

DRAFT 11/27/2007

IN THE MATTER OF

FPL ENERGY MAINE HYDRO LLC)	WATER QUALITY CERTIFICATION
Lewiston, Auburn, Turner, Greene, Leeds, and)	
Livermore, Androscoggin County)	
GULF ISLAND-DEER RIPS HYDRO PROJECT)	FINDINGS OF FACT AND ORDER
#L-17100-33-O-N)	ON APPEAL

Pursuant to the provisions of 38 M.R.S.A. Section 341-D and *Rules Concerning the Processing of Applications and Other Matters*, 06-096 CMR 2 (effective April 1, 2003), the Board of Environmental Protection has considered the appeals of FPL ENERGY MAINE HYDRO LLC and CONSERVATION LAW FOUNDATION, MAINE RIVERS, ANDROSCOGGIN RIVER ALLIANCE, and ANDROSCOGGIN LAKE IMPROVEMENT ASSOCIATION of the Department's Order of September 21, 2005 granting water quality certification, with conditions, for the continued operation of the Gulf Island-Deer Rips Hydro Project. Based on a review of the materials submitted by the appellants and the applicant, the record of the Board's public hearings on this and related appeals, and other related materials on file, the Board makes the following findings of fact, conclusions, and decision.

1. INTRODUCTION

The Gulf Island-Deer Rips Hydro Project consists of two dams and associated impoundments, three powerhouses, and appurtenant facilities located on the Androscoggin River in the Cities of Lewiston and Auburn and the Towns of Turner, Greene, Leeds and Livermore, Androscoggin County, Maine. The project has a total installed generating capacity of 31.538 megawatts and is operated to provide power to the interstate electricity transmission and distribution system.

The project was originally licensed by the Federal Power Commission (now the Federal Energy Regulatory Commission) on July 5, 1962. The project license was issued with an effective date of July 1, 1958 and an expiration date of December 31, 1998.

On December 3, 1991, Central Maine Power Company ("CMP") filed an application with the Department for water quality certification for the continued operation of the Gulf Island-Deer Rips Hydro Project. Certification was requested in conjunction with CMP's Application for New License to FERC for the project. The application was subsequently voluntarily withdrawn and refiled each year by CMP, pending a decision on the application by the Department.

In 1999, ownership of the project was transferred from CMP to FPL Energy Maine Hydro LLC ("FPLE"). The application for water quality certification was subsequently voluntarily

withdrawn and refiled each year by FPLE until a decision on the application was made by the Department. In withdrawing and refiling the application, FPLE stated that it was reserving its right to challenge the applicability of Section 401 of the Clean Water Act to the Gulf Island-Deer Rips Project.

By Order #L-17100-33-O-N dated September 21, 2005, the Department issued water quality certification for the continued operation of the Gulf Island-Deer Rips Hydro Project, subject to a number of conditions. These conditions included, among other things, requirements for: specified minimum flow releases from the project dams; the future installation of fish passage facilities at the project dams for Atlantic salmon; the injection of specified amounts of additional oxygen into Gulf Island Pond, or other equivalent measures; and a contribution of \$100,000 towards the capital cost of equipment to remove phosphorus from the Livermore Falls wastewater treatment facility effluent, or other equivalent measures. These conditions were imposed to provide a reasonable assurance that the continued operation of the project will not violate applicable water quality standards in Gulf Island Pond and in the Androscoggin River below the project.¹

On October 21, 2005, timely appeals of the Department's September 21, 2005 decision were filed by FPLE and by the Conservation Law Foundation, Maine Rivers, Androscoggin River Alliance, and Androscoggin Lake Improvement Association (collectively, "CLF et al."). An additional appeal filed by the Towns of Livermore Falls and Jay was subsequently withdrawn, pursuant to a Stipulation and Consent Order approved by the Board on May 2, 2007.²

By letter dated November 9, 2006, FPLE submitted a response to the issues raised on appeal by CLF et al.

2. APPLICABLE STANDARDS OF APPEAL

Title 38 M.R.S.A. Section 341-D(4) provides that, in acting on an appeal, "the Board is not bound by the Commissioner's findings of fact or conclusions of law but may adopt, modify or reverse findings of fact or conclusions of law established by the Commissioner." The Board is required to make its own findings and draw its own conclusions based upon the record before it, as well as its interpretation and application of the relevant law. Section 24(B)(7) of the Department's Chapter 2 Rules provides that "the Board shall, as expeditiously as possible, affirm all or part, affirm with conditions, order a public hearing to be held as expeditiously as possible, or reverse all or part of the decision" that has been appealed to the Board.

¹ In its September 21, 2005 order, the Department found Gulf Island Pond to be in non-attainment of Class C water quality standards for dissolved oxygen and for the designated use of recreation in and on the water.

² A summary of the appeals and appeal proceedings is appended hereto and incorporated herein.

3. STANDING

Appellant FPLE is the licensee and owner of the hydropower project that is subject to the Department's September 21, 2005 certification decision. FPLE is thus an aggrieved person as defined by the Department's Chapter 2 *Rules Concerning the Processing of Applications and Other Matters* and has standing to bring an appeal before the Board.

Appellants Conservation Law Foundation, Maine Rivers, Androscoggin River Alliance, and Androscoggin Lake Improvement Association (collectively, "CLF, et al.") are all non-profit corporations or associations whose members may suffer particularized injury as a result of the Department's September 21, 2005 decision. Conservation Law Foundation's mission is to conserve natural resources, protect public health and promote vital communities in New England. Maine Rivers' mission is to preserve and enhance the quality of all Maine rivers. Androscoggin River Alliance and Androscoggin Lake Improvement Association are organized to improve and protect the environmental quality of the Androscoggin River. Each of these organizations is thus an aggrieved person as defined by the Department's Chapter 2 *Rules Concerning the Processing of Applications and Other Matters* and has standing to bring an appeal before the Board.

4. BASIS OF FPLE APPEAL

Appellant FPLE argues that the Department's September 21, 2005 water quality certification is arbitrary and capricious, is against the weight of the credible evidence, and is erroneous as a matter of law. In brief, Appellant FPLE contends that:

- Gulf Island Dam does not discharge any pollutants to the river and consequently the water quality certification unlawfully requires FPLE to assume responsibility for injecting oxygen into Gulf Island Pond;
- The water quality model used by the Department to determine the need for additional oxygen injection into Gulf Island Pond is flawed and must be corrected;
- In allocating responsibility for oxygen, the water quality certification unlawfully requires that FPLE mitigate the impacts of non-point source pollution and unknown sediment oxygen demand on water quality in Gulf Island Pond; and
- The water quality certification unlawfully requires that FPLE pay for phosphorus reductions at an upstream publicly-owned treatment works.

Appellant FPLE requests that the Board amend the water quality certification approved by the Department to delete the requirements that FPLE inject additional oxygen into Gulf

Island Pond and that FPLE pay for phosphorus reductions at the Livermore Falls waste water treatment facility.³

5. BASIS OF CLF, et al. APPEAL

Appellant CLF, et al. argues that the five year schedule of compliance for additional oxygen injection contained in the September 21, 2005 water quality certification violates state and federal law. Specifically, CLF, et al. contends that state and federal law prohibit the use of a compliance schedule when setting final effluent limitations that are necessary to attain the pre-July 1, 1977 dissolved oxygen standard of 5 parts per million, and that this prohibition extends to the oxygenation system requirement because oxygenation is being used to achieve compliance with the dissolved oxygen standard.

Appellant CLF, et al. requests that the Board modify the water quality certification approved by the Department to require immediate completion of the addition oxygen injection system or, if the Board determines that a compliance schedule for additional oxygen injection is legal, to require attainment of water quality standards in as short a time as possible and to impose specific interim enforceable requirements.

6. RESPONSE TO APPEAL

In its response to the appeal by CLF, et al., FPLE argues that the Department may lawfully utilize a compliance schedule for additional oxygen injection into Gulf Island Pond, but that there is no basis in law or fact for FPLE's participation in any additional oxygen injection system. FPLE further argues that both the compliance schedule and the additional oxygen injection requirement should be rejected as these pertain to FPLE.

7. PROCEDURAL HISTORY

On August 3, 2006, the Board voted to schedule a consolidated public hearing on the pending appeals of the water quality certification for FPLE's Gulf Island-Deer Rips Hydro Project and the related appeals of the permits for Verso Paper's Androscoggin (Jay) pulp and paper mill⁴ and Rumford Paper Company's Rumford pulp and paper mill.⁵

³ In its appeal, FPLE also initially argued that the conditions of the certification relating to minimum flows and fish passage were either illegal or unsupported by the evidence and should be deleted. These items of the appeal were subsequently withdrawn by FPLE. See attached summary of appeals and appeal proceedings, page 21.

⁴ By Order #W000623-5N-F-R and #ME0001937 dated September 21, 2005, the Department issued a combined waste discharge license and Maine Pollutant Discharge Elimination System Permit for the discharge of treated waste waters to the Androscoggin River from a kraft pulp and paper mill in Jay, Maine. Appeals of this decision were filed by International Paper (now Verso Paper, licensee), FPLE, CLF, et al., and the Natural Resources Council of Maine ("NRCM").

⁵ By Order #W000955-5N-G-R and #ME0002054 dated September 21, 2005, the Department issued a combined waste discharge license and Maine Pollutant Discharge Elimination System Permit for the discharge of treated waste waters to the Androscoggin River from a kraft pulp and paper mill in Rumford, Maine. Appeals of this decision were filed by Rumford Paper Company ("RPC," licensee), FPLE, and CLF, et al.

An adjudicatory hearing to receive testimony from the parties and the general public on whether the legal standards for wastewater discharge permits and for water quality certification, as set forth in federal and state law and applicable regulations, have been met was held on May 2, 3, 4, 8 and 9, 2007 in Auburn and on May 10 in Augusta. Daytime sessions were devoted to testimony from and cross-examination of witnesses called by the parties. Evening sessions on May 3 and 8 were devoted to receiving testimony from members of the general public.

7. DISCUSSION OF FPLE APPEAL

a. FPLE's Responsibility for Additional Oxygen Injection

FPLE's basic argument can be summarized as follows: (1) Gulf Island Dam does not add pollutants to Gulf Island Pond and is therefore not subject to the requirement to obtain water quality certification; (2) Gulf Island Dam does not cause the non-attainment of dissolved oxygen standards in the pond;⁶ and, therefore, (3) FPLE is not responsible for injecting any additional oxygen into the pond.⁷ For the reasons discussed below, the Board rejects this argument.

The United States Supreme Court has held that operating a dam to produce hydroelectricity constitutes an activity that may result in a discharge into navigable waters and, as a consequence, that state water quality certification is required pursuant to Section 401 of the Clean Water Act for the issuance of a federal license for such a dam. The Court has also held that it is not necessary that there be an addition of pollutants to trigger the requirements of Section 401. S.D. Warren Co. v. Maine Board of Environmental Protection et al., 547 U.S. ____ (2006).

Section 401 of the Clean Water Act provides that any certification shall set forth any effluent limitations and other limitations and monitoring requirements necessary to ensure that the applicant will comply with applicable provisions of the Act and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any federal license or permit.⁸ The Maine Supreme Judicial Court has held that, where water quality standards are not presently being met, the Board may impose conditions on the operation of a hydropower project that seek to improve existing water quality. S.D. Warren Company v. Board of Environmental Protection, 2005 ME 27.⁹

⁶ The four-mile long segment of Gulf Island Pond directly above Gulf Island Dam is currently included on the State's 303(d) list of river segments that do not attain assigned water quality standards.

⁷ FPLE currently participates in a partnership with Verso, RPC and Fraser Paper to operate the Gulf Island Pond Oxygenation Project ("GIPOP"), which injects up to 91,000 pounds per day of oxygen into Gulf Island Pond.

⁸ See 33 USC § 1341(d).

⁹ In that case, the Law Court upheld conditions requiring that, among other things, the dam owner operate its dams in such a way as to increase dissolved oxygen levels in the river.

Pursuant to the State's antidegradation policy, as set forth in 38 M.R.S.A. Section 464(4)(F), the Department may only approve water quality certification where the standards of classification of the water body and the requirements of the antidegradation policy are met. The policy further provides that the Department may approve a water quality certification for a project affecting a water body in which the standards of classification are not met if the project does not cause or contribute to the failure of the water body to meet the standards of classification.

Finally, EPA regulations (40 CFR Section 121.2) provide that a certification made pursuant to Section 401 of the Clean Water Act shall include a statement that there is a reasonable assurance that the activity will be conducted in a manner that will not violate applicable water quality standards, and a statement of any conditions deemed necessary or desirable with respect to the activity.

In view of the statutes, regulations and Court decisions reviewed above, the questions before the Board are: (1) is water quality certification required for the Gulf Island-Deer Rips Hydro Project; (2) does Gulf Island Dam cause or contribute to the violation of dissolved oxygen¹⁰ standards in Gulf Island Pond; and (3) what conditions, if any, should be imposed in the certification to mitigate any impact of the dam on dissolved oxygen levels in the pond?

- (1). Water quality certification is required.

When FPLE filed this appeal, the *S.D. Warren* case was still pending before the U.S. Supreme Court. The Court's 2006 decision in that case confirmed that certification is required in the context of federal hydropower project relicensing regardless of whether the project adds a pollutant to the water. Therefore, FPLE's threshold legal issue has no merit.

- (2). The dam causes or contributes to non-attainment.

With respect to the impact of Gulf Island Dam on water quality in Gulf Island Pond, the Department made the following findings in its September 21, 2005 decision:

"The evidence in the record indicates that the non-attainment of dissolved oxygen standards (both modeled and monitored) in Gulf Island Pond is the result of (1) the impact of point source discharges of pollutants, (2) the settling and decomposition of algae, (3) the hydrologic conditions created by Gulf Island Dam, and (4) the impact of natural conditions and non-point sources of pollution. Were it not for the presence and hydrologic impacts of Gulf Island Dam, and with point source discharges operating at current licensed limits, the Androscoggin River in the almost 15 mile-long river reach impounded by the dam would meet Class C dissolved oxygen standards, particularly under dry weather conditions when the effect of non-point

¹⁰ The term "dissolved oxygen" is sometimes abbreviated as "DO."

source pollution on dissolved oxygen levels is minimal. It therefore follows that the dam causes or contributes to the violation of dissolved oxygen standards in the river, and that appropriate mitigation measures must be taken to eliminate the dam's continuing contribution to the violation of standards."¹¹

The Board finds that Appellant FPLE has not presented persuasive evidence calling into question the Department's determination that Gulf Island Dam causes or contributes to the violation of dissolved oxygen standards in Gulf Island Pond. To cause means to serve as something that brings about an effect or a result.¹² To contribute to means to play a significant part in bringing about a result.¹³ The evidence in the record indicates that, were it not for the hydrologic conditions created by the dam, dissolved oxygen standards would be met in the river. [see, e.g., May 2005 TMDL at page 28; pre-filed direct testimony of RPC witness Thomas Gallagher]. Specifically, the dam reduces natural reaeration, increases time of travel for river water and its pollutant load, increases water temperatures, and creates a settling basin for pollutants in an artificial pond almost 15 miles long and up to 80 feet deep. All of these hydrologic conditions have the effect of significantly reducing dissolved oxygen levels below the levels that would exist in the absence of the dam. There is no better demonstration of the dam "causing or contributing to" the violation of water quality standards than this.

In making this finding, the Board also takes notice of the following facts:

- In its application for water quality certification, FPLE proposes to continue to participate in the partnership with the upstream paper companies to maintain and operate the Gulf Island Pond Oxygenation Project, the sole purpose of which is to inject oxygen into Gulf Island Pond and thereby increase dissolved oxygen levels in the pond;
- The Gulf Island Pond Oxygenation Project partnership agreement, voluntarily signed by FPLE's predecessor-in-interest Central Maine Power Company, states in part that "as a condition of obtaining certification from DEP under Section 401 of the Clean Water Act concerning renewal of CMP's Federal Energy Regulatory Commission ('FERC') license to operate the Gulf Island-Deer Rips Hydroelectric Project and as a condition of obtaining from FERC a renewal of such license, CMP will also be required to take action to increase dissolved oxygen in Gulf Island Pond;"
- In the January 9, 1991 consent agreements that ordered the construction and operation of the Gulf Island Pond Oxygenation Project, the Board found that: (1) CMP owned three major dams, including Gulf Island Dam, that created significant impoundments on the Androscoggin River in Lewiston; (2) dissolved oxygen levels in some portions of the impoundments periodically do not attain Class C dissolved oxygen standards;

¹¹ See page 9 of September 21, 2005 water quality certification.

¹² Merriam-Webster Online Dictionary (2007).

¹³ Ibid.

and (3) this non-attainment is due to a combination of the waste discharged from point and non-point sources, natural conditions “and physical conditions created by the existence of the impoundments;” and

- Finally, in its August 23, 2006 order issuing a new license for the Gulf Island-Deer Rips Hydro Project, FERC independently concluded that non-attainment of Class C water quality standards in Gulf Island Pond “is the result of a combination of factors, including...the hydrologic conditions created by Gulf Island Dam.”

(3). The requirements governing oxygen injection are appropriate.

Finally, with respect to certification conditions, in its September 21, 2005 decision, the Department found that the injection by FPLE of specified amounts of oxygen into Gulf Island Pond, or other equivalent measures as may be approved by the Department, is necessary to mitigate the impact of Gulf Island Dam on dissolved oxygen levels in Gulf Island Pond and to support the conclusion that the continued operation of the Gulf Island-Deer Rips Hydro Project will not cause or contribute to the violation of applicable water quality standards in the Androscoggin River.

The Board finds that Appellant FPLE has not presented persuasive evidence or argument calling into question the Department’s determination that FPLE should be responsible for injecting oxygen or taking other equivalent measures to mitigate the impact of Gulf Island Dam on dissolved oxygen levels in Gulf Island Pond. As discussed above, (1) certification is required for the Gulf Island-Deer Rips Hydro Project, (2) the project causes or contributes to the violation of water quality standards in Gulf Island Pond, and (3) any certification issued for the project must include conditions necessary to ensure that the project will not continue to cause or contribute a violation of water quality standards. To on the one hand acknowledge that Gulf Island Dam causes or contributes to dissolved oxygen violations in Gulf Island Pond, while on the other hand hold that FPLE bears no responsibility for mitigating this impact, makes no legal or logical sense. Simply put, since FPLE’s dam is part of the problem, FPLE must be part of the solution.

In making this finding, the Board notes that, in its August 23, 2006 order issuing a new license for the Gulf Island-Deer Rips Hydro Project, FERC independently concluded that the water quality problems in Gulf Island Pond “should continue to be jointly remedied by the GIPOP partnership.”¹⁴

¹⁴ Based on these conclusions, and despite the fact that the additional oxygen injection requirements of the September 21, 2005 water quality certification had been stayed by the Board until action was taken on FPLE’s pending appeal, FERC attached an Article to the license requiring that FPLE file within one year a dissolved oxygen enhancement plan for the Gulf Island-Deer Rips Hydro Project. The plan was to include, among other things, “measures to improve DO in Gulf Island Pond, including any measures identified in the TMDL (Total Daily Maximum Load) for the Androscoggin River and Gulf Island Pond.”

b. Allocation of Oxygenation Requirements

Having established above that Gulf Island Dam causes or contributes to the violation of dissolved oxygen standards in Gulf Island Pond and that FPLE bears some responsibility for mitigating this impact, the Board must next determine the level of FPLE's responsibility.

The evidence in the record indicates that, in order to address water quality problems in Gulf Island Pond, the Department developed a model to predict water quality in the pond under different pollutant loading and oxygen injection conditions. The Department then ran the model with upstream point source discharges set at zero. The model predicted that, absent any oxygen injection, and under summer low flow and high water temperature conditions,¹⁵ there would be significant non-attainment of minimum Class C dissolved oxygen standards in Gulf Island Pond below depths of 20 feet.¹⁶ The Department next made iterative runs of the model while providing increased amounts of oxygen injection into the pond. The model predicted that the injection of 105,000 pounds per day of oxygen at Upper Narrows (the location of the current GIPOP facility, about 5 miles upstream from Gulf Island Dam), or the injection of 65,000 pounds per day of oxygen at Lower Narrows (about 3 miles upstream from the dam), at an existing oxygen efficiency transfer rate of 33%, would be needed to meet dissolved oxygen standards.¹⁷ In its September 21, 2005 water quality certification, the Department imposed a condition requiring that FPLE inject an amount of oxygen at Upper Narrows and Lower Narrows, or take other equivalent measures, sufficient to meet dissolved oxygen standards under critical conditions and in the absence of point source discharges.¹⁸

The Board finds that Appellant FPLE has not presented persuasive evidence calling into question the Department's methodology for determining FPLE's level of responsibility for mitigating the impact of Gulf Island Dam on dissolved oxygen levels in Gulf Island Pond.

At its core, FPLE's argument is that it should not be responsible for anything more than is required of it under the existing GIPOP Partnership Agreement, which amounts to 14% of annual GIPOP operating and maintenance costs. Thus, under that agreement, FPLE would only be responsible to pay for 14,700 pounds per day of 105,000 pounds per day of oxygen injection from the existing GIPOP facility. However, this is clearly an insufficient amount of oxygen to meet dissolved oxygen standards in Gulf Island Pond in

¹⁵ In order to ensure that dissolved oxygen standards are met at all times, water quality modeling is done under "worst case" conditions of low river flows, when in-stream dilution is low, and high water temperatures, when DO saturation is low and BOD decay and SOD are high. See June 2002 Androscoggin River Modeling Report and Alternative Analysis, page 52.

¹⁶ See May 2005 Androscoggin River Total Maximum Daily Load (TMDL) Report, Figures 22 and 23 (pages 47-48).

¹⁷ Ibid, Figures 24-27, pages 48-52.

¹⁸ In its condition, the Department assumed that FPLE would continue to be responsible for 14% of the oxygen injected at Upper Narrows under the terms of the existing GIPOP Partnership Agreement.

the absence of point source discharges. As stated in the Department’s Total Maximum Daily Load (TMDL):¹⁹ “The amount of dissolved oxygen non-attainment predicted by the model with point sources at zero discharge can be considered to be the impact related to the dam.”²⁰ FPLE has not presented any persuasive evidence to the contrary. Therefore, the Board is persuaded that FPLE must do more than it is currently doing to mitigate for the impact of Gulf Island Dam.

FPLE then argues that the Department’s method of assigning responsibility for oxygenation unlawfully makes FPLE responsible for mitigating the impacts of non-point source pollution and unknown sediment oxygen demand on water quality in Gulf Island Pond. Specifically, FPLE contends that: (1) the Department is responsible for instituting Best Management Practices (“BMPs”) to reduce non-point source (“NPS”) pollution into Gulf Island Pond; (2) the responsibility for mitigating the impacts of any remaining non-point source pollution rests with the upstream point sources; and (3) the Department is acting counter to past practice in holding FPLE responsible for the mitigation of non-point source pollution.

With respect to the impacts of non-point source pollution on water quality in Gulf Island Pond, the evidence is insufficient for the Board to make specific findings as to the portion of the non-point source pollution that is attributable to human activity, and thus may be controllable, and the portion attributable to natural background sources, and thus is uncontrollable. The evidence is that the watershed above Gulf Island Pond is large and mostly forested, with limited residential, commercial and agricultural land uses.

There are currently several State statutory and regulatory schemes in place which control non-point source pollution from various human activities. The Site Location of Development Law and the Stormwater Control Law regulate runoff from commercial and residential developments. The Natural Resources Protection Act and the Erosion and Sedimentation Control Law prohibit activities conducted in a manner which may result in runoff into waterbodies and wetlands. The Nutrient Management Act further regulates non-point source pollutions from agricultural activities. The Shoreland Zoning Law regulates development in the shoreland zone. The Forest Practices Act regulates silvicultural activities in areas adjacent to rivers and streams. The Municipal Subdivision Law regulates the impacts of subdivisions on surface water. Taken as a whole, these laws have significantly reduced non-point source pollution from human activities in this and other watersheds. While more reductions can be achieved, these additional reductions will be more difficult to accomplish.

The Board finds that, given the largely undeveloped nature of the watershed and the resulting limited opportunities for further control of non-point source pollution, it cannot

¹⁹ A TMDL establishes the allowable pollutant loadings or other quantifiable parameters for a waterbody and thereby provides the basis for the establishment of effluent discharge limits and other controls necessary for that waterbody to meet water quality standards. See “Guidance for Water Quality-based Decisions: The TMDL Process,” EPA 440/4-91-000 (April, 1991).

²⁰ 2005 TMDL, page 28.

rely on increased regulation or control of non-point source pollution to have a significant impact on the water quality of Gulf Island Pond.

In its May 2005 TMDL, the Department concluded that “[t]here are limited opportunities for the control of significant amounts of non-point pollution given the relatively undeveloped nature of this large watershed” (page 1) and that “control of non-point source pollution is not a feasible solution to address the non-attainment of DO criteria attributable to sediment oxygen demand” in Gulf Island Pond (page 28). In its July 18, 2005 notification of approval of the Department’s TMDL, EPA concurred with the Department’s conclusions, stating that “[t]he huge size of the mostly forested watershed, the sporadic and diffuse occurrence of NPS runoff, and pollutant assimilation prior to reaching the mainstem river, all support ME DEP’s conclusion that NPS controls would have an insignificant impact on the mainstem Androscoggin River or [Gulf Island Pond]...” (page 12). No persuasive evidence has been offered that calls the Department’s conclusions regarding control of non-point source pollution into question.

The Board is persuaded that the use of BMPs to control non-point source pollution will likely be of limited value in increasing dissolved oxygen levels in Gulf Island Pond; as a result, any future reductions in non-point source pollution cannot be relied upon to provide a reasonable assurance that water quality standards will be met. Nonetheless, the Board encourages the Department to further evaluate the sources and control of non-point source pollution to Gulf Island Pond, and to pursue any control strategies that it concludes are feasible and worthwhile.

With respect to the responsibility of point sources to mitigate non-point source pollution, the Board finds that EPA guidance simply states that, in order to allocate reduced pollutant loads to non-point sources, there must be reasonable assurance that a reduction of pollution from non-point sources will in fact be achieved.²¹ Nothing in the Clean Water Act or applicable EPA guidance or regulations specifies how the responsibility for meeting water quality standards will be allocated when the violation of standards is caused by point source discharges, non-point source discharges, and the hydrologic impacts of a dam, as is the case here.²² Therefore, the Board finds that there is no legal requirement that, in this case, the point source dischargers provide oxygen injection to mitigate non-point source pollution to Gulf Island Pond.²³ The Board further finds that existing EPA guidance only discusses situations where the violation of standards is caused by point and non-point source discharges, and not by the hydrologic impacts of a dam, and thus is not controlling in the case of non-attainment in Gulf Island Pond.

²¹ See “Guidance for Water Quality-based Decisions: The TMDL Process,” EPA 440/4-91-001 (April, 1991).

²² In its July 18, 2005 notification of approval of the Department’s TMDL, EPA specifically disagreed with FPLE’s argument that the DEP is required to reduce non-point source contributions of the pollutants at issue and should not be imposing oxygen injection requirements on FPLE.

²³ Indeed, in its July 18, 2005 notification of approval of the Department’s TMDL, EPA stated that, “...in order to ensure that the background assumption of oxygen injection is realized, it is the State’s prerogative to determine how oxygenation should be required, and from whom, consistent with its permitting and licensing authorities.” (page 12) The Board agrees.

Finally, with respect to past practice on the issue of mitigation for non-point source pollution, the Department made the following findings in its September 21, 2005 decision:

“The DEP has conducted its water quality modeling for Gulf Island Pond under assumed low flow conditions, when non-point source pollution from other than natural sources has a de minimis impact on Gulf Island Pond. In addition, the water quality model runs made with upstream point sources at zero discharge levels and Gulf Island Dam in place were made with sediment oxygen demand reduced so that legacy pollution is not included in calculating the dissolved oxygen deficit due to the presence of the dam. Finally, the DEP’s modeling on other rivers (e.g., the Presumpscot) has calculated dissolved oxygen levels under dry weather conditions and, based on this modeling, the DEP has required that other dam owners (e.g., S.D. Warren) mitigate the impact of their dams on dissolved oxygen levels in project impoundments. Therefore, since the DEP considered the same factors here that it has considered in other similar water quality certification proceedings, and based on those factors attached conditions to address the particular circumstances presented here, [FPLE’s] due process and equal protection arguments are without merit.”²⁴

The Board finds that Appellant FPLE has not presented persuasive evidence that the Department’s methodology for assigning FPLE responsibility for meeting water quality standards in Gulf Island Pond under dry weather conditions is flawed. FPLE simply argues that non-point source pollution is “someone else’s” problem to fix, be it the Department or the upstream point source dischargers. However, in the absence of point source discharges, were it not for the presence of the dam, existing non-point source pollution would not result a violation of standards. The dam is causing this portion of the problem, and it is therefore FPLE’s problem to fix.²⁵

c. Model Corrections and Additional Modeling

FPLE argues that the Department’s TMDL, and the water quality model on which it is based, is flawed and must be corrected before any additional oxygen injection is required. Specifically, FPLE contends that the Department failed to recalibrate its water quality model after finding an error in horizontal dispersive mixing in the pond, and that this has the effect of significantly overstating the amount of oxygen needed to bring Gulf Island Pond into compliance with Class C dissolved oxygen standards.

²⁴ See page 27 of September 21, 2005 water quality certification. [footnotes omitted]

²⁵ FPLE’s related argument that it is the discharge of pollutants from point sources that is the cause of dissolved oxygen non-attainment in Gulf Island Pond is equally to no avail, since this argument assumes that the dam does not cause or contribute to the DO problem. And simply because it is true that the higher the effluent limits are for the upstream point sources, the more oxygen injection is needed to meet standards, this does not change the fact that the presence of the dam—even in the absence of point source discharges—is causing or contributing to the violation of dissolved oxygen standards. FPLE is only being held accountable for its fair share of the non-attainment problem, regardless of what actual discharge limits apply to the point sources.

Other appellants in the related proceedings have argued that the Department's TMDL and water quality model are flawed in other respects, and one appellant (NRCM) has argued that a TMDL is simply not needed.

The Board is persuaded that a TMDL is an appropriate and perhaps a necessary basis for any decision in this case to impose effluent limits on upstream point source dischargers and oxygen injection requirements on these dischargers and FPLE. In this complex case, which involves the impacts of non-point source pollution, multiple point source discharges at various locations on the river, and a large dam and impoundment, all the evidence points to the need for a water quality model to predict dissolved oxygen levels in Gulf Island Pond and a TMDL to define the combination of pollutant loadings and oxygen injection needed to bring about compliance with Class C water quality standards. The Board finds that NRCM's arguments that effluent limits can be established solely by extrapolating from past mill performance are not persuasive.

The Board is further persuaded that the current TMDL, which has been approved by EPA, is sufficient to make regulatory decisions. Many of the "flaws" identified by the appellants relate to differences of opinion among experts regarding various assumptions made in the underlying model, as opposed to actual errors in the model. The Board finds that the nature of water quality modeling makes any complex model, such as the one developed and relied upon by the Department here, susceptible to some degree of criticism from other modelers. However, the Board finds that the Department's modeling assumptions are well grounded in science and are reasonable. Specifically, the Board finds the testimony of former DEP modeler Paul Mitnik regarding the development of the model used by the Department to be credible and convincing. [see Paul Mitnik's hearing testimony at Transcript pp.782-1001]. The Board also finds that, after more than twenty years of study, there is ample technical information upon which to base the necessary regulatory decisions, and the time has come to take the actions needed to bring Gulf Island Pond into compliance with water quality standards.

However, as discussed below, the Board is persuaded by the preponderance of the evidence that there are two revisions that should be made to the model.

The first model revision is the re-calibration of the model following the correction of a dispersive mixing error. FPLE witness David Dilks provided compelling evidence that the original DEP model incorrectly assumed that water was flowing upstream through Gulf Island Dam and that, while the DEP recognized and corrected this error in the final TMDL, the DEP did not re-calibrate the model to ensure that model results still accurately predicted the observed dissolved oxygen levels in Gulf Island Pond.²⁶ This re-calibration may reduce the model prediction of the amount of oxygen injection needed to

²⁶ See Dr. Dilks' pre-filed direct testimony at FPLE Tab 5, and Dr. Dilks' hearing testimony at Transcript pp. 1063-1089.

meet standards with point source discharges set at zero and thus may reduce the amount of oxygen that FPLE would be responsible for injecting into Gulf Island Pond.²⁷

The second model revision is the recalculation of the area of sediment in contact with various segments of the pond. Verso witness John Connolly provided convincing evidence that in specifying the amount of phosphorus coming from the sediment underlying each model segment of Gulf Island Pond, the DEP model incorrectly assumed that the full width of the bottom of each segment, not just the bottom segments, was in contact with the sediment and that the DEP needs to recalculate the sediment area that is contributing phosphorus to the pond.²⁸ This recalculation may reduce the model's prediction of the total sediment phosphorus loading to the pond and thus may increase the amount of phosphorus that the model predicts can be discharged to the pond from point sources while still attaining water quality standards.²⁹

Therefore, the Board directs the Department to make the revisions to the model discussed above and, if necessary, revise the TMDL accordingly. The Board further directs the Department to determine, as soon as practical, final additional oxygen injection requirements and final point source effluent limits for phosphorus based on the revised model and any subsequent revisions to the TMDL.

Finally, Verso witness John Connolly provided persuasive evidence that the development and use of a hydro-dynamic model to determine mixing and transport within Gulf Island Pond may more accurately predict water quality conditions than does the Department's current model.³⁰ [see pre-filed direct testimony of Verso witness John Connolly, and Dr. Connolly's hearing testimony at Transcript pp. 413-425]. Using such a model may change point source pollutant loadings and the amount of oxygen injection needed to meet standards in the pond. However, in keeping with recent legislation,³¹ the development of an additional model should be paid for by Verso or RPC, either independently or in cooperation with other point source dischargers. Also, the hydro-dynamic model used must be supported by the Environmental Protection Agency.

While a future hydro-dynamic model could eventually support amended effluent limitations or oxygen injection requirements, it is the Board's considered judgment that it is neither necessary nor prudent to wait for the development of such a model, and that the Department's existing modeling provides a sound basis for the Board's actions today.

²⁷ Dr. Dilks states that he ran the Department's model following re-calibration and determined that the oxygen needed from the existing GIPOP facility to meet standards with the point source discharges removed (and thus with unknown sediment oxygen demand and non-point source impacts remaining) dropped from 105,000 pounds per day to 52,800 pounds per day under critical conditions. See Exhibit FPLE 51.

²⁸ See Dr. Connolly's pre-filed direct testimony, and Dr. Connolly's hearing testimony at transcript pp. 413-441.

²⁹ Dr. Connolly states that he made such a correction for the sediment area and determined that the total sediment phosphorus load dropped from 49 kilograms per day to 21 kilograms per day. See Connolly pre-filed direct testimony at page 39.

³⁰ See Dr. Connolly's pre-filed direct testimony, and Dr. Connolly's hearing testimony at Transcript pp. 413-425.

³¹ P.L. 2005, Chapter 409, "An Act To Amend Water Quality Standards," (L.D. 1450).

d. Payment for Phosphorus Treatment

FPLE argues that it should not be held responsible to pay for phosphorus reductions at the Livermore Falls wastewater treatment plant and that the corresponding requirement in the Department's September 21, 2005 water quality certification should be deleted.

The Board takes notice of the fact that, subsequent to the filing of FPLE's appeal, the Department reported to the Board that the Livermore Falls waste water treatment facility was already meeting its new phosphorus limit and that additional phosphorus treatment at the facility was not needed at this time. The Department stated that, as a consequence, it would not defend on appeal the condition in the water quality certification requiring the FPLE contribute toward the capitol costs of equipment to remove phosphorus from the Livermore Falls facility effluent.³²

The Board also takes note of the fact that, after having filed appeals challenging the new phosphorus limit for the Livermore Falls waste water treatment facility and the limit of \$100,000 on FPLE's responsibility for paying for the required phosphorus treatment at the facility, the Towns of Livermore Falls and Jay agreed to a Stipulation and Consent Order Regarding License Minor revision to resolve the Towns' appeals of the license for the Livermore Falls treatment facility and the water quality certification for the Gulf Island-Deer Rips Hydro Project.³³

In view of these facts, the Board finds that it is appropriate to delete the requirement that FPLE pay for phosphorus reductions at the Livermore Falls waste water treatment facility.

e. Other Issues on Appeal

The Board finds that FPLE has not raised any other issues on appeal that require a response.

8. DISCUSSION OF CLF, et al. APPEAL

Appellant CLF, et al. argues that any compliance schedule for additional oxygen injection is illegal as a matter of state and federal law. Alternatively, Appellant CLF, et al. argues that, if legal, any compliance schedule for additional oxygen injection must be as short as possible and must include interim enforceable requirements. Although the Board generally agrees that compliance schedules should be as short as possible, the Board rejects CLF, et al.'s other arguments in the context of this water quality certification for the reasons discussed below.

³² See attached summary of appeals and appeal proceedings, page 17.

³³ See attached summary of appeals and appeal proceedings, pages 23-24. The Stipulation and Consent Order was approved by the Board on May 2, 2007, at the beginning of the public hearing.

First, the provisions of the Clean Water Act [section 301(b)(1)(C)] and Maine waste discharge licensing law [38 M.R.S.A. § 414-A(2)] cited by Appellant CLF, et al. clearly apply only to the issuance of National Pollutant Discharge Elimination System (NPDES) permits and Maine Waste Discharge licenses, not to the issuance of water quality certifications.

Second, it takes time to fund, design, and construct an oxygen injection system. Given this, and given the fact, as discussed above, that revisions to the water quality model used by the Department may reduce the amount of additional oxygen injection needed to meet water quality standards in Gulf Island Pond, a compliance schedule for additional oxygen injection is both necessary and appropriate. The Board finds that it is not realistic to mandate immediate compliance with an additional oxygen injection requirement when such a requirement cannot possibly be met. The Board further finds that it is not appropriate to require that an expensive oxygen injection system be built now when the need for and size of the system may change significantly.

Third, in recognition of the uncertainties inherent in any model and especially in complex situations such as exist in Gulf Island Pond, EPA guidance and the EPA approved TMDL clearly embrace the concept of phased implementation,³⁴ in which reductions in pollutant loadings and other water quality improvement measures are “phased in” over time in a step-wise fashion while on-going monitoring is used to evaluate the effectiveness of the measures taken before further actions are implemented, as envisioned in the Department’s TMDL.³⁵ Schedules of compliance are inherent in the concept of phased implementation.

Finally, the Board is persuaded by the evidence in the record that the efficiency of the existing 20-year-old oxygenation system in transferring oxygen into Gulf Island Pond, and thus increasing dissolved oxygen levels in the pond, could be greatly improved by upgrading the system. In particular, RPC witness Mark Mobley testified that dissolved oxygen enhancement systems are routinely used at hydropower facilities to improve water quality, and that the oxygen transfer efficiency of the existing system in Gulf Island Pond could be significantly improved in a cost-effective manner. [see pre-filed direct testimony of RPC witness Mark Mobley, and Mr. Mobley’s hearing testimony at Transcript pages 1494-1497, 1658-1663]. This is expected to cost less than any additional oxygen injection system and should be able to be funded, designed and installed in less time than an additional system. Given this, and in keeping with the phased implementation approach recommended in the TMDL, it is appropriate to require upgrades to the existing oxygenation system now while providing a compliance schedule that delays installation of an additional oxygen injection

³⁴ See “Guidance for Water Quality-based Decisions: The TMDL Process,” EPA 440/4-91-001 (April, 1991).

³⁵ “There is some uncertainty in water quality modeling and the assignment of various parameter rates. In addition, there is uncertainty involved in the determination of the water quality target of chlorophyll-a levels used to describe the threshold level of an algae bloom that are specific to Gulf Island Pond...For this reason, it is recommended that the TMDL be implemented in phases of two or three step reductions with required ambient monitoring for point sources in cooperation with MDEP.” May 2005 TMDL summary, pages 6-7. In its July 18, 2005 notification of approval of the Department’s TMDL, EPA stated: “EPA recognizes that where immediate compliance is not possible, phased implementation is a reasonable approach.” (page 19)

system until further monitoring has been undertaken to determine the benefit to dissolved oxygen levels from these upgrades.

However, the Board is sensitive to the fact that it is time to bring Gulf Island Pond into compliance with water quality standards and approves the schedule of compliance in this order with that in mind. The Board specifically finds that this schedule of compliance for additional oxygen injection is as short as possible, based on consideration of the technological, economic and environmental impact of the steps necessary to attain those standards.

9. COMPLIANCE MONITORING

The Board is persuaded by the evidence that accurately determining the point of thermal stratification is critical to the determination of future non-attainment of dissolved oxygen standards in Gulf Island Pond. [see pre-filed direct testimony of FPLE witness F. Allen Wiley at Tab 3, and pre-filed direct testimony of Verso witness John Connolly].

The Board notes that, in a letter to the principals of the GIPOP Partnership dated January 23, 2007, the Department stated that, in order to satisfy the requirements of state law,³⁶ it considers the point of thermal stratification in Gulf Island Pond to be the bottom of the first meter segment in the thermal profiling data where the temperature gradient is one degree Celsius or greater per meter. The Department further stated that it will only be able to determine this point when it has access to thermal profiling data in one meter increments, instead of in 5-foot increments as currently collected in Gulf Island Pond by the GIPOP Partnership.

The Board is persuaded by the evidence in the record that additional water quality monitoring data is needed in order to more accurately determine compliance with Class C dissolved oxygen standards in Gulf Island Pond, as defined by law.

BASED on the above Findings of Fact as well as the Findings of Fact in the Department's Order of September 21, 2005 which the Board adopts as its own, except as otherwise discussed above, the Board concludes that:

1. The appellants are aggrieved and have filed timely appeals.
2. Appellant CLF, et al. has not presented persuasive evidence that would support overturning or modifying the Department's September 21, 2005 water quality certification for the Gulf Island-Deer Rips Hydro Project.
3. Appellant FPLE has not presented persuasive evidence that would support overturning or modifying the Department's September 21, 2005 water quality certification for the Gulf

³⁶ 38 M.R.S.A. Section 464(13), enacted as Public Law 2003, Chapter 257.

Island-Deer Rips Hydro Project, insofar as this decision holds FPLE responsible for providing oxygen injection into Gulf Island Pond to mitigate the impact of Gulf Island Dam on dissolved oxygen levels in the pond.

However, the Board concludes that the water quality model used by the Department was not re-calibrated following the correction of an error relating to dispersive mixing and that, as a consequence, the Department's Total Maximum Daily Load (TMDL) Report may overstate the amount of additional oxygen injection needed to meet water quality standards in Gulf Island Pond. Additionally, the Board concludes that the Department's model miscalculates the area of sediment in contact with various segments of the pond and that, as a consequence, the Department's TMDL Report may overstate the amount of point source phosphorus reductions needed to meet water quality standards in the pond.

The Board also concludes that the development and use of a hydro-dynamic model to determine mixing and transport within Gulf Island Pond may more accurately predict water quality conditions than does the Department's current model, and may result in changes in the effluent limits and additional oxygen injection needed to meet water quality standards in the pond.

The Board further concludes that upgrading the existing oxygen injection system to increase dissolved oxygen levels in Gulf Island Pond is economically and technically feasible and is an appropriate measure to improve water quality in the pond in the near-term.

Finally, the Board concludes that additional water quality monitoring is needed to more accurately determine compliance with dissolved oxygen standards in Gulf Island Pond.

4. Appellant FPLE has presented persuasive evidence that the Department's September 21, 2005 water quality certification for the Gulf Island-Deer Rips Hydro Project should be modified to delete the requirement that FPLE contribute towards the capitol cost of equipment to remove phosphorus from the Livermore Falls wastewater treatment facility effluent.

THEREFORE, the Board DENIES the appeal of CONSERVATION LAW FOUNDATION, MAINE RIVERS, ANDROSCOGGIN RIVER ALLIANCE, and ANDROSCOGGIN LAKE IMPROVEMENT ASSOCIATION to overturn or modify the Department's September 21, 2005 order approving water quality certification for the continued operation of the Gulf Island-Deer Rips Hydro Project.

FURTHER, the Board PARTIALLY GRANTS the appeal of FPL ENERGY MAINE HYDRO LLC and MODIFIES Department Order #L-17100-33-O-N dated September 21, 2005, approving water quality certification for the continued operation of the Gulf Island-Deer Rips Hydro Project, as follows:

1. Condition 5 (“GULF ISLAND POND OXYGENATION”) is modified to read:

- A. By March 1, 2008, the applicant shall, independently or in cooperation with the other members of the Gulf Island Pond Oxygenation Project Partnership, submit a plan for conducting ambient water quality monitoring to determine compliance with Class C dissolved oxygen standards in Gulf Island Pond under current and future conditions. This monitoring shall provide sufficient data to determine the point of thermal stratification in the pond and shall begin no later than June 1, 2008. This plan shall be reviewed by and must receive the approval of the Department.
- B. The applicant shall, independently or in cooperation with the other members of the Gulf Island Pond Oxygenation Project Partnership, operate an upgraded oxygen injection system at Upper Narrows and an additional oxygen injection system at Lower Narrows in Gulf Island Pond, according to a plan approved by the Department, as is further described below.
- C. By June 1, 2008, the applicant shall, independently or in cooperation with the other members of the Gulf Island Pond Oxygenation Project Partnership, submit a plan and schedule for upgrading the existing Gulf Island Pond oxygen injection system to increase the oxygen transfer efficiency of the system and thereby increase dissolved oxygen levels in the pond. The upgraded oxygen injection system shall be operational no later than June 1, 2009. The plan and schedule shall be reviewed by and must receive the approval of the Department.
- D. By June 1, 2009, the applicant shall, independently or in cooperation with the other members of the Gulf Island Pond Oxygenation Project Partnership, submit a plan and schedule for injecting sufficient oxygen into Gulf Island Pond to mitigate the impact of Gulf Island Dam on dissolved oxygen levels in the pond. The plan shall provide that, beginning no later than June 1, 2010, the applicant shall inject oxygen at the rate of up to 14,700 pounds per day at Upper Narrows in Gulf Island Pond and up to 55,900 pounds per day at Lower Narrows in Gulf Island Pond, at an oxygen transfer efficiency of 33%, or equivalent rates at higher transfer efficiencies and/or locations, or take other equivalent measures as may be approved by the Department. The plan and schedule for injecting oxygen into Gulf Island Pond shall be reviewed by and must receive the approval of the Department.

After re-calibration of the water quality model for Gulf Island Pond following correction of an error relating to dispersive mixing, as well as any other future modifications to the model and revisions to the Department’s May 2005 Androscoggin River Total Maximum Daily Load (TMDL) Report, and after notice to the applicant and opportunity for hearing, the Department reserves the right to re-open and modify the terms of this certification to change the rates of oxygen injection specified above.

- E. By March 1, 2008, Verso or Rumford Paper may, independently or in cooperation with other parties, provide sufficient funding to the Department for the development and use

of a hydro-dynamic model to determine mixing and transport within Gulf Island Pond. This model shall be developed by the Department or by a third party under contract to the Department and must be supported by the Environmental Protection Agency. A final modeling report must be provided to FPLE and other interested parties no later than November 1, 2009. After reviewing the report on the results of any hydro-dynamic model developed for Gulf Island Pond, and after notice to FPLE and opportunity for public hearing, the Department reserves the right to re-open and modify the terms of this certification to require changes in oxygen injection system(s) and/or oxygen injection rates, or changes in other equivalent measures, as may be deemed necessary to ensure that Gulf Island Dam does not cause or contribute to the violation of Class C dissolved oxygen standards in Gulf Island Pond.

- F. The applicant shall be responsible for taking such actions as are needed to meet Class C dissolved oxygen standards in Gulf Island Pond, insofar as Gulf Island Dam causes or contributes to a violation of these standards. After reviewing the results of monitoring following the implementation of all additional oxygen injection or other equivalent measures and all reductions in point source discharges required pursuant to the Department's May 2005 Androscoggin River Total Maximum Daily Load (TMDL) Report and any future revisions thereto, and after notice to the applicant and opportunity for hearing, the Department reserves the right to reopen and modify the terms of this certification to require reasonable changes in oxygen injection system(s) and/or oxygen injection rates, or changes in other equivalent measures, as may be deemed necessary to ensure that Gulf Island Dam does not cause or contribute to the violation of Class C dissolved oxygen standards in Gulf Island Pond.

2. Condition 6 ("GULF ISLAND POND PHOSPHORUS CONTROL") is deleted in its entirety.

FINALLY, the findings, conclusions and conditions of Department Order #L-17100-33-O-N, dated September 21, 2005, are adopted by the Board and incorporated herein, except as otherwise discussed above.

DONE AND DATED AT AUGUSTA, MAINE, THIS ____ DAY OF _____, 2007.

BOARD OF ENVIRONMENTAL PROTECTION

BY: _____
VIRGINIA PLUMMER, Chair