERC No. 2631)
BRPWW10

The Massachusetts Department of Environmental Protection (MADEP) has received additional information regarding the application for Water Quality Certification, as referenced above and hereby amends the water quality certificate issued to the International Paper Company on August 30, 2000.

In accordance with the provisions of MGL c.21, §§ 26-53 and Section 401 of the Federal Clean Water Act, as amended (33 U.S.C. § 1251 et seq.), it has been determined there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards.

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Based on information currently in the record, the MADEP grants a Water Quality Certification for this project, subject to the following conditions, to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law:

- (1) The project shall be operated in accordance with the conditions contained in this certification and the provisions included in the Federal Energy Regulatory Commission (FERC) application and any modifications made thereto, to the extent such application provisions and modifications are consistent with this water quality certification. The operation of the hydro facility shall be operated to maintain the designated uses of the Westfield River, as outlined in the Massachusetts Surface Water Quality Standards (314 CMR 4.00) and the maintenance of an integrated and diverse biological community in the Westfield River.
- (2) All activities shall be conducted in compliance with the Massachusetts Wetlands Protection Act (including the Rivers Protection Act) (MGL

Chapter 131, Section 40). An application for a Water Quality Certificate shall be submitted to, and approved by, the MADEP prior to any activity that will cause a discharge subject to Section 404.

- (3) The applicant shall comply with Massachusetts General Laws Chapter 91.
- (4) All maintenance and repair activities, including disposal of debris and removal of sediments in impounded areas, shall be conducted in a manner so as not to impair water quality.
- (5) Any change to the project that would have a significant or material effect on the findings, conclusions, or conditions of this certification, including project operation, must be submitted to the MADEP for prior review and written approval where appropriate and authorized by law and only as related to the change proposed.
- (6) The MADEP may request, at any time during which this certification is in effect, that the FERC reopen the license to make modifications necessary to maintain compliance with the Massachusetts Surface Water Quality Standards or other appropriate requirements of state law.
- (7) The MADEP reserves the right to add and alter terms and conditions of this certification when authorized by law and as appropriate to carry out its responsibilities during the life of the project, with respect to water quality.
- (8) A plan should be submitted for maintaining a run-of-river mode of operation, developed in consultation with the Massachusetts Division of Fisheries & Wildlife (MADFW) and approved by the MADEP, within six months of license issuance. The plan should address provisions for maintaining pond height at 229.0 feet, a means or recording (hourly) and reporting (yearly) pond elevation, and notification of the MADEP when the pond falls below 229.0 feet.
- (9) The project will be operated to maintain the elevation of the impoundment at its current high water elevation of 229.0 feet. The applicant will develop and implement a mussel and fish stranding protection plan during maintenance drawdowns within one year of license issuance, in consultation with the MADFW and with approval of the MADEP. The plan should address the possibility of performing maintenance without conducting a drawdown, limiting the number of drawdowns necessary, and notification and justification to the MADEP when a drawdown is planned.

No drawdown is permitted prior to the approval of the mussel and fish stranding protection plan without MADEP approval.

- (10) The applicant will provide upstream eel passage within one year of license issuance. Operation dates, fishway design, and locations are to be determined in consultation with the MADFW and approved by the MADEP.
- (11) The applicant will evaluate the effectiveness of the downstream fishway design to pass Atlantic salmon and resident fish during the first passage season following issuance of a new license for the project. The plan of study and study results need to be reviewed by the MADFW and approved by the MDEP.
- (12) Upon license issuance, the bypass will be provided a total minimum flow of 57 cfs or inflow, whichever is less. The total flow will provide 35 cfs to the south channel and 22 cfs to the north channel. The bypass channel is to have a continuous flow from the downstream bypass gate. This flow and the south channel flow are combined to yield 35 cfs. The applicant will consult with the MADFW, and obtain approval from the MADEP, regarding the timeframe, location, and design of notches to be installed.

FEDERAL ENERGY REGULATORY COMMISSION

**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE**

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 area and project works shall be 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.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, 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 such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration 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 submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. 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 or 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 stage 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 location 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 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 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 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. 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 statutes and regulations.

Article 21. 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 22. 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 23. 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.