

Unofficial FERC-Generated PDF of 20040719-0031 Received by FERC OSEC 07/16/2004 in Docket#: P-2942-000



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists
July 15, 2004

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Ms. Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
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Washington, D.C. 20426

VIA FED EX STANDARD
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Subject **Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa Projects**
FERC Project Nos. 2942, 2931, 2941, 2932, and 2897
Operations and Flow Monitoring Plan

Dear Ms. Salas:

On behalf of the S.D. Warren Company, Licensee for the Dundee, Gambo, Little Falls, Mallison Falls and Saccarappa Projects, enclosed herewith for filing are an original and eight copies of the Operations and Flow Monitoring Plan for those Projects.

The Federal Energy Regulatory Commission (FERC) Licenses for the above-referenced Projects require that S.D. Warren prepare an Operations and Flow Monitoring Plan ("Plan").¹ The FERC License Article 403 for the Saccarappa and Little Falls Projects and License Article 404 for the Dundee, Gambo, and Mallison Falls Projects originally required filing of this Plan within 180 days of the effective date of the Licenses. However, this filing date was extended to July 2, 2004, by Commission order issued March 19, 2004. On July 2, 2004, S.D. Warren requested a brief two-week extension until July 16, 2004, to file the Plan, based on the need for S.D. Warren to do additional calculations and make modifications to the draft plan before filing. The WQC also contains these requirements with a filing schedule as prescribed by FERC (see WQC Condition No. 4, as quoted in Section 2.2 of the Plan).

The filing of this Plan completes the actions required to comply with Article 403 of the Saccarappa and Little Falls Project Licenses and Article 404 of the Mallison Falls, Gambo, and Dundee Project Licenses.

¹ Dundee Project, No. 2942, 105 FERC ¶61,009; Gambo Project, No. 2931, 105 FERC ¶61,010; Little Falls Project, No. 2941, 105 FERC ¶61,012; Mallison Falls Project, No. 2932, 105 FERC ¶61,011; and Saccarappa Project, No. 2897, 105 FERC ¶61,013.

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Ms. Magalie Roman Salas
July 15, 2004
Page 2



If you have any questions concerning this matter or the enclosed Plan, please contact Tom Howard at (207) 856-4286 or the undersigned at (207) 775-4495.

Sincerely,

DEVINE, TARBELL & ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Madreen Winters", written over a horizontal line.

Madreen Winters
Regulatory and Licensing Specialist

MW/elt
Enclosures

cc: T. Howard, S.D. Warren
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FINAL OPERATIONS AND FLOW MONITORING PLAN

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**FINAL OPERATIONS AND FLOW
MONITORING PLAN**

**PRESUMPCOT RIVER
HYDROELECTRIC PROJECTS**

Dundee Project (FERC No. 2942)

Gambo Project (FERC No. 2931)

Little Falls Project (FERC No. 2941)

Mallison Falls Project (FERC No. 2932)

Saccarappa Project (FERC No. 2897)

**S.D. WARREN COMPANY
Westbrook, Maine**

JULY 2004

OPERATIONS AND FLOW MONITORING PLAN

PRESUMPCOT RIVER HYDROELECTRIC PROJECTS

TABLE OF CONTENTS

Section	Title	Page No.
1.	INTRODUCTION.....	1
2.	REQUIREMENTS IN FERC LICENSES AND WQC	2
2.1	FERC Licenses.....	2
2.1.1	ROR Operations (License Article 401 for all Projects).....	2
2.1.2	Impoundment Fluctuations (License Article 402 for all Projects)	2
2.1.3	Bypass and Reaeration Flows (License Article 403 for Mallison Falls, Gambo, and Dundee Projects)	3
2.1.4	Flow and Operation Monitoring Plan Requirements (License Article 403 for Saccarappa and Little Falls Projects, and License Article 404 for Mallison Falls, Gambo, and Dundee Projects).....	5
2.2	WQC Conditions.....	8
2.2.1	Water Levels and Flows [WQC Condition No. 1].....	8
2.2.2	Impoundment Drawdown and Refill Procedures [WQC Condition No. 2]....	11
2.2.3	Reaeration Flows [applies to Dundee and Gambo Projects only; WQC Condition No. 6]	12
3.	CONSULTATION.....	14
4.	RUN-OF-RIVER OPERATIONS AND IMPOUNDMENT LEVEL MONITORING	16
4.1	Operations and Monitoring Measures.....	16
4.1.1	Dundee Project.....	17
4.1.2	Gambo Project	18
4.1.3	Little Falls Project.....	19
4.1.4	Mallison Falls Project.....	19
4.1.5	Saccarappa Project.....	20
4.2	Maintenance Drawdowns.....	21
4.2.1	Seasonal Limitations.....	21
4.2.2	Agency Consultation	21
4.2.3	Refill Procedures	21
5.	BYPASS AND REAERATION FLOWS	22
5.1	Bypass Flow Provisions and Monitoring.....	22
5.1.1	Dundee Project.....	22
5.1.2	Gambo Project	23

TABLE OF CONTENTS **(Continued)**

Section	Title	Page No.
5.1.3	Mallison Falls Project.....	24
5.1.4	Little Falls and Saccarappa Projects	24
5.2	Temperature and Dissolved Oxygen Monitoring.....	24
5.3	Alternative Reaeration Measures	24
5.4	Stranding Provisions	24
5.5	Bypass Flow Suitability for Atlantic Salmon	24
6.	RECORDKEEPING AND REPORTING	24
6.1	Recordkeeping.....	24
6.2	Operation and Flow Data	24
6.3	Temperature and Dissolved Oxygen Data	24
6.4	Reporting of Unusual Events	24
6.4.1	Temporary Suspension of ROR Operations	24
6.4.2	Notice of Maintenance/Emergency Drawdown.....	24
6.4.3	Interruptions of Bypass or Reaeration Flows	24
6.4.4	Flow, ROR Operations, or Impoundment Elevation Deviations.....	24
7.	IMPLEMENTATION SCHEDULE.....	24
8.	LITERATURE CITED	24

APPENDICES

APPENDIX A - DOCUMENTATION OF AGENCY CONSULTATION
APPENDIX B - CALCULATIONS

OPERATIONS AND FLOW MONITORING PLAN
PRESUMPCOT RIVER HYDROELECTRIC PROJECTS

LIST OF FIGURES

Figure	Title	Page No.
1	AVERAGE DAILY TEMPERATURES IN THE PRESUMPCOT RIVER AS RECORDED IN THE USGS WATER QUALITY GAGE NEAR WEST FALMOUTH, MAINE (GAGE NO. 1064140) FOR PERIOD OF RECORD (1976-93).....	34

Section 1

Introduction

The S.D. Warren Company (S.D. Warren) owns and operates five run-of-river (ROR) hydroelectric projects on the Presumpscot River in southwestern Maine: Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa Projects. These projects are collectively referenced as the Presumpscot River Projects. The Federal Energy Regulatory Commission (FERC or Commission) issued New or Subsequent Licenses (License(s)) for the projects on October 2, 2003¹. A single Water Quality Certification (WQC) under Section 401 of the Clean Water Act had been previously issued for all five projects by the Maine Department of Environmental Protection (MDEP) on April 30, 2003.

The FERC Licenses require development of a project operations and flow monitoring plan to document compliance with ROR operations, the impoundment drawdown restrictions, and the bypass and reaeration flows requirements of the licenses and WQC. The specific FERC License Articles to be addressed in the plan include:

Project	FERC License Article				
	Flow and Operations Plan	Run-of-River Operations	Impoundment Fluctuations	Bypass Flows	Reaeration Flows
Dundee	404	401	402	403	403
Gambo	404	401	402	403	403
Little Falls	403	401	402	Not required	Not required
Mallison Falls	404	401	402	403	Not required
Saccarappa	403	401	402	Not required	Not required

The WQC conditions to be addressed in this plan include Condition No. 1, Water Levels and Flows; Condition No. 2, Impoundment Drawdown and Refill Procedures; and Condition No. 6, Reaeration Measures (applies to Dundee and Gambo Projects only).

The FERC License Articles require filing of this initial plan within 180 days of the effective date of the Licenses.² The WQC contains a schedule consistent with the FERC filing schedule.

¹ Saccarappa Project, No. 2897, 105 FERC ¶61,013; Gambo Project, No. 2931, 105 FERC ¶61,010; Mallison Falls Project, No. 2932, 105 FERC ¶61,011; Little Falls Project, No. 2941, 105 FERC ¶61,012; and Dundee Project, No. 2942, 105 FERC ¶61,009.

² This filing date was extended to July 2, 2004 in FERC's March 19, 2004 Order Granting Extension of Time.

Section 2

Requirements in FERC Licenses and WQC

2.1 FERC Licenses

2.1.1 ROR Operations (License Article 401 for all Projects)

The licensee shall operate the project in a run-of-river mode, with an impoundment elevation of ...feet U.S. Geological Survey datum, for the protection and enhancement of water quality and fisheries resources in the Presumpscot River. The licensee shall, at all times, act to minimize the fluctuation of the impoundment surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream of the project tailrace, approximate the sum of the inflows to the project impoundment.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the Maine Department of Environmental Protection, and the U.S. Fish and Wildlife Service. If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each incident.

2.1.2 Impoundment Fluctuations (License Article 402 for all Projects)

The licensee shall manage water levels in the [project] impoundment for the protection and enhancement of water quality and fishery resources in the Presumpscot River in accordance with Appendix A to this order. The licensee shall notify personnel at the Region A Fisheries Headquarters of the Maine Department of Inland Fisheries and Wildlife, the Commission 2 weeks prior to any planned drawdown and as soon as possible, but no later than 10 days after any unplanned (or emergency) drawdown.

2.1.3 Bypass and Reaeration Flows (License Article 403 for Mallison Falls, Gambo, and Dundee Projects)

Dundee: The licensee shall release, within 30 days of the installation of the flow monitoring equipment required by Article 404, a continuous minimum flow of 60 cubic feet per second (cfs), or inflow, whichever is less, to the bypassed reach, from May 1 through October 31 and 40 cfs, or inflow, whichever is less, from November 1 through April 30 for the protection and enhancement of water quality and fisheries in the Presumpscot River as required by Condition 1.B of Appendix A. As required by Condition 6.A of Appendix A, the licensee shall provide an additional spillage flow of 50 cfs to the bypassed reach during dry weather to maintain Maine's dissolved oxygen standards for the Presumpscot River downstream from the Dundee dam.

Gambo: The licensee shall release, within 30 days of the installation of the flow monitoring equipment required by Article 404, a continuous year-round minimum flow of 60 cubic feet per second (cfs), or inflow, whichever is less, to the bypassed reach, for the protection and enhancement of water quality and fisheries in the Presumpscot River, as required by Condition 1.B. of Appendix A. As required by Condition 6.A. of Appendix A, the licensee shall provide an additional spillage flow of 100 cfs to the bypassed reach during dry weather conditions to maintain Maine's dissolved oxygen standards for the Presumpscot River downstream from the Dundee dam.

Mallison Falls: The licensee shall release, within 30 days of the installation of the flow monitoring equipment required by Article 404, a continuous minimum flow of 60 cubic feet per second (cfs), or inflow, whichever is less, to the bypassed reach, from May 1 through October 31 and 40 cfs, or inflow, whichever is less, from November 1 through April 30, as required by Condition 1.B. of Appendix A, for the protection and enhancement of water quality and fisheries in the Presumpscot River.

Releases from the project to the bypassed reach may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon mutual agreement between the licensee, the Maine Department of Environmental

Section 2

FERC License and WQC Requirements

Protection (MDEP), and U.S. Fish and Wildlife Service (USFWS). If the flow is so modified, the licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident, and shall provide the reason for the modified flow.

The licensee shall develop a flow study plan for the project's bypassed reach. The purpose of the flow study is to evaluate the effectiveness of the minimum bypass flows required by this article to provide habitat for Atlantic salmon spawning and egg incubation, as well as production of juvenile Atlantic salmon. The licensee shall file, with the Commission, for approval, the final flow study plan within 180 days of being notified by the Maine Atlantic Salmon Commission (MASC) that a salmon habitat assessment has been completed and an active restoration program for Atlantic salmon initiated in the Presumpscot River, or according to an alternative schedule established in the project operations and flow monitoring plan required under Article 404. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules.

The flow study plan shall include a description of the methodology to be used to assess the adequacy of the minimum bypass flows required by this article to provide habitat for Atlantic salmon. In addition, the plan shall include a schedule for: (1) implementing the plan; (2) consulting with the appropriate federal and state agencies concerning the results of the study and any additional measures needed to enhance salmon habitat in the bypassed reach (e.g., changes in flow, channel modifications); and (3) filing the results (in the form of a final report), agency comments, and the licensee's response to agency comments with the Commission. The final report shall: (1) describe the flow/habitat relationships for Atlantic salmon spawning, incubation, and juvenile rearing in the bypassed reach; (2) outline any proposals by the licensee and the resource agencies for changes in project operations or structures, if any, to enhance salmon habitat in the bypassed reach; and (3) discuss the basis and need for continued flow studies.

The licensee shall prepare the flow study plan after consultation with the MASC, the MDEP, and the USFWS. The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the completed plan after

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

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If the results of the flow study indicate that changes in project structures or operations, including alternative flow releases, are necessary to enhance Atlantic salmon habitat in the project's bypassed reach, the Commission may direct the licensee to modify project structures or operations, accordingly.

2.1.4 Flow and Operation Monitoring Plan Requirements (License Article 403 for Saccarappa and Little Falls Projects, and License Article 404 for Mallison Falls, Gambo, and Dundee Projects)

Within 180 days of license issuance, the licensee shall file, with the Commission, for approval, a project operations and flow monitoring plan to document compliance with run-of-river operation, the impoundment drawdown restrictions, and the bypass flows, as required by Articles ... of this license, and Conditions 1.A and B 2.A of Appendix A. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules.

The plan shall provide a means to: (1) independently verify compliance with run-of-river operation, as well as the impoundment drawdown and bypass flow requirements of this license; and (2) allow agencies to consult regarding the methods to be used. The plan shall identify the monitoring methods and locations of the monitoring equipment needed to ensure that the project is operated in a manner consistent with the requirements of this license.

The plan shall include, at a minimum;

- (1) a provision to maintain the impoundment elevation at... feet U.S. Geological Survey datum, and notify the Maine Department of Inland Fisheries and Wildlife of any planned drawdowns;*
- (2) a provision to monitor and collect water temperature data in the Presumpscot River at the Gambo dam before 8:00 a.m. for the purpose of determining when additional spillage is needed; [applies to Dundee and Gambo Projects only]*
- (3) a description (including location) of any existing equipment that will be used to record water surface elevations and flows, and the planned locations of any additional flow and water temperature measuring equipment needed to monitor project operations, flows and water temperatures;*
- (4) the design of the monitoring equipment, including any pertinent hydraulic calculations, technical specifications of proposed instrumentation, erosion and sediment control measures, as appropriate, and design drawings of the system;*
- (5) a description of the methods and schedule for installing, calibrating, operating and maintaining the monitoring equipment;*
- (6) specific measures that would ensure that the monitoring system operates under all conditions (including loss of external electric power to the project);*
- (7) a description of the relative extent of manned versus automatic operation of the monitoring equipment;*
- (8) proposed data collection and storage protocols, and a provision to report flow, water temperature, and water surface elevation data to the Commission and the consulted agencies in a timely manner;*

Section 2

FERC License and WQC Requirements

- (9) *provisions to: (a) monitor the timing and magnitude of spillage events in the bypassed reach, along with limited visual observations, to verify that stranded fish are not present in the bypassed reach after the cessation of high spill events, and (b) identify and implement corrective actions should stranding or flushing be observed; [applies to Mallison Falls, Dundee, and Gambo Projects only]*
- (10) *a provision to evaluate alternative measures (such as turbine venting, air or oxygen injection, etc.) that could be implemented in lieu of spillage to meet Maine's applicable dissolved oxygen standards for the Presumpscot River [applies to Dundee and Gambo Projects only];*
- (11) *a provision to evaluate the effectiveness of the minimum bypass flows required by Article 403 to provide habitat for Atlantic salmon, as well as a schedule to develop and file the flow study plan required by Article 403 with the Commission and the MDEP; [applies to Mallison Falls, Dundee, and Gambo Projects only] and*
- (12) *a schedule for implementing the project operations and flow monitoring plan.*

The licensee shall prepare the project operations and flow monitoring plan in consultation with the Maine Department of Environmental Protection (MDEP), the U.S. Fish and Wildlife Service (USFWS) and the U.S. Geological Survey. The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific conditions.

Section 2

FERC License and WQC Requirements

The project operations and flow monitoring plan shall include provisions consistent with the emergency notification requirements for run-of-river operation, drawdowns, and bypass flows required by this license. In addition, should impoundment elevations, impoundment drawdowns or bypass flows, as measured according to the approved monitoring plan, deviate from license requirements, the plan shall include a provision whereby the licensee files, with the Commission, a report of the incident within 30 days of the incident. The licensee shall prepare the report in consultation with the MDEP and the USFWS.

The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also shall include: (1) operational data necessary to determine compliance with this article; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from the MDEP and the USFWS regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.

The Commission reserves the right to require changes to the project operations and flow monitoring plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any equipment installed in accordance with this article shall be shown on the as-built drawings filed pursuant to Article 305 of this license.

2.2 WQC Conditions

2.2.1 Water Levels and Flows [WQC Condition No. 1]

A. Except as temporarily modified by: (1) approved maintenance activities; (2) extreme hydrologic conditions, as defined below; or (3) emergency electrical system conditions, as defined below or (4) agreement between the applicant and other

Section 2

FERC License and WQC Requirements

appropriate state and/or federal agencies, all projects shall be operated in a run-of-river mode, with outflow approximately equal to inflow on an instantaneous basis except during flashboard failure or replacement, and with impoundment levels maintained within one foot of full pond when flashboards are in place and within one foot of spillway crest elevation when flashboards are not in place.

- B. Except as temporarily modified by: (1) approved maintenance activities; (2) extreme hydrologic conditions, as defined below; or (3) emergency electrical system conditions, as defined below or (4) agreement between the applicant and other appropriate state and/or federal agencies, the following minimum flow releases shall be provided annually into the project bypass reaches:*

- *Dundee: 60 cfs from May 1 through October 31 and 40 cfs from November 1 through April 30.*
- *Gambo: 60 cfs year-round.*
- *Little Falls: Existing leakage (approximately 26 cfs).*
- *Mallison Falls: 60 cfs from May 1 through October 31 and 40 cfs from November 1 through April 30.*
- *Saccarappa: Existing leakage (approximately 13 cfs).*

Minimum bypass flows shall consist of uncontrolled leakage, spillage, and any flows released into the bypass reaches through any upstream and downstream eel passage and anadromous fish passage facilities provided at the projects. To the extent possible, all minimum flows shall be provided as spillage at the project dams, in order to provide maximum reaeration.

- C. "Extreme Hydrologic Conditions" means the occurrence of events beyond the Licensee's control such as but not limited to abnormal precipitation, extreme runoff, flood conditions, ice conditions or other hydrologic conditions such that the operational restrictions and requirements contained herein are impossible to achieve or are inconsistent with the safe operation of the Project.*

Section 2

FERC License and WQC Requirements

- D. "Emergency Electrical System Conditions" means operating emergencies beyond Licensee's control which require changes in flow regimes to eliminate such emergencies which may in some circumstances include but are not limited to equipment failure or other abnormal temporary operating condition, generating unit operation or third-party mandated interruptions under power supply emergencies; and orders from local, state or federal law enforcement or public safety authorities.*
- E. The applicant shall, within six months of issuance of a New License for the project by FERC or upon such other schedule as established by FERC, submit plans for providing and monitoring run-of-river operations, impoundment levels, and minimum bypass flows as required by Parts A and B of this condition. These plans shall be reviewed by and must receive the approval of the DEP Bureau of Land and Water Quality.*
- F. Upon completion of a habitat assessment by the Atlantic Salmon Commission and notification to the applicant of initiation of active Atlantic salmon restoration activities in the Presumpscot River, the applicant shall conduct a study to evaluate the effectiveness of the minimum bypass flows required by Part B of this condition in providing habitat for various life stages of Atlantic salmon.*
- G. The applicant shall, within six months after notification from the Atlantic Salmon Commission on initiation of active Atlantic salmon restoration activities in the Presumpscot River, or upon such other schedule as established by FERC, submit plans for a study to evaluate the effectiveness of minimum bypass flows required by Part B of this condition in providing habitat for Atlantic salmon, prepared in consultation with ASC. This study shall include evaluation of the effectiveness of bypass flows in providing habitat for Atlantic salmon spawning and egg incubation and production of juvenile Atlantic salmon. This plan shall be reviewed by and must receive approval of the DEP prior to implementation. In reviewing the plan, the DEP will consider the recommendations of the ASC.*

Section 2

FERC License and WQC Requirements

- H. The applicant shall, in accordance with a schedule set forth in the study plan or upon such other schedule as established by FERC, submit the results of any bypass flow effectiveness study, along with any recommendations for changes in the minimum bypass flows required by this condition. After reviewing the study results, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require such changes in the minimum bypass flows established in this certification as may be deemed necessary to provide Atlantic salmon habitat in the bypass reaches.*

2.2.2 Impoundment Drawdown and Refill Procedures [WQC Condition No. 2]

- A. The applicant shall, unless necessary to address emergency situations or to address dam safety and/or public safety concerns, avoid maintenance drawdowns of the project impoundments during the months of May and June.*
- B. The applicant shall implement the following procedures for refilling the project impoundments after any impoundment drawdowns:*
- If allowed under the FERC-approved Sebago lake level management plan, outflows shall be temporarily increased from Sebago Lake to refill the impoundments while flows from each project are maintained as required by the flow/temperature curve component of the lake level management plan.*
 - If increased outflows from Sebago Lake are not allowed under the FERC-approved Sebago lake level management plan, a maximum of 25 percent of the outflow from Sebago Lake shall be used to refill the impoundments while flows from each project are maintained at 75 percent or more of the outflow from Sebago Lake.*

2.2.3 Reaeration Flows [applies to Dundee and Gambo Projects only; WQC Condition No. 6]

- A. The applicant shall, commencing with the issuance of a new FERC license for the project, institute the spillage of 50 cfs at the Dundee Dam and 100 cfs at the Gambo Dam, or take other equivalent measures as may be approved by the Department, in order to meet Class B dissolved oxygen standards in the river from Dundee Dam to Saccarappa Dam under dry weather conditions. Spillage must occur whenever river temperatures exceed 22 degrees Celsius, as measured at the Gambo Dam before 8:00 a.m., and shall be in addition to the minimum bypass flows required by Condition 1 above.*
- B. The applicant shall, within six months of issuance of a New License for the project by FERC or upon such other schedule as established by FERC, submit plans for providing and monitoring spillage or other approved reaeration measures as required by Part A of this condition. These plans shall be reviewed by and must receive the approval of the DEP Bureau of Land and Water Quality.*
- C. The applicant shall, in consultation with the Department, conduct a study or studies to determine the effectiveness of the spillage or other measures required by this condition in meeting Class B dissolved oxygen standards.*
- D. The applicant shall, within 60 days following the issuance of a new FERC license for the project or upon such other schedule as established by FERC, submit plans for a study or studies to determine the effectiveness of the spillage or other measures taken pursuant to Part A of this condition in meeting Class B dissolved oxygen standards. These plans shall be reviewed by and must receive the approval of DEP prior to implementation.*
- E. The applicant shall, in accordance with a schedule set forth in the study plan or upon such other schedule as established by FERC, submit the results of any studies to determine the effectiveness of the spillage or other measures taken pursuant to Part A*

Section 2

FERC License and WQC Requirements

of this condition to meet Class B dissolved oxygen standards in the river from Dundee Dam to Saccarappa Dam, along with any recommendations for changes in measures taken pursuant to this condition.

- F. The applicant shall be responsible for taking such actions as are needed to meet dissolved oxygen standards in the river from Dundee Dam to Saccarappa Dam, insofar as the project dams cause or contribute to a violation of these standards under dry weather conditions. After reviewing the study results, and after notice to the applicant and opportunity for hearing, the Department will reopen and modify the terms of this certification to require reasonable changes in the design and/or operation of the projects as may be deemed necessary to meet Class B dissolved oxygen standards in the river from Dundee Dam to Saccarappa Dam under dry weather conditions.*

Section 3

Consultation

The FERC Licenses require consultation with certain resource agencies during development of this plan. Accordingly, a draft of this plan was distributed for review by the MDEP, U.S. Fish and Wildlife Service (USFWS), and U.S. Geological Survey (USGS) on May 26, 2004. In addition, S.D. Warren provided copies of the draft plan and invited comments from the Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources (MDMR), and Maine Atlantic Salmon Commission (MASC). Comment letters were received from the MDEP, USFWS, MDIFW and MASC; the USGS provided an electronic mail message stating they would not be providing comments. Comments received have been addressed in this final plan, and Copies of all consultation correspondence are provided in Appendix A.

S.D. Warren has addressed all agency comments, adopting most recommendations and incorporating additional information requested by agencies in this plan. There were three comments that S.D. Warren did not agree with, dealing with requests for further automation of equipment and more frequent gage readings. These issues, and S.D. Warren's rationale for not incorporating specific recommendations, are detailed below:

1. In its comments, the USFWS requested continuous automated recording of turbine flow at the Dundee and Gambo Projects as a means for further verifying run of river operations. S.D. Warren disagrees that automated unit monitoring is necessary. The units at the Dundee and Gambo Project are manually set; typically this occurs only once weekly, when flows out of Sebago Lake are set. Once set by the operators, the flow through the units is constant. The only occasion when unit flow might vary is if headpond levels drop below normal pond; in this event, the operators will be alerted to this condition by the automated headpond monitoring system. S.D. Warren currently maintains records of unit settings, and, as proposed in the draft of this plan, will continue to do so. This data will be maintained at the Westbrook Mill with other flow and operations compliance data.
2. The MDIFW requested daily recording of bypass flow volumes at the Dundee, Gambo, and Mallison Falls Projects. However, since no staff gaging of bypass flows is necessary at the Dundee or Mallison Falls Projects (flows will be verified by conservative calculation of the

Section 3Consultation

spillway and stop log openings) there will be no need or mechanism for daily recordation. Further, at Gambo, since station flows and operations are set manually on a weekly basis (typically), there is no reason to expect bypass flows to appreciably change in between unit setting adjustments.

3. The USFWS requested that temperature monitoring be automated to verify compliance with reaeration flow requirements. S.D. Warren disagrees with this request. Since the trigger for daily provision of reaeration flows is a temperature measurement taken prior to 8:00 a.m. each day, continuous recording is not necessary. Further, although there may be days when temperatures exceed 22°C at the Gambo dam after 8:00 a.m., the Licenses and WQC do not require initiation of reaeration flows under such conditions.

Section 4

Run-of-River Operations and Impoundment Level Monitoring

4.1 Operations and Monitoring Measures

The Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa Projects operate in a ROR mode, utilizing flow releases from the Eel Weir Project at Sebago Lake and additional tributary drainage. The power stations are operated 24 hours per day and manually controlled. S.D. Warren hydro operations crews visit the sites daily and make necessary adjustments to the unit settings based on the scheduled flow release from Sebago Lake and any pond level fluctuations seen since the previous daily inspection. Flow releases from Sebago Lake are typically set weekly, although adjustments may be made if necessary to accommodate changing flow and lake water level conditions (i.e., high flows) at any time. The amount of flow released from Sebago Lake is determined in accordance with the FERC ordered Eel Weir Project Lake Level Management Plan (LLMP) [92 FERC ¶62,180 (2000)].

S.D. Warren will continue to operate all of the Projects manually as described above. Currently, S.D. Warren monitors headpond and tailwater elevations at all stations manually using staff gages. Unit operation settings are also documented manually. To provide for monitoring of headpond elevations and verification of ROR operations under the new Licenses for the Dundee and Gambo Projects, S.D. Warren plans to install pressure sensor monitors and data collection systems at those Projects. Continuous monitoring systems can be justified at those stations based on the size of the headponds and based on the requirement for reaeration flows to be provided by spillage at these two Projects (see Section 5 below), which spillage flows will necessitate continuous headpond monitoring because spillage may be affected if headpond levels drop below normal pond. However, S.D. Warren plans to continue manual monitoring of headpond levels at the Little Falls, Mallison Falls, and Saccarappa Projects. Compliance with ROR operations requirements will be verified by pond level monitoring.

4.1.1 Dundee Project

Currently, impoundment elevations are manually monitored daily by operators using the staff gage located at the powerhouse intake structure. Tailwater elevation is also manually monitored via a staff gage located in the tailrace. S.D. Warren will install a new pressure sensor and data collection system to provide continuous headpond monitoring at this Project. The pressure sensors will *measure and electronically record water elevations in the impoundment once per hour*. Under normal operations, the pond level will be reviewed daily by operators, and downloaded monthly to generate a tabulation of hourly water levels. Quarterly manual readings of the headpond and tailwater staff gages will provide routine quality control on the continuous monitoring system. If manual readings vary from the pressure sensor data, the equipment will be inspected and calibrated as necessary. Records of the pressure sensor and manual staff gage readings will be maintained at the Westbrook mill.

The headpond and tailwater staff gages will be located and calibrated in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and site security requirements may necessitate restricted access in many instances.

In the event unexpected level variations occur, the system will annunciate an alarm at the Energy Management Center (EMC), located at the Westbrook mill, if the headpond fluctuates more than 0.5 feet above or below the top of the flashboards. The EMC operators will attend the alarm and contact the Line Crew to make adjustments as necessary to stabilize the headpond elevation. In the event that power is lost at the station (a rare occurrence), operators will visit the station to manually verify that impoundment levels and ROR operations are being maintained until power is reactivated.

Compliance with the ROR operations requirements will be verified by documentation of the pond levels. When the station is not operating, including during downstream eel passage shutdowns, all inflow will be spilled. These occurrences will be documented in the station records.

4.1.2 Gambo Project

Currently, impoundment elevations are manually monitored daily by operators using a staff gage located at the powerhouse intake structure. Tailwater elevation is also manually monitored via a staff gage located in the tailrace. S.D. Warren will install a new pressure sensor and data collection system. The pressure sensors will measure and electronically record water elevations in the impoundment once per hour. Under normal operations, pond level will be reviewed daily by operators, and downloaded monthly to generate a tabulation of hourly water levels. Quarterly manual readings of the headpond and tailwater staff gages will provide routine quality control on the continuous monitoring system. If manual readings vary from the pressure sensor data, the equipment will be inspected and calibrated as necessary. Records of the pressure sensor and manual staff gage reading records will be maintained at the Westbrook mill.

The headpond and tailwater staff gages will be located and calibrated in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and site security requirements may necessitate restricted access in many instances.

In the event unexpected level variations occur, the system will annunciate an alarm at the EMC if the headpond fluctuates more than 0.5 feet above or below the top of the flashboards. The EMC operators will attend the alarm and notify the Line Crew to make adjustments as necessary to stabilize the headpond elevation. In the event that power is lost at the station (a rare occurrence), operators will visit the station to manually verify that that impoundment levels and ROR operations are being maintained until power is reactivated.

Compliance with the ROR operations requirements will be verified by documentation of the pond level. When the station is not operating, including during downstream eel passage shutdowns, all inflow will be spilled. These occurrences will be documented in the station records.

4.1.3 Little Falls Project

Currently, impoundment elevations are manually monitored daily by operators using the staff gage located at the powerhouse intake structure. Tailwater elevation is also manually monitored via a staff gage located in the tailrace. To verify ROR operations, headpond elevations will continue to be monitored daily by operators. Headpond, tailwater elevations, unit settings, spillage, and any usual operating conditions will be recorded daily. Records will be maintained at the Westbrook mill. The calibration of the current staff gages will be verified when this plan is approved for implementation.

The headpond and tailwater staff gages will be located and calibrated in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and site security requirements may necessitate restricted access in many instances.

Compliance with the ROR operations requirements will be verified by documentation of the pond level. When the station is not operating, including during downstream eel passage shutdowns, all inflow will be spilled. These occurrences will be documented in the station records.

4.1.4 Mallison Falls Project

Currently, impoundment elevations are manually monitored daily by operators using the staff gage located at the powerhouse intake structure. Tailwater elevation is also manually monitored via a staff gage located in the tailrace. To verify ROR operations, headpond elevations will continue to be monitored daily by operators. Headpond, tailwater elevations, unit settings, spillage, and any usual operating conditions will be recorded daily. Records will be maintained at the Westbrook mill. The calibration of the current staff gages will be verified when this plan is approved for implementation.

The headpond and tailwater staff gages will be located and calibrated in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where

Section 4Run-of-River Operations and Impoundment Level Monitoring

they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and site security requirements may necessitate restricted access in some instances.

Compliance with the ROR operation requirements will be verified by documentation of the pond level. When the station is not operating, including during downstream eel passage shutdowns, all inflow will be spilled. These occurrences will be documented in the station records.

4.1.5 Saccarappa Project

Currently, impoundment elevations are manually monitored daily by operators using the staff gage located at the powerhouse intake structure. Tailwater elevation is also manually monitored via a staff gage located in the tailrace. To verify ROR operations, headpond elevations will continue to be monitored daily by operators. Headpond, and tailwater elevations, unit settings, spillage, and any usual operating conditions will be recorded daily. Records will be maintained at the Westbrook mill. The calibration of the current staff gages will be verified when this plan is approved for implementation.

The headpond and tailwater staff gages will be located and calibrated in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and site security requirements may necessitate restricted access in some instances.

Compliance with the ROR operations requirements will be verified by documentation of the pond level. When the station is not operating, including during downstream eel passage shutdowns, all inflow will be spilled. These occurrences will be documented in the station records.

4.2 Maintenance Drawdowns

4.2.1 Seasonal Limitations

S.D. Warren will avoid performing maintenance activities (unless necessary for emergency or safety reasons) that require drawing down the headponds of any of the five Presumpscot River Projects during May and June to protect littoral zone spawners such as smallmouth bass.

4.2.2 Agency Consultation

S.D. Warren will notify a fisheries biologist at the MDIFW Region A Fisheries Headquarters in Gray, Maine, prior to any planned drawdowns.

4.2.3 Refill Procedures

S.D. Warren will institute the following procedure for refilling the impoundment after drawdowns:

- If the FERC-approved LLMP will allow increasing the outflow from Sebago Lake, the impoundment will be refilled by temporarily increasing flows from Sebago Lake, while maintaining a flow below the station of at least the flow required by the flow/temperature curve.
- If the FERC-approved LLMP will not allow increased outflow from Sebago Lake, the impoundment will be refilled by utilizing 25 percent or less of the flow being released from Sebago Lake (i.e., a flow of at least 75 percent of the flow released from Sebago Lake will be maintained below the station).

Section 5

Bypass and Reaeration Flows

Bypass flows are required year-round at the Dundee, Gambo, and Mallison Falls Projects. In addition, reaeration flows are required at the Dundee and Gambo Projects when water temperatures, as measured at the Gambo Project prior to 8 a.m., are 22°C or higher. S.D. Warren's plans for providing and monitoring these flows at each station are discussed below.

5.1 Bypass Flow Provisions and Monitoring

5.1.1 Dundee Project

The Dundee dam has a spillway length of 150 feet capped with 24-inch (two-foot) flashboards. The top of board elevation is at elevation 187.22 (USGS datum). The pin spacing for the boards is 40 inches on center. The dam also has two deep river gates adjacent to the intake structure. These gates are noted as being four feet wide by five feet in height. Their invert elevation is elevation 146.52 (USGS datum). There is also a single shallow sluice gate. This gate has an invert elevation of elevation 173.22 (USGS datum) and a width of four feet.

The required bypass flows at the Dundee Project are 60 cfs from May 1 through October 31 and 40 cfs from November 1 through April 30. An additional 50 cfs reaeration flow is required when water temperatures exceed 22°C at the Gambo dam prior to 8:00 a.m. The bypass flows will be provided through two openings in the flashboards. One permanent opening will be located at the approximate mid-point in the spillway that will provide 40 cfs year round. The second opening will also be in the spillway but will be adjacent to the sluice gate structure and will provide the additional seasonal 20 cfs flow. Calculations for the flashboard openings that will be needed to provide the 40 cfs and 20 cfs flow volumes are provided in Appendix B.

The License and WQC specify that the reaeration flow must be provided via spillage. To pass the 50 cfs reaeration flow through the flashboards would be difficult to manage operationally and from a safety standpoint. Therefore, the 50 cfs reaeration flow will be provided via spillage through the log sluice gate between the sluice gate house and the intake gate structure. The log sluice gate takes water from the surface of the pond, which would fall over a distance slightly longer than the spillway

height, into the tailrace of station. This flow is to be provided whenever instream water temperatures are 22°C or above at the Gambo dam prior to 8:00 a.m. Calculations for the gate opening that will be needed to provide 50 cfs are provided in Appendix B.

The bypass and aeration flow volumes will be verified by conservative calculations of the opening size in both the flashboards and the log sluice, the pond level monitoring data and log book entries indicating when gate settings and flashboard openings are changed. Records will be maintained and reports distributed as described further in Section 6 below.

Operators will visually check all gates and spillway and flashboard openings used to provide *minimum flows daily for debris and will promptly remove any materials that may be restricting flows*. Verification that this has been done will be recorded on the daily inspection sheets.

5.1.2 Gambo Project

The Gambo dam has a spillway length of 250 feet capped with 16-inch (1.33-foot) flashboards. The top of board elevation is at elevation 135.13 (USGS datum). The pin spacing for the boards is four feet on center. The dam also has three deep river gates adjacent to the power canal intake structure. These gates are noted as being 4.5 feet wide by 5.5 feet in height. Their invert elevation is elevation 110.6 (USGS datum).

The required bypass flows at the Gambo Project are 60 cfs year-round. An additional 100 cfs reaeration flow is required when water temperatures exceed 22°C at the Gambo dam prior to 8 a.m.

Bypass flows (60 cfs year-round) and reaeration flows of 100 cfs will be discharged using a combination of the log sluice, flashboard openings and the deep gate. The year-round 60 cfs bypass flow will be discharged through the deep river gate. The current leakage through the gate, which has been leaking for more than a decade, has been gaged at approximately 60 cfs. The bypass flow will be provided by this leakage. Flows will be verified via the staff gage discussed below.

The License and WQC specify that the reaeration flow must be provided via spillage. To pass the 100 cfs reaeration flow would require removal of 19.6 feet of flashboards. This would be difficult to

manage operationally. Therefore, the 100 cfs recreation flow will be provided via a combination of spillage through a log sluice located in the spillway adjacent to the sluice gate structure and flashboard openings. The log sluice gate takes water from the surface of the pond and routes it into the bypass channel. This flow is to be provided whenever instream water temperatures are 22°C or above at the Gambo dam prior to 8:00 a.m. Calculations for the log sluice opening that will be needed to provide the 100 cfs flow volume are provided in Appendix B.

The bypass flow volumes will be verified by installation of a staff gage in the bypass, which will be recorded daily pursuant to MDIFW's request. The staff gage will be field located to provide accurate level monitoring and convenient access for operators. The bypass staff gage will be located and calibrated to stream flow in accordance with USGS guidelines (USGS 1982). The MDIFW has requested that staff gages be installed in locations where they can be easily viewed by the public, and that the gages be marked with applicable target elevations and flow equivalents. S.D. Warren will attempt to accommodate MDIFW's request to the extent feasible and practical. Site constraints may limit suitable locations, and FERC site security requirements may necessitate restricted access in some instances. S.D. Warren will provide MDIFW a table correlating the gage and streamflow after installation.

Daily observation and recording of the gate opening and the continuous headpond monitoring will provide additional verification of flows. Records will be maintained as described further in Section 6 below.

Operators will visually check all gates and spillway and flashboard openings used to provide minimum flows daily for debris and will promptly remove any materials that may be restricting flows. Verification that this has been done will be recorded on the daily inspection sheets. Compliance will be verified by manual observation of flow passages and comparison to recorded headpond level data.

5.1.3 Mallison Falls Project

The Mallison Falls dam has a spillway length of 174.5 feet. The dam has no operational sluice gates in the main dam structure. The main dam structure does have two stop log openings; one is adjacent

to the canal intake structure and is 5.5 feet wider, and the other is at the opposite end of the spillway and is 5.75 feet wide.

Bypass aquatic flows of 60 cfs, or inflow, whichever is less, from May 1 through October 31 and 40 cfs, or inflow, whichever is less, from November 1 through April 30, are required at the Mallison Falls Project. These flows will be discharged using a combination of leakage over the spillway caused by missing granite blocks and the stop log opening adjacent to the canal intake structure.

The bypass flow volumes will be verified by conservative calculations of the opening size in both the spillway and the stop log opening (calculations for these openings are provided in Appendix B), the pond level monitoring data, and log book entries indicating when gate settings are changed. Records will be maintained and reports distributed as described further in Section 6 below.

Operators will visually check all gates and spillway openings used to provide minimum flows daily for debris and will promptly remove any materials that may be restricting flows. Verification that this has been done will be recorded on the daily inspection sheets.

5.1.4 Little Falls and Saccharappa Projects

The WQC requires that existing leakage flows be maintained at the Saccharappa and Little Falls Projects. At the Little Falls Project, leakage flows of 26 cfs occur from the sluiceway sections of the dam. At the Saccharappa Project, approximately 13 cfs (5 cfs in the east channel and 8 cfs in the west channel) occurs from gate structures. In its comments, the MDEP asked that this plan address how S.D. Warren will verify future maintenance of these leakage volumes. S.D. Warren has no plans to repair or seal any of these gates. If any repair or maintenance work is done on these gates in the future, S.D. Warren will gage leakage flows to verify that 26 cfs and 13 cfs are maintained at the Little Falls and Saccharappa Projects, respectively.

5.2 Temperature and Dissolved Oxygen Monitoring

Reaeration flows at the Dundee and Gambo Projects are to be provided when water temperatures in the Gambo dam exceed 22°C (approximately 71.6°F) prior to 8:00 a.m. As shown in Figure 1

Section 5

Bypass and Reaeration Flows

(attached hereto), water temperature data collected by the USGS in the Presumpscot River near West Falmouth, Maine from 1976 to 1993 indicate that average water temperatures in the River near West Falmouth were consistently above 70°F (approximately 21°C) throughout July and August. Average temperatures in the Presumpscot River remain below 60°F (approximately 15.5°C) until June of each year. During September, average water temperatures ranged from 60 to 70°F (15.5°C to 21°C). Starting in October, average water temperatures in the Presumpscot consistently remained below 60°F (15.5°C) for the period of record. Temperature data collected throughout the River during relicensing studies showed that the River has a relatively uniform temperatures for its entire length. Therefore, the West Falmouth gage data is believed to be representative of long-term average temperatures in the Gambo Project waters.

Based upon historical data, S.D. Warren expects to institute reaeration flows from late-June through mid-September. S.D. Warren will initiate daily manual monitoring of temperature at the Gambo dam on June 1 annually. Monitoring will be done by operators upstream of the sluice gate structure at mid-depth. When water temperatures are 22°C or higher at the Gambo dam prior to 8:00 a.m., S.D. Warren will immediately provide the necessary flows at the Dundee and Gambo dams, as described above. Daily temperature monitoring will continue through the summer. When water temperatures fall to 22°C or less, the flows will be terminated. The temperature monitoring will continue until the temperature is significantly below 22°C, then it will cease.

The FERC Licenses do not require any testing of effectiveness of the reaeration measures. However, the WQC requires a study or studies be performed to determine the effectiveness of the spillage or other measures implemented to meet Class B dissolved oxygen standards. Therefore, S.D. Warren will manually monitor both temperature and dissolved oxygen in the Gambo impoundment daily prior to 8:00 a.m. Temperature and dissolved oxygen data will be recorded and local rainfall data will be obtained from the National Weather Service. All data will be maintained as described in Section 6 below.

Temperature and dissolved oxygen measurements will be obtained using a hand-held field meter. This unit will be calibrated daily prior to use, according to manufacturer specifications. The unit will also be calibrated annually by a qualified equipment quality control specialist.

5.3 Alternative Reaeration Measures

The FERC Licenses and WQC allow for evaluation of alternative methods for dissolved oxygen enhancement. S.D. Warren is aware that other options such as turbine venting, aeration weirs, and reservoir diffusers are increasingly being employed to improve dissolved oxygen at other hydro projects. However, such measures are costly and require extensive study to determine the applicability to a given project. Importantly, based upon the MDEP's analysis of dissolved oxygen in the Presumpscot River, upon which the WQC is based, MDEP determined that the required reaeration flows will alleviate any low dissolved oxygen issues. Other measures may not be necessary or economically justifiable for the Dundee and Gambo Projects. Therefore, S.D. Warren proposes no evaluation of alternatives unless determined to be necessary based on a minimum of three years of monitoring data.

5.4 Stranding Provisions

The FERC Licenses require that this plan include provisions to monitor the timing and magnitude of spillage events in the bypassed reach, along with limited visual observations, to verify that stranded fish are not present in the bypassed reach after the cessation of high spill events, and identification of the corrective actions that would occur should stranding or flushing be observed.

As discussed above, the timing and magnitude of spillage events will be documented via the headpond monitoring systems and bypass staff gages at the Dundee and Gambo Projects, and by the headpond and bypass staff gages at the other Projects. After spillage events, including each morning of the downstream eel passage season, S.D. Warren will inspect each bypass reach for stranded fish. If found, stranded fish will be carefully collected and released downstream of the bypass. Records of any stranding event will be maintained.

5.5 Bypass Flow Suitability for Atlantic Salmon

The FERC Licenses and WQC require that this plan include a schedule to develop and file the flow study plan required by Article 403 for the Mallison Falls, Gambo, and Dundee Projects with the FERC and MDEP. License Article 403 (for the Mallison Falls, Gambo, and Dundee Projects)

Section 5

Bypass and Reaeration Flows

requires S.D. Warren to evaluate the effectiveness of the required minimum bypass flows to provide habitat for Atlantic salmon. The Article 403 study plan is not required until 180 days after S.D. Warren is notified by the Maine Atlantic Salmon Commission (MASC) that a salmon habitat assessment has been completed and an active restoration program for Atlantic salmon initiated in the Presumpscot River, or according to an alternative schedule established in this project operations and flow monitoring plan.

S.D. Warren believes that the existing data from the minimum flow studies (Kleinschmidt 1997 and 1998) conducted for the relicensings of these Projects can easily provide data on flow suitabilities for Atlantic salmon. However, given that there is no active Atlantic salmon restoration program for the Presumpscot River, it is premature to address this license condition. S.D. Warren will, as required, prepare a study plan pursuant to Article 403 of the Mallison Falls, Gambo, and Dundee Project Licenses in consultation with the MASC, MDEP, USFWS, and FERC as described above upon receiving notification from the MASC.

Section 6

Recordkeeping and Reporting

6.1 Recordkeeping

Operations, flow, and staff gages data for each Project will be recorded at each station as follows:

	Dundee	Gambo	Little Falls	Mallison Falls	Saccarappa
Unit settings	D	D	D	D	D
Hours of operation/shutdowns	D	D	D	D	D
Spillage (presence/absence)	D	D	D	D	D
Headpond staff gage level	Q	Q	D	D	D
Tailrace staff gage level	Q	Q	D	D	D
Bypass staff gage level		D			
Leakage changes			x		x
Upstream eel passage flow	d	d	d	d	d
Fish passage flows	d	d	d	d	d
Sebago Lake Flow	D				
River Flow at Westbrook (from USGS gage 01064118)		USGS	USGS	USGS	USGS
Unusual operating conditions	x	x	x	x	x
Check for gate/spillway debris	D	D		D	
Equipment calibration	x	x			
Corrective actions taken	x	x	x	x	x

D= Daily; d = daily during passage season; Q=quarterly; x=as necessary; USGS= Daily flow data to be obtained from USGS

Data will be recorded daily by station operators. Any deviations from required minimum flows or headpond levels will be corrected immediately and reported to the S.D. Warren Hydro Manager. All manual data will be input into spreadsheets and reviewed monthly by the Hydro Manager. Data from the pressure sensor systems at the Dundee and Gambo Projects will be downloaded monthly and will also be reviewed. Reporting to FERC and other agencies of such occurrences will be undertaken as described below.

6.2 Operation and Flow Data

S.D. Warren will maintain all records on Project operations and minimum flows at the Westbrook Mill, with the exception of the station logs, which will be maintained at each station. This data will be made available to the agencies upon request.

6.3 Temperature and Dissolved Oxygen Data

Daily temperature and dissolved oxygen monitoring will commence June 1 each year and continue until temperatures are 22°C or below at the Gambo dam before 8:00 a.m. S.D. Warren will maintain this data at the Westbrook Mill. After the third full season of operation/monitoring, S.D. Warren will address whether any assessment of alternative measures for reaeration (to maintain dissolved oxygen levels in the Gambo Project waters is necessary, as discussed above in Section 5.3) will be studied or employed.

6.4 Reporting of Unusual Events

6.4.1 Temporary Suspension of ROR Operations

ROR operation may be temporarily modified or suspended if required for approved maintenance activities, operating emergencies beyond the control of S.D. Warren, including extreme hydrological conditions and emergency electrical system conditions, and for short periods upon mutual agreement between S.D. Warren, MDEP, and USFWS. For approved maintenance activities, S.D. Warren will follow Section 6.4.2 below. In the event of operating emergencies, S.D. Warren will consult with MDEP and USFWS as soon as possible after such events occur. If the flow is so modified, S.D. Warren will notify FERC as soon as possible, but no later than 10 days after each incident.

6.4.2 Notice of Maintenance/Emergency Drawdown

S.D. Warren will notify personnel at the MDIFW Region A Fisheries Headquarters and FERC two weeks prior to any planned drawdown and as soon as possible, but no later than 10 days after any unplanned (or emergency) drawdown.

6.4.3 Interruptions of Bypass or Reaeration Flows

Bypass and Reaeration flow releases from the applicable Projects to the bypassed reach may be temporarily modified if required by operating emergencies beyond the control of S.D. Warren,

including approved maintenance activities, extreme hydrological conditions, and emergency electrical system conditions, and for short periods upon mutual agreement between S.D. Warren, MDEP, and USFWS. If the flow is so modified, S.D. Warren will notify the FERC as soon as possible, but no later than 10 days after each such incident, and shall provide the reason for the modified flow.

6.4.4 Flow, ROR Operations, or Impoundment Elevation Deviations

In the event that impoundment elevations, impoundment drawdowns or bypass flows, as measured according to the approved monitoring plan, deviate from License requirements for a Project, S.D. Warren will file a report with the FERC within 30 days of the incident. A draft of the report will be prepared and circulated for review by MDEP and USFWS within 10 days of the incident and these agencies' comments will be addressed in the report to FERC.

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

Section 7

Implementation Schedule

S.D. Warren has included the installation of the new pressure sensor equipment at the Dundee and Gambo Projects and the gate/flashboard modifications in its 2005 capital budget (October 2004 to September 2005). After approval of this plan, S.D. Warren will install the new pressure sensor equipment at the Dundee and Gambo Projects, install a new bypass staff gage at the Gambo Project, and field verify all existing staff gages on or before June 30, 2005. Monitoring of compliance will begin within 30 days of completion of installation.

The schedules for data and incident reporting are contained in Section 6 of this plan and will be implemented upon commencement of monitoring as described above.

Section 8

Literature Cited

Kleinschmidt Associates. 1997. S.D. Warren Company. Presumpscot River hydroelectric projects, habitat and flow study of bypass and free-flowing reaches, Phase I habitat mapping report. Prepared for S.D. Warren. KA. Pittsfield, Maine. 66+pp.

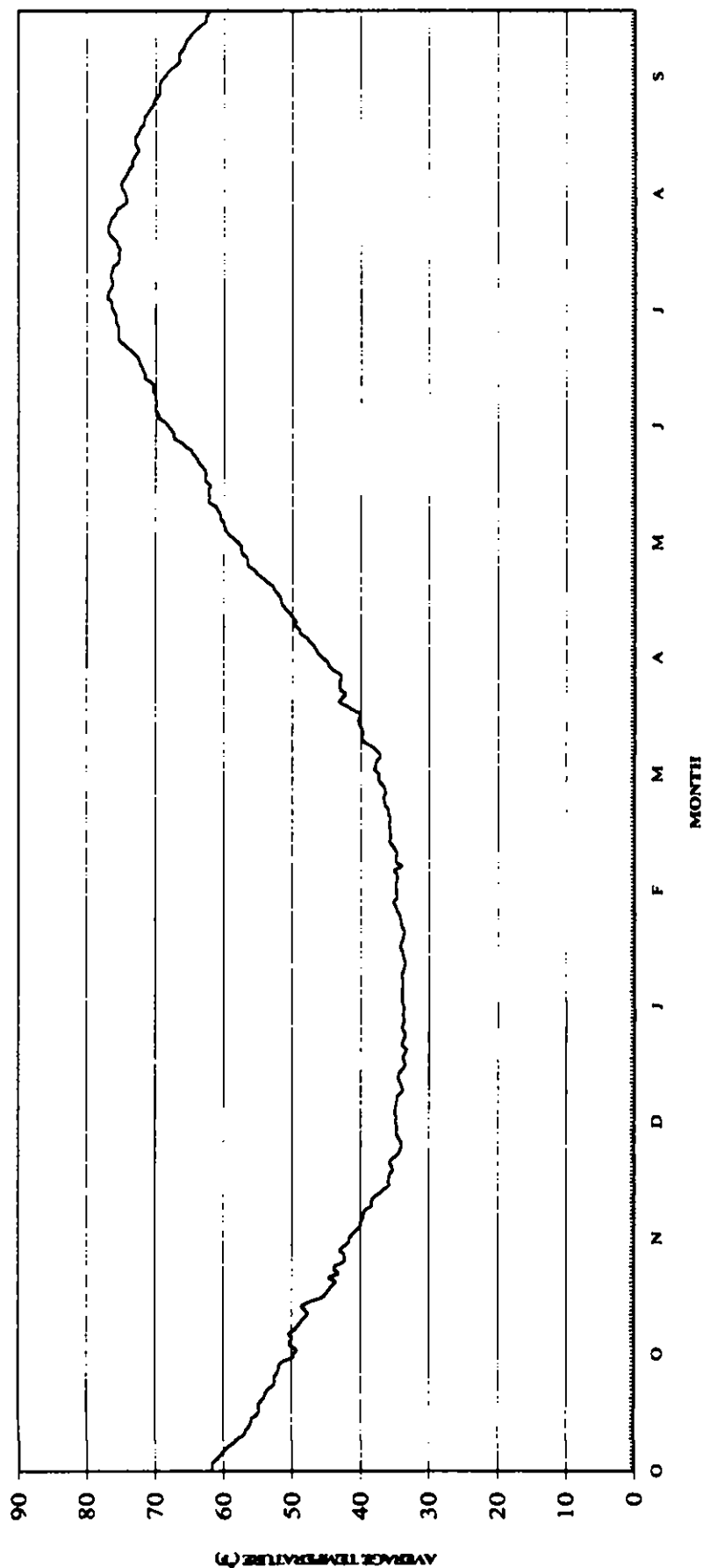
———. 1998. S.D. Warren Company. Presumpscot River hydroelectric projects, habitat and flow Study of bypass and free-flowing reaches, Phase II habitat mapping report. Prepared for S.D. Warren. KA. Pittsfield, Maine. 61+pp.

USGS. 1982. Measurement and Computation of Streamflow: Volume 1. Measurement of Stage and Discharge. United States Government Printing Office, Washington, DC.

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MW/elt
July 15, 2004
102.0001.0100

FIGURE 1

AVERAGE DAILY TEMPERATURES IN THE PRESUMPCOT RIVER AS RECORDED IN THE USGS WATER QUALITY GAGE
NEAR WEST FALMOUTH, MAINE (GAGE NO. 1064140) FOR PERIOD OF RECORD (1976-93)



APPENDICES

APPENDIX A
DOCUMENTATION OF AGENCY CONSULTATION



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists
May 26, 2004

Principals:
John J. Devine, P.E., President
John C. Tarbell, P.E.
James M. Lynch
Edwin C. Luttrell, P.E.
102.0001.0100/8.0

TO: Attached Distribution List

SUBJECT: Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa
FERC Project Nos. 2942, 2931, 2941, 2932, and 2897
Draft Operations and Flow Monitoring Plan

Dear Recipient:

On behalf of the S.D. Warren Company, Licensee for the Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa Projects, we are distributing the enclosed draft Operations and Flow Monitoring Plan for your review and comment. Please provide comments to the undersigned on or before June 25, 2004.

This plan has been prepared in compliance with the new and subsequent licenses issued by the Federal Energy Regulatory Commission (FERC) on October 2, 2003 and the Water Quality Certification (WQC) issued for all five projects by the Maine Department of Environmental Protection on April 30, 2003. The FERC Licenses and WQC require development of a plan for providing bypass and reaeration flows (at applicable projects) and for monitoring of compliance with flow and operations conditions of the licenses.

If you have any questions, please contact the undersigned at 207-775-4495.

Sincerely,

DEVINE TARBELL & ASSOCIATES, INC.

Sor Maureen Winters
Project Manager

MW/elt
Enclosures

cc: T. Howard, S.D. Warren
N. Skancke, GKRSE
File

J:\Projects\SD Warren\102.0001\102.0001.0100\Oper&Flow Monitoring Plan-040517\agency draft cvr ltr-040526.doc

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Bellingham, Washington
360-671-1150/1152 (fax)

**FLOW AND OPERATIONS PLAN
AGENCY REVIEW DRAFT**

**CONSULTATION DISTRIBUTION LIST
MAY 26, 2004**

Mr. Larry Miller
U.S. Fish and Wildlife Service
1168 Main Street
Old Town, ME 04468

Mr. Dana P. Murch
Maine Department of Environmental Protection
Bureau of Land and Water Quality
17 State House Station
Augusta, ME 04333

Mr. Robert Lent
District Chief
United States Geological Survey
196 Whitten Road
Augusta, ME 04330

Mr. Norman Dube
Maine Atlantic Salmon Commission
650 State Street
Bangor, ME 04401-5654

Mr. Steven A. Timpano
Maine Department of Inland Fisheries & Wildlife
41 State House Station
284 State Street
Augusta, ME 04333

Mr. Francis Brautigam
Maine Department of Inland Fisheries & Wildlife
RR 1. 328 Shaker Road
Gray, ME 04039

Ms. Gail Wippelhauser
Maine Department of Marine Resources
21 State House Station
Augusta, ME 04333



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAWN R. GALLAGHER
COMMISSIONER

June 8, 2004

Maureen Winters
Project Manager
Devine Tarbell & Associates, Inc.
970 Baxter Boulevard
Portland, ME 04103

RE: Comments on Draft Operations and Flow Monitoring Plan
Presumpscot River Hydro Projects

Dear Maureen:

The DEP has reviewed your letter of May 26, 2004 and the accompanying Draft Operations and Flow Monitoring Plan for the Presumpscot River Hydro Projects (Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa), submitted on behalf of SD Warren Company. This plan has been prepared in compliance with Articles 401, 402, 403 and 404 of the FERC licenses (No. 2942, 2931, 2941, 2932, and 2897) for the projects and Conditions 1, 2, and 6 of the Water Quality Certification for the projects.

The DEP notes that, in accordance with Condition 1 of the WQC for the projects, SD Warren is required to submit a plan for providing and maintaining run-of-river operations, impoundment levels, and minimum bypass flows in compliance with the terms of the certification.

The DEP further notes that, in accordance with Condition 2 of the WQC for the projects, SD Warren is required to implement specific procedures for refilling the project impoundments after any maintenance drawdowns.

Finally, the DEP notes that, in accordance with Condition 6 of the WQC for the Dundee and Gambo Projects, SD Warren is required to submit plans for providing and monitoring reaeration flows at these projects in compliance with the terms of the certification.

We have the following comments on the draft plan.

1. DEP has no objections to SD Warren's plan to monitor run-of-river operations and impoundment levels by installing pressure sensor monitors and data collection systems at the Dundee and Gambo Projects and by using existing headpond staff gages at the Little Falls, Mallison Falls and Saccarappa Projects.

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PRESQUE ISLE, MAINE 04769-2294
(207) 764-2477 FAX: (207) 764-1507

Letter to Maureen Winters

June 8, 2004

Page 2

2. SD Warren proposes to provide the required bypass flows and reaeration flows at the Dundee Project via flashboard openings and spillage through the log sluice gate. The final plan should include the calculations for the openings necessary to provide the required flows.
3. SD Warren proposes to provide the required bypass flow at the Gambo Project via leakage through the deep river gate and spillage through the log sluice gate. SD Warren further proposes to monitor flows in the bypass via a new staff gage. The final plan should include a description of how the staff gage will be calibrated to measure flows in the bypass.
4. SD Warren proposes to provide the required bypass flows at the Mallison Falls Project via a stop log opening and leakage over the spillway caused by missing granite blocks. The final plan should include the calculations for the openings necessary to provide the required flows.
5. The first sentence in Section 5 (page 20) should be corrected to refer to the "Dundee, Gambo and Mallison Falls" Projects.
6. Condition 1 of the WQC requires that existing leakage flows be provided into the bypass reaches at the Little Falls and Saccarappa Projects. These flows have been estimated by approximately 26 and 13 cfs, respectively. The final plan should include a discussion of how SD Warren proposes to ensure that these leakage flows will be maintained in the future.
7. Figure 1, "Average Daily Temperature in the Presumpscot River As Recorded in the USGS Water Quality Gage Near West Falmouth, Maine (Gage No. 1064140) For Period of Record 1976-93," appears to be incorrectly labeled on its x axis.
8. SD Warren proposes to initiate daily temperature monitoring on June 1 annually in the Gambo impoundment in order to determine when reaeration flows must be instituted at the Dundee and Gambo Projects. SD Warren further proposes to monitor temperature upstream of the sluice gate structure at mid-depth in the impoundment. The Dep has no objections to this monitoring plan. However, the final plan should specify the equipment that will be used to monitor temperatures, and should include a description of a QA/QC protocol that will be used to ensure the accuracy of the temperature data.
9. The draft plan states (Section 5.3, page 23) that the "WQC require(s) evaluation of alternative methods of dissolved oxygen enhancement" at the Dundee and Gambo Projects. This is not correct. Condition 6 of the WQC provides that SD Warren shall "institute the spillage of 50 cfs at the Dundee Dam and 100 cfs at the Gambo Dam, or take other equivalent measures as may be approved by the [DEP], in order to meet Class B dissolved oxygen standards in the river from

Letter to Maureen Winters
June 8, 2004
Page 3

Dundee Dam to Saccarappa Dam under dry weather conditions." The provision for "other equivalent measures" was included based on the fact that alternative methods of increasing DO levels in the river (such as turbine venting, air injection, and partial impoundment drawdowns) may be less costly to SD Warren than the approved spillage (see discussion on page 24 of the WQC). The DEP simply wanted to provide SD Warren with the opportunity to investigate and propose a less-costly alternative for achieving the required recreation. Whether Warren avails itself of this opportunity is up to the company.

10. DEP agrees that a study plan to evaluate the effectiveness of the required minimum bypass flows in providing habitat for Atlantic salmon is not required until after SD Warren is notified by the Atlantic Salmon Commission of initiation of active Atlantic salmon restoration activities in the Presumpscot River.
11. According to the Implementation Schedule included in the draft plan (see Section 7, page 29), SD Warren proposes to install new bypass staff gages at the Dundee, Gambo and Mallison Falls Projects. However, both the text of the plan (see pages 20-22) and the record keeping table (see page 26) refer to a bypass staff gage at the Gambo Project only. Please clarify.
12. A copy of the final plan, as filed with FERC, must also be filed with DEP in compliance with Conditions 1(E) and 6(B) of the WQC for the Presumpscot River Projects (DEP Order #L-19713-33-E-N dated April 30, 2003). The final plan must include responses to any comments received on the draft plan, and must be accompanied by a completed Application for Condition Compliance (form enclosed) and a fee of \$109.00 (payable to treasurer, State of Maine).

Thank you for this opportunity to comment. If you have any questions, please feel free to call me at 287-7784.

Sincerely,



Dana Paul Murch
Dams & Hydro Supervisor

Enclosure

cc: Larry Miller, USF&WS
Norm Dube, ASC
Steve Timpano, IF&W-Augusta
Francis Brautigam, IF&W-Region A
Gail Wippelhauser, DMR



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office
1168 Main Street
Old Town, ME 04468-2023
(207) 827-5938



In Reply Refer To:
FWS/Region5/ES/MEFO

June 21, 2004

REF: FERC Project Nos. 2942, 2931, 2941,
2932, and 2897 Dundee, Gambo, Little Falls, Mallison Falls,
and Saccarappa Hydroelectric Projects (Presumpscot River)
S.D. Warren Company
Draft Operations and Flow Monitoring Plan Comments

Ms. Maureen Winters
Devine Tarbell & Associates, Inc.
970 Baxter Boulevard
Portland, Maine 04103

Dear Ms. Winters:

We have reviewed S.D. Warren Company's (Warren or licensee) proposed Operations and Flow Monitoring Plan (plan) submitted to us as required under various articles of the Federal Energy Regulatory Commission (FERC) licenses for the above referenced projects (FERC Nos. 2942, 2931, 2941, 2932, and 2897, collectively referred to as the Presumpscot River projects) located on the Presumpscot River in Maine. The applicable FERC license articles require the licensee to develop a project operation and flow monitoring plan to document compliance with run-of-river (ROR) operations, impoundment drawdown restrictions, and minimum bypass flow requirements for the Presumpscot River projects. We provide the following comments on plan.

Currently Warren monitors impoundment levels at the five Presumpscot River projects manually on at least a daily basis. Warren proposes to continue to monitor impoundment levels manually at the Little Falls, Mallison Falls, and Saccarappa projects and to install automated pressure sensor monitors and data collection systems (hourly recording in electronic format) at the Gambo and Dundee projects. Compliance with ROR operation requirements will be verified through pond level monitoring (i.e., consistent pond levels indicate inflow equals outflow, or ROR operation).

Generally we concur with the plan for monitoring impoundment level, ROR operation, and minimum flows at the Presumpscot River projects conditioned upon incorporation of our following recommendations:


- Flow through the turbine (i.e., generation output of each turbine converted to flow using the turbine operating efficiency curve) at the Gambo and Dundee project should be

automatically recorded¹ along with the hourly impoundment levels in order to allow for verification minimum flow conditions in the project bypass reach and tailrace,

- Data from the USGS gage station (USGS 01064118 Presumpscot River at Westbrook, Maine) should be recorded and reported as river discharge² along with impoundment level and project flow data,
- In order to verify compliance with reaeration flow requirements, the recording of the river water temperature in the Gambo impoundment should be automated¹ and reported along with the above information,
- Calculations verifying the attainment of minimum flows through the proposed flash board and sluice gate openings at the minimum impoundment elevation should be included in the plan, along with standard operating procedures that will ensure these openings remain free of debris and are in proper operating condition, and
- The U.S. Fish and Wildlife Service should be consulted regarding the Bypass Flow Suitability Plan for Atlantic salmon required under license Article 403.

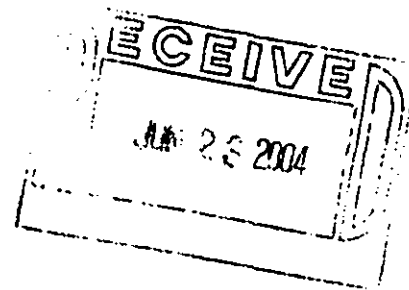
Thank you for the opportunity to comment on the proposed Operations and Flow Monitoring Plan for the Presumpscot River projects. If you have any questions, please contact Larry Miller at (207) 827-5938.

Sincerely yours,


Gordon W. Russell
Supervisor
Maine Field Office

cc:

SOL/Boston (Andrew Tittler/Judy Stolfo)
RO/EN (B. Rizzo)
NMFS, Gloucester (S. McDermott)
ME DEP, Augusta (D. Murch)
ME DMR, Augusta (T. Squiers/G. Wippelhauser)
ME ASC, Augusta (J. Trial/N. Dube)
ME IFW, Augusta (S. Timpano)



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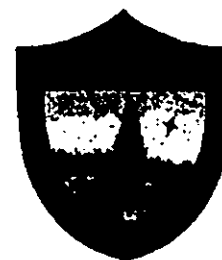
¹ This should be relatively easy task given that most of the automation and recording equipment will be available onsite as a result of Warren's proposed impoundment level monitoring.

² A rating curve will need to also be developed by Warren to convert stream gage to discharge.



Maine Department of Inland
Fisheries and Wildlife
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Telephone: 207-657-2345 ext.112
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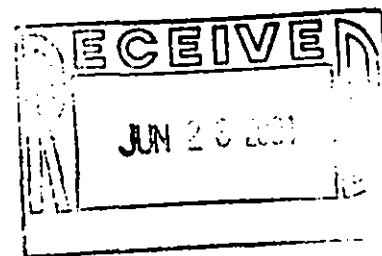


John Elias Baldacci, Governor

Roland D. Martin,
Commissioner

June 24, 2004

Maureen Winters
Devine Tarbell & Associates, Inc
970 Baxter Boulevard
Portland, ME 04103



RE: Draft Operations and Flow Monitoring Plan for Dundee, Mallison, Little Falls, Gambo, and Saccarappa Projects / Draft American Eel Passage Plan for the same aforementioned 5 projects

Dear Maureen,

The Maine Department of Inland Fisheries & Wildlife, Fisheries Division, has completed a review of the aforementioned plans, which were based on requirements contained in recently issued Water Quality Certification (4/30/03) and FERC licenses (10/2/03). Comments are provided below for each plan.

Draft Operations and Flow Monitoring Plan

Required minimum bypass flows below Little Falls (26 CFS) and Saccarappa (13 CFS) Dams, as proposed, will be maintained by existing leakage, but there are no provisions to ensure that existing leakage rates will be maintained in the future. Furthermore, since minimum bypass flow provisions associated with the remaining projects rely on quantified contributions of leakage it is important to periodically quantitatively verify leakage rate contributions.

Staff gauges should be designed, located, installed and calibrated at all stations to reflect seasonally required minimum bypass flows so as to permit independent verification of compliance with required minimum flow releases. These staff gauges should be situated so as to be easily read by the agency representatives as well as the public. The gauge should be "marked" by at least 3 elevations and associated verbiage that denote "Summer Minimum Flows", "Winter Minimum Flows", and "Summer Minimum Reaeration flows", which reflect minimum flow license/certification requirements. The applicant should also denote the actual elevation that corresponds to these minimum target elevations. These provisions will facilitate an immediate determination of compliance. Furthermore, these provisions will facilitate efforts to assess when there are changes in leakage conditions. I would also request a written summary of the elevational data that correspond with minimum flow release requirements.

Additional clarification should be provided regarding the frequency with which bypass flows are monitored by the Licensee for compliance. Weekly monitoring was proposed for Mallison Station, but the monitoring frequency is unclear for the remaining projects. I would request at least daily monitoring.

Draft American Eel Passage Plan

Coordination with the MDMR and USFWS was not possible prior to the preparation of MDIFW review comments. Therefore, in the event that MDIFW comments contradict those expressed by MDMR or the USFWS, I will defer to the latter agencies for the purpose of this review .

The proposed 3-year downstream migration study involves the use of only one eel sampling location on the entire Presumpscot River to determine the timing of peak downstream eel migration. Since there are 8 dams on the river, distributed along the entire length of the river and the presence of each dam may influence the rate and progress of downstream migration it will be necessary to include additional sampling locations, preferably a minimum of one in the upper drainage (below Dundee) and one above Saccarappa Dam. This information will provide a basis for determining the need for developing station specific shutdown periods for adult eels.

If you have any questions regarding this interview process you may reach me at (207) 657-2345 (112).

Sincerely,



Francis Brautigam
Fishery Biologist, MDIFW



John Elias Baldacci
Governor

June 24, 2004

State of Maine
Atlantic Salmon Commission

650 State Street
Bangor, Maine 04401
Telephone: (207) 941-4449



Patrick Keilher
Executive Director

Maureen Winters
Project Manager
Devine Tarbell & Associates, Inc.
970 Baxter Boulevard
Portland, ME 04103

RE: Dundee, Gambo, Little Falls, Mallison Falls, Saccarappa
FERC Project Nos. 2942, 2931, 2941, 2932, 2987
Draft Operations and Flow Monitoring Plan

Dear Maureen:

Maine Atlantic Salmon Commission (MASC) staff have reviewed your letter dated May 26, 2004 and the associated *Draft Operations and Flow Monitoring Plan* for the following projects located on the Presumpscot River: Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa. Staff concurs with the Operations and Flow Monitoring Plan as drafted.

Of significance to the Maine Atlantic Salmon Commission (MASC), S.D. Warren Co. is required under Federal Energy Regulatory Commission (FERC) license article 403 for Mallison Falls, Gambo, and Dundee projects and under the Maine Department of Environmental Protection (MDEP) Water Quality Certificate (WQC) Condition No. 1 to conduct a study to evaluate the effectiveness of the minimum bypass flows in providing habitat for various life stages of Atlantic salmon and to consult with the MASC in the development of study plans. The required studies and plans need not be initiated until the MASC has completed an Atlantic salmon habitat assessment in the Presumpscot River and has notified S.D. Warren that an active salmon restoration program has commenced in the Presumpscot River.

We agree with S.D. Warren that a study plan to evaluate the suitability of bypass flows for various Atlantic salmon life stages is not required until S.D. Warren is notified by the MASC that Atlantic salmon habitat assessments have been completed and an active Atlantic salmon restoration program has been initiated.

Thank you for the opportunity to comment on the Draft Operations and Flow Monitoring Plan for the five Presumpscot River projects. If you have any questions, please contact me at (207) 941-4453.

Sincerely

Norman R. Dubé
Fisheries Scientist

cc: Steve Timpano, MDIFW
Gail Wippelhauser, MDMR
Dana Murch, MDEP
Larry Miller, USFWS

-----Original Message-----

From: Gregory J Stewart [mailto:gstewart@usgs.gov]
Sent: Wednesday, June 30, 2004 5:50 AM
To: Winters, Maureen
Subject: Re: S D Warren Flow and Operations Monitoring Plan

Maureen,

Generally speaking the USGS is a scientific agency and not regulator. With that in mind generally we don't comment on plans of the this nature unless we are specifically requested by one of our cooperators. If you have any additional questions please let me know. Thanks,

Greg

Gregory J. Stewart P.E.
Data Section Chief
Maine District Office
U. S. Geological Survey
196 Whitten Road
Augusta Maine 04330
tel: 207-622-8201 X 118
fax: 207-622-8204
email: gstewart@usgs.gov

|-----+----->
| "Winters, Maureen" |
| <Maureen.Winters@DevineT |
| arbell.com> |
| : |
| : |
| 06/29/2004 02:30 PM |
| To: <gstewart@usgs.gov> |
| Subject: S D Warren Flow and Operations Monitoring Plan |

Greg,

Last month (5/26/04) we distributed for agency review and comment a draft flow and operations monitoring plan for S.D. Warren's five hydro projects on the Presumpscot River. The plan is a requirement of the recently issued FERC licenses for the five projects. The mailing went to the attention of Mr. Lent but I thought it may have been forwarded to your division for review. Will USGS be filing any comments on this plan?

If this issue is being handled by another division please advise as to who would be the appropriate contact. Thank you!

Maureen Winters
Project Manager
Devine, Tarbell & Associates
970 Baxter Blvd.
Portland, ME 04103
207.775.4495

APPENDIX B
CALCULATIONS

MEMORANDUM

TO: Tom Howard – SAPPI - Westbrook

FROM: M.C. Schimpff

DATE: July 9, 2004

RE: Flow Release Options – Dundee, Gambo and Mallison

Based on the field measurements taken today and our discussions, the following are the discharge calculations for providing the required minimum flows and aeration flows.

DUNDEE DAM

The Dundee dam has a spillway length of 150 feet capped with 24 inch (2 feet) flashboards. The top of board elevation is at El. 187.22. The pin spacing for the boards is 40 inches on center. The dam also has two deep river gates and one shallow gate adjacent to the intake structure. These gates are noted as being 4 feet wide by 5 feet in height. Their invert elevation is El. 146.52. The shallow sluice gate has an invert elevation of El. 173.22 and a width of 4 feet. There is also a log sluice adjacent to the intake structure. This structure is 5 feet in width and has a depth of 4.5 feet from the normal pond level (El. 187.22).

Discharging 40 cfs through a cut out in the flashboards would require an opening of 4.5 feet. An additional 2.5 feet would be required to pass an additional 20 cfs. It should be noted that a total length of 7 feet would slightly exceed the 60 cfs. However, with two openings, the contraction losses would reduce the flow to the 60 cfs.

Providing the 50 cfs aeration flow through the log sluice would require a depth of 2.1 feet, or 25 inches.

GAMBO DAM

The Gambo dam has a spillway length of 250 feet capped with 16 inch (1.33 feet) flashboards. The top of board elevation is at El. 135.13. The pin spacing for the boards is 4 feet on center. The dam also has three deep river gates adjacent to the power canal intake structure. These gates are noted as being 4.5 feet wide by 5.5 feet in height. Their invert elevation is El. 110.6. There is also a log sluice in the spillway adjacent to the gate structure. This sluice is 4 feet in width and 26 inches in depth at the normal pond depth. At this level, the sluice way can pass approximately 55-57 cfs. Providing the additional flow required to reach the 100 cfs flow would require the removal of approximately 8.5 feet of flashboards.

MALLISON DAM

The Mallison spillway has a total length of 288 feet with a permanent crest elevation of El. 90.6. The spillway has two sections; a concrete section 174.5 feet in length, and a granite masonry section 113.5 feet in length. There are three sluiceways in the spillway section; one adjacent to the canal headworks, one in the center portion of the spillway, and one adjacent to the headworks on the opposite side. The sluiceway on the opposite side of the spillway is 5.5 feet in width and is 1 foot deep. The sluiceway adjacent to the canal headworks is 5.5 feet in width and 4 feet deep.

With the impoundment at one inch below the spillway crest elevation, this sluiceway will pass approximately 15 cfs. In order to provide 40 cfs, 25 cfs would need to be passed through the sluice gate adjacent to the canal headworks. This would be achieved by allowing a depth of flow of 14 inches. Increasing the minimum flow requirement to 60 cfs would increase the depth of flow through the sluice to 22 inches.