

1-8602/5



John R. McKernan, Jr.
Governor

C. Edwin Meadows, Jr.
Commissioner

DEPARTMENT OF CONSERVATION
Telephone (207) 287-2631
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2572/00

April 23, 1993

Brian R. Stetson
Manager of Environmental Affairs
Great Northern Paper, Inc.
One Katahdin Avenue
Millinocket, Maine 04462-1398

RE: Approved Land Use Regulation Commission Water Quality
Certification WQC 0001, Ripogenus Project

Dear Brian:

Enclosed is a copy of your approved Land Use Regulation Commission Water Quality Certification WQC 0001 for the Ripogenus Project. Please read the enclosed certification carefully, paying special attention to the conditions of approval, as the certification is valid only if you comply with those conditions. Any changes in your plans must be reviewed and approved as an amendment to your certification.

Thank you for your patience and cooperation. Should you have any further questions, please contact me at the Augusta office. From within Maine, our toll free number is 1-800-452-8711.

Sincerely,

Roger H. Johnstone
Senior Project Analyst
Development Review Division

Enclosure: LURC Water Quality Certification WQC 0001

xc: WQC 0001 File
Service List



Department of Conservation
MAINE LAND USE REGULATION COMMISSION

State House Station 22, Augusta, Maine 04333
Telephone (207) 287-2631 or (800) 452-8711

COMMISSION DECISION
IN THE MATTER OF

Great Northern Paper, Inc.

Findings of Fact and Decision

Water Quality Certification Application WQC-0001
Ripogenus Project

The Maine Land Use Regulation Commission, at a meeting of the Commission held April 15, 1993, at Bangor, Maine, after reviewing the application and supporting documents submitted by Great Northern Paper, Inc. for Water Quality Certification WQC-0001, public comments, agency review and staff comments, and other related materials in the public hearing record, pursuant to 38 M.R.S.A. section 464 et seq., Executive Order #16 FY 91/92, and Section 401 of the Federal Water Pollution Control Act (Clean Water Act) makes the following Findings of Fact:

1. Applicant: Great Northern Paper, Inc.
a subsidiary of Bowater Incorporated
One Katahdin Avenue
Millinocket, Maine 04462
2. Date of Application for Water Quality Certification: October 15, 1992
3. Name of Project: Ripogenus Dam Project
4. Location of Project, within the following townships in Piscataquis County:

T2 R12 WELS	T3 R13 WELS	T5 R12 WELS
T3 R11 WELS	T4 R12 WELS	T5 R13 WELS
T3 R12 WELS	T4 R13 WELS	T6 R13 WELS
		T6 R14 WELS

Background and Jurisdiction

5. Great Northern Paper, Inc. ("Great Northern" or "applicant") is a corporation organized and existing in the State of Delaware and maintaining its corporate offices in Millinocket, Maine. Great Northern owns and operates paper mills in Millinocket and East Millinocket, a sawmill in Nashville Plantation, and owns and manages approximately 2.1 million acres of forest land, mostly in the unorganized townships and plantations in Maine. Great Northern also owns and operates six dams, including Ripogenus Dam, on the West Branch of the Penobscot River (West Branch) and Millinocket Stream, together with related generating facilities and transmission lines, to provide electricity for its mills. The combined electrical generating capacity of the hydropower facilities is approximately 93,000 Kilowatts, with the capacity of Ripogenus Dam being 37,530 Kilowatts.

6. Ripogenus Dam, known collectively with its related impoundment and generating facilities as the "Ripogenus Project" (the project), is located on the West Branch in T3 R11 WELS. Ripogenus Dam was first constructed in 1915-16, with modifications resulting in its current design and impoundment elevation in 1923. From its original construction to 1953, the exclusive function of the dam was for logging and storage purposes. Beginning in April of 1953 with the completion of McKay Station, the water impounded by the dam was also used for hydroelectric power generation.

The project area provides approximately 15,000 "angler-days" annually to those fishing and/or boating the project waters as well as others who use the natural resources of the area for other nonintensive recreational activities. It supports warmwater and coldwater fisheries. Chesuncook Lake is known for its landlocked salmon fishery. The project area also supports a self-sustaining landlocked salmon fishery in the riverine section below McKay Station which is considered by some experts to be world class. During the past ten years, commercial whitewater rafting and recreational whitewater boating use increased dramatically; 17,000 to 18,000 people now boat or raft in the project area annually.

7. The proposed continued operation of the project qualifies as an "activity...which may result in [a] discharge into the navigable water [of the United States]" under the Clean Water Act, 33 USC 1251 et seq. Section 401 of the Clean Water Act requires that any applicant for a federal license or permit to conduct such an activity obtain a certification that the activity will comply with applicable State water quality standards.

The project has been licensed by the Federal Energy Regulatory Commission (FERC) as a water power project under the Federal Power Act (Project No. 2572). The initial project license was issued on December 20, 1968 (Effective October 1, 1951) and expires on December 31, 1993. In December of 1991, the licensee filed an Application for New License to continue to operate the Ripogenus Hydroelectric Project for another 30 years. This application is currently pending before FERC. Pursuant to Section 401 of the Clean Water Act, before FERC may issue a license, Great Northern must obtain certification that the project will comply with applicable state water quality standards.

The Maine Land Use Regulation Commission has been designated by the Governor of Maine as the certifying agency for issuance of Section 401 Water Quality Certification for all activities located wholly within areas of the Commission's regulatory jurisdiction under 12 M.R.S.A., Chapter 206-A. Executive Order #16 FY 91/92.

8. On February 23 and 24, 1993, the Commission held a public hearing in Millinocket on Great Northern's application. Public Notice of the hearing was given in various newspapers in the State on January 19, January 22, February 2, February 5, and February 16, 1993. The public hearing record closed on March 10, 1993.

9. Prior to the public hearing, the Commission granted petitions to intervene in the proceeding to the following parties: Association in Support of a Sustained Supply of Energy and Timber (ASSSET); Town of East Millinocket; Town of Millinocket; East Millinocket/Medway Chamber of Commerce; Katahdin Regional Development Corporation; Katahdin Regional Tourism Council; Millinocket Chamber of Commerce; United Papermakers International Union Local #12; United Papermakers International Union Local #24; United Plant Guards of America Local #549; United Pipefitters and Plumbers Local #658; Timothy Smyth; Pray's Big Eddy Campground, Inc.; Maine Sporting Camp Association; a coalition of Conservation Law Foundation, Inc. (CLF), Maine Audubon Society, Appalachian Mountain Club, American Rivers, Inc., and American Whitewater Affiliation; United Brotherhood of Carpenters and Joiners and its Local #1612; Trout Unlimited (TU); Maine Professional River Outfitters Association (MEPRO); Brotherhood of Electrical Workers, Local #567; United Brotherhood of Carpenters and Joiners, Local #658; and the Maine Building Trades Council.
 10. Also prior to the hearing, the Commission, acting through its Presiding Officer, held several pre-hearing conferences in order to facilitate the orderly and efficient conduct of the hearing. Pre-hearing memoranda and orders were issued by the Presiding Officer on December 9, 1992, December 23, 1992, and February 19, 1993. Those orders are hereby adopted in full in this decision and incorporated by reference.
 11. For the purposes of the proceeding the intervenors were consolidated into two groups as follows:
 - A. ASSSET, Town of East Millinocket, Town of Millinocket, East Millinocket/Medway Chamber of Commerce, Katahdin Regional Development Corporation, Katahdin Regional Tourism Council, Millinocket Chamber of Commerce, United Papermakers International Union Local #12, United Papermakers International Union Local #24, United Plant Guards of America Local #549, United Pipefitters and Plumbers Local #658, Timothy Smyth, Pray's Big Eddy Campground, Inc., Maine Sporting Camp Association, Brotherhood of Electrical Workers Local #567, and United Brotherhood of Carpenters and Joiners Local #658; and
 - B. Coalition of CLF, Maine Audubon Society, Appalachian Mountain Club, American Rivers, Inc., and American Whitewater Affiliation; Trout Unlimited; United Brotherhood of Carpenters and Joiners and its Local #1612; Maine Building Trades Council; and MEPRO.
- Consolidation was for all issues and purposes of the proceeding, except that: A) TU was not required to be consolidated with the CLF group for the limited issues of impact of the project on fisheries and fishing; and B) MEPRO was not required to be consolidated with the CLF group for the limited issue of water flows below Ripogenus Dam.
12. Direct testimony of the applicant and the intervenors (collectively referred to as the "parties") was required to be pre-filed by

February 1, 1993. By prior agreement, the parties chose not to cross-examine each other's witnesses. At the hearing, the applicant and the consolidated intervenors were offered the opportunity to make an opening statement and to summarize their direct testimony. Oral testimony was given by the Maine Department of Inland Fisheries and Wildlife, and various municipal officials and members of the public. Following the hearing, the parties were offered the opportunity to file written statements in rebuttal to earlier testimony.

Summary of Application for Water Quality Certification

13. The applicant proposes the continued operation of the Ripogenus Project over the 30 year term of the FERC license for which it has applied. The project is part of an integrated power system developed and operated by the applicant to provide hydroelectric and hydromechanical energy for use in its pulp and paper manufacturing operations in Millinocket and East Millinocket.

14. Existing Project Features:

The Ripogenus Project consists of a dam and impoundment, an intake structure, a tunnel and penstocks, a powerhouse, a tailrace, a 115 kV substation, a transmission line, and appurtenant facilities. The powerhouse, known as McKay Station, is located approximately 0.75 mile downstream of the dam. The 3,900 foot natural channel between the dam and McKay Station is known as the Upper Gorge. From McKay Station, the West Branch flows unobstructed for approximately 20.8 miles to Ambajejus Lake.

Ripogenus Dam is a concrete structure with a short earth-filled end section orientated in a generally north-south direction across the West Branch. The bridge deck across the top of the dam is at elevation 942.59 feet. The dam extends approximately 795 feet between two vertical rock faces and has a maximum height (base of structure to bridge deck) of approximately 83 feet.

The dam is comprised of four separate sections. The concrete spillway section, intake section, and gated sections comprise approximately 695 feet of the dam. An earthen embankment section comprises the remaining 100 feet of the dam. A series of concrete piers situated across the crest of the dam support the stoplogs and crest gates, and also support the concrete bridge deck atop the dam.

The project intake structure is located approximately 220 feet from the southern spillway abutment. The intake structure controls the flow of water into the tunnel that extends downstream to McKay Station. The concrete intake structure, protected by trash racks, measures approximately 37 feet in width. An electrically controlled slide gate, 18 feet high by 20 feet wide, located on the upstream side of the intake structure, is used to control the flow of water into the tunnel. The intake structure connects to a 16 foot diameter vertical shaft which drops approximately 100 feet to a concrete-lined, 16 foot diameter tunnel. This tunnel, measuring approximately 3,850 feet in length, conveys water from the dam to

McKay Station via a 104 foot high, 44 foot diameter surge tank and three 10 foot diameter penstocks 100 to 136 feet in length.

The project impoundment consists of Ripogenus, Caribou, and Chesuncook Lakes, and Black, Brandy and Moose Ponds. The impoundment contains a total area of 29,270 acres and extends approximately 20.8 miles (river course) up the West Branch. The gross storage capacity of the impoundment at normal high water elevation (941.59 feet) is approximately 710,000 acre-feet. The usable storage capacity of the impoundment with the maximum possible drawdown (44 ft.) is approximately 688,705 acre-feet. The mean depth of the impoundment is approximately 35.8 feet. The maximum depth is approximately 150 feet.

Chesuncook Lake is a 19 mile long water body with multiple deep basins. The West Branch, Caucomgomoc Stream, and Umbazooksus Stream discharge into the head of Chesuncook Lake providing active water movement toward the junction with Ripogenus Lake. Black and Brandy Ponds are lower extensions of Caucomgomoc Stream. Chesuncook Lake has a maximum depth of 115 feet. The Commission has identified Chesuncook Lake (including the Ripogenus basin) as a management class 2 (accessible, undeveloped, with exceptional values) lake with outstanding fisheries, wildlife, botanic, cultural, and physical resources.

Caribou Lake forms an elongated side basin to Chesuncook Lake parallel to Chesuncook. Depths up to 84 feet have been recorded. Ragged Stream provides its single largest inflow. The Commission has identified Caribou Lake as a management class 3 (potentially suitable for development) resource class 1A lake with outstanding fisheries, wildlife, botanic, cultural, and physical resources.

Ripogenus Lake, immediately upstream of Ripogenus Dam, is the most downstream basin in the impoundment and contains a single deep basin up to 150 feet deep. Near the dam its depth is generally less than 70 feet.

15. Existing Project Operation:

The applicant has historically used the impoundment to store the majority of spring runoff to provide sustained flows for power production and discharge of wastewaters downstream of the project area, and to hold river flows at safe levels. Flows are released according to a hydro system rule curve that produces a more even distribution of water flow in the West Branch throughout the year than would otherwise occur under unimpounded conditions. This flow provides an improved recreational, aquatic, and fishery environment in the West Branch in the vicinity of the project.

The applicant currently operates McKay Station to maintain a minimum flow of 200 cubic feet per second ("cfs") in the West Branch below the station, as required by Article 33 of the existing FERC license. In order to protect salmon redds (spawning beds) during the incubation period, the applicant has voluntarily maintained a minimum flow of 500 cfs below McKay Station during the salmon incubation period in recent years.

The normal high water elevation of the impoundment is 941.59 feet. During the period of study used in the applicant's flow analysis (1970 to 1985), the impoundment has been drawn down approximately 16.5 feet per year on average. During that period, the applicant has drawn the impoundment down as much as 30.6 feet per year to provide controlled flows downstream and to provide sufficient storage capability to capture the spring runoff. The impoundment can be drawn down as much as 44 feet, in anticipation of spring runoff and to provide flows throughout the year. The level to which the impoundment is drawn is determined by the applicant, customarily based upon the actual and anticipated precipitation for the time of year, and the water content of the snow cover.

The project is operated using a system-wide rule curve that produces a relatively even distribution of water flow throughout the year. This curve is a statistical formula based on providing an average daily flow of 2,400 cfs at Millinocket, with a 1% probability of running out of water storage. Great Northern also uses a total available water curve which was developed by the applicant for the Ripogenus Project.

16. Summary of Proposal:

Starting in 1986 in preparation for relicensing of the project, and in response to requests of state and federal agencies and public interest groups, Great Northern has conducted 42 individual studies (31 of which are directly relevant to its application for water quality certification), and held numerous consultation meetings with the agencies and interest groups to review the various study results. These studies address a wide variety of environmental and resource issues.

The applicant is proposing to make certain changes to its existing water system management of the Ripogenus Project and other dams on the West Branch. The proposed operation is set forth in the Water Use Plan submitted as part of Great Northern's application for certification, as subsequently amended. The Water Use Plan, a model of Great Northern's hydropower system, utilizes the water resources available in the applicant's entire hydropower system, as well as its condensing and cogeneration facilities located at its mills, in order to determine power supply capabilities and to compensate for reductions (or increases) resulting from reallocation of water to support other designated uses.

Some of the requests for water allocation by interested parties are competing, and in some cases conflicting. According to the applicant, the Plan reflects a balance between competing uses of the projects's water resources. Implementation of the Plan will provide enhancements to some of the area's existing natural resources while maintaining efficient operation of the hydroelectric system to support its mills. Key aspects of the Plan as applicable to the Ripogenus Project are summarized as follows:

A. Minimum Flows.

- (1) Upper Gorge. The applicant is proposing to provide a minimum flow of 100 cfs in the Upper Gorge from the time landlocked salmon appear at McKay Station from downriver (approximately July 1) to September 30 of each year, with leakage flows being provided the remainder of the year.
- (2) West Branch below McKay Station.
 - (a) Normal Project Operation¹

From May 1 to September 15 of each year, the applicant proposes a minimum flow, for whitewater rafting and other recreational uses, of at least 2,000 cfs during normal months, and at least 1,800 cfs during wet or dry months, as defined in the applicant's Water Use Plan. The Plan indicates that these flows represent minimums and that, based on the amount of water that is typically available during this period, daytime flows would be approximately 2,400 cfs.

From September 16 to October 14 of each year, the applicant proposes to provide a minimum flow of at least 1,000 cfs. Again, this flow represents a minimum; flows typically would be higher. This reduction in the minimum flow is to allow the downstream North Twin impoundment to be drawn down prior to the lake trout spawning period to enhance lake trout spawning in that impoundment, and to facilitate annual maintenance of the hydro generation and transmission systems.

From October 15 to November 15, generally the period during which salmon spawn in the West Branch, the applicant proposes flows of approximately 1,300 to 2,000 cfs but not less than 1,300 cfs. This flow will concentrate salmon spawning in deeper, more protected portions of the river. Prior to the start of each salmon spawning season, the applicant will establish and maintain a consistent flow for the duration of that spawning season.

From November 16 to June 7, the period of salmon incubation, the applicant proposes to maintain flows to support salmon incubation. These flows will be established based on actual flows occurring during the preceding salmon spawning period and will equal or exceed the salmon spawning flows.

¹

A "normal" month is a month where the total available water at Ripogenus is within one standard deviation of the historic mean. The applicant estimates that total available water will be within this range approximately two-thirds of the time.

(b) During Outages at McKay Station

Although the applicant will normally maintain the flows specified above for the specified periods, there may be occasional malfunctions or other shutdowns in mill or hydropower operations resulting in outages at McKay Station. The applicant is proposing to maintain a minimum flow of at least 400 cfs below McKay Station during any outages. This flow will be provided through McKay Station by automating the station's controls. This flow, considered to be a biological minimum flow, would not extend for a period greater than three consecutive days during any outage.

From May 1 to September 15, the applicant proposes to reestablish a minimum recreational flow of 1,800 cfs during daylight hours as soon as possible after an outage. Once the 1,800 cfs daytime recreational flow has been established, the applicant will release a ramped flow of 1,000 cfs during nighttime hours.

During the remainder of the year, the scheduled flows described above would be resumed as soon as possible after an outage.

B. Structural Changes

No structural changes to the existing dam or facilities are proposed.

Summary of Applicable Water Quality Standards

17. Classification: The waters of the West Branch drainage of the Penobscot River within the project area are currently classified as follows:

- A. Ripogenus Impoundment - Class GPA. 38 M.R.S.A. section 465-A(1); and
- B. Below Ripogenus Dam - Class B. 38 M.R.S.A. section 467(7)(C)(1).

18. Designated Uses: The project waters have the following designated uses.

- A. Class GPA waters shall be of such quality that they are suitable for the designated uses of drinking water after disinfection; recreation in and on the water; fishing; industrial process and cooling water supply; hydroelectric power generation and as habitat for fish and other aquatic life. The habitat shall be characterized as natural. 38 M.R.S.A. section 465-A(1)(A).

A limited exception to GPA waters is set forth in 38 M.R.S.A. section 464(9), enacted as P.L. 1991 c. 813. Section 464(9) provides that where an existing hydropower impoundment is

~ subject to significant water level fluctuations, the impoundment is deemed to have met the habitat characteristics and aquatic life criteria for water quality certification if (i) the impoundment is able to support all species of fish indigenous to those waters and (ii) the structure and function of the resident biological community in the impounded waters is maintained. The Commission finds that the Ripogenus impoundment is a hydropower impoundment qualifying for evaluation under 38 M.R.S.A. section 464(9) and c.813.

- B. Class B waters shall be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12 section 403; and navigation; and as habitat for fish and other aquatic life. The habitat shall be characterized as unimpaired. 38 M.R.S.A. section 465(3)(A).

19. Numeric Standards (Dissolved Oxygen):

- A. Class GPA waters do not have numeric standards for dissolved oxygen (DO).
- ~
B. The dissolved oxygen content of Class B waters shall be not less than 7 parts per million (ppm) or 75% of saturation, whichever is higher; except that for the period from October 1 to May 14, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration shall not be less than 9.5 parts per million and the 1-day minimum dissolved oxygen concentration shall not be less than 8.0 parts per million in identified fish spawning areas. 38 M.R.S.A. section 465(3)(B).

20. Narrative Standards:

- A. Class GPA waters shall maintained such that their trophic state meets standards based on measures of the chlorophyll "a" content, Secchi disk transparency, total phosphorus content and other appropriate criteria. Class GPA waters shall have a stable or decreasing trophic state, subject only to natural fluctuations and shall be free of culturally induced algal blooms which impair their use and enjoyment. 38 M.R.S.A. section 465-A(1)(B).
- B. Discharges to Class B waters shall not cause adverse impact to aquatic life in that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community. 38 M.R.S.A. section 465(3)(C).

21. Applicable Portions of Antidegradation Policy:

38 M.R.S.A. section 464(4)(F) provides that existing in-stream water uses and the level of water quality necessary to protect those existing uses shall be maintained and protected. Existing

in-stream water uses are those uses which have actually occurred on or after November 28, 1975, in or on a waterbody whether or not the uses are included in the standard for classification of the particular waterbody. Water quality certification may be made only if the standards of classification of the waterbody and the requirements of the State's antidegradation policy will be met. Accordingly, the antidegradation policy requires protection of existing uses and provides that, if water quality actually exceeds the standards required for the water's classification, the existing higher water quality must be maintained. 38 M.R.S.A. section 464(4)(F).

Discussion of Issues

22. Dissolved Oxygen

The applicant performed extensive sampling and analysis of West Branch waters during 1986, 1987, and 1988. Stations were sampled on a one day per month basis within the McKay Station tailrace and in the Upper Gorge. The lowest flow below McKay Station during sampling was 1232 cfs. Samples were taken in the Upper Gorge at leakage flows. Minimum measured dissolved oxygen levels were 7.4 ppm in the Upper Gorge and 7.3 ppm in the tailrace at temperatures of 14.0 degrees Celcius (gorge) and 22.7 deg. C (tailrace). Minimum percent saturations were 74.6% in the gorge and 82.6% in the tailrace. During the period from October 1 to May 14, dissolved oxygen levels below McKay Station ranged from 9.7 ppm to 11.6 ppm. Dissolved oxygen levels in the Upper Gorge during this period ranged from 10.8 ppm to 12.3 ppm.

Dissolved oxygen levels are not expected to deteriorate from existing levels under the proposed Water Use Plan. Notably, water flows in the Upper Gorge would be increased to 100 cfs from July 1 (or earlier, beginning when adult salmon appear at McKay Station) to September 30 of each year to provide adult salmon habitat and fishing opportunity.

The Maine Department of Environmental Protection Bureau of Water Quality Control has reviewed the proposed Water Use Plan and sampling and analysis results and concludes the West Branch downstream of Ripogenus Dam meets at least Class B dissolved oxygen standards and would continue to do so under the Water Use Plan.

23. Trophic State

The applicant also performed extensive sampling and analysis of impoundment waters during 1986, 1987, and 1988 with the following results:

Caribou Lake: Caribou Lake is an oligotrophic lake. The lake becomes thermally stratified with considerable dissolved oxygen (DO) depletion with concentrations below 5 mg/l within the hypolimnion during the summer (1.9 mg/l minimum) and a slight supersaturation in surface water during May and July. Total phosphorus ranged from 3.0 to 29.0 parts per billion (ppb) and chlorophyll "a" ranged from 1.19 to 2.67 ppb. The sampling

indicated soft, poorly buffered water with a moderately high color.

Chesuncook Lake: Chesuncook Lake is an oligotrophic lake. The lake becomes thermally stratified with considerable DO depletion with concentrations below 5 mg/l within the hypolimnion during the summer (2.2 mg/l minimum). Total phosphorus ranged from 3.0 to 115.0 ppb and chlorophyll "a" ranged from 0.48 to 1.73 ppb. The sampling indicated soft, poorly buffered water with a moderately high color.

Ripogenus Lake: Ripogenus Lake is an oligotrophic lake. The lake becomes thermally stratified with considerable DO depletion with concentrations below 5 mg/l within the hypolimnion during the summer (3.6 mg/l minimum). Total phosphorus ranged from 5.0 to 250.0 ppb and chlorophyll "a" ranged from 0.48 to 1.72 ppb. The sampling indicated soft, poorly buffered water with a moderately high color.

The Maine Department of Environmental Protection Bureau of Water Quality Control has reviewed the application and the applicant's basis for classifying the impoundment waters. The Department has concluded that significant stratification and hypolimnic dissolved oxygen depletion occur within the GPA impoundments, and that no point source discharges (residential, commercial, or industrial wastewater discharges) are licensed or occur to these waterbodies. The Department concludes that the impoundments are attaining a stable trophic state.

24. Fisheries Resources

- A. The impoundment and the West Branch below Ripogenus Dam support both coldwater and warmwater fish species. The major sport fisheries are landlocked salmon, lake trout (togue), smelt, burbot, and white perch, with minor fisheries for brook trout and lake whitefish. With the exception of lake trout, the fish populations are the result of natural reproduction and are self-sustaining. Also present are populations of suckers, minnows, and other non-sport species typically found in northern Maine waters.
- B. Both the applicant and the Maine Department of Inland Fisheries and Wildlife have conducted numerous studies of these fish populations both within and below the impoundment. The coldwater fisheries within the project, and the fishing opportunities they provide, are characterized in testimony of the Maine Department of Inland Fisheries and Wildlife as "among the finest and the most important in the State of Maine." Fish populations in the project waters are managed by the Department for self-sustaining coldwater and warmwater fisheries. Testimony of the Department indicates the salmon fishery exceeds statewide management objectives for average size of fish, and the catch rate is one of the highest in the state. Togue are occasionally stocked in the impoundment (last stocking in 1989). The Department, however, does not manage the impoundment or other project waters for a self-sustaining togue population.

C. Ripogenus Dam was constructed to its present design in 1923. McKay Station became operational in 1953. The project has been operated generally in its present mode of storage and generation since log drives on the West Branch ceased in 1971.

- (1) Impoundment. Project operation results in an annual drawdown of the project impoundment an average of 16.5 feet, with a maximum possible drawdown of 44 feet. This results in the littoral zone along the shore of the impoundment being annually exposed to drying and freezing, and wind, wave and ice action. Information submitted by the applicant shows the aquatic communities of the impoundment are similar to those of other upper oligotrophic Maine lakes, but that the diversity and/or abundance of some aquatic groups (i.e., periphyton, plankton, or macroinvertebrates) may differ as a result of present fluctuating water level management. Typical lacustrine submerged, floating-leaved, and emergent aquatic vegetation in the impoundment littoral zone is poorly developed. Much of the littoral area is composed of coarse substrate, is wave-swept, and is not conducive to the establishment of aquatic vegetation. Moreover, accumulation of finer bottom materials that would support aquatic plant growth is discouraged by wave and ice action over a range of water levels. Aquatic vegetation is sparse, occurring sporadically at or below the lower edge of the zone affected by the drawdown.

The application shows current project operation has the potential to affect fish populations by (a) the overall effect of seasonal and annual drawdown and dewatering on habitat, aquatic communities, primary production, and fishing opportunity, and (b) the effect of drawdown on reproduction of species that spawn in the impoundment or that require access to spawning tributaries. Lake trout, lake whitefish, and burbot are all fall-winter lake spawners whose eggs are subject to loss from dewatering caused by drawdown during the incubation periods that extend into May. Brook trout are also fall spawners, using lake spawning habitat as well as tributary streams. Based upon the weight of the evidence, it is conceivable but unlikely that this mode of operation has caused declines of brook trout and lake whitefish populations, through disruption of their reproductive cycles by dewatering of spawning areas. The Maine Department of Inland Fisheries and Wildlife testified this decline is not likely the result of project operation. The Department believes these declines are primarily due to interspecific competition; through competition for food between young landlocked salmon and brook trout, and through whitefish egg predation by rainbow smelt. The Department noted as a comparison that Brassua Lake, located outside of the project area and which undergoes a more extreme habitat reduction through annual drawdown, still supports a thriving brook trout fishery.

Fluctuations of impoundment water levels are historic; and populations of all species appear to be stable under current operation of the impoundment. The Department testified that present and proposed water level management in the Ripogenus impoundment does not appear to jeopardize existing fish populations and will continue to allow for support of all indigenous fish species.

The intervenors CLF group and Trout Unlimited raised a concern that project operation may be resulting in increased bacterial transformation of mercury to its methylated (biologically active) form and its subsequent bioaccumulation within the project waters' resident aquatic life, particularly with regard to large predatory fishes, and also to bald eagles nesting and foraging within the project area. Data in the application indicates mercury levels of impoundment waters and sediments are elevated, in a manner and at levels similar to other waterbodies in the region. Fish tissue samples from the project area were not tested for mercury; however, fish samples from the North Twin impoundment downstream of the project show concentrations ranging from 0.71 ppm to 1.4 ppm, levels comparable to other lakes in the region. The Food and Drug Administration (FDA) standard for edible fish tissue is 1.0 ppm. The concentrations of mercury in fish from non-impounded Maine lakes in some cases also exceed FDA standards.

Testimony of Great Northern's expert witnesses (Mr. Dennis Sasseville and Drs. Theresa Bowers, Anne Shortelle, and Ian Nisbet) was unanimous and credible with regard to their opinion that elevated lake mercury levels are a regional phenomenon. Based upon their experience and review of available scientific literature, they are aware of no mechanism(s) by which the annual drawdown of the impoundment would result in an increase in methylated (biologically active) mercury levels. While the method(s) by which elemental mercury is made available and concentrated up the food chain is currently not understood in its entirety, increases in methyl mercury levels are most likely caused in newly flooded impoundments, where mercury is leached from the flooded soils and converted to the methylated form. This phenomenon would not appear to be present in older impoundments like Ripogenus. While testimony indicated that there may be no predictable correlation between water and/or sediment mercury levels and mercury levels in fish, testimony also indicated that the methylation process is predominately controlled by biological and chemical conditions in the water column. These conditions within the waters affected by the project have been extensively described, without revealing any conditions suggestive of unusual methylation rates. Dr. Nisbet also testified there is no research indicating that exposure to mercury has caused reproductive impairment of

bald eagles; nor any reports of other toxic effects on eagles, other than in cases of acute poisonings.

In rebuttal, Dr. Kenneth Kimball, for the CLF group, suggested several possible mechanisms by which he believes project operation might be accelerating methylation and bioaccumulation of mercury, including the impoundment's catch of the spring runoff capturing and retaining mercury deposited from the atmosphere in the approximately 1,422 square mile watershed, the dewatering and subsequent plant growth over substantial areas of the impoundment resulting in conditions not unlike those of a newly flooded impoundment, and unusually high levels of bioaccumulation by the large smelt population in the impoundment. Smelt are known to be efficient bioaccumulators of mercury, and concern has been raised that the smelt "drift" through McKay Station may be effecting a substantial export of mercury from the impoundment to the West Branch.

- (2) Below McKay Station: The Department of Inland Fisheries and Wildlife testified that, at present, salmon fishing in the West Branch exceeds the state-wide objectives for the Department's salmon management plan. The extreme and lengthy river flow variations that would be experienced under natural conditions have been largely eliminated by regulation of the project for hydroelectric power generation. In addition, smelt "drift" through the project provides the forage base for the salmon fishery. These benefits of the project to the fishery have occasionally been countered, however, by flow reductions during the salmon egg incubation period resulting in spawning redds' exposure and loss.

The West Branch is unusual in its support of all life stages of landlocked salmon. Adults usually live in lakes, with spawning and juvenile stages in tributary streams. In the West Branch, however, the river provides lacustrine-like adult habitat in its large deadwater areas and pools. Studies by the applicant, and the healthy and productive fishery described by the Department of Inland Fisheries and Wildlife demonstrate the existence of ample spawning and nursery habitat available in the 20+ mile reach below McKay Station.

To provide additional salmon spawning and nursery habitat, the applicant proposes to rewater a 400+ yard long side channel known as the Holbrook Channel, located just upstream of Telos Bridge (below McKay Station). Minimum flow in the channel will be maintained at approximately 25-35 cfs. This will create approximately 7,000 square yards of additional fish spawning and nursery habitat.

Ripogenus Dam is a complete barrier to upstream movement of West Branch fish populations. The dam does not have a fishway and construction of a fishway is not proposed. Because of a natural vertical drop just below the dam site,

pre-dam conditions of the site likely precluded upstream fish passage. The Department of Inland Fisheries and Wildlife has concluded that installation of a fishway is not necessary for either management or sustainment of the existing fisheries in the project area.

- (3) Upper Gorge: The streambed of the Upper Gorge is confined by steep banks and nearly sheer rock walls throughout virtually its entire length. Substrate is generally coarse and heavy, with virtually no aquatic vegetation. The configuration of the channel results in generally high velocity and turbulent conditions when flows are greater than approximately 100 cfs.

Upper Gorge habitat is composed of permanent pools, scattered areas that become small pools at various flows above leakage, and riffle/run reaches. There are seven permanent pools, which make up approximately one-third of both the length and the wetted area (at leakage flow from the dam) of the Upper Gorge. In addition to the permanent pools, several smaller areas exist which become pools at certain flows. These pools exist where channel constrictions or hydraulic controls create pool conditions that are suitable for holding salmon and providing fishing opportunity. These flow dependent pools are created at specific ranges of flow and may not exist at greater or lesser flows.

In addition to the observations made during annual studies and the preliminary habitat/flow study conducted by the applicant in 1986, a comprehensive inventory of available salmon habitat was made during a 1989 instream flow study conducted jointly by the United States Fish and Wildlife Service, the Maine Department of Inland Fisheries and Wildlife, and the applicant. In addition, Redd surveys were conducted from 1985 through 1989. While there is plentiful salmon habitat at 100 cfs, there is virtually no spawning habitat in the Upper Gorge.

While neither brook trout spawning habitat nor spawning have been observed during salmon redd surveys in the Upper Gorge, electrofishing studies have documented the presence of large numbers of young of year (juvenile) and smaller numbers of older brook trout in the Upper Gorge. It is possible that brook trout reproduction is occurring in one or more small inflows into the Upper Gorge. Young of year brook trout use similar habitat but lower velocity areas than young of year salmon in the Upper Gorge. Larger trout will seek velocity refuges in the numerous small pocket pools and lower velocity riffle areas.

Flow in the Upper Gorge has been leakage from the dam (usually less than 20 cfs), except when there is spillage from the Ripogenus dam gates. Spillage usually occurs in the spring and has occurred in 12 of 20 years from 1970 to 1989. These discharges have been as high as approximately

- 2 11,715 cfs, with durations of 1 to 34 days per spill and a maximum of 73 days of spill in any one year. As described above, Great Northern proposes a flow of at least 100 cfs in the Upper Gorge from the time salmon arrive at McKay Station from downstream (approximately July 1) to September 30 of each year to provide salmon habitat and fishing opportunity.

Upper Gorge water quality is excellent for fisheries management at all flows. Summer water temperatures and pH are within the suitability range of salmon, brook trout, and other species. Dissolved oxygen concentration are always at or near saturation. There are no detrimental discharges or inflows. The excellent growth of juvenile salmon and brook trout taken by electrofishing suggests the existence of a relatively abundant macroinvertebrate community. However, due to frequent high-flow spillages from the dam, and the removal of suitable spawning substrates by those flows, the Upper Gorge is not suitable as salmon spawning habitat.

25. Other Aquatic Life

- A. Impoundment. While the diversity and/or abundance of some aquatic groups (e.g., periphyton, plankton, or macroinvertebrates) may differ as a result of present water level management, most of the aquatic communities of the project impoundment are similar to those of other upper oligotrophic Maine lakes. Typical lacustrine, submerged, floating-leaved, and emergent aquatic vegetation is poorly developed in the project impoundment. Much of the littoral area is composed of coarse substrate, is wave-swept, and is not conducive to the establishment of aquatic vegetation. Moreover, accumulation of finer bottom materials that would support aquatic plant growth is discouraged by wave and ice action over a range of water levels. Aquatic vegetation is sparse, occurring sporadically at or below the lower edge of the drawdown zone.

Wetlands associated with the impoundment are generally discrete communities that have developed in areas protected from the high wind, wave, and ice action that is typical of the impoundment. Many of the more extensive wetlands associated with the impoundment are at least partially hydrologically independent of the impoundment, while those hydrologically dependent on the impoundment tend to be smaller and/or composed of species with some degree of tolerance for fluctuating water regimes.

In comments made to the Commission on the application, the Maine Department of Inland Fisheries and Wildlife expressed concern that the fluctuating water levels may adversely affect shoreline nesting birds, and that receding water levels may harm overwintering aquatic furbearers. Because of the magnitude of the drawdown during the months when the impoundment is frozen, the mortality of overwintering beaver

and muskrat probably is very high due to exposure of the dens. Overwintering populations of these two species are probably largely related to the number of individuals dispersing into the project area from outside during the ice-free months. Adverse impacts of the project to mink should not be great because of their ability to use terrestrial, rather than aquatic, habitats during winter. Impacts of receding water levels on overwintering otter populations are unknown.

- B. Below McKay Station. The aquatic communities of the West Branch are typical of those found in flow-regulated Maine rivers below headwater impoundments. Flow management in the West Branch enhances benthic macroinvertebrate production. The relative stability of river banks, substrate, depth, and velocity is conducive to healthy aquatic populations. The discharge of plankton-rich waters from the impoundment influences the diversity and abundance of the riverine populations, with measurable differences related to distance downstream from the impoundment and substrate variation.

The West Branch supports wetland and aquatic vegetation. There are many well-developed wetlands below McKay Station that have developed due to the relatively flat topography that borders the deadwater areas located along the lower segment of the river, and the stable river flow resulting from project operation. The most common wetland communities are shallow marsh/wet meadow, and open bog/wet meadow, which occur generally along the periphery of quiet areas. These wetlands provide abundant habitat for aquatic life.

- C. Upper Gorge. The Upper Gorge receives water flows from two sources: 1) leakage flow from Ripogenus dam and 2) spillage flow during high runoff periods, typically during the spring of about three out of every five years. The streambed of the Upper gorge is confined by steep banks and nearly sheer rock walls throughout virtually its entire 3,900 foot length. Substrate is generally coarse and composed primarily of rock ledge outcroppings and boulders, although small, scattered pockets of gravel and cobble can also be found in some areas. There are virtually no macrophytes in the Upper Gorge, although woody debris is present. Upper Gorge habitat is composed of permanent pools, scattered areas that become small pools at flows greater than leakage, and riffle/run reaches. At leakage flow, riffle/run habitat comprises about two-thirds of both the length and total wetted area of the Upper Gorge; permanent pools comprise the remaining third.

The Maine Department of Environmental Protection Bureau of Water Quality Control recommends that a flow of at least 50 cfs must be maintained at all times in order to meet its general policy for assuring attainment of the aquatic life criteria. The Department calculates that at 50 cfs, 95% of the Upper Gorge would have a channel width at least equal to 75% of the channel width at 300 cfs. Even with the constant 50 cfs flow recommended by the Department, the gorge would contain

approximately 6.2 acres of aquatic habitat, 79% of the 7.8 acres available at 300 cfs (full channel).

At leakage flows (estimated to be 12 cfs when aquatic life studies included in the application were carried out), the Upper Gorge contains approximately 5.8 acres of aquatic habitat, 74% of the 7.8 acres available at 300 cfs. With a constant 50 cfs flow, the gorge would contain only an additional 0.4 acres of aquatic habitat (6.2 acres, or 79%), and less at the Department's recommended 75%. The application indicates that water temperature and dissolved oxygen levels would remain the same over the range of flows between leakage and 50 cfs. Under the circumstances, the aquatic life criterion is met with the leakage flow of 12 cfs since a 50 cfs flow will result in an insignificant increase in habitat with disproportionate loss to other designated uses.

26. Recreation, Fishing and Navigation

The project area provides a broad array of recreational opportunities, a fact which is amply demonstrated by public testimony.

- A. Impoundment. Current recreational uses in and on the project impoundment include sport fishing, boating, canoeing, kayaking, camping, hunting, swimming, snowmobiling, cross-country skiing, and sightseeing. Use of the impoundment during the summer months consists primarily of boating, fishing, camping, and the use of existing seasonal camps on leased lots adjacent to the impoundment. Fishing is the principal recreational use of the impoundment. The applicant estimates that approximately 4,000 to 5,000 angler days occur on the impoundment during the open water fishing season from April 1 to September 30. The applicant estimates that 9,900 camping days occur at the 18 State-managed campsites and the Allagash wilderness camping area located adjacent to the impoundment. Winter recreational use consists primarily of ice-fishing and snowmobiling. Approximately 2,500 to 4,000 angler days occur during ice-fishing season (January 1 to March 31).

Boat launching facilities are provided at Ripogenus Lake at Allagash Gateway Campsite, Chesuncook Lake at Chesuncook Dam Point and at Umbazooksus Stream, and Caribou Lake at a site off the Golden Road. In response to requests by the Maine Department of Conservation's Bureau of Parks and Recreation, the applicant has proposed to improve the boat launch on Caribou Lake by removing several trees, and placing gravel to provide a pull-ahead area and making other minor improvements to expand and improve the existing parking area. The applicant has also agreed to cooperate with the Department in marking any navigational hazards, should the Department deem such steps necessary in future.

The Bureau also recommends that the applicant be required to consult with the Bureau if the privately owned and operated

Allagash Gateway boat launching area is closed, to determine if an additional launch facility is warranted and should be constructed at that time.

The Bureau recommends that the applicant be required to continue to keep flow records as well as monitor recreation use, and to review the effectiveness of the Water Use Plan, with regard to flow management for the different resources and uses, to be compiled and reported every ten years over the term of the new project license.

- B. Upper Gorge. The dam and the Upper Gorge are frequented by hikers, sightseers, and other visitors in the summer months. There is a 0.75 mile long trail adjacent to the gorge within the project boundary. There is little boating in the gorge, due to the physical conditions (e.g. pitch, large rocks). As stated above, the applicant has proposed to provide flows of at least 100 cfs in the gorge from July 1 to September 15 to create additional fishing opportunity.
- C. Below McKay Station. The West Branch below McKay Station supports a broad range of recreational activities. Flows from McKay Station are conducive to an excellent landlocked salmon fishery and other water-related recreational resources. The applicant's studies found that 27% of the total visitor day use was for fishing. From April 1 to September 30, 5,900 to 8,000 angler days occur annually along this section of the river.

Whitewater boating is another important recreational use of the West Branch below McKay Station. The applicant estimates 17,000 to 18,000 whitewater rafters per year raft this segment of the West Branch, with the put-in point at McKay Station. The river is also used for canoeing and kayaking. Access points are numerous. Other uses of this river segment, such as sightseeing, camping and hunting, are popular during the summer and fall and are characterized as moderate to heavy.

The applicant proposes minimum flows of 2,000 cfs from May 1 to September 15 of every year to accommodate recreational whitewater rafting, canoeing and kayaking uses, with at least 1,800 provided during daytime hours as soon as possible after an outage.

The Maine Professional River Outfitters Association (MEPRO), an intervenor, has requested a 2,400 cfs minimum flow from May 1 to October 15, noting that this level is the average flow from the project over the 15 year study period. MEPRO indicates that the proposed minimum flows of 2,000 cfs (1,800 cfs after an outage) ensure only the "existence" of commercial whitewater rafting on the West Branch, while the higher flows requested would enhance the viability and future prosperity of commercial whitewater rafting by providing the rafting public a more enjoyable rafting experience, allowing for safer operation of rafting trips, and allowing rafting trips to be completed in a timely manner as required by law.

- Dr. John Frachella, speaking for a group of recreational whitewater boaters, testified in support of the applicant's proposed flows, indicating that certain whitewater sections are paddleable only by experts at the higher flows requested by MEPRO, and that variable flows allow use by paddlers of varying skill levels.
- D. Enhancements for Recreational Access and Use. In addition to the proposed minimum flows for boating and fishing below Ripogenus Dam, measures proposed by the applicant to enhance recreational access and use include, but are not limited to:
- (1) Improvement of the informal boat launch on Caribou Lake;
 - (2) Installation of two concrete vault privies at the parking lot adjacent to the McKay Station access road;
 - (3) Maintenance of an abandoned dirt road extending from Ripogenus Dam along the top of the Upper Gorge for pedestrian use;
 - (4) Construction of changing rooms at the Never's Corner take-out area for whitewater rafters and boaters; and
 - (5) Continued assessment of the adequacy of existing recreational facilities once every ten years for the term of the new license, and consultation with the Maine Bureau of Parks and Recreation when each assessment is completed.

The measures described in items 1-4 above, if not already accomplished, would be completed by the applicant within one year following issuance of the FERC license.

27. Hydroelectric Power Generation

The State of Maine has adopted an Energy Resources Plan (Office of Energy Resources, October 1987) designed to "promote the present and future economic well-being of Maine residents and businesses by ensuring the availability of reliable energy at the lowest possible cost." Specifically, the Plan calls for the State to:

- * Encourage cost-effective energy conservation measures in the public sector and least cost planning in the electric and gas industries;
- * Promote the environmentally sound development and use of cost-effective indigenous and renewable energy resources;
- * Pursue strategies designed to reduce the cost of all imported energy and to increase the availability of natural gas in the state; and
- * Encourage the diversification of energy investments in Maine.

With respect to hydroelectric power, the Plan recommends that the development of hydropower be encouraged in a manner consistent with the Maine Rivers Act and that the upgrading of existing

hydroelectric dams be examined during relicensing. Great Northern, proposes no further development of the project, but proposes operation according to its Water Use Plan that will result in some modest decrease in generation to accommodate other competing uses of the water resources in the project area.

During the period 1976-1990, the Ripogenus Project had an annual net electric generation of 226,760 Megawatt-hours. This is equivalent to the energy that would be produced by burning 377,931 barrels of oil or 105,080 tons of coal each year. If operated as proposed, the Ripogenus Project will continue to provide cost-effective indigenous and renewable electricity.

Based on the above Findings of Fact, and subject to the Conditions listed below, the Commission concludes that:

1. Because of its extreme water level fluctuations and other characteristics, the Ripogenus impoundment qualifies for treatment under 38 M.R.S.A. section 464(9) [P.L. 1992 c. 813].
2. With Respect to Designated Uses:
 - A. The continued operation of the project as proposed will result in the affected waters being suitable for drinking water after disinfection (Class GPA) or after treatment (Class B).
 - B. The continued operation of the project as proposed (including the proposed enhancements) will result in the affected waters being suitable for recreation in and on the water provided that, in the period between May 1 and September 15, daytime minimum flows of at least 2,000 cfs are provided below McKay Station during normal months, and at least 1,800 cfs during wet or dry months, as the terms "normal", "wet" and "dry" are defined in the Water Use Plan. These levels must be achieved as soon as possible following an outage. The Commission is persuaded that reestablishment of the pre-outage recreational flow of 2000 cfs is feasible under the Water Use Plan and reflects a more appropriate balancing of the designated uses than the applicant's proposal.
 - C. The sport fisheries supported by project waters are a recreational resource of statewide significance. Concerns were raised regarding the possibility of elevated mercury levels in sport fish. The most persuasive evidence suggests that mercury levels in these waters are not caused by project operations, but some additional study of this issue is required under Condition #3. The continued operation of the project as proposed (including the proposed enhancements) will result in the affected waters being suitable for fishing.
 - D. The continued operation of the project as proposed (including the proposed enhancements) will result in the

- 2 affected waters being suitable for industrial process and cooling water supply.
- E. While operation of the project as proposed will result in slightly less water being available for hydroelectric power generation (through increased minimum outage and Upper Gorge flows, for example), the continued operation of the project as proposed (including the proposed enhancements) will result in the affected waters being suitable for this use.
- F. The continued operation of the project as proposed (including the proposed enhancements) will result in the affected waters being suitable for navigation.
- G. The continued operation of the project as proposed (including the proposed enhancements) will result in the affected waters being suitable as habitat for fish and other aquatic life provided that the applicant maintains a flow of at least 100 cfs in the Upper Gorge from the time salmon reach McKay Station from downstream (approximately July 1) to September 30 of each year, and at least 12 cfs at all other times.

2 With regard to the project impoundment, the Commission concludes that, as might be expected of any mode of operation, current operation appears to be relatively advantageous to some species (e.g. landlocked salmon and smelt), and disadvantageous to others (brook trout and lake whitefish). Nonetheless, the impoundment is able to support all species of indigenous fish. Further, the structure and function of the impoundment's resident biological community (including that of wetlands associated with the impoundment), which has, to a large extent, been determined by present operation of the impoundment, will be maintained by the impoundment's continued similar operation. Accordingly, the impoundment satisfies the criterion for attainment of the designated use of aquatic habitat and other aquatic life criteria set forth in Chapter 813.

With the relatively stable flows provided below McKay Station as proposed by the applicant and in the Upper Gorge as required by conditions of this certification, the aquatic habitat below Ripogenus Dam, and wetlands associated with the West Branch below McKay Station, will not be degraded by project operation.

3. The continued operation of the project as proposed will result in at least Class B standards for dissolved oxygen being met in the affected waters.
4. The continued operation of the project as proposed will result in the narrative Class GPA and at least Class B standards being met in the affected waters, provided the project is operated in accordance with the conditions of this certification. To the extent that project waters, both in the impoundment and

- ~ downstream, exceed the standards of these classifications, the existing water quality will be maintained.
5. The continued operation of the project as proposed will comply with the State's antidegradation policy provided that the applicant conducts a study, in cooperation with the Maine Department of Environmental Protection and the U.S. Environmental Protection Agency, to determine the interrelationship and impacts of atmospheric deposition and water level fluctuations on concentrations of mercury in aquatic life, including sport fish, in the Ripogenus Impoundment and the West Branch.

Therefore, the Commission grants certification that there is a reasonable assurance that the continued operation of the Ripogenus Hydroelectric Project, as proposed by the applicant and modified herein, will not violate applicable water quality standards, subject to the following conditions:

1. MINIMUM FLOWS

- A. Except as temporarily modified by operating emergencies beyond the applicant's control, as defined below, the Ripogenus Project must be operated such that minimum flows are maintained as proposed by the applicant, and described in this decision, with the following exceptions:
- (1) A minimum flow of at least 12 cfs must be maintained in the Upper Gorge at all times; and
 - (2) During the period from May 1 to September 15, a daytime recreational flow of at least 2,000 cfs must be provided during normal months (as defined in the Water Use Plan and described above), and of at least 1,800 cfs during wet or dry months. These flows must be achieved as soon as possible following any outage.
- B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating condition, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.
- C. Flows required to promote salmon spawning and incubation, as described in the application, shall be established each year in consultation with the Maine Department of Inland Fisheries and Wildlife.
2. The applicant shall continue to keep accurate flow records and monitor recreational use; and shall review the effectiveness of its Water Use Plan with the Commission, other interested resource agencies, and affected private groups every ten years over the term of the new project license.
3. The applicant shall conduct a study similar in scope to that conducted by the applicant for Millinocket Lake in 1992 to

- 2 assess mercury concentrations in aquatic life in the Ripogenus impoundment and the West Branch. Such study shall include sampling of game fish in the project area. A work plan and proposed schedule for the study shall be submitted to the Commission for its review and approval within 90 days of the effective date of this certification. Such study, including all data collected, shall be submitted to the Commission upon completion. In addition, the applicant shall cooperate in a study to be conducted by the Maine Department of Environmental Protection and the U.S. Environmental Protection Agency to determine the interrelationship and impacts of atmospheric deposition and water level fluctuations on concentrations of mercury and other heavy metals on aquatic life in the project waters.
4. The applicant shall, within 6 months of FERC relicensing or upon such a schedule as may be established by FERC, submit a plan for implementing all proposed fisheries, fishing, recreational, habitat, and navigational enhancements specified herein and those specified in its FERC application. This plan shall be reviewed by and must receive approval of the Maine Land Use Regulation Commission.
 5. This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted by the applicant except as herein specified. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Commission prior to implementation.
 6. The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project.
 7. This water quality certification shall be effective on the date of issuance of a new hydropower project license by the Federal Energy Regulatory Commission (FERC) and shall expire with the expiration of the FERC license.
 8. This water quality certification does not constitute an approval of any aspects of the applicant's Water Use Plan or any other elements of its proposal that deal with upstream impoundments, as these are to be subject to future licensing by the Federal Energy Regulatory Commission and water quality certification by the State.

DONE AND DATED AT BANGOR, MAINE THIS 15TH DAY OF APRIL, 1993.

By: David E. Boulter
David E. Boulter, Director