CERTIFICATE OF SERVICE

I hereby certify that I will, within the timeframe and means established in 18 C.F .R. § 385.2010, serve the accompanying materials upon each person designated on the official service list compiled by the Secretary in this proceeding, unless such person is no longer a representative of the party to be served, in which case I will serve the accompanying materials on an alternate representative of that party.

Dated at Newport, Maine this day: December 2, 2015

Name: William B. Ball, P.E.
Address: Acheron Engineering Services
147 Main Street
Newport, ME 04953

Phone Number: (207) 368-5700

SACCARAPPA HYDROELECTRIC PROJECT (P-2897) DISTRIBUTION LIST

City of Westbrook	The Honorable Colleen Hilton, Mayor Westbrook City Hall 2 York Street Westbrook, ME 04092 chilton@westbrook.me.us Mr. William D. Baker Assistant City Administrator Business & Community Relations Westbrook City Hall 2 York Street Westbrook, ME 04092 207-591-8101 (desk direct) wbaker@westbrook.me.us
US Fish and Wildlife Service	Mr. Steve Shepard U.S. Fish & Wildlife Service 17 Godfrey Drive, Suite 2 Orono, ME 04473 steven_shepard@fws.gov Mr. Brett Towler U.S. Fish and Wildlife Service - Northeast Regional Office Fisheries Program 300 Westgate Center Drive Hadley, MA 01035-9589 Brett_towler@fws.gov Andrew Tittler, Esq. One Gateway Center, Suite 612 Newton, MA 02458-2879 andrew.tittler@sol.doi.gov
National Oceanic and Atmospheric Administration	Mr. Sean McDermott Hydropower Program Coordinator Habitat Conservation Division National Marine Fisheries Service 55 Great Republic Drive Gloucester, MA 01930 Phone: (978)-281-9113 sean.mcdermott@noaa.gov Mr. Eric Hutchins Fisheries Biologist NOAA Restoration Center 55 Great Republic Drive Gloucester, MA 01930 Phone: (978)-281-9313 eric.hutchins@noaa.gov

US Army Corps of Engineers	Mr. Jay Clement U.S. Army Corps of Engineers Maine Project Office 675 Western Avenue, #3 Manchester, Maine 04351 jay.l.clement@usace.army.mil
US National Park Service	Mr. Kevin Mendik NPS Hydro Program Manager National Park Service U.S. Department of the Interior 15 State Street, 10th Floor Boston, MA 02109-3572 Kevin_Mendik@nps.gov Mr. Andrew Raddant Regional Environmental Officer U.S. Department of Interior 15 State Street, Suite 400 Boston, MA 02109 Andrew_raddant@ios.doi.gov
Maine Department of Environmental Protection	Ms. Kathy Howatt Maine Department of Environmental Protection Central Me Regional Office, 17 State House Station Augusta, ME 04333-0017 kathy.howatt@maine.gov
Maine Department of Inland Fish and Wildlife	Mr. Francis Brautigam Maine Department of Inland Fisheries & Wildlife 358 Shaker Road Gray, ME 04039 Francis.Brautigam@maine.gov
Maine Department of Marine Resources	Dr. Gail Wippelhauser Maine Department of Marine Resources #172 State House Station Augusta, ME 04333 gail.wippelhauser@maine.gov
Maine Historic Preservation Office	Dr. Earle G. Shettleworth, Jr. Director and State Historic Preservation Officer Maine Historic Preservation Commission 55 Capitol Street, 65 State House Station Augusta, Maine, 04333-0065 Earle.Shettleworth@maine.gov

Tribal	The Honorable Edward Peter-Paul, Chief Aroostook Band of Micmac Indians 7 Northern Road Presque Isle, ME 04769 epeterpaul@micmac-nsn.gov rgetchell@micmac-nsn.gov The Honorable Brenda Commander, Tribal Chief Houlton Maliseet Band of Indians 88 Bell Road Littleton, ME 04730 tribal.chief@maliseets.com The Honorable William J. Nicholas Sr., Chief Passamaquoddy Tribe, Indian Township Reservation P.O. Box 301 Princeton, ME 04668 chief.wnicholas@gmail.com The Honorable Frederick Moore III, Chief Passamaquoddy Tribe, Pleasant Point Reservation P.O. Box 343 Perry, ME 04667-0343 fredmoore@wabanaki.com rcleaves@wabanaki.com The Honorable Kirk Francis, Chief Penobscot Nation 12 Wabanaki Way Indian Island, ME 04468 kirk.francis@penobscotnation.org Mr. John Banks, Director Department of Natural Resources Penobscot Indian Nation 6 River Road, Indian Island Old Town, ME 04468 jbanks@penobscotnation.org

NGOs	Friends of Presumpscot River Ron Kreisman, Esquire 77 Mackworth Street Portland, ME 04103-4531 207-699-4558 kreisman@gwi.net Ms. Michael Shaughnessy President Friends of the Presumpscot River PO Box 1474 Windham, ME 04082-0223 michael@presumpscotriver.org Ms. Dusti Faucher Vice President Friends of the Presumpscot River PO Box 1474 Windham, ME 04082-0223 coveredbridge45@maine.rr.com Conservation Law Foundation Sean Mahoney, Esquire 47 Portland Street, Suite 4 Portland, ME 04101 smahoney@clf.org Presumpscot River Watershed Coalition Mr. Will Plumley PO Box 9300 Portland, ME 04104 chair@presumpscotcoalition.org Friends of Sebago Lake Mr. Doug Watts 385 Menotomy Road Fryeburg, ME 04037 info@dougwatts.com

APPLICATION FOR LICENSE SURRENDER

FOR THE

SACCARAPPA PROJECT (FERC NO. 2897)

SUBMITTED BY:

S.D. WARREN COMPANY DBA SAPPI NORTH AMERICA
89 CUMBERLAND STREET
WESTBROOK, ME 04092

WITH ASSISTANCE BY:

Acheron Engineering Services
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com

147 Main Street	24466 Powell Road
Newport, Maine 04953	Brooksville, Florida 34602
(207) 368-5700	(352) 796-6236

SUBMITTAL DATE:

DECEMBER 2, 2015

TABLE OF CONTENTS

I. List of Acronyms iii

II. Initial Statement iv

Section 1.0: Executive Summary 1

Section 2.0: Existing Facilities 4

Section 3.0: Project Background 9

Section 4.0: Dam Decomissioning Proposal 11

4.1 Alternatives Analysis 11

4.2 Western Channel Design 20

Section 5.0: Affected Environment 39

5.1 Geology 40

5.2 Water Resources 42

5.3 Aquatic Resources 51

5.4 Wildlife Resources 59

5.5 Botanical Resources and Wetland Resources 63

5.6 Rare, Threatened, and Endangered Species 67

5.7 Historic and Cultural Resources 70

5.8 Recreation Resources 81

5.9 Land Management and Aesthetic Resources 90

Section 6.0: Schedule 94

Section 7.0: Literature Cited 95

Appendices 99

Appendix A: Additional Information Request Matrix

Appendix B: FERC Order Issuing Subsequent License for the Saccarappa Project

Appendix C: FERC Order Amending License, Saccarappa (10/08/2014)

Appendix D: Communications

Appendix E: Decision Document

Appendix F: Evaluation of Potential Soil Erosion and Sedimentation

Appendix G: Conceptual Design Drawings

Appendix H: Western Channel Design, HEC-RAS Model

Appendix I: Construction Schedule

Appendix J: Order Issuing New License, Eel Weir (03/23/2015)

Appendix K: 2013 & 2014 Fish Passage Effectiveness Testing, Cumberland Mills

Appendix L: 2014 Eel Passage Results, Saccarappa

Appendix M: Wetland Survey

Appendix N: Interim Recreation Monitoring Report and FERC Order of Approval

I. LIST OF ACRONYMS

APE	Area of Potential Effect
CLF	Conservation Law Foundation
DEA	Draft Environmental Analysis
FERC	Federal Energy Regulatory Commission
FOPR	Friends of the Presumpscot River
HPMP	Historic Properties and Management Plan
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDMR	Maine Department of Marine Resources
MESHPO	Maine State Historic Preservation Officer
MWDCA	Maine Waterway Development and Conservation Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PA	Programmatic Agreement
Plan	Recreation Use Monitoring Plan
Project	Saccarappa Project (FERC Project No. 2897)
RM	River Mile
USFWS	U.S. Fish and Wildlife Service; United States Fish and Wildlife Service

II. INITIAL STATEMENT

A. Introduction

Pursuant to the Federal Energy Regulatory Commission's (FERC) regulations at 18 C.F.R. §6.1 and §6.2, S.D. Warren Company dba Sappi North America (Warren) applies to FERC for surrender of the license for the 1.35 megawatt (MW) Saccarappa Project (FERC Project No. 2897) (Project).

The original license for the Saccarappa Project was issued to Warren in 1979. The subsequent license, currently in effect, was issued on October 2, 2003 for a 40-year term expiring on October 1, 2043. The October 2, 2003 FERC Order issuing the Project's current license required that Denil fish ladders be constructed at the Project within two years after fish passage is available at the downstream non-jurisdictional Cumberland Mills Dam. Fish passage became available at the Cumberland Mills Dam in May 2013, triggering the requirement for installation of operational fish passage facilities at Saccarappa by May 2015. Warren determined that the high cost of constructing fish passage for an operating facility in accordance with the license renders the Project uneconomical. Warren submitted an application to FERC to surrender the project license, remove the eastern spillway and install a Denil fish ladder over the lower falls, on December 31, 2013.

After Warren filed the Surrender Application, it met with State and Federal resources agencies, the City of Westbrook, Friends of the Presumpscot River (FOPR) and the Conservation Law Foundation (CLF) to discuss whether it would be appropriate to delay processing of the Surrender Application to allow time to study more nature-like fish passage alternatives. On March 14, 2014, Warren entered into an agreement (Agreement) with the Department of the Interior, United States Fish and Wildlife Service (USFWS), Maine Department of Marine Resources (MDMR), Maine Department of Inland Fisheries and Wildlife (MDIFW), City of Westbrook, FOPR, and CLF (Parties) to request from FERC an extension of the fish passage deadline for the Saccarappa Project and a stay of the license surrender application filed by Warren on December 31, 2013. The purpose of the Agreement was to allow the Parties time to engage in a collaborative, open, and joint process to evaluate fish passage design alternatives at the Saccarappa Project site. The Agreement also extended the deadline for operative fish passage at the Saccarappa Project site to May 1, 2017 and set a schedule for the design, review, and evaluation of alternative passage. The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

The collaborative process provided for in the Agreement resulted in the fish passage facilities, known as the Western Channel Design, that are proposed in this Surrender Application. The scope of the selected design involves removal of the eastern spillway, western spillway, and ancillary structures in the forebay channel, filling the existing tailrace, installation of a double Denil fishway within the filled tailrace structure, and physical modifications in the upper western channel to facilitate nature like fish passage. The Western Channel Design is similar in some ways to the design submitted with the 2013 Surrender Application, but the collaborative process undertaken

as a result of the Agreement resulted in modifications that Warren believes improved the design and will result in safe, timely, and effective passage of anadromous fish at the Saccarappa Project site.

Warren is committed to installing fish passage at the Saccarappa Project site by May 1, 2017, and, hence, Warren requests that FERC act expeditiously on this Application in accordance with the schedule presented in this Application.

On April 9, 2014, FERC issued an Additional Information Request (AIR) related to Warren's 2013 Surrender Application. The information requested in the AIR is addressed in and included in this Surrender Application. There is also a matrix included in Appendix A that cross references each issue raised in the AIR with a specific section of this Application.

B. Project Location

The Project is located on the Presumpscot River in Westbrook, Cumberland County, Maine. The Project is located at approximately 43º40'43.4"N and 70º22'10.8"W.

C. Name and Address of Applicant

The exact name, business address, and telephone number of the applicant are:

S.D. Warren Company dba Sappi North America
89 Cumberland Street
Westbrook, Maine 04092
(207) 856-4584

D. Authorized Agents

The exact name, business address, and telephone number of each person authorized to act as agent for the applicant in this Application are:

Barry Stemm
Senior Engineer
Sappi North America
P.O. Box 5000
Westbrook, ME 04098
(207) 856-4584

Briana K. O'Regan, Esq.
Assistant General Counsel
Sappi North America
179 John Roberts Road
South Portland, ME 04106
(207) 854-7070

Matthew D. Manahan, Esq.
Pierce Atwood LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101
(207) 791-1189

William B. Ball, P.E.
Acheron Engineering Services
147 Main Street
Newport, ME 04953
(207) 368-5700

E. Corporate Organization/Preference

The applicant is a domestic corporation and is not claiming preference under section 7(a) of the Federal Power Act, which is inapplicable to this Surrender Application.

F. State Requirements

To the extent relevant, the statutory or regulatory requirements of the State of Maine that affect the Project as proposed with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act, are:

1. Maine Waterway Development and Conservation Act (MWDCA), Maine Revised Statutes title 38, §§ 630 et seq., which requires a permit for certain structural alterations of a hydropower project.

2. Mandatory Shoreland Zoning Law, Maine Revised Statutes title 38, §§ 435 et seq., which requires municipalities to adopt zoning and land use ordinances consistent with minimum guidelines to protect "shoreland areas," including areas within 250 feet of the normal high water line of river.

Warren has taken the following steps to comply with each of the laws cited above:

1. Warren intends to submit an MWDCA and Water Quality Certification application for approval under the MWDCA of the actions proposed in this Surrender Application. Warren will work with the Maine Department of Environmental Protection (MDEP) to obtain water quality certification, as necessary.

2. Warren will work with the City of Westbrook to determine what local approvals are necessary, if any, for the actions proposed in this Surrender Application.

G. Project Description

The Project is a 1.35 MW hydroelectric facility located on the Presumpscot River in Cumberland County, Maine. The Project is located at approximately river mile 11 and consists of two 10 to 12-foot high concrete diversion dams separated by an island, a headgate structure, a concrete-lined forebay, and a powerhouse containing three turbine-generator units with a total rated generating capacity of 1.35 MW. The Project also includes a 345-foot-long tailrace channel and has two bypass reaches measuring 475 and 390 feet long extending from the respective diversion dams to the downstream end of the tailrace channel. A more detailed description of the existing Project is included in the subsequent license attached as Appendix B of this Application.

In this Surrender Application, Warren proposes to discontinue power generation at Saccarappa; remove the eastern spillway, western spillway, and ancillary structures in the forebay channel; replace material excavated during construction of the existing forebay at the upstream end of the western channel to control flow to facilitate nature like fish passage in the upper western channel and create a hydraulic control at elevation 64 feet to match the natural hydraulic control in the eastern channel; fill the existing tailrace; and install a double Denil fishway within the filled tailrace area. The power house structure will remain. Some bedrock modification is proposed in the western channel between the exit of the fishway and the rock fill in the upper western channel. A full description of Warren's proposal is included in Section 4.0 of this Surrender Application, which details the proposed design; the method, consideration and consultation associated with the design process; and an analysis of alternative designs. Other pertinent information regarding the environmental conditions at the Project and the anticipated impacts of the proposed design are described in Section 5.0 of this Application.

H. Lands of the United States

There are no lands of the United States included within the geographic boundary of the existing Project.

I. Project and Construction Schedule

Warren proposes the following regulatory and construction schedule for the proposed design:

December 2, 2015:	Warren files with FERC the application for surrender of the Saccarappa Project license, including the proposed modifications

	Application for MWDCA Approval and Water Quality Certificate filed with Maine Department of Environmental Protection
By January 31, 2016	Applications filed with U.S. Army Corps of Engineers and City of Westbrook
By March 1, 2016	FERC issues a public notice and requests comments within 30 days of the public notice
By April 1, 2016	FERC receives comments on the Surrender Application
By June 15, 2016	FERC issues Draft Environmental Analysis (DEA) and provides a 30-day comment period on the DEA
By August 1, 2016	MDEP issues final MWDCA permit
By August 15, 2016	FERC issues Final Environmental Assessment and Order ACOE issues final permit City of Westbrook issues final permit(s)
By August 31, 2016	Saccarappa Project hydro operations shut down
May 1, 2017	Warren completes construction and commences fish passage

J. Notarization

This Application is executed in the State of Maine, County of Cumberland by:

Michael Standel, Managing Director, Sappi North America, 89 Cumberland Street, Westbrook, Maine, who, being duly sworn, deposes and says that the contents of this Application are true to the best of his knowledge or belief. The undersigned has signed the Application on NOVEMBER 30, 2015 (DATE).

S.D. Warren Company

By: _____
Michael Standel

State of Maine, County of Cumberland

Subscribed and sworn to before me, a Notary Public of the State of Maine on November 30th 2015 (DATE).

CHRISTOPHER J. GLENN
Notary Public
Maine
My Commission Expires Apr 20, 2018

_____
Notary Public, State of Maine

_____
My Commission Expires

SECTION 1.0
EXECUTIVE SUMMARY

S.D. Warren Company dba Sappi North America, owner and operator of the Saccarappa Dam and Hydroelectric Facility in Westbrook, Maine, proposes to surrender its Federal Energy Regulatory Commission (FERC) license (FERC Project No. 2897) and discontinue power generation at the Saccarappa Project; remove the eastern spillway, western spillway, and ancillary structures in the forebay channel; restore the river bed at Saccarappa Falls to the pre-hydro elevation by replacing excavated material at the upstream end of the western channel; restore the water level in the river upstream of Saccarappa Falls to the levels that existed prior to hydroelectric development at the Saccarappa site; partially fill the existing tailrace; and install a double Denil fishway within the filled tailrace area. The proposed design involves some modification of bedrock in the western channel between the exit of the fishway and the rock fill in the upper western channel to facilitate fish passage over the upper falls. This section of the Surrender Application summarizes the existing site, permitting history, and project scope.

The Saccarappa Project is a hydroelectric facility located on the Presumpscot River in Westbrook, Cumberland County, Maine at approximately river mile 11. The Saccarappa impoundment stretches from the Saccarappa Dam approximately 5 miles upstream to the tailwater of the Mallison Falls Dam, and has a surface area of approximately 87 acres.

The original Saccarappa Dam and Hydroelectric Facility was built in 1887 by the Presumpscot Water Power Company. The existing dam was constructed at the same site in 1907 and currently consists of two 10 to 12 foot high concrete dams that are located in the eastern and western channels. The crest elevations of both spillways vary from 69.8 feet to 70.0 feet. A small island separates the two channels. In the western channel there is a control gate structure, a concrete lined forebay, a power house, and a 345 foot long tailrace channel. The Project also includes two bypass reaches measuring 475 and 390 feet long extending from the respective diversion dams to the downstream end of the tailrace channel. The power house contains three turbine-generator units with a total rated generating capacity of 1.35 MW; typical generation ranges from 0.75 to 0.85 MW. These units were historically connected to a one mile long 2.3 kV transmission line that terminated at the Warren mill on Cumberland Street in Westbrook. In 2015, Warren disconnected the existing transmission line between the Saccarappa Project and the Warren mill, installed a transformer at the Saccarappa Project, and tied the station output directly to the local utility 12.4 kV distribution circuit on Dana Street in Westbrook. All power generated at the Saccarappa Project is now sold on the open market. This connection will be terminated when the Saccarappa Project is decommissioned.

Regulation of the Saccarappa Project falls under the jurisdiction of FERC, which issued the original 20-year operational license for the Saccarappa Project in 1979. After an extension of the original license, FERC issued a new 40-year operational license in 2003. This license required that

fish passage be constructed at the Saccarappa Project within two years after installation of fish passage facilities at the downstream Cumberland Mills dam. The Cumberland Mills dam is not used for power generation, hence is not regulated by FERC. Fish passage became available at the Cumberland Mills site in May 2013, triggering the requirement for operational fish passage at the Saccarappa Project by May 2015. After extensive review, Warren determined that the high cost of constructing fish passage for an operating facility in accordance with the existing FERC license is not economical. Hence, in December 2013 Warren proposed to surrender the Saccarappa Project license, remove the eastern spillway, and install a Denil fish ladder in the tailrace of the Saccarappa Project.

After Warren filed the Surrender Application, it met with State and Federal resources agencies, the City of Westbrook, FOPR and CLF to determine whether the processing of the Surrender Application should be delayed to evaluate alternative fish passage options. On March 14, 2014, Warren entered into an agreement (Agreement) with the Department of the Interior, USFWS, MDMR, MDIFW, City of Westbrook, FOPR and CLF (Parties) to request from FERC an extension of the fish passage deadline for the Saccarappa Project and a stay of the license surrender application filed by Warren on December 31, 2013. The purpose of the Agreement was to allow the Parties time to engage in a collaborative, open, and joint process to evaluate two fish passage design alternatives at the Saccarappa Project. The Agreement also extended the deadline for operative fish passage at the Saccarappa Project to May 1, 2017 and set a schedule for the design, review and evaluation of alternative passage. The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

The fish passage design, as described in this application, was chosen after careful consideration of all of the data, technical information, Agency feedback, public comments and stakeholder desires. This collaborative process resulted in several changes to the fish passage design submitted by Warren with the 2013 Surrender Application. The fish passage facilities that are proposed in this Surrender application involve the removal of the eastern spillway, western spillway, and ancillary structures in the forebay channel, filling the existing tailrace, installation of a double Denil fishway within the filled tailrace structure, and physical modifications in the upper western channel to facilitate nature like fish passage. On April 9, 2014 FERC issued an Additional Information Request (AIR), with regard to the 2013 Surrender Application. The information requested in the AIR is addressed in this Surrender Application (Appendix A).

This surrender and dam removal proposal provides multiple benefits. Removal of both spillways above the natural falls will reduce the site head by approximately 4.5 feet under average flow conditions and restore the section of river between Saccarappa Falls and Mallison Falls, including all tributaries to that segment of the river, to the natural conditions before the construction of this hydro project. The lower head at the site will help facilitate fish passage at the site. In addition, removal of both spillways will remove all in-river legacy structures, thereby eliminating any

concern about long term spillway maintenance. The site reconfiguration that will result from removal of the spillways will eliminate multiple competing attraction flows, which will result in less complex and more successful fish passage. Removal of the spillways will protect and enhance resident fish populations and aquatic communities in the Presumpscot River by re-establishing riverine connectivity of upstream and downstream aquatic life and their habitats. Dissolved oxygen will likely improve with the transition to a free flowing reach of river. Recreational opportunities along the river and at Saccarappa Falls will be expanded. The proposed fish passage will be less obtrusive than the passage that would be required by the FERC Project license and more effective than the passage set forth in the license prescription.

In addition to surrender of the FERC Project license, this design may require approval from the MDEP under the Maine Waterway Development Conservation Act (MWDCA)[1] and Water Quality Certification for a Section 404 dredge and fill permit from the U.S. Army Corps of Engineers.[2]

---

[1] Warren reserves the right to argue that MWDCA approval is not required. The MWDCA prohibits the construction or reconstruction of a "hydropower project," or the structural alteration of a "hydropower project," in ways that change water levels or flows, without first obtaining a permit from the Department. 38 M.R.S.A. § 633(1). The statute defines a "hydropower project" as "any development that utilizes the flow or other movement of water... as a source of electrical or mechanical power or that regulates the flow of water for the purpose of generating electrical or mechanical power." 38 M.R.S.A. § 632(3). As explained in Warren's FERC Surrender Application, Warren plans to disconnect the generating units prior to removing any portion of the dam. At the time that the dam removal will occur, the Project will not be in use to generate electrical or mechanical power and therefore the project will not qualify as a "hydropower project" under the MWDCA, and a permit therefore is not required. Further, Warren reserves its right to argue that the Federal Power Act preempts MDEP's authority to issue a permit for this activity, because the Project and Project land are subject only to FERC jurisdiction until all dam removal work has been completed and FERC has performed a final site inspection and issued a letter to that effect. See *California v. FERC*, 495 U.S. 490 (1990); *First Iowa Hydro-Electric Cooperative v. FPC*, 328 U.S. 152, 168, 175-76, 182 (1946).

[2] Warren is applying for water quality certification only for the Corps permit, and not for the FERC approval of the Project license surrender, because certification under Clean Water Act section 401 is not required for a Project license surrender. Based on our conversations with MDEP, Warren understands that MDEP agrees with this approach, and that, consistent with prior MDEP practice, MDEP will waive certification with respect to the FERC Surrender Application. Further, Warren is submitting this Application for water quality certification with a reservation of the right to argue that certification is not required for the Corps permit, because the federal action being taken by the Corps does not authorize any "discharge" into the navigable waters, as required by Section 401. A "discharge" includes a discharge of a pollutant or pollutants, but the term "discharge of a pollutant" limits such discharges to those emanating from a point source. 33 U.S.C. § 1362. This project will not involve the discharge of any material from a point source.

SECTION 2.0
EXISTING FACILITIES

The Saccarappa Project (FERC Project No. 2897) is a Warren owned hydroelectric facility located on the Presumpscot River in Westbrook, Cumberland County, Maine at approximately RM 11, where the river is bisected by a small island and creates the eastern and western river channels. The Project impoundment stretches approximately 5 miles upstream to the tailwater of the Mallison Falls Dam (*Figure 2-1*) and has a surface area of approximately 87 acres. Refer to *Figure 2-2* for Project Location.

The original Saccarappa Dam and Hydroelectric Facility was built in 1887 by the Presumpscot Water Power Company. The current Project facilities replaced the older facilities and were constructed in 1907. These facilities consist of a 322-foot-long diversion dam formed by two concrete overflow structures that are separated by an island. The eastern spillway is 220 feet long and 10 feet high, while the western spillway is 102 feet long and 12 feet high. The crest elevations of the spillways vary from 69.8 feet to 70.0 feet. The Project also includes: (1) two free-flowing bypassed reaches measuring 475 and 390 feet long on either side of the island; (2) a 380-foot-long and 36-foot-wide intake canal cut into bedrock; (3) a 60-foot-long headgate structure; (4) an 80-foot-long concrete-lined forebay; (5) a 49-foot-wide by 71-foot-long powerhouse; (6) three horizontal Francis turbines direct-connected to generators; each with an installed capacity of 450 kW for a total project installed capacity of 1.35 MW, typical generation ranges from 0.75 to 0.85 MW; (7) a 345-foot-long tailrace channel formed by a 33-foot high concrete guard wall; and (8) transformer that connects the generators to the open market. Refer to *Figure 2-3* for an overview Project facilities.

The power turbines were historically connected to a one mile long 2.3 kV transmission line that terminated at the Warren mill on Cumberland Street in Westbrook; first passing through a transom in an abutment on the Bridge Street Bridge located directly downstream of the Saccarappa Project. In 2013, the Maine Department of Transportation began the design for the reconstruction of the Bridge Street Bridge. As Warren intends to cease power generation at the Saccarappa Project, it was decided during the design process that it would be unnecessary to accommodate the existing transmission line in the new bridge design. On July 29, 2015 the transmission line went out of service. Warren installed a transformer at the Saccarappa Project and tied the Saccarappa Project directly to the local utility distribution system. All power generated at the Saccarappa Project is now sold on the open market. When the Project license is surrendered and power generation at the Saccarappa Project ceases, this connection will be removed (Appendix C).

The Saccarappa Project operates in a run-of-river mode. The Saccarappa Project, along with five other Presumpscot River projects operated by Warren (*Figure 2-2)*, provided base load power to Warren's Westbrook mill at the time the License was issued. The Saccarappa Project generates approximately 7,600 megawatt-hours (MWh) of electricity annually. Table 2-1 identifies key

parameters for the six Warren Presumpscot River Projects that provide power to Warren's Westbrook paper mill.

Table 2-1
Key Parameters for Warren's Presumpscot River Projects

Project Name	FERC No.	Installed Capacity (MW)	Approximate River Mile
Eel Weir	2984	1.8	24
Dundee	2942	2.4	22
Gambo	2931	1.9	19
Little Falls	2941	1.0	17
Mallison Falls	2931	0.80	16
Saccarappa	2897	1.35	11

In total, there are seven hydroelectric developments and one non-power dam along the river's length (*Figure 2-2*). In addition to the dams that provide power to Warren's Westbrook mill, there is one other hydroelectric station and one non-generating dam on the Presumpscot River. The North Gorham Hydroelectric Project (FERC No. 2519), owned by Brookfield White Pine, LLC, is located between the Dundee Project and the Eel Weir Project. The Cumberland Mills Dam, a non-generating dam that provides process water storage for the Warren mill, is owned by Warren and is located immediately downstream of the Saccarappa Project.

Figure 2-1: Project Location Figure

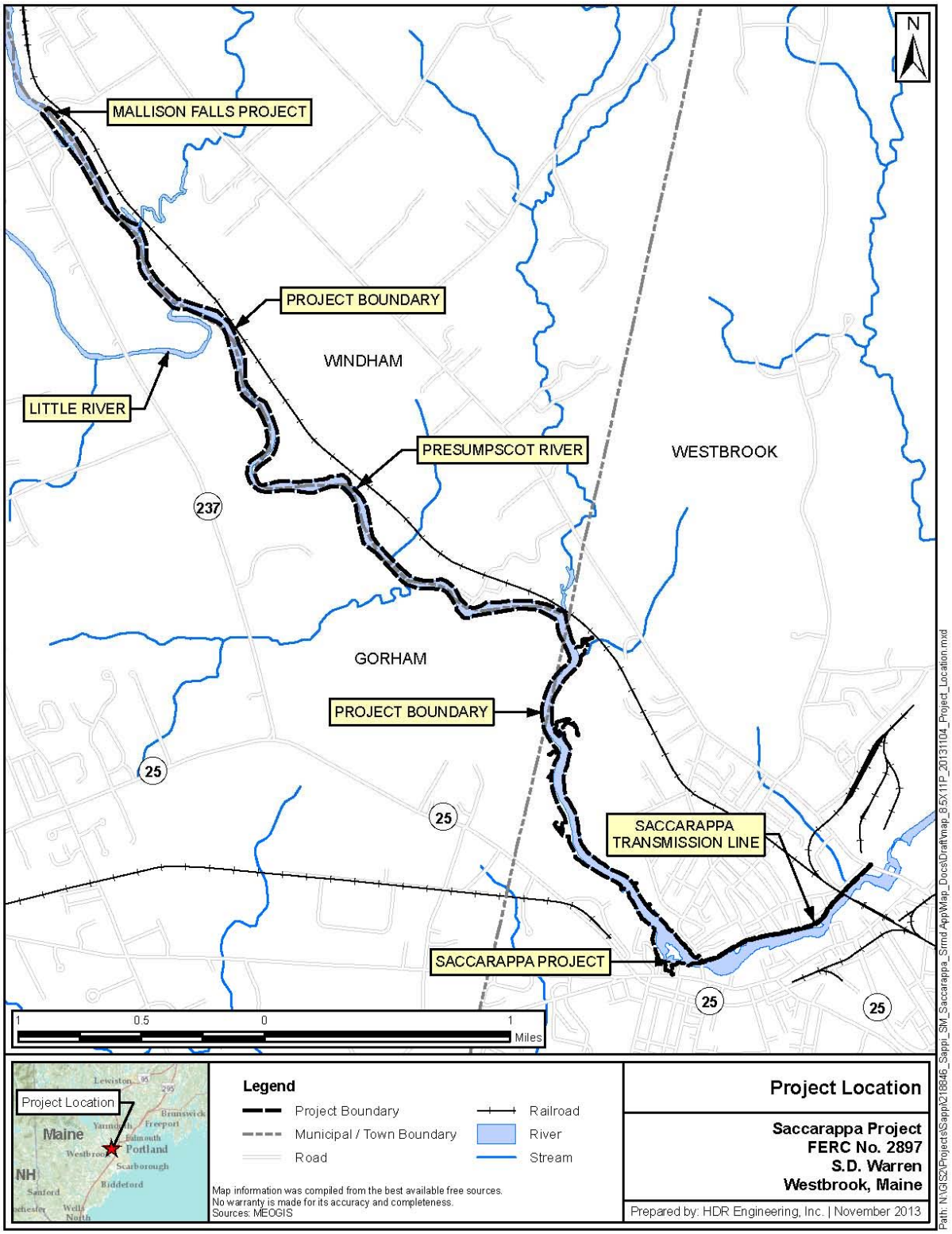


Figure 2-2: Presumpscot River Projects Location Map

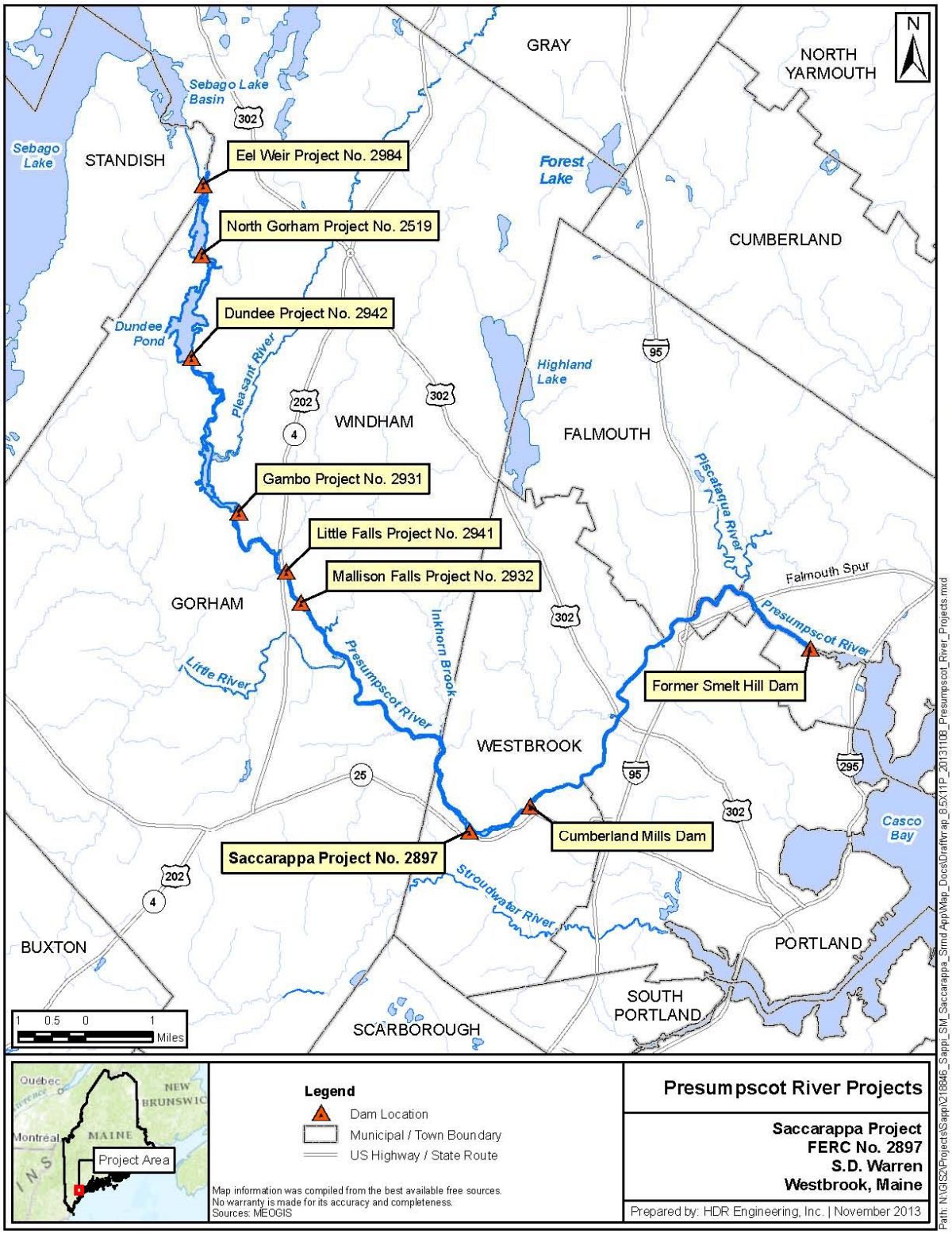
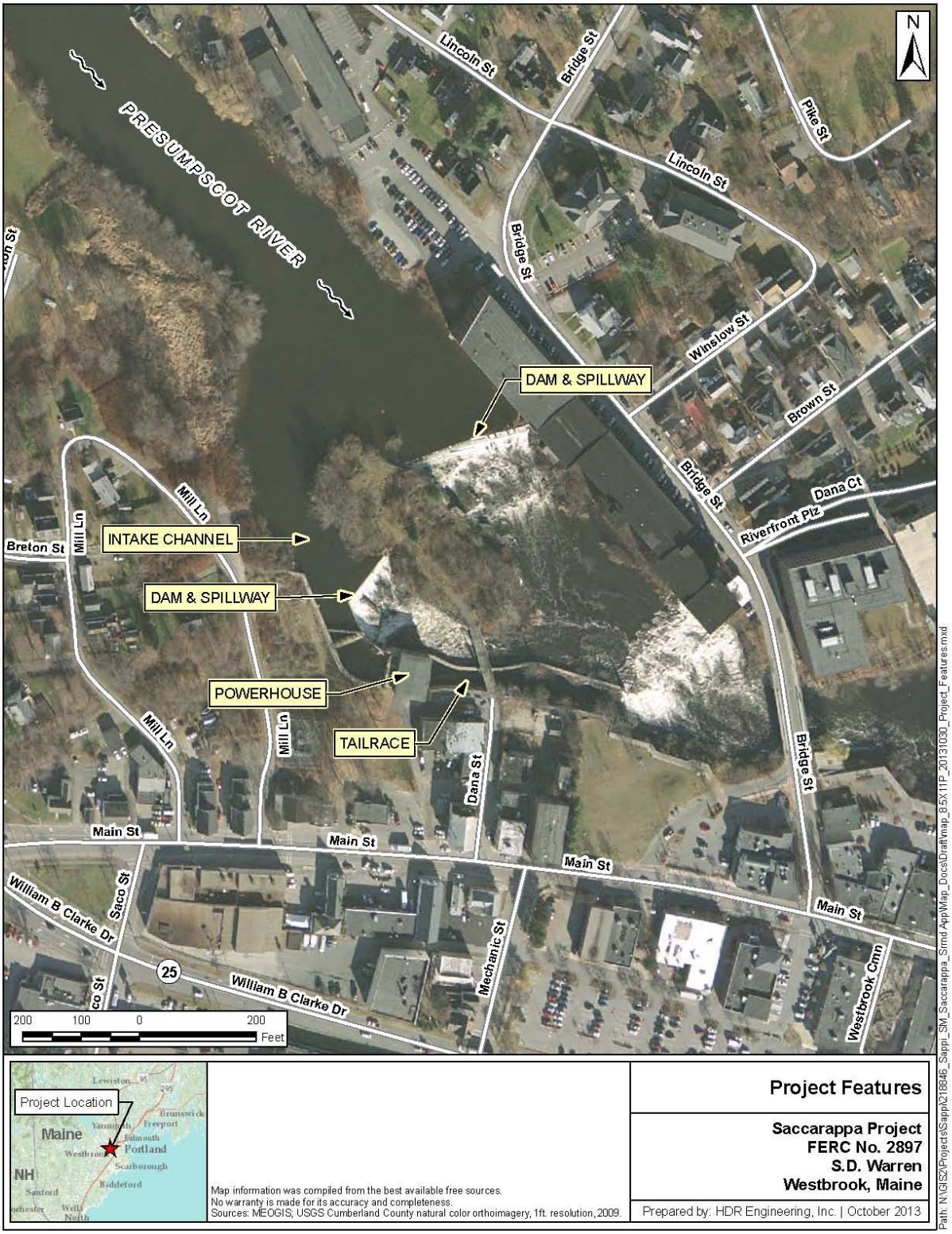


Figure 2-3: Saccarappa Project Facility Map



SECTION 3.0
PROJECT BACKGROUND

FERC issued an original license for the Saccarappa Project in 1979, with an expiration date of October 1, 1999. By Order issued January 26, 1996, the license expiration date of the Saccarappa Project was modified to January 26, 2001. FERC issued a new 40-year operational license on October 2, 2003.

The license required upstream and downstream anadromous fish passage at the Project. Fish passage at the Project was based on a phased approach and contingent upon fish passage at the downstream Cumberland Mills Dam. The two-phased approach is described below:

> ***Phase I -*** *A Denil "fish ladder," or other passage facilities of comparable efficiency in passing the target species, designed to pass at least 18,000 American shad, 109,000 blueback herring, and 273 Atlantic salmon annually. These facilities, which shall include a counting, trapping, and sorting facility, must be operational no later than 2 years after passage is available at the downstream Cumberland Mills Dam.*
>
> *The fishway is to include facilities for counting, trapping, and sorting, in the exit channel, and have two gated entrances capable of collecting migrants in the powerhouse tailrace and at the west end of the spillway. The design of the Phase I Denil fish ladder should include provisions to facilitate the conversion to a possible future Phase II lift. The Licensee must provide up to 30 cfs attraction flow at each of two fish ladder entrances (up to 60 cfs total attraction flow).*
>
> ***Phase II -*** *Convert or replace the Phase I passage facilities with a fish lift, or other passage facilities of comparable efficiency in passing the target species, designed to pass up to 58,000 American shad, 353,000 blueback herring, and 426 Atlantic salmon annually. These facilities, which shall include a counting, trapping, and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission (which has since been absorbed by the DMR) of initiation of Phase II restoration above Gambo Dam and (2) the capacity of the installed Phase I passage facilities has been reached for any of the target species.*

The license further stated that downstream passage facilities must be installed to pass American shad, blueback herring, and Atlantic salmon at the Project. The facilities are to be operational concurrent with the completion of upstream anadromous fish passage facilities at the Project or within 2 years following notification of the MDMR of sustained stocking of anadromous fish

above Saccarappa Dam, whichever comes first. Temporary downstream passage facilities for anadromous fish were installed at the Saccarappa Project in 2014.

Fish passage facilities were put in operation at Cumberland Mills Dam in the spring of 2013, necessitating the installation of fish passage facilities at the Saccarappa Project by May 1, 2015. Warren determined that continued operation of the Project with installation and operation of fish passage facilities was not economical. Hence, in December 2013 Warren proposed to surrender the Project license, remove the eastern spillway, and install a Denil fish ladder in the tailrace of the Saccarappa Project.

After Warren filed the Surrender Application, it met with State and Federal resources agencies, the City of Westbrook, FOPR, and CLF to determine whether the processing of the Surrender Application should be delayed to evaluate alternative fish passage options. On March 14, 2014, Warren entered into an agreement (Agreement) with the Department of the Interior, USFWS, MDMR, MDIFW, City of Westbrook, FOPR, and CLF (Parties) to request that FERC extend the fish passage deadline for the Saccarappa Project and stay the license Surrender Application filed by Warren on December 31, 2013. The purpose of the Agreement was to allow the Parties time to engage in a collaborative, open, and joint process to evaluate two fish passage design alternatives at the Saccarappa Project site. The Agreement also extended the deadline for operative fish passage at the Saccarappa Project to May 1, 2017. The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

The fish passage design, as described in this application, was chosen after careful consideration of all of the data, technical information, Agency feedback, public comments and stakeholder desires. This collaborative process resulted in several changes to the fish passage design submitted by Warren with the 2013 Surrender Application. The fish passage design facilities that are proposed in this Surrender Application involve the removal of the eastern spillway, western spillway, and ancillary structures in the forebay channel, filling the existing tailrace, installation of a double Denil structure within the filled tailrace structure, and physical modifications to the bedrock in the upper western channel to facilitate fish passage. The proposed design is detailed in Section 4.0.

SECTION 4.0
DAM DECOMMISSIONING AND FISHWAY PROPOSAL

This portion of the Surrender Application details the proposed scope of the surrender, including design alternatives, proposed design, Agency, public, and non-governmental organization (NGO) consultation, and construction cost. A description of the existing Project site facilities is provided in Section 2.0.

4.1 Alternatives Analysis

For the 2013 Surrender Application, Warren evaluated two alternatives: (1) the Prescription as set forth in the 2003 FERC license for the Saccarappa Project; and (2) the Denil Design presented by Warren in the 2013 Surrender Application.

As per the terms of the Agreement, Warren and Parties engaged in a collaborative, open, and joint process to evaluate other alternatives for fish passage designs at the Saccarappa Project site. The Agreement set a design, consultation, and review schedule that involved the review of a Western Channel Design (Alternative 3), as well as a Two Channel Design (Alternative 4) prepared by Princeton Hydro, a natural resource management and environmental engineering firm, on behalf of non-governmental organizations, FOPR and CLF. This was, essentially, an iterative evaluation process that involved the analysis of two primary fish passage design concepts through a series of written communications and technical meetings (Appendix D).

In July 2015 each party submitted 30% designs for their respective alternatives to MDMR and USFWS for agency comment. Agencies conducted an assessment of each option based on models that evaluated fish performance. Taking Agency and public feedback into consideration, Warren determined that the Western Channel Design was superior to the Two Channel Design. A copy of the Decision Document explaining Warren's decision was distributed to all Parties to the Agreement on October 12, 2015 and is included in Appendix E. In summary, Warren's decision to select the Western Channel Design is based primarily on the following factors:

1. The predicted performance of the Denil fishway in the Western Channel Design is significantly better than the rock-ramp fishway in the Two Channel Design;

2. The extensive bedrock excavation in the eastern channel proposed in the Two Channel Design will lower the water levels upstream of the site lower than pre-development historic levels and more than is necessary in order to provide fish passage at the site. The potential impacts and unintended consequences of lowering water level below that which has ever existed, could be substantial.

3. The Two Channel Design proposes extensive modifications in the eastern channel to facilitate 100% fish passage in both the western and eastern channels. Fish passage in the eastern channel is not necessary to provide safe, timely, and effective passage of the Saccarappa Falls.

4. The scientific data support the Western Channel Design. Fish exiting the Denil fishway will naturally continue upstream into the western channel, thereby leaving the eastern channel available for enhancement of recreational opportunities. The City of Westbrook and the public have expressed their preference for leaving the eastern channel available for future modifications to enhance recreational opportunities.

Hence, the Western Channel Design, modified to incorporate Agency feedback, is the alternative presented by Warren in this FERC Surrender Application. Each concept design, as well as Warren's justification for accepting or rejecting a design, is included in this section. Design alternatives (1) – (3) are detailed in Section 4.1.2. The proposed design alternative (4) is detailed in Section 4.2.

4.1.1 Environmental Impacts

Generally speaking, the two options, the Western Channel Design and the Two Channel Design, are somewhat similar with two important differences: (1) the Western Channel Design includes a double Denil fishway, while the Two Channel design includes a rock ramp fishway in the tailrace channel to allow fish to pass over the lower falls; and (2) the Two Channel Design includes provisions to remove bedrock in the eastern channel while the Western Channel Design does not.

The installation of fish passage and removal of spillways at Saccarappa Falls will make the section of river up to Mallison Falls and all of the tributaries accessible to migratory anadromous fish by facilitating passage over Saccarappa Falls. The environmental impacts associated with both alternatives are similar and primarily include temporary wetland impacts to wetlands along the edges of the river.

The Two Channel Design will cause the water level in the section of river between Saccarappa Falls and Mallison Falls to be approximately 1.7 feet lower (under average flow conditions of 900 cfs) than Warren's Western Channel Design. At lower flow rates the additional drop will be greater and at higher flow rates the additional drop will be less. Warren's Western Channel Design will cause the water level in the section of river between Saccarappa Falls and Mallison Falls to be the same as existed prior to the development of hydroelectric facilities at the Saccarappa site. Warren is concerned that lowering water levels in the river below the levels that existed pre-hydroelectric development could cause or contribute to embankment instability issues, cause or contribute to excessive soil erosion along the embankments of the river, and exacerbate impacts to residents

along the river. Refer to Appendix F for an "Engineering Evaluation of Potential Soil Erosion and Sedimentation within the Saccarappa Impoundment", dated June 2015.

The temporary construction related impacts at the site vary slightly with each design, however all temporary impacts are minor and transitory. Refer to Section 4.2.2, for detailed information regarding temporary construction features. These temporary impacts are outweighed by the advantage to the environment associated with removal of the dam at Saccarappa Falls.

4.1.2 Design Alternatives

4.1.2.1 FERC License Prescription (1)

In 2003 FERC issued a new 40-year license for the Saccarappa Project that required anadromous fish passage to be constructed at the Saccarappa Project within two years after installation of anadromous fish passage facilities at the Cumberland Mills Dam, located downstream of the Saccarappa Project. The Cumberland Mills Dam is not regulated by FERC because it is not used for power generation. Fish passage became available at the Cumberland Mills Dam on May 1, 2013, triggering the requirement for operational fish passage at the Saccarappa Project by May 1, 2015.

Section 18 of the FERC Order issuing an operational license for the Saccarappa Project requires that Warren, construct, operate, and maintain a fishway at the Saccarappa Project. Section 18A addresses the requirements for anadromous fish passage at Saccarappa Project and expresses a phased approach to developing upstream and downstream fish passage facilities. The portion of Section 18A detailing requirements for anadromous fish passage is included below:

> *"36. The fishway prescription embodies a phased approach to developing upstream and downstream fish passage facilities at the five project dams. Phase 1 requires Warren to construct Denil fish ladders at the Saccarappa dam no later than two years after fish passage is available at the Cumberland Mills dam, and at the Mallison Falls and Little Falls dams no later than two years after passage of specified numbers of American shad or blueback herring at the Saccarappa dam. Concurrent with construction of upstream fish passage facilities, Warren must install 1-inch trash racks and appropriate bypass facilities for downstream fish passage at the three projects. No Phase 1 fish passage facilities are required at the upstream Gambo and Dundee dams. For ease of administering the licenses, we have altered the numbering and placement of tables as submitted by FWS.*
>
> *37. Phase 2 requires the replacement of the Denil fish ladders with fish lifts at each of the three minor projects and, pending review by the FWS and the Maine fisheries agencies of the Phase 1 fish passage program, installation of fish lifts and downstream fish passage facilities at the Gambo and Dundee dams. The Phase 2 facilities would be constructed at the three minor projects, once the Phase 2 design populations for targeted species have been reached. The upstream fish passage facilities required as part of Phase 2 at the Gambo and Dundee dams*

would be completed within 2 years of a target number of American shad and blueback herring being passed at the downstream Little Falls dam (Gambo facilities) and Gambo dam (Dundee facilities). The downstream fish passage facilities at Gambo and Dundee would be completed concurrent with the completion of upstream passage, or within 2 years of the fisheries agencies notifying the licensee that sustained annual stocking of anadromous fish upstream of the projects has been initiated.

The option set forth in the Prescription was rejected by Warren, as it would not accomplish safe, timely, and effective passage of the Project. A conceptual analysis of the design indicated that the length and height of the Denil fishway that would be necessary to traverse the spillway(s) would result in a significantly decreased potential fishway effectiveness and efficiency. Generally speaking, the effectiveness declines as the length and height of a Denil fishway increases. The Cumberland Mills fishway is approximately the maximum length and height of a successful Denil fishway. The head at Cumberland Mills is approximately 19 feet. The design head at Saccarappa Project is approximately 30 feet. The length and head of the Denil fishway at Saccarappa Project as set forth in the Prescription above would exceed accepted design criteria for a conventional Denil fishway. Warren was advised by its consultants that the performance and effectiveness of such a long Denil fishway may be very poor.

Additionally, Warren determined that the technical challenges and cost of constructing the Denil fish passage mandated in the Prescription, while operating the facility in accordance with the existing FERC license, combined to make this alternative unacceptable.

4.1.2.2 Design from 2013 Surrender Application (2)

On December 31, 2013, Warren submitted an application to FERC to surrender the Saccarappa license and install fish passage at Saccarappa Project. Warren proposed to remove the 220-foot long and 10-foot high eastern spillway of the Saccarappa Dam and construct a Denil fish ladder in the tailrace of the Saccarappa Project. The proposed design included passage over the upper falls in the eastern channel and the installation of a diversion channel to help facilitate fish passage in the eastern channel. Refer to Figure 4-1 for details.

Feedback from Federal and State agencies, including FERC, DEP, USFWS and MDMR is summarized below:

- The proposed 2013 Surrender design involved leaving the western spillway and ancillary structures intact. Agencies expressed concern that structures should not be left in situ, as they would require long-term maintenance.

- The intention of the diversion channel was to ensure that flows over the eastern falls were suitable for successful fish passage at high river flow rates. Agencies expressed

concern that the diversion channel flow may create a dead-end attraction for migrating fish and that predicted velocities in the diversion channel would not be suitable for successful fish passage.

The 2013 design was modified to address agency considerations by incorporating the removal of the eastern spillway, western spillway, and ancillary structures in the forebay channel and eliminating the need for a separate diversion channel.

Figure 4-1: 2013 Surrender Application Design

4.1.2.3 FOPR/CLF Concepts

Princeton Hydro Engineering, P.C. (Princeton Hydro) was recommended by FOPR and CLF to evaluate fish passage options at the Saccarappa Project. On April 17, 2015 Princeton Hydro presented several options to Warren, Agencies, and non-governmental groups. On July 14, 2015 Princeton Hydro presented a two-channel passage option. All alternatives proposed by Princeton Hydro are described in this Section.

<u>Western Channel Option (FOPR/CLF)</u>

Princeton Hydro presented this option at the April 17, 2015 technical meeting. This alternative included the removal of the eastern and western spillways, the installation of a weir at the upstream end of the western channel to restrict flow from the river into the western channel, and the installation of rock-ramp type fishway in the tailrace. Multiple nature-like pools were included

within the filled tailrace section along with bedrock modifications in some areas. The power house would remain, while the existing footbridge would be removed. This design, which is depicted in Figure 4-2, would result in average slopes in the western channel ranging between 2% and 4%. This design would result in a maximum velocity in the western channel of 6 ft./sec., based on flows between 300 cfs and 480 cfs. This option did not include any modifications to the eastern channel.

Figure 4-2: Princeton Hydro, Western Channel Option

Princeton Hydro, on behalf of FOPR/CLF, ultimately decided to not pursue this option

<u>Western Channel Option with Switchbacks (FOPR/CLF)</u>

Princeton Hydro presented this option at the April 17, 2015 technical meeting. The western channel option with switchbacks is similar to the western channel option, except that it proposes a switchback within the tailrace area. This option also involves the removal of the eastern and western spillways, the installation of a weir at the upstream end of the western channel to restrict flow in the western channel, and the installation of a nature-like or rock-ramp fishway with a switchback (180 degree turn) within the existing tailrace area. The power house would remain, while the existing footbridge would be removed. This design, which is depicted in Figure 4-3, would result in average slopes in the western channel that peak at 4%. This design would result in a maximum river velocity in the western channel of 6 ft./sec., based on flows between 300 cfs and 480 cfs. This option does not include any modifications to the eastern channel. This option was designed to decrease river velocities within the tailrace fish passage area, while still limiting passage to the western channel.

Princeton Hydro, on behalf of FOPR/CLF, decided not to pursue this option, in favor of pursuing an option that provided passage in both the eastern and western channels.

Figure 4-3: Princeton Hydro, Western Channel Option with Switchback

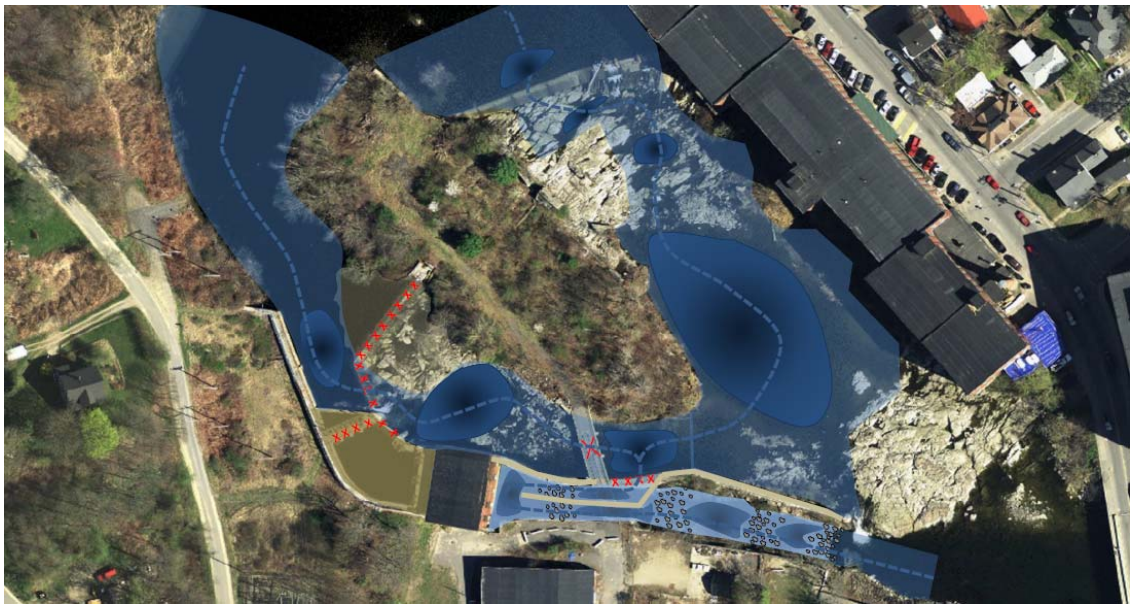
Two-Channel Design (FOPR/CLF) (3)

Princeton Hydro presented a two-channel design at the July 14, 2015 technical meeting. This concept consists of modifications to the site that would promote fish passage in both the eastern and western channels. The proposed concept consists of bedrock modification in the eastern channel to lower water levels upstream of the falls, as well as to create varied pools to diversify flow conditions to encourage fish passage. In the western channel the design consists of bedrock modification in the upper portion of the channel, and the installation of nature-like rock-ramp fishway with a switchback in the existing tailrace. The bedrock elevation in the eastern channel would be lowered from 64 to 62 feet and the elevation proposed in the western channel is 61 feet. This design would lower the impoundment approximately 1.6 feet below historic levels. The fishway in the tailrace channel would utilize a series of riffle and pool areas. The entrance into the tailrace fishway is 20 feet wide. The design of the upper western channel is similar to the design of the upper western channel outlined in Section 4.2, with the exception that this design does not propose a weir at the upstream end of the channel to control flow into the western channel.

In this concept, the power house would remain, while the existing footbridge would be removed. This design, which is depicted in Figure 4-4, would result in average proposed slopes in the eastern

channel that peaks at 4% and average slopes in the western channel that peak at 3%. This design would result in a maximum velocity in the eastern channel ranging between 4.2 ft./sec. at river flows of 300 cfs and 6.8 ft./sec. at river flows of 3,000 cfs. This design would result in the maximum velocity in the western channel of approximately 5.0 ft./sec. at river flows of 300 cfs and approximately 7.2 ft./sec. at river flows of 3,000 cfs, all based on HEC-RAS modeling by Princeton Hydro. The calculated flow split for this design is approximately 50/50 for the eastern and western channels for river flows between 300 cfs and 2,250 cfs. This option was designed to facilitate passage in both channels.

Figure 4-4: Princeton Hydro, Two-Channel Design



Princeton Hydro's 30% design drawings for the Two Channel Design were submitted to USFWS and MDMR in July 2015 for evaluation. Agency comments include the results of the USFWS and MDMR passage evaluation model developed by the USFWS, which included a numerical assessment of survivorship, fatigue, and work models. The results indicated that swimming through the long nature-like fishway required to pass the lower falls would be significantly challenging to upstream migrants. The models also indicated that the performance of the portion of the Two Channel Design that traverses the upper falls in the western channel was challenging and that both the Western Channel Design (Section 4.2) and Two Channel Design performed similarly in this section. It was found that the performance of the eastern channel passage, while adequate, involved artificially lowering the control elevation of the channel below the pre-project elevation. Agencies expressed concern that this excavation may result in head cutting, sediment mobilization, and possibly creation of a passage impediment in the former impoundment. Refer to Appendix D for agency comments.

Warren prepared an opinion of potential construction cost for the Two Channel Design. The cost opinions summarized below in Tables 4-1 and 4-2 are based on the scope of work and quantities

of material required for construction as delineated on the preliminary design drawings. Unit costs for the design are based on R.S. Means and/or contractor bids for the recent Cumberland Mills fishway installation.

Table 4-1: Two Channel Design Construction Costs

S. D. Warren Co		
Westbrook, Maine		
Saccarappa Fish Passage, Two Channel Design By Princeton Hydro		
Opinion of Potential Construction Cost Based on Preliminary Design		
August 2015		
Item	**Description**	**Potential Cost**
1	Rock Ramp Fishway in Tailrace	$ 1,381,000
2	Bedrock Removal in Eastern Channel	$ 417,000
3	Bedrock Removal in Western Channel	$ 376,000
4	East Dam Removal	$ 158,000
5	West Dam Removal	$ 425,000
6	West Channel Access Road to Island & Cofferdam	$ 67,000
7	Island Connector Road	$ 11,000
8	Eastern Dam Access Road	$ 30,000
9	Cofferdams & Temporary Facilities	$ 141,000
10	West Dam Access Road	$ 29,000
11	West Tailrace Wall Access	$ 74,000
12	Fishway Exit Access & Bridge Demo	$ 147,000
13	Forebay Rock Fill	$ 127,000
14	Stormwater Drainage System	$ 121,000
15	Power House Decommission	$ 143,000
16	Testing and Startup	$ 50,000
	Sub-Total	$ 3,697,000
	Contractor Mobilization/Demobilization (15% Sub-Total)	$ 555,000
	Sub-Total	$ 4,252,000
	Contingency (25%)	$ 1,063,000
	Sub-Total	$ 5,315,000
	Opinion of Potential Construction Cost	**$5,300,000**
Acheron		
Engineering, Environmental & Geologic Consultants		
www.AcheronEngineering.com		

Table 4-2: Post-Construction Costs

S.D. Warren Co.			
Westbrook, Maine			
Saccarappa Fish Passage, Two Channel Design			
Opinion of Potential Post Construction Cost			
August 2015			
Item	***Description***	***Potential Capital Cost***	***Potential Annual Cost***
1	*Operation and Maintenance of Fish Passage*	*$ -*	*$ 56,000*
2	*Fish Counting at Cumberland Mills*	*$ -*	*$ 21,000*
3	*Adaptive Management*	*$ 180,000.00*	
4	*Project Works Maintenance*		*$ 40,000*
	Sub-Total	*$ 180,000.00*	*$ 117,000*
	Contingency (25%)	*$ 45,000.00*	*$ 29,250*
	Sub-Total	*$ 225,000.00*	*$ 146,250*
	Opinion of Potential Post Construction Cost	***$ 225,000.00***	***$150,000***
Acheron			
Engineering, Environmental & Geologic Consultants			
www.AcheronEngineering.com			

Multiple factors must be taken into account when considering appropriate fish passage design. Most importantly, facilities must be designed to provide safe, timely, and effective fish passage and to minimize future maintenance and operational requirements. Other factors to be considered include historic fish passage, the pre-developed state of the area, cost, and recreation opportunities at the site and impact of the design on abutting land owners. Some of these considerations are more important than others, but all must be considered when selecting the most-effective solution.

The pre-developed, natural state of the area is an important consideration in this project. Section 5.7 details the historic state of Saccarappa Falls, as well as pre-dam fish passage. The historic elevation of the hydraulic control at Saccarappa Falls was 64 feet. The Two Channel Design would lower the elevation of the hydraulic control to 62.3 feet and thereby lower the impoundment level approximately 1.7 feet lower (under average flow conditions of 900 cfs) than the historic level has ever been in the river segment upstream of the site. Lowering the impoundment beyond historic levels is a concern to upstream abutters (expressed during public meetings), and may have unforeseen and unintended consequences. This sentiment is addressed in USFWS comments, which also address the potential for head cutting, sediment mobilization, and possible creation of obstacles to passage in the impoundment. Additionally, the modifications proposed at the upper eastern channel to improve passability are unnecessary, as dual channel passage has not historically been available at this site, and because the upper eastern falls are already passable under moderate flow conditions (Section 5.7).

The Two Channel Design includes modifications to enhance fish passage in both channels. This design may also adversely impact future opportunities for structural modifications in the eastern channel to increase recreational boating opportunities at Saccarappa Falls because structural enhancements may adversely impact fish passage. Although the City of Westbrook has indicated that it may be able to include recreational opportunities in this design, the opportunities are more limited with dual channel passage.

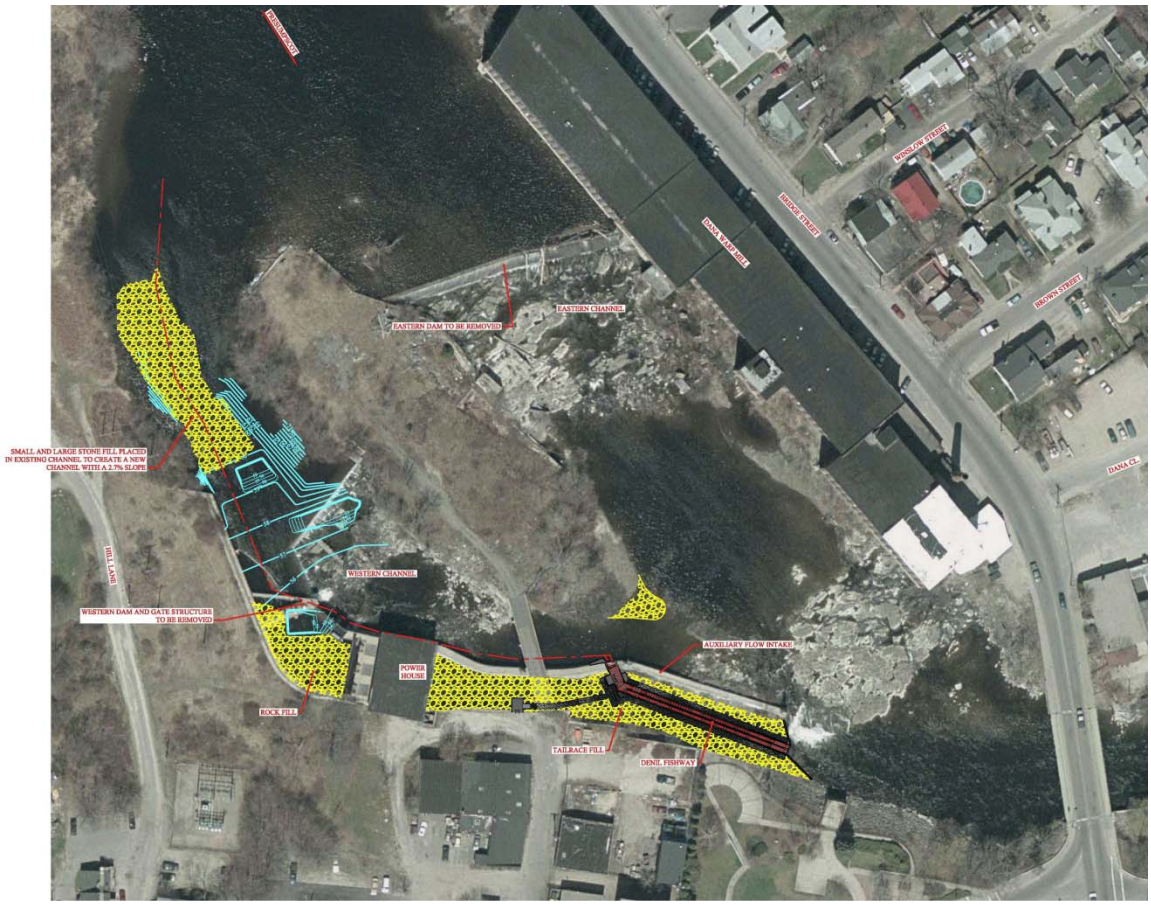
4.2 Western Channel Design (Alternative 4)

4.2.1 Western Channel Design

The fish passage design that is proposed in this Surrender Application is a modified version of the design presented at the April 17, 2015 and July 14, 2015 technical meetings. Warren proposes to discontinue power generation at the Saccarappa Project; remove the eastern spillway, western spillway, and ancillary structures in the forebay channel; replace excavated material fill at the upstream end of the western channel to control flow to facilitate nature like fish passage in the upper western channel and restore the hydraulic control at elevation 64 similar to the natural hydraulic control in the eastern channel; fill the existing tailrace; and install a double Denil fishway within the filled tailrace area. The power house structure will remain for now, but will likely eventually be demolished. Some bedrock modification is proposed in the upper western

channel between the exit of the fishway and the rock fill in the upper western channel to facilitate fish passage. These modifications are necessary to create lower velocity and resting areas to facilitate fish passage over the upper western falls. The proposed modifications to bedrock are depicted on the current conceptual 30% design that is displayed in Figure 4-6. A full conceptual 30% design package is attached as Appendix G.

Figure 4-5: Western Channel Design



The Western Channel Design would result in average proposed slopes in the western channel that peak at 3% and a maximum velocity in the western channel ranging between 4.5 ft./sec. at river flows of 300 cfs and 6.9 ft./sec. at river flows of 2,250 cfs. These data are from the final HEC-RAS model of the proposed Western Channel Design. It would also include modification of the bedrock in the western channel to facilitate passage over the upper falls. A complete list of channel velocities from a HEC-RAS model of the proposed Western Channel Design under a range of flow conditions in included in Appendix H. No passage enhancements are proposed in the eastern channel, with the exception of the removal of the eastern spillway. Removal of the spillways will cause the water level in the Saccarappa impoundment to drop by approximately 4.0 feet during average river flows of 900 cfs.

Removal of the eastern and western spillway combined with the rock fill in the western channel will result in a split in river flow around the island that is close to a 50-50 within the design flow rates for the fish passage facilities. The following table lists the split between the eastern and western channels under a range of river flow conditions.

Table 4-3: Flow-Split Analysis

River Flow	***Western Channel Flow***	***Eastern Channel Flow***
300 cfs	150 cfs	150 cfs
1,000 cfs	480 cfs	520 cfs
1,500 cfs	710 cfs	790 cfs

The first permutation of Warren's Western Channel Design called for one Denil ladder to be installed in the tailrace. In July 2015, 30% design drawings of this version of Warren's Western Channel Design were submitted to USFWS and MDMR for evaluation. Agency comments, dated September 22, 2015, indicate that the USFWS and MDMR compared the performance of the Western Channel Design and the Two Channel Design using the survivorship, fatigue, and work models developed by the USFWS. The results of the comparison modeling indicated that the Denil fish ladder will perform substantially better and is more effective than the riffle/pool rock ramp in the Two Channel Design. The survivorship and fatigue models indicated that the Western Channel Design had somewhat better performance and effectiveness than the Two Channel Design for the portions of the passage in the western channel, although both designs would likely be challenging for certain sizes of fish under certain flow conditions. Agencies also expressed support for a double Denil ladder, in lieu of a single Denil. Refer to Appendix D for agency comments.

The Western Channel Design included in this Surrender Application reflects feedback that Warren received from governmental agencies and others regarding the design proposed in the 2013 Surrender Application and feedback/comments received during the formal alternative evaluation process with FOPR/CLF. The current Western Channel Design includes removal of both spillways, instead of just the eastern spillway, and eliminates the diversion channel. Diversion of flow is created by opening the western channel to fish passage. The proposed Western Channel Design addresses the agency comments received on September 22, 2015 and detailed in this section.

4.2.2 Construction

4.2.2.1 Construction Sequence

The construction plan and sequencing described in this Surrender Application is based on the assumption that construction will start in the fall of 2016 and continue through the winter to be ready for a May 1, 2017 start date. This plan also assumes that Warren will be able to control and regulate the flow release rate at the Eel Weir Project to no more than the prescribed minimum flow

rate for extended periods of time (up to one month) with periods of higher flow releases between intervals of low flow. This plan also anticipates that work on the demolition of the eastern spillway, demolition of the western spillway, and work in the tailrace channel will be undertaken concurrently to meet the tight schedule. Refer to Appendix I for the construction schedule.

1. The first task is to provide access to the island for workers and heavy equipment. Workers (but not heavy equipment) can access the island via the existing bridge across the tailrace but the condition of the bridge and the support systems have deteriorated so that the bridge cannot be used for access to the island with heavy equipment. The contractor will need to make arrangements to get heavy equipment and trucks onto the island for demolition of the eastern spillway. The contract has the option to use a barge in the river or to reinforce that existing bridge over the tailrace for access to the island. It is the contractor's decision regarding which of these two options is the most cost effective.

2. The next critical task is to close the head-gates on the powerhouse and remove the turbine scroll cases and other wet-side obstructions inside the powerhouse. Once the turbines have been removed, the head gates and the waste gate in the forebay area will be opened to allow the flow of the river to pass down the western channel, through the power house and the deep waste gate. During this period, the release of flow at the Eel Weir Project should be at or near the regulatory minimum. The powerhouse head gates can then be used to regulate the flow in the western channel to reduce the water level in the section of river upstream of the two dams between Saccarappa Falls and Mallison Falls, including the tributaries to this section of the river. The water level in the river impoundment should be reduced to or slightly below elevation 64 to eliminate flow in the eastern channel.

3. Once the eastern channel is dewatered, demolition of the eastern spillway will be started, beginning on the easterly end and progressing westerly. All concrete and fill material will be removed moving east to west along the spillway.

4. Once the spillway is about halfway done, the head gates are closed at the powerhouse to stop flow in the western channel and specified fill is placed in the western channel to create a cofferdam to divert flow in the river from the western channel into the eastern channel. Once the river flow has been diverted to the eastern channel and the cofferdam in the western channel is completed, demolition and removal of the eastern channel spillway and all other project related work is continued in the western channel.

5. The next task will be to fill the tailrace, construct the Denil fishway, construct fish passage in the western channel and complete decommissioning of the powerhouse and transmission lines.

6. Once the work in the lower part of the western channel is complete, the cofferdam will be reshaped in the western channel to refine construction of the fish passage in the western channel.

7. The cofferdam in the upper western channel is then removed and startup/testing procedures are conducted.

8. The finished fishway is placed into service. Deadline May 1, 2017.

The owner of the Saccarappa fishway and associated property, currently Warren, will be responsible for on-going maintenance and operation of the Denil fish ladder, including cleaning, repairs, and maintenance of the physical facilities and operation of the fishway during the fish passage season. Warren will prepare an operational procedures manual for the ongoing operation and maintenance of the fishway. The proposed operational procedures manual will be submitted to MDMR and USFWS for review and comment prior to implementation.

4.2.2.2 Construction Impacts at Saccarappa Falls

Environmental Resources

Potential wetland impacts associated with the Saccarappa fish passage work fall into two broad categories. The first consists of impacts associated with the proposed modifications at the Saccarappa Falls site. The second category of impacts is related to the lowering of water levels in the river upstream of Saccarappa Falls to Mallison Falls. This section addresses the first category of impacts. Refer to Section 5.5 for information regarding the second category of impacts.

The first category of potential impacts at the Saccarappa Falls site includes both temporary and permanent impacts. An example of a positive, permanent impact is removal of the eastern spillway. Once that concrete structure is removed, it will expose a large area of benthic habitat across the entire river that does not exist today. The only potentially negative permanent impact is related to the filling of the tailrace channel. Technically, this man-made channel with concrete walls and smooth bedrock bottom is not riverine habitat, but it is hydraulically connected the river. The proposed double Denil fishway will be constructed on the fill to be placed in the tailrace channel.

Temporary impacts at Saccarappa Falls are all related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the project. Temporary wet roads, some doubling as cofferdams, will be needed to gain access to the spillways with excavators and trucks. Fortunately, there is an existing wet road upstream of the dam that was left in place the last time the dam/spillway was repaired. The existing wet road will be utilized for this work and will be removed as the dam is removed. Removal of that existing wet road will also be a permanent positive impact. Other wet road/cofferdams will be required but their areas have been minimized and they are very temporary.

Erosion

Temporary erosion control measures will be put into place during the construction phase. Erosion control measures will adhere to State of Maine Erosion Control Best Management Practice Manual. Refer to Appendix G for proposed erosion and sedimentation control measures. Appendix F contains an evaluation of potential erosion and sedimentation control within the entire project area.

Vegetation

The Saccarappa Project site is industrial. The island is the only area within the direct construction site that is vegetated. In order to minimize impact to vegetation on the island during the construction process, Warren has minimized the landward construction staging areas and roadways necessary to access the site. All roadways have been located to minimize impact to existing vegetation. All fill required for staging areas will be removed post construction and areas re-vegetated with grass. Refer to Appendix G for Design Drawings that depict staging and access ways.

Public Access and Safety

In order to ensure public safety it will be necessary to limit public access to the construction site during the entirety of the construction phase, as well as to limit public access to the boat launches located in the vicinity of the site at the time of drawdown. The proposed access limitations are temporary and necessary to safeguard the public. Upon completion of drawdown, the public will regain access to nearby boat launches. Upon completion of the work, the public will gain access to Saccarappa Falls.

Warren is committed to taking the following steps to ensure that the proposed removal of the spillway and installation of the fish ladder will not result in unsafe conditions for the general public at and in the vicinity of the work site:

- A notice of dam removal activities will be published in a local newspaper. Up- and downstream communities will be notified prior to dam breach and water drawdown.

- Appropriate barriers, fencing, and signs will be erected at the immediate work site to warn the public of construction activity and restrict entry to the site.

- All boat launches located in the immediate vicinity of the work area will be temporarily closed while the water level in the impoundment is being drawn down. The City of Westbrook owns and operates three boat launch facilities downstream of Saccarappa Falls within the Cumberland Mills impoundment. Warren will request that the City suspend public access to these boat launch facilities while the impoundment is being drawn down.

- A boat barrier currently exists upstream of the Saccarappa Falls. The barrier will remain in place and be maintained during the entire construction process.

- The dam will be removed slowly with a controlled drawdown. Water recreation sites commonly used by the public up- and downstream of the Saccarappa Falls will be posted to warn recreational users of potential changes in water levels during dam removal and drawdown.

- Permanent barriers already exist around the Project area. The Project area is completely fenced to reduce the risk of unauthorized public access to the Project. Those fences and barriers will be maintained during and following construction activities.

Because of the discontinuation of hydroelectric generation and removal of both spillways the work will result in significant benefit to the public rights of access to and use of the surface waters of the State for boating, fishing, fowling, recreation and other lawful public uses. Surrendering of the hydro station operation and removal of the spillways eliminates the safety restrictions associated with the dangers of dams and hydro station water intakes, thereby enabling the public to safely navigate the waters directly above, through and below the Saccarappa site.

Traffic Movement

Motorized vehicles will deliver workers, materials, and equipment to the Saccarappa Falls site during the construction period. The additional traffic caused by the delivery of workers will not cause any notable change in traffic in the City of Westbrook. The maximum staffing level during construction will be in the range of 20 to 25 workers. That level of staffing will generate an estimated 12 to 15 round trips with conventional passenger vehicles per day. That increase in traffic in the Main Street or Bridge Street area of Westbrook caused by workers on the job site will not have any impact on traffic movement.

Equipment deliveries will be minimal since this project will not require much in the way of pre-manufactured equipment. Construction equipment will arrive at the site by heavy trucks but the quantity of equipment required is quite small and the traffic caused by the delivery of that equipment will be minimal. It is anticipated that one medium size crane will be needed at the site during construction. That crane will be delivered by truck once and removed once. Special provisions and temporary traffic control may be needed for that truck to maneuver from Main Street to the job site.

Material deliveries will consist primarily of steel, concrete, and fill material that will likely be delivered to the site in large trucks. Concrete deliveries will likely come from one of the two concrete batch plants in Westbrook. Concrete trucks will easily access the site from Main Street and are not expected to cause any unusual disruption of traffic on Main Street.

The largest volume of truck traffic will be related to the delivery of fill material for the tailrace channel and removal of spoil from demolition of the spillways. The most likely source of the fill material is an existing gravel pit in Gorham. Trucks delivering material from the pit to the site will

follow State Route 237 and State Route 25B, which lead directly to Main Street and the project site. The duration of the fill process will be approximately one month. During that period, residents and motorists along the travel route may notice an increase in truck traffic on Main Street. The most likely disposal site for spoil material is a former quarry site at the intersection of Main Street and Larrabee Road in Westbrook, Maine (about 2.5 miles from the site). The duration of this process will be approximately one month. Approximately 40 round trips per work day with a 12 yard truck are anticipated during this period. Residents and motorists along this route may notice an increase in truck traffic due to spoil disposal. Warren will require the contractor to coordinate with the City of Westbrook Public Safety Department regarding the use of flaggers or law enforcement personnel at Mill Lane and Dana Street where trucks will enter and exit at Main Street.

Warren and the selected contractor will coordinate the delivery of fill material for the tailrace channel and disposal of spoil material from the spillways with the City of Westbrook Public Safety Department. Delivery and disposal will be suspended during any special events that are planned in the City of Westbrook. Flaggers may be needed to coordinate truck traffic turning into or out of the site onto Main Street. Warren and the contractor will coordinate those activities with the City of Westbrook Public Safety Department.

There are not expected to be any unusual or significant traffic issues related to operation of the fishway following construction. During routine operations, one vehicle per day is expected for inspection of the fishway and related structures.

Wildlife

The existing Project site is industrial. There are no known rare, threatened, or endangered species in the direct construction area that will be impacted by the proposed work. Refer to Section 5.6 for more information regarding rare, threatened and endangered species within the Project area.

Fisheries

The proposed work will not occur during catadromous or anadromous migration periods, therefore impact to fishery resources will be negligible, though provision of fish passage at the site will have long term benefits to fish. Refer to Section 5.3 for information regarding anadromous and catadromous species within the Project area.

Water Quality

Water quality is expected to remain the same or improve with removal of the spillways. The initial removal may result in some flushing of some light organic sediments downstream, although the amount of accumulated sediments is not expected to be significant. Sedimentation is discussed in further detail in Appendix F. There could be a short term increase in turbidity, but this is likely to

subside after a short period of time. Dissolved Oxygen will likely improve with the transition to a free flowing reach of river.

Noise Levels

There may be an increase in noise levels at the work site due to the demolition of the spillways and construction of the fishway. Warren is committed to undertaking the work so as to cause minimal disruption of nearby residents and workers in the Dana Warp mill building. Construction and demolition will be limited to daylight hours. Warren is exploring construction methods that will minimize potential disruption of routine activities during the daylight hours.

4.2.3 Construction and Post-Construction Cost for Western Channel Design

Warren prepared an opinion of potential construction cost of the Western Channel Design and the Two Channel Design. The potential construction cost of the Western Channel Design is $4,400,000 and the Two Channel Design is $5,300,000. Refer to Tables 4-4 and 4-5 for Western Channel Design construction and post construction costs.

The cost opinion below is based on the scope of work and quantities of material required for construction as delineated on the preliminary design drawings. At this point, environmental and regulatory permits have not been obtained for this design, so the scope may change as the design is subjected to regulatory review by federal, state, and local agencies. Unit costs for the design are based on R.S. Means and/or contractor bids for the recent Cumberland Mills fishway installation.

Table 4-4: Western Channel Design Construction Cost

S.D. Warren Co.
Westbrook, Maine
Saccarappa Fish Passage, Western Channel Design
Opinion of Potential Construction Cost, Based on Preliminary Design
August 2015

Item	Description	Potential Cost
1	Island Access Bridge	$ 247,000
2	Eastern Dam Temp Access and Denil Access	$ 81,000
3	East Dam Access Road	$ 97,000
4	Removal of East Dam	$ 158,000
5	Western Dam Access Road	$ 29,000
6	Western Dam Removal	$ 425,000
7	Western Channel Rock Removal	$ 310,000
8	Western Channel Natural Fish Passage	$ 126,000
9	Denil Fishway	$ 747,000
10	Tailrace Fill	$ 387,000
11	Stormwater Drainage System	$ 121,000
12	Cofferdams and Temporary Facilities	$ 142,000
13	Power House Decommission	$ 143,000
14	Testing and Startup	$ 30,000
	Sub-Total	$ 3,043,000
	Contractor Mobilization/Demobilization (15% Sub-Total)	$ 469,000
	Sub-Total	$ 3,512,000
	Contingency (25%)	$ 878,000
	Sub-Total	$ 4,390,000
	Opinion of Potential Construction Cost	**$4,400,000**

Acheron
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com

Table 4-5: Western Channel Design Post-Construction Cost

S.D. Warren Co.
Westbrook, Maine
Saccarappa Fish Passage, Western Channel Design
Opinion of Potential Post Construction Cost
August 2015

Item	*Description*	*Potential Capital Cost*	*Potential Annual Cost*
1	*Operation and Maintenance of Fish Passage*	*$ -*	*$ 6,000*
2	*Fish Counting*	*$ 6,000.00*	*$ 21,000*
3	*Adaptive Management*	*$ 50,000.00*	*$ -*
4	*Project Works Maintenance*		*$ 40,000*
	Sub-Total	*$ 56,000.00*	*$ 67,000*
	Contingency (25%)	*$ 14,000.00*	*$ 16,750*
	Sub-Total	*$ 70,000.00*	*$ 83,750*
	Opinion of Potential Post Construction Cost	***$ 70,000.00***	***$85,000***

Acheron
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com

4.2.4 Agency Consultation

Warren has undertaken extensive consultation with the resource agencies, the general public, and other interested parties prior to reaching the decision to select the Western Channel Design. Refer to Appendix D for documentation of public, resource, and agency communications, as well as a documentation matrix of agency comments on the draft Surrender Application.

4.2.5 Warren's Evaluation and Selection of the Western Channel Design

4.2.5.1 Background

On March 14, 2014, Warren entered into an agreement (Agreement) with the U.S. Department of the Interior and USFWS, MDIFW, MDMR, the City of Westbrook, FOPR, and CLF (collectively, the "Parties") to request from the Federal Energy Regulatory Commission (FERC) an extension of the fish passage deadline for the Saccarappa Project and a stay of the license surrender application filed by Warren on December 31, 2015. The purpose of the Agreement was to allow the Parties time to engage in a collaborative, open, and joint process to evaluate two fish passage design alternatives at the Saccarappa Dam site. The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014. The Agreement includes the following provision:

> ***"2.2.2.1*** *Unless the Parties agree that it is not necessary, Warren will prepare a written summary of its evaluation of both design alternatives, based on the Information. In its evaluation, Warren will provide its determination, made in its sole discretion but in consultation with the other Parties, of whether it will proceed with the Denil Alternative, the Two-Channel Alternative, or some combination of those designs."*

During the extension period a series of technical meetings were held. These meetings were attended by the Parties and their respective technical consultants for the purpose of carefully exploring several alternatives for fish passage at the Saccarappa Dam site, post surrender. Warren's consultants, as well as Princeton Hydro, the consultant selected by FOPR and CLF, developed alternative designs that came to be referred to as the Western Channel Design and the Two Channel Design. On September 21, 2015 and September 22, 2015 respectively, the USFWS and MDMR provided written feedback based on the two designs. In addition to the numerous technical meetings held by the Parties to develop and discuss these two designs, Warren also held two public meetings in Westbrook during the extension period to solicit comments on the designs, and received voluminous written comments. In making its decision, Warren carefully considered the features of the two designs, the technical data, agency feedback, the comments and suggestions of those who attended the public meetings, the submitted written comments and stakeholder desires.

The Saccarappa Project site consists of two falls, the upper falls and the lower falls. Both final designs propose solutions for fish passage over both falls, but the two proposals differ in their approach to elevation changes, as follows:

Table 4-6: Summary of Two Designs

Proposal Designation	Upper Falls Design	Lower Falls Design
Western Channel Design	Provide fish passage in the western channel only, while retaining the original bedrock and elevations of the upper impoundment to what existed prior to original hydro construction.	Provide a 180' double Denil fish ladder within the existing hydro tailrace, with a counting station at the outlet.
Two Channel Design	Provide fish passage in both the western and eastern channels by reshaping the original bedrock of the eastern channel and lowering the impoundment above the falls to below the pre-hydro elevation level.	Provide a 500' riffle/pool fishway within the existing hydro tailrace. In order to obtain the required length and slope, this design includes an 180° "switchback" within the tailrace. Fish counting is not included.

4.2.5.2 Lowering the Hydraulic Control Elevation and Water Levels Upstream of Saccarappa

The Two Channel Design calls for lowering the water level in the section of river between Saccarappa and Mallison Falls by removal of bedrock in the upper eastern channel to elevation 62 in the eastern channel and relying on the existing hydraulic control in the western channel at elevation 60. The Western Channel Design leaves the existing bedrock in the eastern channel at elevation 64 and replaced excavated material in the western channel to the historic elevation 64, and leaves the river impoundment above the site at pre-dam conditions.

The Two Channel Design would cause the water levels in the river between Saccarappa and Mallison Falls, post dam removal, to be approximately 1.7 feet lower at average flow rates (900 cfs) and up to 3 feet lower at low flow rates than the Western Channel Design. Any potential impacts to environmental, cultural, fisheries, soils, embankments, wetlands, and man-made resources related to lowering of water levels in the river will be exacerbated by the Two Channel Design. With the Western Channel Design, the water level in the section of river between Saccarappa and Mallison Falls will be returned to the levels that existed prior to construction of the first hydroelectric facility at the site. If the Two Channel Design was chosen, all of the impact studies that have been done based on a control elevation of 64 would need to be re-done to reflect the lower control elevation in the proposed Two Channel Design, causing delays and potential complications in the permitting process. Examples of studies that would have to be redone include the following: (1) wetlands assessment, (2) erosion and sedimentation, (3) water quality (mostly related to potential erosion), (4) archeological resources, (5) historic structures, (6) irrigation system intakes, and (7) docks and retaining walls.

In addition to the potential impacts upstream, excavation of bedrock in the eastern channel will alter the aesthetics of water flow over the upper eastern falls. The appearance of the water flow over the Saccarappa Falls will be altered by flattening the falls. Additionally, several landowners

on the river commented during the public meetings that they preferred that Warren try to minimize the drop in impoundment water levels.

Warren's conclusion is that the impacts associated with lowering water levels in the river upstream of the Saccarappa Falls site required by the Two Channel Design would be significantly greater than the impacts associated with the Western Channel Design, and not necessary to accomplish the objectives of timely and effective fish passage.

4.2.5.3 Recreational Considerations

The final two designs considered by Warren differ substantially in their consideration of recreation, specifically water craft recreation. Over the past several years, the City of Westbrook has expressed an interest in enhancing recreational opportunities for boaters. The potential enhancements could include substantive structural modifications at the site, as long as those enhancements do not impede or interfere with fish passage at the site. The City's recreational consultant has indicated that the opportunities for enhancements in the eastern channel are only limited by one's imagination. Warren believes that the expressed interests of the City are better served by allocating the western channel for fish passage and leaving the eastern channel available for other non-conflicting interests.

The Two Channel Design includes substantive modification to both the eastern and western channels for fish passage. In addition, with the Two Channel Design, Warren would need to install barriers to watercraft upstream of the western channel to exclude boats from entering the western channel because watercraft could be drawn into the riffle / pool fishway in the tailrace.

The riffle / pool fishway area is not appropriate or safe for recreational boating activities, especially in the area of the 180° switchback and during times of heavy river flow. The 20-foot wide opening to the riffle / pool fishway area could encourage boaters to try to navigate the fishway. An option might be to install a boating barrier at the entrance to the tailrace area, but such a barrier at that location poses complications and challenges. Therefore, Warren is very concerned about the safety risks of this design.

The Western Channel Design concentrates the modifications to enhance fish passage in the western channel. The Western Channel Design does not necessitate any restrictions to boating activities in either channel. Both channels are available for recreational boaters (predominantly kayaks). It will not be practical, however, to implement structural modifications for recreation in the western channel because any structural enhancements could adversely impact the success of fish passage in the western channel. Warren's modeling in the western channel shows that it will provide safe and effective fish passage, so modifications in the eastern channel to promote or enhance fish passage are not necessary and are not being proposed; hence the eastern channel is available for structural enhancements for recreational boating without adversely impacting fish passage.

On the other hand, the Two Channel Design does include substantive modification to both the eastern and western channels to enhance fish passage. Therefore, any structural modifications in either channel solely for the purpose of enhancing recreational boating could negatively impact the modifications proposed for fish passage.

Warren's conclusion is that the Western Channel Design is preferred because it does not limit in any way potential future opportunities for recreational enhancements in the eastern channel, and the Western Channel Design allows boats to safely use both the eastern and western channels for recreational boating.

While recreational enhancements by the City of Westbrook are not part of Warren's design and/or this Surrender Application, recreational concepts provided by the City are being provided in this Application for information only. A copy of the City's preliminary design drawings are included in Appendix G.

4.2.5.4 Cost Comparison

An opinion of potential construction and post-construction costs was prepared for both options. The summary of the cost opinions is presented below.

Table 4-7: Cost Comparison

Item Description	***Western Channel Design***	***Two Channel Design***
Construction Cost	$4,400,000	$5,300,000
Post Construction Capital Cost	$70,000	$225,000
Post Construction Annual O&M Cost	$85,000	$150,000

Warren's conclusion from the cost comparison of the two options is that it will cost substantially more to build and operate the Two Channel Design than the Western Channel Design.

4.2.5.5 Provisions to Count Fish

The ability to count fish at the Saccarappa Falls site is important because the licenses for Mallison Falls and Little Falls, the next two hydroelectric stations upstream from Saccarappa, include triggers for fish passage that are tied to counts of specific fish species at Saccarappa Falls. The Western Channel Design includes provisions to view and count fish at the exit of the Denil fishway. Viewing and counting are important because the triggers are species specific. Warren has not been able to devise a reliable and proven method of counting and identifying fish species with the Two Channel Design.

Warren's conclusion is that the Western Channel Design is preferable to the Two Channel Design because the Western Channel Design includes provisions for counting fish at Saccarappa Falls as required by the FERC licenses for Mallison Falls and Little Falls.

4.2.5.6 Performance Evaluation

Performance Evaluation by Alden Labs

Tailrace Switchback Channel (Two Channel Design) vs. Denil Fishway (Western Channel Design):

The lower roughened channel in the Two Channel Design is approximately 580 feet long, at a 2% slope. The lower 280 feet of the channel occupies the full tailrace width at approximately 30 feet and then transitions to a variable 10 to 20 foot wide switchback section for the remainder 300 feet to the middle pool. The channel includes 13 boulder sills, creating a step pool channel. The normal tailwater elevation ranges between 41 to 42 feet and the middle pool elevation ranges between 53.5 to 56.5 feet. The total head from the tailwater to the middle pool ranges between 12 to 15 feet. The lower two boulder sills are submerged, thereby providing a total of 11 boulder sills for the full head, creating 14 to 18 inch drops between pools. The flow through the channel ranges from 152 cfs to 557 cfs for corresponding river flow of 300 cfs and 3,000 cfs, respectively. HEC-RAS model results of the proposed design provided by FOPR predict velocities of 2 to 6.7 ft./sec, as shown below.

Table 4-8: Switchback Channel Velocities

Total River Flow (cfs)	Switchback Channel Flow (cfs)	Max Channel Velocity (ft./sec)
300	152	4.9
1500	379	6.0
2250	476	6.4
3000	557	6.7

The Two Channel Design switchback channel fishway proposed for the lower falls is a one-of-a-kind design without known precedent. The expected hydraulic conditions within the irregular channel are complex and not easily predicted without sophisticated analysis, and there is insufficient information to predict the ability of fish to pass up this channel. One dimensional modeling has been completed, which is appropriate and useful to predict water levels through the channel and can provide an approximation of average velocity, but it does not provide adequate information to assess fish passage.

The following considerations are important relative to fish passage success for the lower falls:

- The switchback channel is over 500 feet long, at a 2% slope with velocities ranging from 2 to 7 ft./sec. Shad passage effectiveness decreases as the length of fishways increase. The Denil ladder is about 1/3 the length of the switchback channel and can provide more timely passage than the switchback channel due to its shorter length.

- There are significant uncertainties and risks with the hydraulic design of the switchback channel. The average velocities predicted by HEC-RAS approach and exceed fish passage design threshold recommendations of 6 ft./sec. The one-dimensional modeling is not adequate to understand the three dimensional irregularity of the proposed channel. In particular, the proposed 180 degree switchback pool has potential to create adverse flow conditions such as eddies, which are known to delay fish and hinder passage. By contrast, the hydraulics of the Denil ladder are well understood and effective. The Denil ladder configuration has been carefully designed to optimize internal hydraulics (no 180 degree turning pools) to eliminate the potential for adverse conditions (such as eddies) that may delay or hinder passage.

- The switchback channel includes 10 pools with a hydraulic drop of 14 to 18 inches between pools. Typically, step pool fishways for shad and herring are designed with drops of less than 6 inches (a drop that produces a plunging flow of about 6 ft./sec.). The Two Channel Design will create plunging flow velocity of up to 10 ft./sec.

- Average velocity predicted by HEC-RAS modeling is greater than 6 ft./sec. for river flows greater than 1,500 cfs. Maximum channel velocity will be considerably higher than 6 ft./sec. and fish passage will be challenging for river flows greater than 1,500 cfs.

- The switchback channel lacks a means to limit flow into the channel. As the river flow increases, the switchback channel flow also increases. Flood flows are of particular concern, which could damage and move grade control features such as the boulder sills and also deposit large debris within the channel (especially in the switchback area, where the flow changes 180°). Debris and trees have potential to become trapped within the tight turns of the channel, and there are no means of accessing the channel with heavy equipment to remove large debris. The channel is constructed of fill material that will require periodic inspection and adjustment to maintain proper sill elevations and hydraulic conditions.

- The as-built conditions of the switchback channel are very important to the ultimate success of the design. Considerable uncertainties exist with the design, which are compounded by the challenges associated with constructing irregular rock structures at the design elevations and widths. Great care will be needed to document as-built conditions and final hydraulics. Adaptive management and additional channel modifications will likely be required after initial construction.

- Hydraulic conditions at the entrance of the switch-back fishway will be substantially altered by the cascade of water over the lower falls. Currently, a 10 foot deep plunge pool exists where the water flows over the lower falls. The plans call for the depth of water to be approximately 1 to 1.5 feet deep. This cascade of water into this shallow area may cause confusing hydraulic conditions which may delay or hinder the ability of fish to find the entrance to the switch-back channel.

Upper Western Channel:
The upper western channel in the Two Channel Design is approximately 520 feet long, at a 2.5% slope with velocities ranging from 3 to 8 ft./sec.

- The upper western channel in the Two Channel Design is similar to the Western Channel Design, but the Two Channel Design includes pools and riffles to assist in dissipating energy. The Western Channel Design includes sculpted bedrock features to dissipate energy. Relative to fish passage, the two designs in this location are expected to be similarly effective.

4.2.5.7 Performance Evaluation by MDMR and USFWS

On August 26, 2015, Brett Towler from the USFWS provided all parties to the Agreement a copy of a model intended to evaluate and compare three performance parameters for the Western Channel Design and the Two Channel Design. The three parameters are:

- *Survivorship Analysis*: The proportion of fish successfully passing a velocity barrier.

- *Fatigue Analysis*: Fatigue and distance relationships.

- *Work-Energy Analysis:* Estimate of the energy that it takes a fish to move through a fishway.

Warren compared the results of the model outputs for both of the designs. Refer to Appendix D for model results. The results of the comparison clearly indicate that the Western Channel Design fared better than the Two Channel Design. Warren also concluded that if some resting pools could be added into the western channel upstream of the Denil exit, then the model results for the Western Channel Design would be even better, so Warren asked its consultants to modify the Western Channel Design to add some resting pools. The site plan for the modified design is attached to this Surrender Application along with the results of the performance passage model developed to reflect the modified design of the western channel.

Warren's assessment of this information is that with relatively minor modifications to the Western Channel Design submitted to the agencies at the July 14, 2015 technical meeting in Hadley, Massachusetts and the August 26, 2015 public meeting in Westbrook, Maine, the predicted effectiveness and efficiency of the Western Channel Design's nature like passage in the upper western channel can be improved. The passage model results for the revised Western Channel Design are dramatically better than the passage model results for the Two Channel Design.

Therefore, based on the independent evaluation of potential fish passage performance by the agencies and the modifications proposed by Warren to the Western Channel Design, Warren believes the Western Channel Design will provide safe, timely, and effective passage over the lower and upper falls at Saccarappa.

4.2.5.8 Formal Comments by MDMR and USFWS

On September 22, 2015, Warren received written comments from both MDMR and USFWS on the Western Channel and Two Channel designs. Both of the letters from the resource agencies included an extensive summary as well as recommendations. The following are the recommendations copied from each letter. Each of the letters and the recommendations were discussed and reviewed extensively during the September 22, 2015 technical meeting in Westbrook.

> *"MDMR Recommendations:*
>
> 1. *To pass upstream migrants over the lower falls, MDMR recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the attraction water supply system.*
>
> 2. *Retain the fish counting facility that was included in the Denil design. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder.*
>
> 3. *Provide passage on both the east and west channel using the nature-like fishways proposed by FOPR. MDMR believes that for this project to be successful both channels must be passable."*

> *"USFWS Recommendations:*
>
> 1. *To pass upstream migrants over the lower falls, the Service recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by- side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the auxiliary water supply system.*
>
> 2. *Retain the fish counting facility that was included in the Denil design. This facility*

is needed in order to determine when triggers are met for fish passage construction at upstream sites. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder. (Note: The Service is willing to discuss a date certain for construction of fish passage at the next upstream Projects in lieu of constructing counting facilities at the Denil fishway. This letter does not address the jurisdictional difficulties that may arise from the current structure, which triggers fish passage at upstream projects based on counts at Saccarappa, when Saccarappa is no longer a FERC-licensed Project.)

3. *Construct a nature-like fishway in the west spillway channel to provide passage over the upper falls. As the design progresses, incorporate appurtenant in-stream structures (e.g., retain suitable ledge features, construct rock vanes, or place boulder clusters) to further improve passage effectiveness.*

4. *Modify ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding."*

Warren has carefully considered the input received during the meetings and the written material provided by the agencies.

Following a detailed review of the comments and recommendations from the agencies, Warren decided to modify the Western Channel Design to include a double Denil fishway in the tailrace, as recommended by the agencies. Both of the letters include the same recommendation for a double Denil fishway instead of the single 4-foot wide fishway. Warren understands the agencies' rationale for the double Denil fishway and believes that the second fishway can be added without adding significantly to the cost of the installation.

The letter from MDMR includes a recommendation that Warren provide passage on both the east and west channels proposed by FOPR. The USFWS letter included a recommendation that Warren modify the ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding. It is unclear precisely what the USFWS recommendation would involve, but the recommendation by MDMR is clear because 30% design drawings of the proposed modifications in the eastern channel were provided by Princeton Hydro.

The Two Channel Design for the modifications in the eastern channel call for removing bedrock to reduce the elevation of the hydraulic control from elevation 64 to elevation 62 +/-. The elevation of the hydraulic control in both the eastern and western channels was at or near elevation 64 prior to hydroelectric development at the site. Water levels in the river segment upstream of the falls were controlled by the bedrock at the falls at elevation 64. The Western Channel Design calls for removal of the spillways and replacement of excavated material in the upper western channel, allowing the segment of river between Saccarappa and Mallison Falls, including all tributaries to that segment of the river, to be restored to conditions that existed prior to hydroelectric development at the site. The available evidence indicates that the wooden crib and masonry dams

that preceded Warren's activities did not involve structural modifications to the bedrock that created the hydraulic control of river water levels upstream.

Warren has studied the potential environmental, recreational, and social impacts related to removing the spillway but leaving the hydraulic control at elevation 64 feet and has determined that the impacts associated with returning river water levels to pre-hydro development levels are minimal. Warren has not studied the potential impact of lowering water levels below the predevelopment levels, but Warren is concerned that potential impacts related to wetlands, soil erosion, embankment stability, and cultural and historic resources could be greater – and potentially significantly greater than with the Western Channel Design.

Additionally, Warren estimates that the cost associated with modifying the eastern falls as proposed in the Two Channel Design will add a minimum of $600,000, or 25%, to the cost of fish passage at Saccarappa Falls.

4.2.5.9 Conclusion

Warren's conclusion from its evaluation of all the available data, facts, and opinions is that the potential negative impacts to environmental, recreational, cultural, and social resources upstream of and at the Saccarappa Falls site, as well as the cost of construction, associated with the Two Channel Design are not worth the potential negligible or *de minimis* benefits to fish passage at the Saccarappa Falls site. Warren concluded that its efforts and resources should be directed toward making safe, timely, and effective fish passage in the western channel as successful as possible.

Warren agrees with the No. 3 recommendation from the USFWS related to modifications to the passage in the upper western channel and has incorporated changes into the Western Channel Design, as attached in Appendix G.

Based on Warren's careful consideration of all of the facts, data, and opinions described above, Warren has determined that the Western Channel Design, as modified following the September 22, 2015 technical meeting, is its preferred design, and Warren is therefore proceeding with the process of implementing the surrender of its FERC license based on that design. This Surrender Application includes Warren's proposal to implement fish passage at the Saccarappa Falls site based on the Western Channel Design depicted in the design drawings (Appendix G).

SECTION 5.0
AFFECTED ENVIRONMENT

The Presumpscot River originates at the outlet of Sebago Lake and extends approximately 25 miles to the Atlantic Ocean at Casco Bay. Seven tributaries feed the Presumpscot River between Sebago Lake and the Saccarappa Project. These include the Otter, Nason, Black, Colley Wright, and Inkhorn brooks, and the Pleasant and Little rivers. The topography of the area is gently rolling with a few isolated hills. The land immediately surrounding the Saccarappa Project is developed and industrial.

There are a total of seven hydroelectric developments along the river's length. The now fully removed Smelt Hill dam was located downstream of the Cumberland Mills Dam (which is immediately downstream of the Saccarappa Project) at the mouth of Casco Bay. Moving upstream is the Cumberland Mills Dam, a non-jurisdictional dam that provides water storage for the Warren paper mill. Continuing upstream from the Saccarappa Project is Mallison Falls (FERC Project No. 2932), Little Falls (FERC Project No. 2941), Gambo (FERC Project No. 2931), Dundee (FERC Project No. 2942), North Gorham (FERC Project No. 2519), and Eel Weir (FERC Project No. 2984).

The Saccarappa Project impoundment is approximately five miles in length extending upstream to the Mallison Falls Project and has a maximum depth of up to 28 feet. The impoundment shoreline is generally forested with moderate development, with the exception of the Saccarappa Project facilities, which are located in a developed area of the City of Westbrook in Cumberland County, Maine.

5.1 Geology

5.1.1 Existing Conditions

The Saccarappa Project is located within the southeast portion of the Kearsarge-Central Maine Synclinorium, a group of Upper Ordovician to Lower Silurian steeply dipping slates, phyllites, and schists that compose the majority of the bedrock of Southern and Central Maine. The Sebago Batholith, Carboniferous in age, flanks the Northern edge of the Project area. Glacial till, sand and gravel, and glaciomarine clay all of late Pleistocene age overlie bedrock. Topography is gently rolling with a few isolated hills. The general geology of the area is typical of Southern and Central Maine. Igneous rocks and highly deformed metamorphic rocks underlie Wisconsinan glacial sediments of variable composition and thickness.

The bedrock geology within the Saccarappa Project area is Late Ordovician to Early Silurian age. Most of the area is underlain by metamorphic rocks of the Windham and Vassalboro formations. The Windham formation is Early Silurian in age and is correlative with the Waterville Formation of Central Maine (Hussey 1971 and 1981). The bedrock consists of three lithologies: a pelitic two

mica garnet-quartz-plagioclase schist, a thin limestone member, and a calc-silicate and biotite granofels (Thompson and Guidotti, 1989). The Vassalboro Formation, Early to Middle Silurian in age, consists mostly of a quartz-plagioclase-biotite-hornblende granofels and lesser amounts of calc-silicate micaceous schist (Thompson and Guidotti, 1989). Bedrock outcrops of the Windham and Vassalboro Formations are found near Saccarappa Project.

The dominant structures of the general area are large scale recumbent to overturned synclines and anticlines trending N30°E and plunging gently to the North and South. Minor structures such as tight isoclinal folds and crenulation cleavage are also common (Thompson and Guidotti, 1989). The Norumbega fault system, a group of southwest-northeast trending post metamorphic faults, passes through the Southern study area, and may control the path of the Presumpscot River as it flows northeast of Westbrook along the Nonesuch River Fault (Hussey, 1971 and 1981).

Surficial geological deposits in the area were likely deposited by the retreat of the Wisconsinan ice sheet of the late Pleistocene and consist of till, eskers and deltas, and glaciomarine deposits of the Presumpscot Formation. Till in this area is composed of a heterogeneous mixture of clay, silt, sand, pebbles, cobbles, and boulders up to ten feet in diameter and forms end moraines and drumlins (Bolduc, et al., 1994; Smith 1994).

Glaciofluvial deposits are composed of sand and gravel and are found as marine deltas, fans, and eskers ranging in thickness from less than ten to greater than 30 meters in thickness (Bolduc, et al., 1994; Smith 1994). The Presumpscot Formation consists of grayish-blue silt and clay sized rock flour, and is from less than one to 46 meters thick (Smith, 1994). Numerous mass movements have occurred in the Presumpscot Formation in Southern Maine (Devin and Sanford, 1990).

Typically, till forms a blanket deposit directly over bedrock. Glaciofluvial sand and gravel deposits, such as eskers and deltas, lie on top of the till, while the distal glaciomarine deposits of the Presumpscot Formation lie on top of and interbedded with the glaciofluvial sands and gravels. End moraines and the Presumpscot Formation are the most common surficial deposits in the area (Bolduc, et al., 1994). The Presumpscot Formation is found along the banks of the majority of the Presumpscot River.

The Suffield-Buxton Hollis soil association dominates the Saccarappa Project area. The association consists of areas of gently sloping to rolling, marine deposited silts and clays (Suffield, Buxton, Belgrade, Biddeford, Harland, Melrose, and Scantic), glacial till (Hollis, Elmwood, Melrose and Swanton) and many gently rolling to steep, shallow glacial till-derived soils on ridges (USDA 1974). Suffield soils make up approximately 23 percent and are deep, well-drained moderately sloping to steep, medium-textured soils that are underlain by clay (at depths greater than two feet), and are primarily located on ridges or naturally eroded drainage ways (USDA 1974).

Buxton soils comprise about 20 percent and are deep, moderately well drained to somewhat poorly drained, gently sloping to moderately sloping, medium-textured soils that occur in areas near Suffield soils (USDA 1974). Hollis soils (about 19%) consist of shallow, somewhat excessively drained, gently sloping to steep, moderately coarse-textured soils that are located on crests of ridges that protrude through many areas of Suffield and Buxton soils (USDA 1974). Minor soils (approximately 38%) in this association are the Belgrade, Biddeford, Elmwood, Hartland, Melrose, Scantic, and Swanton soils.

5.1.2 Proposed Conditions

The removal of the spillways of the Saccarappa Project is not expected to cause significant erosion of soils within the existing impoundment or in the Little River, and is not expected to cause significant sedimentation into the impoundment of Cumberland Mills immediately downstream from Saccarappa Project. Refer to the Erosion Control Report in Appendix F for more information.

5.2 Water Resources

5.2.1 Water Quantity

5.2.1.1 Existing Conditions

Presumpscot River

The water of the Presumpscot River is used for hydroelectric generation, millworks, municipal and industrial wastewater treatment facility discharges, and recreation. The Warren mill in Westbrook is the largest daily consumptive user of the Presumpscot River water, withdrawing an estimated 28 cfs for process water, almost all of which is returned to the river under provisions of existing licensed discharges. There are a few seasonal homes and a golf course along the upper section of the river that also draw water for irrigation. There are several municipal and industrial wastewater treatment facilities that discharge treated wastewaters to the main stem of the Presumpscot River and to its tributaries.

Approximately 77% of the drainage area for the Saccarappa site is above the Eel Weir Dam. That means that on average, approximately 77% of the total annual flow at Saccarappa is manually regulated by the releases at Eel Weir Project. The remaining, on average, 23% comes from unregulated flow from overland runoff and tributaries below Eel Weir dam. During high flow periods, such as during spring runoff, there can be substantial contribution from the unregulated drainage area downstream of Eel Weir Project. However, during fish passage season (May 1 through July 15) and continuing throughout the summer season, the flow releases from the Eel Weir Project represent the major portion of the total river flow. The changes in flow releases at the Eel Weir Project based on the 2015 license (Appendix J) will have a dramatic effect on the flows at the Saccarappa site. Under the new Eel Weir license, low flows will be higher and high flows

will be lower. The new flow duration curve is likely a conservative estimate of what the changes will mean to the recurrence interval of flows at the site.

Presumpscot River flows are measured at the Sebago Lake outlet (Table 5-1). The Westbrook gauge located downstream of the Saccarappa Project, provided river flow data that is characteristic of the Project prior to the new Order issued for Eel Weir Project that changed the flow release requirements.

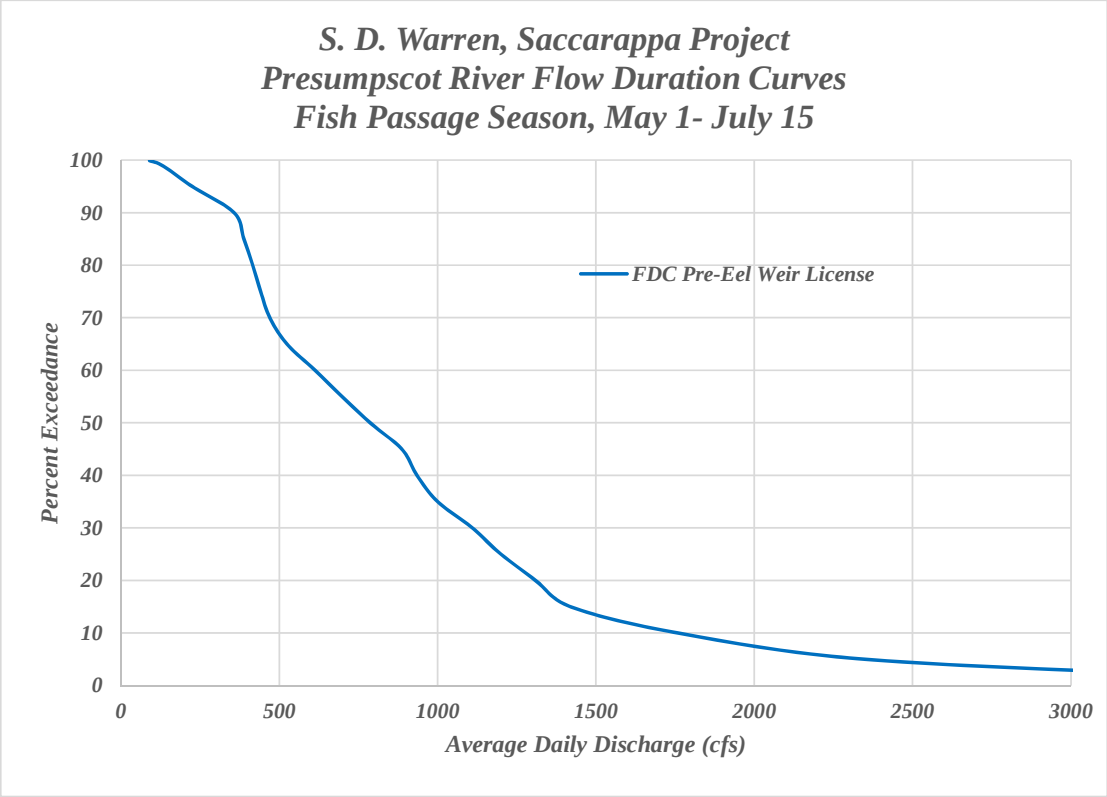
Table 5-1: Observed flow rates at the Eel Weir Project (Sebago Lake) Gauge USGS Gauge #01064000, Presumpscot River, Maine

Month	**Observed Monthly Mean (cfs) 1976-1995**	**Observed Daily Maximum (cfs) 1976-1995**	**Observed Daily Minimum (cfs) 1976-1995**
January	672	2,490	175
February	745	2,460	131
March	683	2,320	0
April	724	3,400	0
May	839	3,300	50
June	691	3,390	50
July	485	844	0
August	519	1,330	50
September	490	1,320	50
October	454	1,330	175
November	513	1,500	170
December	672	2,490	170

Source: Louis Berger 2001

Figure 5-1 below, is a copy of the flow duration curve developed from flow rate data obtained from USGS gauge No. 01064118 that was operational from 1976 through 1995. The gauge site for the curve below is located downstream of Cumberland Mills.

Figure 5-1: Presumpscot River Flow Duration Curve



River flows at Saccarappa Falls are dependent on controlled flow releases at Eel Weir Project. The magnitude of water released at Eel Weir Project has historically been driven by the Sebago Lake Level Management Plan, which required releases to meet target lake levels. On March 23, 2015 FERC issued an Order Issuing New License for the Eel Weir Project. This Order changed the flow release requirements at Eel Weir to a flow-based regime, whereby Warren must maintain target discharges that vary by the time of year. The following is a tabulation of the new target flows for releases from Eel Weir.

Table 5-2: New Target Release Flows for Eel Weir Project

Date	Normal Operating Target Range	Extreme Range of Flows
May 1 – June 15	500 – 1,167 cfs	408 – 1,000 cfs
June 16 – July 15	408 – 1,000 cfs	408 – 1,000 cfs

Warren has prepared a new flow duration curve for the Saccarappa Falls site that is based on the new flow regime for the Eel Weir Project. The new flow duration curve is predicated on the following facts: (1) the existing flow duration curve is based on data from a period of time when the regulation of flows out of Sebago Lake was substantially different than it will be when the new flow regime for Eel Weir is fully implemented, (2) in the future, the low flow releases will be higher and the high flow releases will be lower than they were during the period when the data was obtained for the old flow duration curve and (3) the median flows in the river at Saccarappa will likely be similar to the median flows in the past, as the new flow regime will not cause more or less water to be retained or released over the long term. These facts, and the new target release flows presented in the Eel Weir license, were used to anticipate a flow duration curve that is reflective of the new flow regime at Eel Weir.

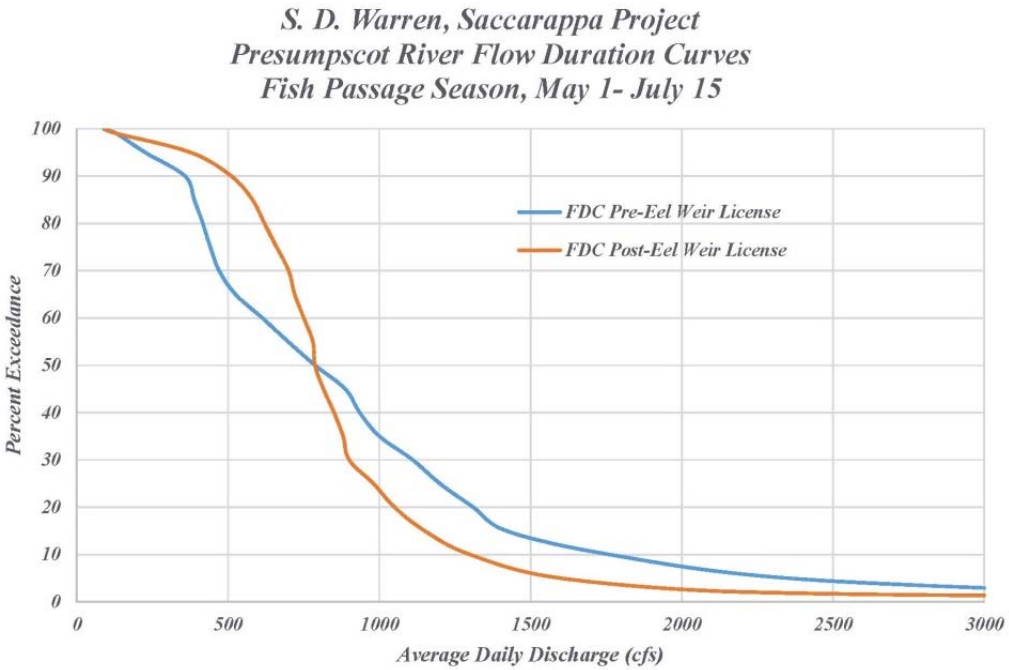
Design flows for Western Channel Design are based on the modified flow duration curve for the fish passage season of May 1 through July 15 annually. The design flows are:

Recurrence Interval	Design Flow
95th Percentile	300 cfs
5th Percentile	1,500 cfs

The design flows from the new flow duration curve range from 300 cfs to 1,500 cfs and are within the design boundaries of the historic flow duration curve (300 cfs – 2,250 cfs). The fish passage performance evaluations that are provided in this application (Appendix D) are based on a flow range of 500 to 1,500 cfs.

Refer to Figure 5-2 for a comparison of Presumpscot River flow rates and recurrence intervals, during the fish passage season May 1- July 15, before and after implementation of the 2015 Eel Weir Order flow release rates. The comparative flow duration curve below reflects the fact that low flows will be higher and more frequent while high flow rates will be lower and less frequent.

Figure 5-2: Comparative Flow Duration Curve



Saccarappa Impoundment

The Saccarappa Project has a 567 square mile drainage area. The 5-mile long Project impoundment has a normal headpond elevation of 69.95' NGVD and negligible usable storage capacity. The maximum hydraulic capacity of the Project powerhouse is 990 cfs with each of the three generating units discharging 330 cfs (Kleinschmidt 1999). The Project license issued October 2, 2003 (105 FERC ¶ 61,013) incorporates as Appendix A a Water Quality Certification issued April 30, 2003 that identifies specific water levels and flows the Project must comply with.

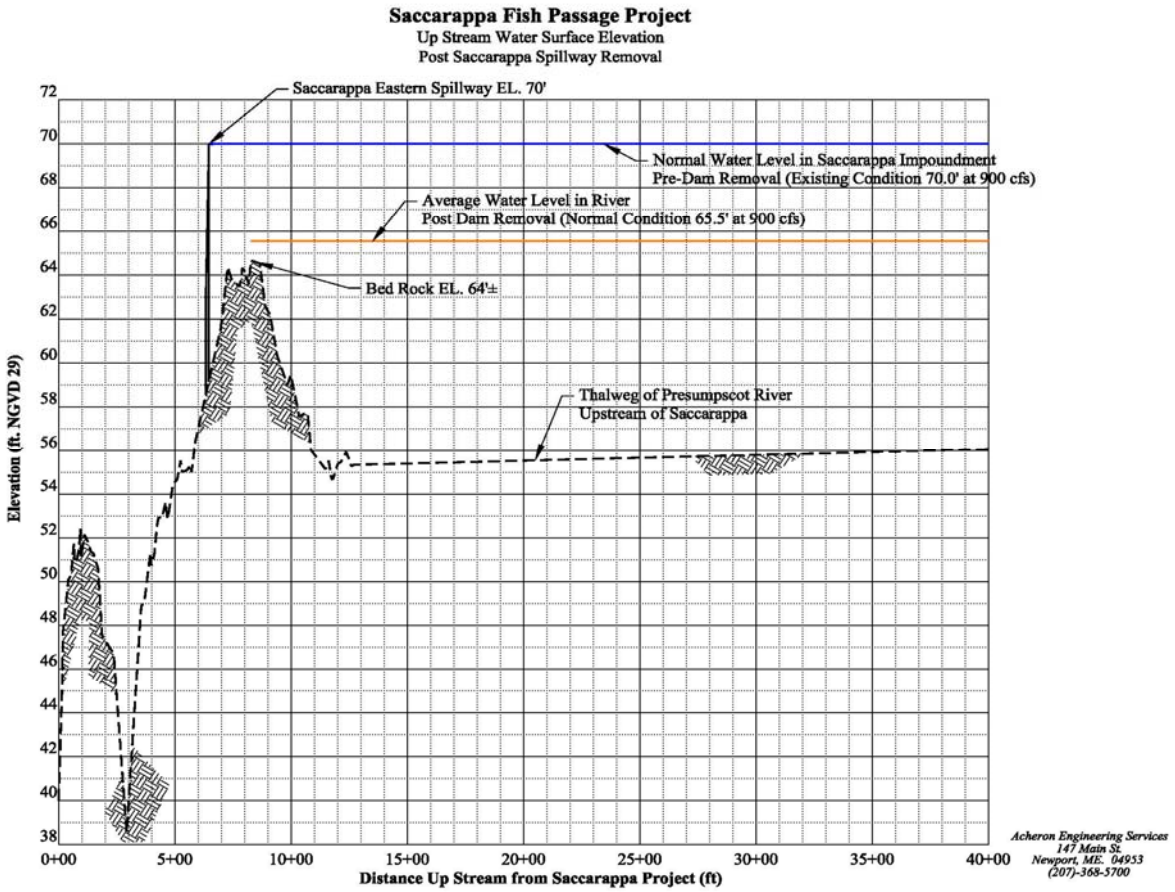
5.2.1.2 Proposed Conditions

The future elevation of the water in the river, after the Saccarappa Falls dams are removed, will be dependent upon the distance upstream of the dams and the flow in the river. Under average flow conditions of 900 cfs, the water level in the section of river upstream of the Saccarappa Falls site will be lowered by approximately 4.5 feet below the spillway crest elevation of 70 feet. Figure 5-3 depicts the surface elevation of the impoundment post spillway removal.

Warren completed transects of the existing Saccarappa Impoundment and Little River Impoundment in order to assess the effect of the proposed drawdown on the impounded sections of the Presumpscot and Little Rivers. Transects were based on a series of four field surveys by Plisga and Day in 2011 and 2014. The results of this study, including a plan view of the rivers, a profile of the river pre and post dam removal and cross-sectional views of each transect, are included in Appendix F and are discussed in this section.

In summary, the portion of the Presumpscot River that is the Saccarappa Impoundment and the portion of the Little River impounded by the Saccarappa Project (approximately 6.3 miles in both rivers) will revert back to the conditions that existed prior to construction of the first hydroelectric development at the Saccarappa site. Approximately 4.6 miles of the Presumpscot River above Saccarappa Falls will still have the appearance of an impoundment, even though the water level will be approximately 4 feet lower under average flow conditions after dam removal. The reason is that that bottom of the Presumpscot River from Saccarappa to Mallison is below elevation 64 feet, the elevation of the bedrock control at the Saccarappa site. Approximately 0.3 miles of the Presumpscot River below Mallison Falls and 1.4 mile of the Little River will change from impoundment to free flowing riffle and pool habitat. Removal of the eastern and western spillways at Saccarappa Falls will create approximately 19 acres of exposed embankment that is currently under water. Vegetation on the existing embankment will migrate down the slope with the reduced water level.

Figure 5-3 Upstream Water Surface Elevation, Post Spillway Removal



The current length of the Saccarappa Impoundment from the eastern spillway to the upstream limit of the impoundment is 26,046 feet. After the drawdown, the length of the Presumpscot River in

the former impounded area from the location of the eastern spillway to the upstream limit of what will appear to be impoundment is 24,429 feet. Technically, the stretch of river above Saccarappa Falls will not be a manmade impoundment created by a dam. However, during low and moderate flow periods, this area will appear to be a flat, low velocity section of river and resemble an impoundment. Approximately 2,680 feet of existing impoundment below Mallison Falls will become free flowing river. This 2,680 foot section of the river will be a series of riffle and pool segments that will be quite shallow and have a visually discernible current. Some erosion of sediments that may have accumulated in this segment may be scoured into suspension during high flow periods in the river but a detailed inspection of this section of the river revealed little in the way of accumulated fine grained sediment.

The current length of the impoundment in the Little River from the confluence with the Presumpscot River to the upstream limit of the impoundment is approximately 7,600 feet. The length of the Little River impounded area from the confluence with the Presumpscot to the upstream limit of the impoundment after the removal of the spillways at Saccarappa Falls will be approximately 83 feet. In essence, all of the flat water section of the Little River from the confluence with the Presumpscot River to the Rt. 202 Bridge will be free flowing river with a series of riffle and pool segments. There will be no discernible flat water segment in the Little River caused by the backwater from the Presumpscot River.

5.2.2 Water Quality

5.2.2.1 Existing Conditions

The Presumpscot River is classified as Class B waters from its confluence with the Pleasant River to U.S. Route 202 to Saccarappa Falls. No new direct discharges are allowed after January 1, 1999 in the segment from the river's confluence with the Pleasant River to U.S. Route 202 (Maine Revised Statutes, Title 38, §467). Class B is the third highest classification. Class B water quality classifications as per the State of Maine Revised Statutes, Title 38, §465, p. 3. are identified below:

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

B. *The dissolved oxygen content of Class B waters may not be less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million and the 1-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas. Between May 15th and September 30th, the number of Escherichia coli bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 64 per 100 milliliters or an*

instantaneous level of 236 per 100 milliliters. In determining human and domestic animal origin, the department shall assess licensed and unlicensed sources using available diagnostic procedures.

C. *Discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community.*

   1. *This paragraph does not apply to aquatic pesticide or chemical discharges approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency for the purpose of restoring biological communities affected by an invasive species.*

   2. *For the purpose of allowing the discharge of aquatic pesticides approved by the department for the control of mosquito-borne diseases in the interest of public health and safety, the department may find that the discharged effluent will not cause adverse impact to aquatic life as long as the materials and methods used provide protection for non-target species. When the department issues a license for the discharge of aquatic pesticides authorized under this subparagraph, the department shall notify the municipality in which the application is licensed to occur and post the notice on the department's publicly accessible website.*

MDEP's Waste Load Allocation report in 1998 identified non-attainment of the Class B minimum dissolved oxygen (DO) criterion in the Gambo, Little Falls, Mallison Falls, and Saccarappa impoundments during both low and high flow events. This report concluded that during high flow events non-attainment was likely due to non-point source pollution, but during low flow non-attainment was due to the flow conditions caused by the impoundments.

In 2002, as recommended by the MDEP, Warren agreed to provide additional spillage flows of 50 cfs at Dundee Project and 100 cfs at Gambo Project whenever river temperatures exceed 22°C, as measured at the Gambo Project before 8 AM. It was predicted that the increased spillage, in addition to current bypass flow, would provide enough re-aeration to attain Class B concentrations of DO. This increased spillage became a condition of the Water Quality Certification issued by MDEP in April 2003. In addition, as part of the condition, Warren was to continue to monitor the impoundments for DO. (MDEP 2011).

Monitoring in 2008 and 2009 measured DO levels below the class B minimum DO criterion of 7.0 ppm, but both of those years were high flow years and non-point pollution was the expected cause of non-attainment. Monitoring in 2010 (Table 5-3) documented four days of non-attainment in the Saccarappa Project impoundment. To correct the DO levels, S.D. Warren proposed to discharge 408 cfs from Sebago Lake, as opposed to the previous flow of 270 cfs. MDEP believed the increased flow would enable the Saccarappa Project to meet Class B attainment and comply with the conditions set forth in the 2003 Water Quality Certificate (MDEP 2011).

Total phosphorous concentrations measured by MDEP in 1993 and during the Presumpscot River Water (PRW) study in 1990 indicated eutrophic conditions in the Saccarappa Project impoundment. Total suspended solids concentrations monitored during the PRW study were low, ranging from 0.64 to 1.43 mg/l. Higher concentrations were measured in the tributaries (specifically in the Little River); potential sources were agricultural runoff (Louis Berger 2001).

Table 5-3: Dissolved Oxygen Readings in Saccarappa Project Impoundment

Date	Flow	Average Temperature (°C)	Average Dissolved Oxygen
7/9/2010	333	26.9	6.8
7/16/2010	367	26.1	7.2
7/20/2010	367	26.3	7.1
7/23/2010	367	24.3	6.6
7/26/2010	367	24.5	6.5
7/29/2010	367	25.8	7.0
8/3/2010	367	24.4	7.2
8/6/2010	367	25.5	7.3
8/9/2010	333	24.2	7.5
8/19/2010	270	23.9	7.0
8/23/2010	270	22.7	7.2
8/31/2010	270	23.0	7.3
9/2/2010	270	24.5	7.0
9/8/2010	270	22.4	6.9

Source: MDEP 2011

5.2.2.2 Proposed Conditions

Water quality is expected to remain the same or improve with removal of the spillways. The initial removal may result in some flushing of some light organic sediments downstream, although the amount of accumulated sediments is not expected to be significant. Sedimentation is discussed in further detail in Appendix F. There could be a short term increase in turbidity, but this is likely to subside after a short period of time. DO will likely improve with the transition to a free flowing reach of river.

5.2.3 Macroinvertebrates

5.2.3.1 Existing Conditions

Warren conducted a study of the benthic macroinvertebrate community in the Saccarappa Project study areas in 1997. Six sites were monitored in the stretch below the Dundee Project to the Saccarappa Project. One site was located in the middle of the Saccarappa impoundment. All sites were found to be attaining applicable aquatic life criteria. Specifically, Saccarappa had the highest overall diversity when compared to the other sites and the combined diversity of caddisflies and mayflies was similar to the other two sites. Additionally, the MDEP's 1994 Surface Water Ambient Toxics program monitoring included one site in the upper extent of the Saccarappa impoundment. The benthic community at this location was found to be attaining Class B standards (Kleinschmidt 1999).

5.2.3.2 Proposed Conditions

The macroinvertebrate community at the Saccarappa Project may experience short term impacts due to sediment transport with removal of the spillways. Any potential impacts to the macro-invertebrate community are expected to be minimal and temporary.

5.3 Aquatic Resources

5.3.1 Habitat

5.3.1.1 Existing Conditions

Aquatic habitat in the Saccarappa Project consists of a 5-mile long, approximately 90-acre impoundment, bypass reach, power canal, and a tailwater area below the powerhouse. The Project impoundment extends upstream to the tailrace of the Mallison Falls Project. Aquatic habitat in these specific areas of the Saccarappa Project is discussed below:

<u>Impoundment</u>

The Saccarappa Project impoundment has poor habitat diversity and quality. Channel characteristics in the impoundment are relatively uniform and the substrate is dominated by fine silts and clay. The Little River enters the Presumpscot River at the Saccarappa Project impoundment.

<u>Tailwater Area</u>

Flows exiting the Saccarappa Project powerhouse enter an approximately 300-foot man-made tailrace channel that extends downstream from the powerhouse. Substrates consist primarily of bedrock and boulders. Small and large boulders and overhanging vegetation provide abundant in stream cover.

5.3.1.2 Proposed Conditions

Habitat within the impoundment will change slightly with the removal of the spillways. The lowering of impoundment levels by approximately four feet, with the level varying throughout the impoundment, may initially affect some shoreline habitat.

5.3.2 Resident Fish

5.3.2.1 Existing Conditions

Along its entire length, the Presumpscot River supports a natural, self-sustaining, warm water fishery. Warm water fish species including smallmouth bass, largemouth bass, chain pickerel, and yellow perch are found throughout the river. Table 5-4 lists fish species known to inhabit the Presumpscot River in the vicinity of the Project.

Table 5-4: Fish Species of the Presumpscot River

Scientific Name	Common Name
Anguilla rostrata	American eel
Castostomus commersoni	White sucker
Lepomis gibbosus	Pumpkinseed
Micropterus dolomieui	Smallmouth bass
Micropterus salmoides	Largemouth bass
Pomoxis nigromaculatus	Black crappie
Notemigonus crysoleucas	Golden shiner
Notropis bifrenatus	Bridle shiner
Notropis cornutus	Common shiner
Semotilus corporalis	Fallfish
Fundulus diaphanus	Banded killifish
Esox niger	Chain pickerel
Apeltes quadracus	Fourspine stickleback
Ameiurus nebulosus	Brown bullhead (hornpout)
Perca flavescens	Yellow perch
Morone americana	White perch
Salmo salar	Atlantic salmon
Salvelinus frontinalis	Brook trout
Salmo trutta	Brown trout

Source: Kleinschmidt 1999

The cold water fishery, which exists primarily due to annual stocking of brown trout, brook trout, and landlocked Atlantic salmon, occurs mostly in the upper reaches of the Presumpscot River from

the Eel Weir Project bypass downstream to the Gambo Project, both of which are upstream of the Saccarappa Project. MDIFW also stocks some of the larger Presumpscot River tributaries and the tailrace of the Mallison Falls Project, located just upstream of the Saccarappa Project. Limited natural reproduction of landlocked Atlantic salmon, brown trout, and brook trout have been reported in the Presumpscot River and its tributaries, although the exact extent is not known. Limited natural reproduction of salmonid species (i.e., landlocked salmon, brown and brook trout) has been reported in the Presumpscot River and its tributaries. In addition, drop down adult landlocked salmon originating from Sebago Lake have also been observed in the Presumpscot River (Kleinschmidt 1999).

Overall, the recreational freshwater fishery resources of the Presumpscot River are rated "high value" by the MDIFW. In assigning a value (low, moderate, high) to a fishery, the MDIFW considers the quality and availability of fish habitat, water quality, size of the watershed, and fish communities (including recruitment, forage base, and natural reproduction) present in the watershed. In the 1982 Inland Fisheries River Management Plan, MDIFW ranks the lower section of the Presumpscot River that encompasses the Saccarappa Project as "medium" for habitat quality, "low" for fishing quality and "high" for natural reproduction (Kleinschmidt 1999). This is likely due to the developed nature of the lower end of the Saccarappa Project impoundment.

A baseline fish survey was conducted in support of relicensing in 1997. Methods used in the 1997 survey included boat electrofishing, trap nets, minnow traps, and experimental angling. Numbers of game and panfish species collected in the Saccarappa Project impoundment were relatively low. A total of 331 fish representing ten species were collected in the Saccarappa Project impoundment. Golden shiner was the most abundant species, representing 28.4% of the catch. American eel (18.1%) and pumpkinseed (16.9%) were the next most abundant species collected. Forage species (cyprinids and white sucker) represented 44.7% of the catch, and panfish (yellow perch, pumpkinseed, and brown bullhead) accounted for 18.1% of all fish captured. Smallmouth bass comprised 10.6% of the catch. Based upon the size distribution of individual fish, recent reproductive success can be assumed for all species collected except brown trout and white sucker, of which only adults were captured. Smallmouth bass in samples ranged in length from 83 mm to 236 mm. Pumpkinseed ranged in length from 47 mm to 152 mm. American eel ranged in length from 140 mm to 660 mm (Kleinschmidt 1999). Warren has no reason to assume the composition of fish species within the Saccarappa Project impoundment has altered, except for the population of eels due to the construction of an eel passage facility (see below for further discussion). Table 5-5 presents species and number of fish collected at the Saccarappa Project.

Table 5-5: Species and Quantity of Fish Collected at Saccarappa

Common Name	Impoundment	Bypass Reach and Tailrace
American eel	60	181
Landlocked Atlantic salmon	0	0
Burbot	0	0
Brook trout	0	1
Brown trout	19	5
Blacknose dace	0	2
Chain pickerel	9	0
Golden shiner	94	0
Brindle shiner	0	0
Common shiner	0	5
Fallfish	21	3
White sucker	33	3
Brown bullhead	3	0
Banded killifish	0	0
Fourspine stickleback	0	0
Pumpkinseed	56	6
Smallmouth bass	35	136
Largemouth bass	0	1
Yellow perch	1	0
TOTAL	**331**	**343**
Total Species	**10**	**10**

Source: IA and DE&S 1998

In addition to a baseline fisheries survey, Warren performed a near shore spawning habitat assessment for smallmouth bass within the impoundments of the Warren Projects on the 12-mile reach of the Presumpscot River between Dundee and Saccarappa Projects. The spawning habitat assessment identified a total of 29 distinct near shore smallmouth bass spawning habitats in the Saccarappa Project impoundment. Of the Saccarappa Project identified habitats, 2% were considered high quality, 19% were considered medium quality, 72% were considered low quality, and 7% were not suitable (IA and DE&S 1998).

5.3.2.2 Proposed Conditions

The resident fish population is not expected to be impacted with the removal of the spillways. The removal of the spillways may enhance the resident fish population with natural connectivity of the river.

5.3.3 Catadromous and Anadromous Species

5.3.3.1 Existing Conditions

Anadromous Species

The lower Presumpscot River (downstream of Cumberland Mills Dam) has been open to anadromous species (primarily alewife and a few shad) with implementation of fish passage facilities at the Smelt Hill Dam from 1990 on. Smelt Hill Dam, including its fish passage facility, was severely damaged by flooding in 1996 and subsequently fully removed in 2002, allowing for passage of anadromous fish at certain river flows and tidal conditions. Table 5-6 summarizes anadromous fish passed upstream at the Smelt Hill Dam, 1994-1996.

Table 5-6: Anadromous Fish Passage at Smelt Hill Dam, 1994-1996

Year	Fish Lift Operational Period	River herring (blueback herring and alewife)	American shad	Atlantic salmon
1994	No data	Approx. 27,000	12	0
1995	May 1 to June 21	27,313	1	0
1996	May 3 to June 20	5,322	31	0

Source: CMP 1995, CMP 1996

The fishway at Cumberland Mills dam, just downstream of the Saccarappa Project, began operating on May 1, 2013. Fish passage at Cumberland Mills was designed to meet the standards set by the MDIFW. These standards were developed to ensure safe and effective passage for blue-back herring, alewives, shad, and American eel. The Cumberland Mills fishway has a design capacity to pass least 200,000 river herring and 20,000 shad annually.

Counting of fish species is not required at the Cumberland Mills Dam; therefore exact numbers are not known, however fishway effectiveness testing occurred at the Cumberland Mills Dam in the freshet channel fishway in 2013 (Stage 1), 2014 (Stage 2A) and 2015 (Stage 2B). A summary of each effectiveness test is provided below.

Anadromous species did occur historically in the Presumpscot River, but historic populations and precise distribution within the basin are unknown. The falls that occur on the river, including the

Saccarappa Falls, may have restricted the upstream migration of some of these species (shad, river herring and alewife).

The State stocks brook trout, brown trout, and landlocked Atlantic salmon in the Presumpscot River to support a put-and-take fishery. Landlocked salmon are not protected as a listed species (USFWS 2012a). Salmonids are typically stocked each year between the Eel Weir dam and Gambo tailrace in the following quantities:

- Brook trout 1,600 fish
- Brown trout 3,500 fish
- Landlocked Atlantic Salmon 400 fish

The Little River, a tributary to the Presumpscot River that flows into the Saccarappa Project impoundment, has been reported to support wild trout populations. Trout stocking likely occurs in this tributary (Louis Berger 2001).

Cumberland Mills Fishway Effectiveness Testing

The results of the 2013 effectiveness testing indicated that as of the inspection date (1) all elements of the required downstream fish passage facilities were constructed and operating as designed; (2) flow measurements were being recorded on a daily basis during the upstream anadromous fish migration season; (3) the depth of water in the plunge pool downstream of the mechanical gates exceeded the requirements; and (4) that there were no visual indications of anadromous fish or eels becoming stranded or injured as they migrated past the freshet channel dam.

The results of the 2014 effectiveness testing indicated that fish were not observed congregating outside the entrance to the fishway, indicating that the fish were not delayed at they attempted to enter the fishway. There were no fish observed at the barrier dam or near the Obermeyer dam, indicating that fish did not bypass the entrance to the fishway and attempt to migrate upstream by means other than the fishway. The number of river herring exiting the fishway was estimated by counting fish passing by the exit end camera for 10 minutes of every daylight hour of each day from May 6 through June 15. The estimated number of fish exiting the fishway was derived by extrapolating the 10 minute counts by the total daylight hours of each day and the total number of days from May 6 through June 15. The estimated total number of river herring that exited the fishway in 2014 was 9,300. Warren attempted to estimate the number of fish entering the fishway, however, the effort was not successful as there was significantly less light at the fishway entrance, the bubbles created by the cascading flow of water over the baffles just upstream of the entrance inhibited the viewing and counting process, and the rapid movement of fish entering and exiting the fishway entrance at the same time made it impossible to generate an accurate count of the number of fish entering the fishway. No shad were observed at the entrance, inside the entrance or at the exit end of the Cumberland Mills fishway in 2014.

The 2015 effectiveness testing report is not available for inclusion in this Surrender Application. The deadline for submission of the 2015 effectiveness testing report is December 31, 2015. Refer to Appendix K for a copy of the 2013 and 2014 effectiveness testing reports.

Catadromous Fish

The American eel is a catadromous (*i.e.*, migrates to the ocean to spawn) species with a complex life cycle that includes both freshwater and marine life stages. American eel are relatively abundant in the Presumpscot River in the vicinity of the Project and are able to reach Sebago Lake where a fishery for adult eels has existed (Kleinschmidt 1999). As discussed, a baseline fisheries survey was conducted at the Saccarappa Project in June 1997. American eels were found in both the tailrace and the Project impoundment. A concentrated fishery for elvers exist downstream of the Saccarappa Project (Louis Berger 2001).

The FERC order issuing the 2003 license required the construction of eel passage facilities at the Saccarappa Project. On April 3, 2008, and supplemented on February 9, 2009, Warren filed its final upstream eel passage plan. Upstream eel passage at the Saccarappa Project is present in two locations: 1) the eastern spillway and 2) the western spillway. Both passage facilities consist of stainless steel ramps with a permanently attached cover. Both ramps have type 7020 Enkamat affixed to half the ramp surface and a tapered cone substrate affixed to the other half of the ramp surface. Monitoring of passage was conducted in 2007 for a total of 54 days. Both ramps effectively passed eels during the passage season as demonstrated by the monitoring indicating the eastern ramp passing a total of 358 eels and the western ramp passing 1,014 eels. Appendix L contains eel passage design plans and 2014 daily eel monitoring and collection results. These eel passage facilities continue to operate during upstream eel passage season.

Downstream eel passage at the Warren Projects consists of station shutdowns for eight hours per night for eight weeks (September 1 through October 31) during the fall migration period for silver eels. Station shutdown occurs at approximately sunset and remains offline for eight hours thereafter. During the shutdowns, all inflow to the Saccarappa Project is spilled over the dam spillways and pond levels are monitored.

5.3.3.2 Proposed Conditions

Anadromous Species

The proposed Saccarappa fishway will make the five mile section of river up to Mallison Falls and all of the tributaries accessible to migratory anadromous fish. The effects of removing the Saccarappa Project spillways on the production potential of the target species of interest (American shad and river herring) were analyzed previously in 2001 in the Impact Assessment of the Removal of the Little Falls, Mallison Falls, and Saccarappa Dams along the Presumpscot River Final Report (Louis Berger 2001). One option analyzed examined the removal of solely the Saccarappa Project. The analyzed option of the Saccarappa Project included removal of both the eastern and western

spillways. The estimates looked at habitat units rather than hydrology. The potential effects of spillway removal on American shad and river herring are summarized in Tables 5-7 through 5-8, below.

Table 5-7: Estimated Potential American Shad After Removal of the Saccarappa Spillways

River Section	Suitable River Length (miles)	Average Wetted Width (feet)	Area (Acres)[3]	Production per Acre[4]		Potential Adult Returns	
				Min.	Max.	Min.	Max.
Mainstream Presumpscot	5.0	128[1]	78	25	142	1,950	11,076
Little River	5.0	40[2]	24	25	142	600	3,408
Totals		n/a	102	n/a	n/a	2,550	14,484

Source: Louis Berger Group 2001

[1] Based on average post-dam wetted width at the 5 Saccarappa transects (Louis Berger Group 2001).
[2] Based on observed width of Little River at the Route 202 bridge, approximately 2 miles upstream from the river mouth.
[3] River length (in feet) times average wetted width, divided by 43,560 ft^2
[4] Based on Connecticut River shad production from St. Pierre 1979.

Table 5-8: Estimated Potential River Herring After Removal of the Saccarappa Spillways

River Section	Suitable River Length (miles)	Average Wetted Width (feet)	Area (Acres)[3]	Production per Acre[4]	Potential Adult Returns
Mainstem Presumpscot	5.0	128[1]	78	1,700	132,600
Little River	5.0	40[2]	24	1,700	40,800
Totals		n/a	102	n/a	173,400

Source: Louis Berger Group 2001

[1] Based on average post-dam wetted width at the 5 Saccarappa transects (Louis Berger Group 2001).
[2] Based on observed width of Little River at the Route 202 bridge, approximately 2 miles upstream from the river mouth.
[3] River length (in feet) times average wetted width, divided by 43,560 square feet
[4] Based on alewife production for a Maine Lake, as reported by Walton (1987)

These estimates of potential production indicate that spillway removal coupled with the double Denil fish ladder facility will increase numbers of target species. Potential for American shad and river herring are high because the entire Saccarappa Falls reach is considered suitable habitat for American shad and river herring.

The removal of the eastern and western spillways combined with the construction of a double Denil fish ladder will further enhance the anadromous species population in the Saccarappa Falls impoundment.

Catadromous

Removal of the spillways is expected to favorably impact eel migrations in the lower river as it eliminates an obstacle to passage. Eels are agile climbers, with this ability varying with the eel size and the obstruction's characteristics. The three most important attributes for eel passage over existing barriers (i.e., dams) include: (1) rough surfaces for eels to climb, (2) wetted surfaces or gentle flows over the barrier, and (3) inclined or short vertical barriers (Solomon and Beach 2004). American eels are expected to be able to pass the natural falls after the removal of the eastern and western spillways. Downstream eel passage will be provided by the natural flow of the waterway.

5.3.4 Mussels

The aquatic resources species that would be most affected by removal of the eastern spillway would be any of the mussel species that have been observed in the Saccarappa Project area. The eastern elliptio mussel and eastern floater mussel are the most common mussels found throughout the Presumpscot River. Negative impacts to mussels are based on the possibility that there could be mortality for mussels directly related to the dewatering of mussel beds along the shoreline and the inability of mussels to move when their habitat has been dewatered. Mortality will be limited throughout the impoundment by the lowered water levels, as the drop in impoundment level will vary based on how close one is from Saccarappa Falls.

Warren contacted MDIFW on May 12, 2015 to ascertain whether any threatened or endangered species of freshwater mussels existed within the Project area. Communications with John Perry, Environmental Review Coordinator at MDIFW confirmed that there are no mussels of concern located within the area. A summary of communications is included in Appendix D.

5.4 Wildlife Resources

5.4.1 Existing Conditions

Wildlife habitat prevails within the riparian zone of the Presumpscot River. The interface between land and water provides edge habitat, benefitting species utilizing aquatic and terrestrial habitats. This riparian zone also provides wildlife with undeveloped travel corridors. Table 5-9 provides a summary of wildlife grouped by habitat cover type potentially occurring in the Saccarappa Project vicinity.

Table 5-9: Potential Wildlife Resources in the Project Area

Class	Species
Mixed Hardwood Forest	
Mammalian	Deer mouse, chipmunk, red squirrel, smoky shrew, northern flying squirrel, woodland jumping mouse, coyote, gray and red fox, porcupine, southern red-backed vole, red squirrel, snowshoe hare, white-tailed deer, black bear, moose
Avian	Red-eyed vireo, American redstart, veery, hairy woodpecker, eastern wood peewee, ruffed grouse, white-throated sparrow, dark-eyed junco, purple finch, northern water thrush, mourning warbler, Canada warbler, black-throated blue warbler, Tennessee warbler, hermit thrush, red-tailed hawk, broad-winged hawk, common raven, black-capped chickadee, brown creeper, golden-crowned kinglet, oven bird, northern oriole, cedar waxwing, wood thrush, wild turkey
Amphibian	Redback salamander, northern dusky salamander, blue-spotted salamander, Jefferson salamander, gray treefrog, spring peeper, wood frog, American toad
Reptilian	Eastern garter snake, eastern milk snake, ringneck snake, redbelly snake, wood turtle
Coniferous Forest	
Mammalian	Fisher, deer mouse, red squirrel, smoky shrew, longtailed shrew, southern red-backed vole, gray squirrel, northern flying squirrel, woodland jumping mouse, snowshoe hare, coyote, white-tailed deer, black bear, moose, bobcat, porcupine
Avian	Warblers, evening grosbeak, blue jay, golden-crowned kinglet, solitary vireo, pine grosbeak, red crossbill, boreal chickadee, pileated woodpecker, hairy woodpecker, black-capped chickadee, red-breasted nuthatch, purple finch, winter wren, hermit thrush, dark-eyed junco, Swainson's thrush, pine siskin
Amphibian	Wood frog, redback salamander, American toad
Reptilian	Eastern garter snake, eastern milk snake, redbelly snake, ringneck snake

Class	Species
Shrub/successional field	
Mammalian	Striped skunk, field mouse, red fox, eastern mole, meadow jumping mouse, meadow vole, woodchuck, white-tailed deer
Avian	American robin, short-cared owl, American tree sparrow, eastern screech owl, eastern bluebird, red-tailed hawk, vesper sparrow, savannah sparrow, mourning warbler, Tennessee warbler, barn swallow, brown-headed cowbird, eastern meadowlark, American crow, American kestrel
Reptilian	Redbelly snake, smooth green snake, eastern garter snake, eastern milk snake
Palustrine forested wetlands	
Mammalian	White-tailed deer, moose, raccoon, water shrew, snowshoe hare, red squirrel, northern flying squirrel
Avian	Northern saw-whet owl, belted kingfisher, red-eyed vireo, American redstart, red-bellied woodpecker, pileated woodpecker, yellow warbler, ruffed grouse, wood duck, black capped chickadee
Amphibian	Spring peeper, spotted salamander, wood frog, pickerel frog
Reptilian	Eastern garter snake, painted turtle
Palustrine scrub/shrub wetlands	
Mammalian	Raccoon, mink, moose, red squirrel, weasel, snowshoe hare, short-tailed shrew
Avian	American woodcock, common yellow throat warbler, common snipe, belted kingfisher, yellow warbler, blackburnian warbler, mourning warbler, northern waterthrush, southern red backed vole
Amphibian	Green frog, gray tree frog, American toad, spring peeper, redback salamander
Reptilian	Eastern garter snake, redbelly snake

Class	Species
Palustrine emergent wetlands	
Mammalian	Water shrew, meadow jumping mouse, muskrat, beaver, river otter, meadow vole, striped skunk, moose, raccoon, red fox
Avian	Great blue heron, barn swallow, red-winged blackbird, swamp sparrow, song sparrow, common yellow throat warbler, common grackle, common snipe, belted kingfisher, spotted sandpiper, American black duck, mallard, common loon, ring-necked duck, red-breasted merganser
Amphibian	American toad, spring peeper, northern leopard frog, pickerel frog, bullfrog
Palustrine unconsolidated bottom	
Mammalian	Beaver, muskrat
Amphibian	Bullfrog
Reptilian	Snapping turtle, painted turtle

Source: S.D. Warren. 1999

5.4.2 Proposed Conditions

Existing wildlife species within the Saccarappa Project are not expected to be adversely impacted by the removal of the spillways. The removal of the spillways will allow for natural river connectivity. It is expected that wildlife species will easily adapt to the small lowering of water levels.

Wildlife species are not expected to be impacted by removal of the spillways therefore no mitigation is necessary.

5.5 Botanical Resources and Wetland Resources

5.5.1 Botanical Resources

5.5.1.1 Existing Conditions

The Presumpscot River is located in the Northern Hardwoods Ecoregion of northern New England. Fertile loamy soils, suitable moisture conditions, and elevations below 2,500 feet are abiotic characteristics typical of this Ecoregion and reflect conditions found in the vicinity of the Saccarappa Project (DeGraaf and Rudis 1986).

The lower segment of the Presumpscot River, downstream from the Westbrook city line, is dominated by urban/industrial and residential development within the City of Westbrook. The Saccarappa Project is located in this reach of the river and has limited vegetative resources relative to the middle and upper Presumpscot River reaches. There are, however, narrow stretches of naturally vegetated riparian habitat extending along the river banks, including some isolated upland forest stands and palustrine wetlands. These naturally vegetated areas are concentrated upstream from the Saccarappa Project (MacDonald, et al. 1994).

Warren conducted a vegetative cover study in support of the relicensing in the vicinity of the Saccarappa Project in 1997 (Kleinschmidt 1999). The river is flanked by a mostly forested landscape consisting of mixed hardwood forest and coniferous forest with smaller areas of palustrine forested wetlands. The exception of this forested landscape is the Project and other buildings located in the City of Westbrook. The major cover types in the Saccarappa Project area are discussed in further detail below:

<u>Mixed Hardwood Forest</u>

The mixed hardwood forest cover type is characterized by mature second-growth trees. Dominant tree species are red oak, red maple, sugar maple, American beech, black cherry, yellow birch, and white pine. Subdominant species include quaking and big tooth aspen (poplar), white ash, eastern hemlock, gray birch, white birch, red pine, and basswood. The shrub/sapling stratum in this cover type is dominated by saplings of the more shade-tolerant overstory species such as beech and hemlock, as well as shrubs and small trees such as witch-hazel, striped maple, beaked hazelnut, hobblebush, and eastern hophornbeam. Typical herb layer species are Canada mayflower, bracken fern, bunchberry, purple trillium, wild sarsaparilla, common wood-sorrel, and spinulose woodfern. Shade intolerant species such as gray birch, white birch, and quaking aspen are common along the immediate river bank, but are only a minor component of the forest interior.

<u>Coniferous Forest</u>

Coniferous forest cover type in the area is characterized by mature, relatively even-aged forest stands dominated by white pine and eastern hemlock. White pine-dominated areas consist both of plantations as well as historical crop and pasture lands which naturally seeded-in to pine. Hemlock

dominated coniferous forests occur primarily in areas which were historically logged, and include some of the steeper areas and slopes with northern aspects. Subdominant tree stratum species in the coniferous forests include northern white cedar, red pine, balsam fir, and red spruce. The understory is sparse and contains primarily hemlock. Wintergreen, starflower, and Canada mayflower are found in the herb stratum.

Shrub/Successional Old Field

The shrub/successional old field cover type occurs sporadically in the area and occurs primarily in areas of abandoned farm fields and maintained utility and railroad right-of-ways. Dominant woody species include quaking aspen, white birch, gray birch, white pine, common juniper, and staghorn sumac. Dominant herbaceous species in this cover type include Queen Anne's lace, Canada goldenrod, bracken fern, common milkweed, New England aster, witch grass, and hawkweed.

Agriculture/Maintained Field

The agriculture/maintained field cover type occurs sporadically in the area and consists of corn, hay, market vegetables, and a variety of row crops as well as pasture for livestock. Typical species in pastures are grasses including Timothy grass, little bluestem, blue-joint grass and fescues and broad-leaved herbs including clover, New England aster, common lamb's-quarters, common milkweed, wild oats, witch grass, common strawberry, common goldenrod, Queen Anne's lace, and thistle.

5.5.1.1 Proposed Conditions

Existing botanical species within the Saccarappa Project are not expected to be adversely impacted by the removal of the spillways. The water level in the river segment from Saccarappa Falls to Mallison Falls will be approximately 4.5 feet under average flow conditions. It is expected that botanical species will adapt to the lowering of water levels.

Botanical species are not expected to be impacted by removal of the spillways.

5.5.2 Wetland Resources

5.5.2.1 Existing Conditions

Wetlands are generally defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Most formal wetland definitions emphasize three primary components that define wetlands: the presence of water, unique soils, and hydrophytic vegetation. The U.S. Fish and Wildlife Service (USFWS) (Cowardin et al. 1979) defines wetlands as follows:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports*

predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Riparian habitats are areas that support vegetation found along waterways such as lakes, reservoirs, rivers, and streams. The boundary of the riparian area and the adjoining uplands is gradual and not always well defined. However, riparian areas differ from the uplands because of their high levels of soil moisture, frequency of flooding, and unique assemblage of plant and animal communities (Virginia State University 2000). These habitats can range from mature forests to areas covered by emergent vegetation and shrubs. Riparian habitats are unique because of their linear form and because they process large fluxes of flow energy and materials from upstream systems (Mitsch and Gosselink 1993). Riparian areas and the associated vegetation provide important habitat for wildlife and may contain a higher number of species, both plant and animal, than surrounding upland areas due to the proximity to water. These areas may be important avian habitats for resident and migratory birds. Riparian habitats typically function as travel corridors for migratory wildlife species.

During the growing season in 1997, Warren completed a vegetative cover type mapping study in the study area as part of relicensing of the Warren Projects. The landward boundary of the cover typing extended from the edge of the Presumpscot River to a variable distance of between 300 to 500 feet horizontally from the river, terminating at logical landmarks, such as roads and railroad tracks (Kleinschmidt 1999). Interpretation of aerial photography was used to delineate between different cover types and ground-truthing of the mapped cover types was completed in June, 1997. As part of the study, all wetland cover types were ground-truthed, as were at least 20% of the upland cover types (Kleinschmidt 1999).

In August 2015, Mark Hampton Associates, Inc. conducted an assessment of wetland resources due to the proposed lowering of the Saccarappa impoundment. This assessment included identification of all existing wetlands located within the Saccarappa impoundment and the portion of the Little River impounded by the Saccarappa Falls. The report details existing wetland conditions within the Project Area. Refer to Appendix M for the "Assessment of Wetland Resources due to Lowering of Impoundment".

5.5.2.2 Proposed Conditions

There are two categories of wetland impacts associated with the Saccarappa fishway installation; those due to proposed modifications at the Saccarappa Falls site, and those related to lowering of the water level in the river between Saccarappa Falls and Mallison Falls.

The first category of potential impacts at the Saccarappa Falls site includes both temporary and permanent impacts. The removal of the eastern spillway, western spillway and ancillary structures

in the forebay channel is a positive, permanent impact. Removal of these structures will expose a large area of benthic habitat across the entire river that does not exist today. The only potentially negative permanent impact is related to the filling of the tailrace channel. Technically this man-made channel with concrete walls and smooth bedrock bottom is not riverine habitat but it is hydraulically connected the river. The proposed fishway is to be constructed on the fill to be placed in the tailrace channel.

Temporary impacts at Saccarappa Falls are all related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the project. Temporary wet roads that will double as cofferdams will be needed to gain access to the dam structures for demolition with excavators and trucks. Fortunately, there is an existing wet road upstream of the dam that was left in place the last time the dam/spillway was repaired. The existing wet road will be utilized for this project and will be removed as the dam is removed. Removal of that existing wet road will also be a permanent positive impact.

The second category of potential wetland impacts is related to the lowering of the water level in the section of river between Saccarappa Falls and Mallison Falls. A bathymetric survey of the river area just upstream of the existing spillways was conducted in 2013 and indicates the lowest point of the bedrock upstream of the eastern spillway is at elevation 64.0' +/-. The current elevation of the top of the dam is 70.0' +/-. The future elevation of the water in the river after the dam is removed is dependent upon the distance upstream of the dam and the flow in the river. The maximum potential drop in water level in the section of river between Saccarappa and Mallison Falls under average flow conditions is about 4.5 feet.

The physical size and characteristics of the river upstream of the existing Saccarappa Project are not much different today than they were when the river was free flowing prior to construction of the first dam at the Saccarappa Falls site. The existing dams only raised the water level about 4.5 feet. The physical size and footprint of the river that exists today is similar to that which existed prior to the construction of dams at this site.

The study conducted by Mark Hampton Associates, Inc. in August 2015 identifies the impact of the proposed drawdown on these wetlands. Refer to Appendix M for the "Assessment of Wetland Resources due to Lowering of Impoundment". In summary, the report concluded that the proposed fishway installation and associated lowering of the impoundment water level by approximately 4.5 feet under average flow conditions after spillways removal would result in no net loss of wetlands within the impoundment area. In fact, the report indicates that the proposed work may result in a slight increase in wetland area at locations within the area where surface water tributaries empty into the impoundment.

The report states that at drawdown, wetlands located adjacent to the impoundment will migrate with the lowering of water levels. Wetlands associated with streams, brooks, swales and other tributaries emptying into the impoundment will not be affected by the drawdown, as they derive their primary source of water from the stream, brook, or swale and not from the impoundment. After the drawdown the wetlands at these locations will expand to meet the new shoreline.

In summary, most of the wetland impacts will only exist for a short period of time during construction. Potential wetland impacts related to the lowering of the water level in the section of river between Saccarappa Falls and Mallison Falls are negligible because of the relatively small change in water level in the river pre- and post-dam removal.

5.6 Rare, Threatened, and Endangered Species

Warren consulted with the MDIFW, Maine Department of Agriculture, Conservation and Forestry (MDACF) and USFWS regarding federal and state listed rare, threatened and endangered species potentially occurring within or near the Saccarappa Project site. An assessment was completed using USFWS' Information, Planning and Conservation System. Rare, threatened, and endangered species are discussed below under aquatic species, terrestrial species, and botanical species. RTE correspondence is included in Appendix D.

5.6.1 Aquatic Species

Warren consulted with the USFWS and MDIFW on RTE species potentially occurring within or near the Saccarappa Project site. An assessment was completed using USFWS's Information, Planning, and Conservation (IPaC) system. No aquatic RTE species are expected to occur within or near the Saccarappa Project (USFWS 2013).

American eel, a state species of special concern, is present in the Presumpscot River watershed and MDMR has management authority over this catadromous species (MDIFW 2013).

Warren contacted the MDIFW on May 12, 2015 to ascertain whether any threatened or endangered species of freshwater mussels existed within the Project area. Communications with John Perry, Environmental Review Coordinator at MDIFW confirmed that there are no mussels of concern located within the area. A summary of communications is included in Appendix D.

5.6.2 Terrestrial Species

According to consultation and assessment, it was determined that occurrences of the New England cottontail rabbit (*Sylvilagus transitionalis*), Northern long-eared Bat (*Myotis septentrionalis*) and upland sandpiper (*Bartramia longicauda*) have been mapped within and in the vicinity of the project area. The New England cottontail rabbit is listed federally as a candidate species and as a state endangered species, the Northern long-eared bat is listed federally as a threatened species, and the upland sandpiper is listed as a state endangered species. In addition to these species, the

Bald Eagle, a federally protected species and state species of special concern is presumed to use the river for foraging. An assessment of the impact of the proposed project to each of these species is detailed below. Documentation and results of consultation with MDIFW regarding the presence of mussels within the area is also included in Appendix D.

5.6.2.1 New England Cottontail Rabbit

According to the MDIFW, there have been known occurrences of the New England cottontail rabbit within Cumberland County, specifically within Westbrook, Gorham, and Windham. The habitat of the New England cottontail consists predominantly of native shrub lands, wetlands and young forests. There are riverine wetlands located adjacent to the Saccarappa impoundment that will be affected by the proposed project. The proposed work will result in both temporary and permanent impacts within the Project area. These impacts can be divided into two categories; impacts at the site and impacts to the Saccarappa impoundment that result from the removal of the spillways.

Proposed permanent impacts at the site include the removal of the existing spillways and appurtenant structures and installation of nature-like fish passage at the Saccarappa Falls site, while proposed temporary impacts at the site are associated with the use of temporary cofferdams and wet roads that will be used during the spillways removal. The specific locations of these impacts are detailed in the design drawings located in Appendix G. The area adjacent to the Project site is industrial and not suitable as New England cottontail habitat, thus these impacts will not have a detrimental effect on cottontail habitat. In fact, the removal of the spillways will benefit the local environment by returning that area to a more natural state.

The second category of potential impacts to the area results from the lowering of the water level in the section of river between Saccarappa Falls and Mallison Falls. The potential drop in water level in the river upstream of the dam averages approximately 4.5 feet under average flow conditions. The magnitude of the change in water level is dependent on the flow conditions in the river. Potential wetland impacts related to the lowering of the water level in the river upstream of the Saccarappa Falls are likely to be negligible because of the relatively small change in water level in the river pre and post dam removal. The work will not result in significant benefit or harm to coastal and inland wetlands, as rather the riverine wetlands will migrate with the change in water level; hence there will be no detrimental impact to existing cottontail habitat.

In summary, most of the impacts are actually temporary and will only exist for a short period of time during construction. Potential wetland impacts related to the lowering of the water level in the river upstream of the Saccarappa Falls are likely to be negligible because of the relatively small change in water level in the river pre and post dam removal. Thus, the project will not result in significant benefit or harm to coastal and inland wetlands.

5.6.2.2 Northern Long-Eared Bat

According to the USFWS, the Project area is located within the range of the northern long-eared bat. During the winter the northern long-eared bad hibernates in caves and mines, while during the summer they roost underneath bark and in cavities and crevices of both live and dead trees. Their feeding ground consists primarily of forested areas. There are vegetated wetlands located adjacent to the Saccarappa impoundment that may be affected by the proposed work.

The proposed potential drop in water level associated with the removal of the Saccarappa spillways in the river upstream of the spillways is approximately 4.5 feet. The magnitude of the change in water level is dependent on the flow conditions in the river. As a result of this drop existing wetlands will migrate with the water level, hence existing wetland impact related to this work is temporary. As the water level drops, the exposed area adjacent to the river will become vegetated, hence increasing the overall amount of vegetation located adjacent to the water. As the northern long-eared bat roosts and feeds in vegetated and forested areas, the proposed work may increase the amount of habitat available to the northern long-eared bat in the area. The work will not result in any detrimental impact to the potential habitat of the northern long-eared bat and may increase the amount of habitat found within the area.

5.6.2.3 Upland Sandpiper

According to the MDIFW, there have been documented occurrences of the upland sandpiper within the Project area. The upland sandpiper primarily breeds in large grasslands and barrens along the coast. They occasionally breed in bogs and open peat lands. The population of upland sandpipers has decreased as grassland habitat has become fragmented by development, and/or reverted to forests. The only upland sandpiper habitat located within the project that will be affected by the proposed project are wetlands located adjacent to the Saccarappa impoundment.

The proposed removal of the spillways and appurtenances will not have a detrimental impact on the habitat of the upland sandpiper. As previously discussed, the proposed work will result in two categories of impacts within the area; impacts at the site and impacts to the Saccarappa impoundment that result from the removal of the spillways. The area adjacent to the Project site is industrial and not suitable as upland sandpiper habitat, thus these temporary and permanent impacts will not have a detrimental effect on upland sandpiper habitat. The removal of the spillways will, in fact, benefit the local environment by returning that area to a more natural state. The second category of potential impacts involves the lowering of the water level in the Saccarappa impoundment as a result of the spillways removal. This potential drop will average approximately 4.5 feet and is dependent on the river flow. The proposed work will not result in significant benefit or harm to coastal and inland wetlands, as the riverine wetlands will migrate with the change in water level.

The MDIFW suggested in response to the original Surrender Application dated December 31, 2013, that ground disturbance within and adjacent to sandpiper nesting habitat should not occur between May 1 and July 31. There are no known upland sandpiper nests located within the Project area, and no construction is proposed upstream of the immediate Saccarappa Falls site (Design Drawings, Appendix G); hence no ground disturbance is proposed that would affect upland sandpiper habitat within that time frame. Thus, the work will not result in significant benefit or harm to upland sandpiper habitat.

5.6.3 Botanical Species

Warren consulted with the MDACF on state-listed RTE species potentially occurring within or near the Saccarappa Project site. In consultation received from MDACF dated November 8, 2013, no state-listed rare botanical features are documented specifically within the Project area (MDACF 2013a).

Warren consulted with the USFWS on RTE species potentially occurring within or near the Saccarappa Project site. An assessment was completed using USFWS' Information, Planning, and Conservation (IPaC) system. According to consultation, the small whorled pogonia (Isotria medeoloides), a federally listed threatened species, may occur in the Project area (USFWS 2013). In addition to being listed federally, the small-whorled pogonia is also listed as endangered on the state level, however, is not expected to occur within the Project area per consultation with the MDACF (MDACF 2013a).

Warren conducted a RTE species study in the summer of 1997 in which the small whorled pogonia was included. This species was not observed in the Saccarappa Project area (Kleinschmidt 1999).

5.7 Historic and Cultural Resources

5.7.1 Background

The Presumpscot River has been used heavily throughout history as a water passage route between Casco Bay and Sebago Lake. The Cumberland and Oxford Canal, listed on the National Register of Historic Places (NRHP), extends along the western shore of the Presumpscot River from Sebago Lake to the Portland waterfront. The canal served as a major transportation route from 1820 to the 1870's, when the railroad made this means of transportation obsolete. The canal system includes the canal itself, the raised tow path, and a series of 27 locks. Today, although approximately 2.25 miles of the canal have been inundated, much of the canal and tow path are still intact and visible. Sections of the tow path are integrated with local recreational trails. Remains of the Cumberland and Oxford canal exist on the west side of the Saccarappa Project, some within close proximity of the river.

The Saccarappa Project site has been used for hydro-mechanical purposes to support a variety of manufacturing purposes since early settlement of the Westbrook area. The original Saccarappa Project was commissioned in 1887 by the Presumpscot Water Power Company, in which Warren had controlling interest. The Saccarappa Project was the first hydroelectric plant on the Presumpscot River and was later replaced by current Project facilities in 1907. The site has been used continuously providing power to the Warren mill and, at one point, the surrounding community.

The Saccarappa Project includes a powerhouse, equipment contained within the powerhouse, two concrete dam sections, a headgate structure, intake canal, forebay, and tailrace. The two-story powerhouse exterior has retained a high degree of architectural integrity, with few modifications having been made since original construction. Inside the powerhouse, much of the original equipment is still in use. Although parts have been replaced as necessary, the shells of the most major equipment remain. The dam, intake and outlet structures have undergone few modifications since the 1907 construction. The Saccarappa Project facilities including the dam, forebay, intake, tailrace, powerhouse, and historic period equipment are eligible for the NRHP as an example of early 20th century hydroelectric station design.

Archaeological surveys were conducted in support of Saccarappa Project relicensing. Phase I and II archaeological surveys were conducted on one site within the Area of Potential Effect (APE). This prehistoric site, site 8.20, is situated on the east side of the river downstream from Mallison Falls Dam. Site 8.20 is a large, complex, multi-component site. Site use spans the early Archaic to the early historic periods, with specific evidence for early Archaic, middle Archaic, late Archaic, early Ceramic, and early historic period occupations.

Under Project relicensing, Warren was required to develop a Historic Properties and Management Plan (HPMP). As specified in the Programmatic Agreement (PA) and summarized in the HPMP, Warren developed a plan for the protection of Sections 9 and 15 of the Cumberland and Oxford Canal as it relates to erosion. The HPMP also required the Warren to maintain and operate the Saccarappa Project as an historic property according to 36 C.F.R. Part 67, Guidelines for Rehabilitating Historic Properties (revised 1990), and applicable National Park Service Preservation Briefs (S.D. Warren 2004). The Maine State Historic Preservation Office (SHPO) and FERC must be notified prior to any proposed or contemplated undertaking that may adversely affect the Saccarappa Project, which would include the removal of the eastern spillway and associated actions related to the closing of the hydroelectric facilities. The PA also specifies that, in the event that FERC may authorize the decommissioning and removal of a Project for which a license has been issued (e.g., the Saccarappa Project), FERC will first consult with the SHPO, the Penobscot Indian Nation, the Advisory Council on Historic Preservation, and the Licensee (Warren) to consider alternatives to adversely affecting Historic Properties. The Licensee would

retain no obligations for any such Project under this Programmatic Agreement or subsequent HPMP.

5.7.2 Historic and Cultural Evaluations

Warren conducted a series of historic and cultural assessments for the areas of potential effect (APE) for the relicensing of its five FERC projects located on the Presumpscot River, including the Saccarappa Project. These assessments are identified below and were used to assess the impact of the proposed Saccarappa license surrender to cultural and historic resources within the APE for the Saccarappa Project.

- An Archaeological Phase 0 Study of the Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), and Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.
- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), and Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Bourque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places Roberts Janet E. Roberts and Ann G. Ball, 1997.

All studies were conducted during the relicensing of the Saccarappa Project in 2003. In 2013, Warren submitted documentation to surrender the Project license for Saccarappa. During the review process, FERC, at the recommendation of MHPC and the SHPO requested an historic survey of the island that bisects the Saccarappa Project in order to assess the presence of any historic structures and/or cultural significance. Warren determined that such a survey had not been completed as part of those previously listed. In August 2015, Warren contracted an archaeological consultant to conduct a Phase IA historic archaeological survey of the island. At the time of this application, the study is underway. Warren will make the results of the study available to FERC and parties listed on the Certificate of Service when it is ready.

The Project area has been evaluated for historic and cultural resources. This section details the evaluations that have occurred and identifies the impact of the proposed project on those resources.

5.7.3 Historic and Cultural Sites Located within the Project Area

One culturally significant site was identified within the Area of Potential Effect (APE) for the Saccarappa Project as being a candidate for listing on the National Register of Historic Places. Two historically significant sites were identified as necessitating remediation for erosion. The existing foundations of the historic Little River Aqueduct were also identified. This section of the Surrender Application includes a physical description of each site, description of the significance of each site and an assessment of the impact of the proposed drawdown on each site. Historically significant structures located at the Saccarappa Dam site are discussed in Section 5.7.4.

5.7.3.1 Site 8.20

Site 8.20 is located on the east side of the Presumpscot River downstream of the Mallison Falls dam within the town of Windham on property owned by Warren. Site 8.20 was discovered during the Phase I Archeological survey of Warren's Presumpscot River Hydroelectric Projects *(Wilson, 1998)* and measures approximately 75 meters in length by 30 meters in width. A Phase II Study of the site was also conducted (*Wilson and Bourque, 2000*). The site occupies both the high, level bench and the low terrace at the south end of the site. Figure 5-4 depicts the location of Site 8.20.

Site use spans the early Archaic to the early historic periods, with evidence of early Archaic, middle Archaic, late Archaic, early Ceramic and early historic period occupations. The site consists of a lower terrace, and an upper bench. The cultural materials collected from both terraces at Site 8.20 indicate that it is a multicomponent site, with occupation spanning the early Archaic to early Ceramic periods. Site 8.20 is distinguished by the strong horizontal separation of components, especially the early Archaic and early Ceramic period occupations. Early Archaic presence is distributed across the site, while early Ceramic presence is present in at the south end of the site only.

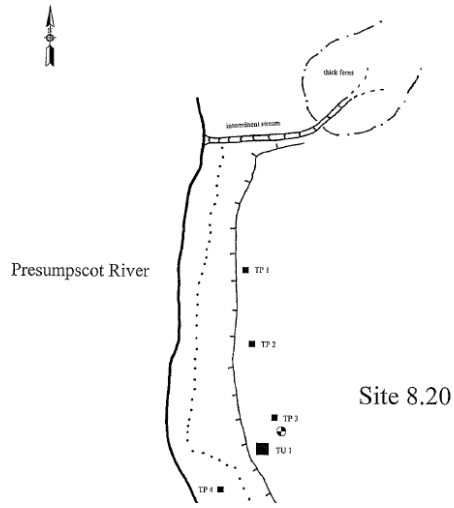


Figure 5-4: Location Map, Site 8.20

Site 8.20 is significant and eligible for listing on the National Register of Historic Places. Presently, the cultural material at the site is not eroding sufficiently to classify it as an emergency site, however in accordance with MHPC policy, Warren has inspected the site since 2011 annually to assess the

status of erosion. There has been no documented change in the stability of the area since the onset of inspection.

It is anticipated that the drawdown associated with the proposed removal of the Saccarappa spillways will benefit Site 8.20 by reducing the potential for long-term erosion. The proposed drawdown will lower the water levels in the impoundment by approximately 4.5 feet. The existing vegetation will migrate downslope and become established, stabilizing the new embankment. This will lessen the impact of erosion due to water flows, flooding and ice. Refer to Appendix F for an "Engineering Evaluation of Potential Soil Erosion and Sedimentation within the Saccarappa Impoundment", dated June 2015.

5.7.3.2 Sections 9 and 15 of the Oxford Canal

The Cumberland and Oxford Canal is a historic canal that extends along the western shore of the Presumpscot River between Sebago Lake and the Portland Waterfront. It is listed on the National Register of Historic Places. The canal served as a major transportation route during the mid- to late-1800s. It generally consists of canal bed through which water and boats moved, a raised tow path, and a series of 27 locks. The canal and tow path crossed the Little River on a constructed aqueduct. Although, approximately 2.25 miles of the canal are currently inundated with water, most of the canal and tow path are still intact and visible. In 1998, a Phase I survey of the Presumpscot River Projects was completed to identify historic areas of concern within the area of potential impact for the Warren owned hydrostations on the Presumpscot River *(Dinsmore and Riess, 1998).* This report identified two sections of the Cumberland and Oxford Canal, Sections 9 and 15 that contained areas at risk of erosion and undercutting. Section 9 is located approximately 1,020 feet downstream of the Mallison Falls Dam and Section 15 is located approximately 240 – 570 feet downstream of the Mallison Falls Dam. Figure 5-5 may be used to discern the location of Sections 9 and 15.

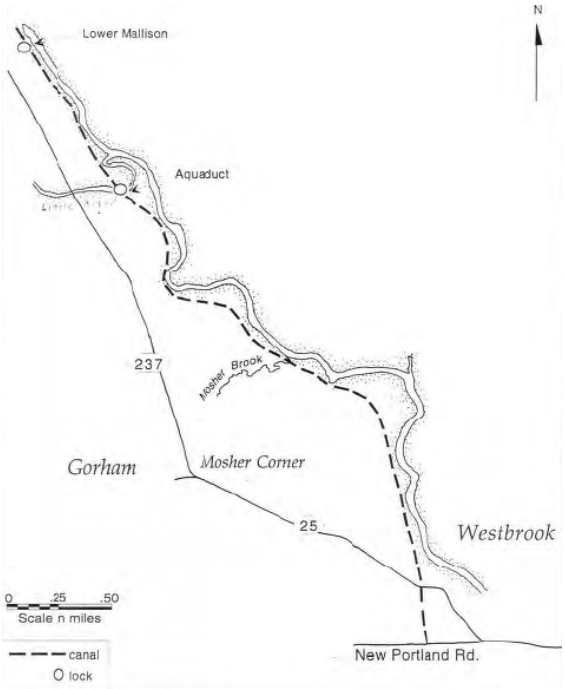


Figure 5-5: Location Map, Sections 9 and 15

During the 2003 relicensing for the Saccarappa Project, Warren was required to develop and implement a plan to protect the canal and tow path from future construction activity at the Saccarappa Project related to Project maintenance. Warren was also required to file and implement shoring plans for Sections 9 and 15 of the canal, as Sections 9 and 15 of the Oxford Canal were

identified as canal sites at risk for erosion located within the area of potential impact for the Saccarappa Project *(Dinsmore and Riess, 1998)*.

The implementation of the required shoring plans stabilized Sections 9 and 15, minimizing the risk of continued erosion in these areas. It is anticipated that the drawdown associated with the proposed removal of the Saccarappa spillways will benefit these sections by reducing the potential for long-term erosion. The proposed drawdown will lower the water levels in the impoundment by approximately 4.5 feet. The existing vegetation will migrate downslope and become established, stabilizing the new embankment. This will lessen the impact of erosion due to water flows, flooding and ice. Refer to Appendix F for an "Engineering Evaluation of Potential Soil Erosion and Sedimentation within the Saccarappa Impoundment", dated June 2015.

5.7.3.3 Little River Aqueduct

The Little River Aqueduct was identified during a Phase I Study *(Dinsmore and Riess, 1998)*. As previously detailed, an aqueduct was constructed as part of the Cumberland and Oxford Canal such that the historic tow path could cross the Little River. The location of the aqueduct is depicted on Figure 5-6.

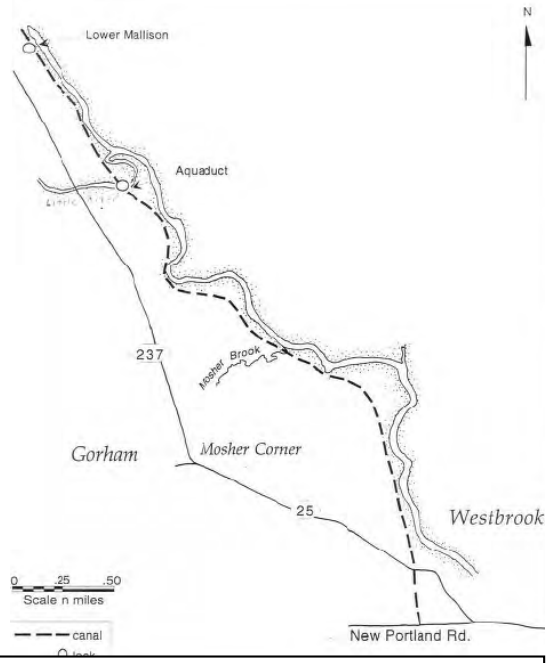


Figure 5-6: Location Map, Aqueduct

The cut granite foundation walls exist for the upstream, downstream and middle of the aqueduct. According to the Phase I Study *(Dinsmore and Riess, 1998)*, the remains of the upstream foundation of the Little River Aqueduct are in moderate to poor condition, with some stones being out of place. The remains of the downstream foundation of the aqueduct are in moderate condition. Photographs of the aqueduct foundations have been included in this section.

The drawdown associated with the proposed removal of the Saccarappa spillways will benefit the historic aqueduct foundation. The proposed drawdown will lower the water levels in the impoundment by approximately 4.5 feet. This will lessen the impact of erosion due to water flows, flooding and ice. Refer to Appendix F for an "Engineering Evaluation of Potential Soil Erosion and Sedimentation within the Saccarappa Impoundment", dated June 2015.

Figure 5-7: Aqueduct Foundation

Figure 5-8: Aquduct Foundation

5.7.4 Historic Structures at the Saccarappa Dam

The Saccarappa Project site has been used to support a variety of manufacturing purposes since the early settlement of the Westbrook area. The original Saccarappa Project was commissioned in 1887 by the Presumpscot Water Power Company, in which Warren has a controlling interest. It was the first hydroelectric plant on the Presumpscot. The first Project was designed and constructed by Stone and Webster Engineering Corporation, one of the leading engineering firms of the period. A second station was developed later on. Both were replaced by the current Project facilities in 1907 by Warren. It is unknown who designed the existing powerhouse and dam. The site has been used continuously, providing power to the Warren mill, and, at one time, the surrounding community.

The Saccarappa Project includes a powerhouse, equipment contained within the powerhouse, two concrete dam sections, a headgate structure, intake canal, forebay and tailrace. The two-story powerhouse exterior has retained its original architectural integrity. Inside the powerhouse, much of the original equipment is still in use. The dam, intake and outlet structures have undergone few changes since 1907. Because the Saccarappa hydro station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO has determined that the powerhouse, dam and related structures meet National Register criteria.

In 2003, FERC issued a new operational license in that required anadromous fish passage must be constructed at Saccarappa Project within two years after the installation of anadromous fish passage facilities at the Cumberland Mills Dam. Fish passage became available at the Cumberland Mills site on May 1, 2013, triggering the requirement for operational fish passage at Saccarappa Project by May 1, 2015. After extensive review, Warren determined that the high cost of constructing fish passage for an operating facility in accordance with the existing FERC license was not technically practical and economically feasible. Hence, in 2013, Warren proposed to surrender the Project license, remove the eastern spillway and install a Denil fish ladder in the tailrace of the Saccarappa Project. That surrender application was subsequently suspended, such

that Warren could consider alternative nature-like passage. In 2014, to facilitate the design process, FERC extended the requirement for installation of operational passage at Saccarappa to May 1, 2017. The proposed final design, which is detailed in this Surrender Application, incorporates USWFS, MDMR and NGO considerations and necessitates the removal of the eastern spillway, western spillway and ancillary structures in the forebay channel including the headgate structure. Refer to Table 5-10 for a description of the impact of the proposed work on historic resources.

Table 5-10: Impact on Historic Resources

Resource	Impact
Dam	Eastern and western spillways, as well as ancillary structures in the forebay, will be removed. This will return the section of the river between Saccarappa and Mallison Falls to the conditions that existed prior to the first hydroelectric development at the Saccarappa site.
Powerhouse	This structure will be decommissioned and no longer used for power generation.
Dana Warp Mill	This structure is located adjacent to the eastern shoreline of Saccarappa Falls. The proposed work will not physically impact this structure. Removal of the spillways will create a more natural, riverine aesthetic adjacent to the structure.
Tailrace	The proposed work will result in filling the existing tailrace channel and installing a double Denil ladder within this channel.
Island	The proposed work will utilize portions of the island for access during the construction/demolition phase. The proposed access ways have been designed to minimize impact to vegetation on the island. After completion of the work, the island will be left in a natural state.

The proposed work represents the best option to facilitate the return of this section of the Presumpscot River to a historic, pre-developed state. This option meets USFWS fish passage criteria, takes USFWS, MDMR and NGO feedback into consideration and provides low-maintenance, proven, cost-effective, passage using a combination of a technical fishway and nature-like passage. This design will allow anadromous fish to gain access to the river segment between Saccarappa Falls and Mallison Falls and tributaries to that section of the river.

While the existing Saccarappa Falls site documents an important part of man-made history, its construction and current presence has limited the ability of anadromous fish to migrate within the Presumpscot River. In this situation, it is more important to return the section of the river between Saccarappa and Mallison Falls, and all tributaries within this section, to a natural state than it is to maintain the presence of historic structures. The existing powerhouse will remain intact for now, but will likely be demolished in the future unless it can be repurposed. Warren understands the

historic significance of the structures that are proposed to be removed and will ensure that a written and photographic history of these structures is preserved. Warren has and will continue to consult with the SHPO to develop appropriate measures to resolve any adverse effects of spillway removal on the NRHP-eligible Project facilities. These measures may include Historic American Engineering Record/Historic American Building Survey recordation of NRHP-eligible properties affected by this undertaking.

5.7.5 History of Fish Passage at Saccarappa

The first dam in Maine was built on the Presumpscot River at Presumpscot Falls (subsequently referred to as Smelt Hill dam) in 1735. From 1735 until the implementation of fish passage facilities at the Smelt Hill Dam in 1990, anadromous fish were prevented from migrating up-river to the Cumberland Mills dam in Westbrook and other tributaries between Cumberland Mills and Smelt Hill. Smelt Hill Dam, including its fish passage facility, was severely damaged by flooding in 1996. Smelt Hill Dam was subsequently fully removed in 2002, re-opening the up-river habitat, up to Cumberland Mills, to anadromous species. In the spring of 2013, the fishway at Cumberland Mills was completed, allowing access for migrating anadromous fish to the section of the river between Cumberland Mills and Saccarappa Falls.

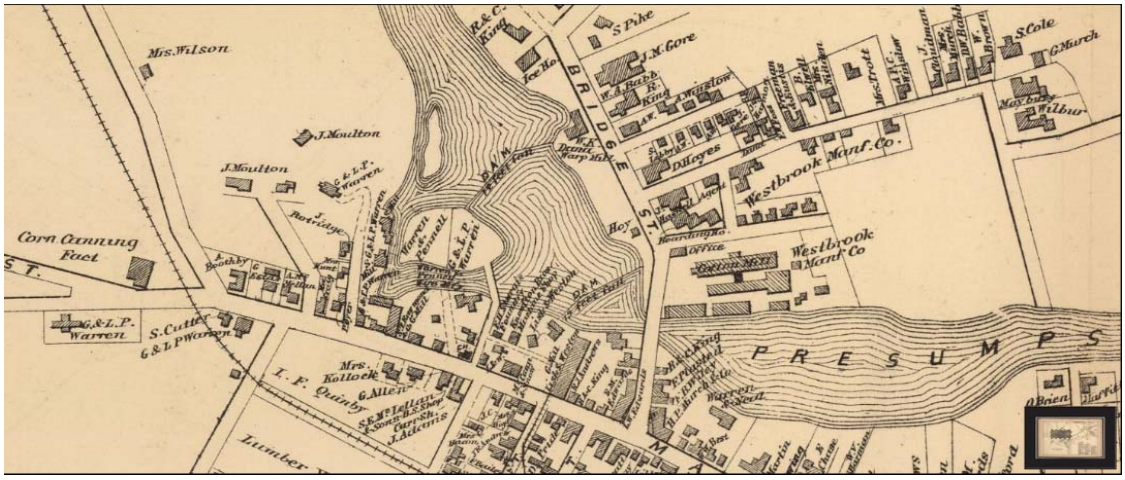
The construction of the currently existing Saccarappa Project in 1907 did not alter existing fish passage at Saccarappa Falls, as fish passage has not existed at the Saccarappa site since the original Saccarappa Dam and Hydroelectric Facility was constructed in 1887 by the Presumpscot Water Power Company. The Presumpscot River has a history of industrial use dating back to the early 1700s, hence fish passage at Saccarappa Falls and in the lower Presumpscot River was affected and restricted by manmade uses prior to the construction of two dams at Saccarappa in 1887. Anadromous species, specifically American eels and Atlantic salmon have historically migrated above Saccarappa Falls. Available data, however, support the conclusion that passage over the lower falls and the falls on the east side of the island for river herring and American shad has been historically challenging, even before any man-made water diversion structures or dams were built at the site.

Prior to the construction of the 1887 dams, settlers constructed dams and saw mills at Saccarappa Falls. The first saw mill was constructed in 1729 and many saw mills existed at Saccarappa Falls until the construction of the three dams (two at the upper falls and one at the lower falls) in 1887. Many saw mills were constructed at Saccarappa Falls; in fact, at one time Saccarappa Falls was purported to have had 19 saw mills in operation day and night[3]. The presence of the small dams and/or water diversion structures for the saw mills likely made fish passage at Saccarappa Falls even more challenging than it was naturally. Additionally, the construction of the Smelt Hill Dam, located downstream of Saccarappa Falls at Presumpscot Falls, in 1735 effectively blocked all fish

[3] *History of Westbrook, Westbrook Historical Society*

passage in the Presumpscot River so passage at Saccarappa Falls was a moot point after 1735. Fish passage was installed at Smelt Hill Dam in 1990 and existed at Smelt Hill Dam until it was severely damaged by a flood in 1996. Refer to Figure 5-9, for a rendering of the dams that existed at Saccarappa Falls in 1871[4]. Note that this figure depicts two dams, one at the upper falls and one at the lower falls, 16 years prior to the construction of the Saccarappa Dams on the eastern and western sides of the island that exist today.

Figure 5-9: 1871 Rendering of Dams at Saccarappa Falls



In addition to understanding the historic impact of manmade structures on fish passage at the Saccarappa site, it is informative to note that first documented exploration of the Presumpscot River and estuary, as well as contact with Native Americans, by European explorer Christopher Levett in 1625, did not indicate the presence of large quantities of anadromous fish in the Presumpscot River. In his written records, Captain Levett stated that he "found one good River (Fore River) which [contained] ….. much Salmon and other good fish…. [and in] the same Bay, found another River (the Presumpscot).[5]" While this documentation neither confirms nor denies the historic presence of anadromous fish in the Presumpscot River, it is interesting to note that their presence was confirmed in great quantities in the Fore River, while there was no mention of their presence in the Presumpscot River during the same time period.

It is evident that the construction of the existing Saccarappa Dam in 1907 did not alter or directly impact fish passage at Saccarappa Falls. Records indicate that heavy industrial use occurred at the site dating back to the construction of the first saw mill in 1729 and that anadromous fish were likely not present in the upper Presumpscot River after the Smelt Hill Dam was constructed in 1735.

[4] *1871 Atlas of Cumberland County*
[5] *History of Westbrook, Westbrook Historical Society*

That then leaves the question of whether anadromous fish were able to pass the falls at Saccarappa prior to the construction of man-made barriers on the Presumpscot in the early 1700s. Leaving for another day the issue of whether the target species were able to pass Presumpscot Falls prior to construction of the first Smelt Hill dam, Warren has investigated the question as to: "(a) whether, and to what extent, the falls at the project dam were ever passable to anadromous fish".

The earliest document that Warren was able to find regarding this issue is an engineering drawing of the Saccarappa site entitled "Plan of Water Power at Saccarappa, Showing Proposed Locations for Power House for Warren Company, December 10, 1900 by W. Foster". This drawing provides a detailed topographic and bathymetric map of the entire Saccarappa site. This drawing depicts two wooden dams and one stone dam (two at the upper falls and one at the lower falls) that existed at the site in 1900 (presumably the dams that were built in 1887). The drawing shows an existing hydroelectric powerhouse operated by the "Westbrook Elec. Lt. & P. CO., Sta. No. 1." The drawing also depicts in considerable detail the bathymetry of the river bottom upstream of both dams and on both sides of the island. The drawing also shows 4 potential locations for the future Warren Saccarappa powerhouse, one of which (Option 1) is the configuration that exists today.

Two things stand out from the analysis of this drawing. One is how similar the topography of the eastern channel was then to what exists today. The 1900 vintage surveys indicate that the topography of the river bottom at the upper and lower falls on the eastern side of the river is no different today than it was in 1900. The western side of the river, westerly of the island, was, however, altered significantly during construction of the Saccarappa powerhouse, forebay canal, and tailrace channel.

The 1900 drawing clearly indicates that the channel on the western side of the island was much different than exists today. The western channel was much wider (downstream of the falls) and a portion of the channel was actually much closer to Main Street than exists today. Portions of the western channel were excavated for the forebay channel and the powerhouse and tailrace channel, and presumably all of the excavated material was used to fill in the portion of the western channel between the powerhouse and Main Street.

The topography of the upper western channel in the general vicinity of the Westbrook Electric and Power Company powerhouse depicts a steep set of falls with a total drop in the bedrock surface of approximately 16 feet with a slope that varies from 10% to 16% in the channel. The hydraulic control in the western channel was at elevation 65 feet (NGVD 29) prior to construction of the current forebay channel and the elevation of the hydraulic control in the eastern channel was elevation 64 feet (NGVD 29) the same as it is today. Under almost all flow conditions, the water flow in the river was split between the eastern and western channels. The lower falls are very similar to what exists today.

Assuming for the purposes of discussion that the target species were able to navigate the natural falls at Presumpscot Falls (Smelt Hill) and Cumberland Mills prior to construction of any dams on

the river, those same fish would then have to ascend the lower falls at Saccarappa and then either the eastern or western falls on either side of the island. Fisheries biologists indicate that the lower falls at Saccarappa are, and therefore were, not passable by river herring and Shad with the possible exception of some exceptional fish under certain flow conditions. Saccarappa Falls were likely passable to other anadromous species such as Atlantic salmon and American eel. It is impossible for any fisheries biologists to state with absolute certainty that there was never a passage pathway for all target species of fish under some flow conditions. The available data indicate that the western side of the island posed a more onerous pathway over the upper falls than the eastern falls. Therefore, any river herring and Shad that did successfully navigate the lower falls, would then have to pass the eastern upper falls. The prevailing view is the upper falls are passable under low to moderate flow conditions.

Therefore, the conclusion from the analysis of all the available data is that the falls at Saccarappa were probably not passable by all target species, with the caveat that some fish, under ideal conditions, may have been able to find a navigable passageway over the lower falls and then over the upper falls. Clearly, the falls at Saccarappa were a formidable barrier to passage by river herring and Shad prior to the construction of man-made structures at the site.

5.8 Recreation Resources

5.8.1 Existing Conditions

The region provides opportunities for a variety of both land and water based activities. There are approximately 123 formal recreational access sites within 60 miles of the Saccarappa Project that provide recreational opportunities in a variety of riverine and palustrine environments (S.D. Warren, 2000). The most notable of the regional recreational opportunities occur on Sebago Lake upstream of the Project. Recreational activities in the Saccarappa Project vicinity include hiking, camping, open water fishing, and swimming in the summer. Three ramp and float facilities are operated by the City of Westbrook between the Saccarappa Project and Cumberland Mills Project in Riverbank Park, Ash Street and Brown Street. These facilities are designed to increase the recreational use of the river by providing access for fishermen and paddlers in kayaks and canoes. Fall offers the opportunity for foliage viewing and hunting. Winter offers skiing, ice fishing, snowmobiling, snowshoeing, and other snow based recreational activities.

The Saccarappa Project is located in the City of Westbrook in a predominantly urban industrial setting, although the 5-mile long Saccarappa Project impoundment spans through rural agricultural areas. Saccarappa Park, owned and maintained by the City of Westbrook, is an urban park located on the western shore, overlooking Warren's Saccarappa Dam and powerhouse. Twelve park benches are available for seating, and a walkway along the riverbank provides views of the Saccarappa Project. A city-owned boat launch is located on Lincoln Street in Westbrook, upstream from the Saccarappa Dam on the eastern shore.

A site upstream from Saccarappa Dam is available as a take-out/launch area for hand-carried boats and car top launching. Shoreline fishing may also occur at this location. The area is located on the western shore just upstream of the Saccarappa powerhouse. In addition to public access areas, there are also private piers, docks and other water-access points along the impoundment. Along the Saccarappa Project impoundment, there are eight private sites in various states of repair and disrepair, and one set of steps into the river.

The Saccarappa Project impoundment also offers recreational opportunities such as boating and fishing. Article 408 of the FERC license required Warren to file with FERC a Recreational Facilities Enhancement Plan for the Saccarappa Project. This Recreational Facilities Enhancement Plan included the plans and schedule to establish a formal take-out site that would also allow car-top boat access to the impoundment, post signage appropriate to these uses, establish space for parking, and mechanically remove vegetation. Warren filed this Recreational Facility Enhancement Plan with FERC in January 2005. The take-out site and parking area is located on the western bank upstream of the boat barrier blocking access to the intake canal. The parking area provides access to Mill Lane and Main Street. Warren completed construction of the recreation facility in October 2006.

The FERC license required development of a Recreation Use Monitoring Plan (Plan) for the Warren Projects on the Presumpscot River. The purpose of the Plan is to establish procedures for monitoring recreational use at the Projects, and to assess whether the recreational enhancement required under the Project license is adequate to meet recreational demand at the Projects. Warren filed the Plan with FERC on August 28, 2013. Under the Plan, Warren conducted use monitoring in 2014. A copy of the "Interim Recreation Monitoring Report" dated August 1, 2014 and the FERC Order approving the "Interim Recreation Monitoring Report" on August 12, 2014 are included in Appendix N.

5.8.2 Proposed Conditions

The removal of the eastern spillway will enhance the recreation opportunities from Mallison Falls to Cumberland Mills, opening up a 5.8 mile stretch of river to boaters without portage around non-natural structures. In the future, the falls at Saccarappa may act as a natural barrier for some boaters under some flow conditions. It is possible that a short portage along the edge of the river bed would needed, although this portage would be shorter in length than portage around the current configuration of the Saccarappa Project. The existing falls may also offer greater opportunities for whitewater enthusiasts under certain flow conditions.

Long-term benefits will include improved opportunities for a wide variety of recreational activities including boating and fishing. The introduction of anadromous fish to the area may also allow for the establishment of fisheries upstream of the dam and increase the viability of recreational fishing. A recent study examined the potential benefits associated with the removal of the Saccarappa

facility (Colgan 2013). The benefits included recreational enhancements, the potential for a whitewater park and improved recreational facilities.

Throughout the design process for this work, Warren has maintained extensive ongoing communications with the City of Westbrook. The City has a significant stake in the design. Over the past several years, the City of Westbrook has expressed interest in enhancing recreational opportunities for boaters. Potential enhancements could include structural modifications at the site, as long as those enhancements do not impede or interfere with fish passage. The City's recreational consultant has indicated that the opportunities for enhancements in the eastern channel are only limited by one's imagination. Warren believes that the interests of the City are better served by allocating the western channel for fish passage and leaving the eastern channel available for other non-conflicting interests. The long term benefits of including recreational amenities at the Saccarappa site are important to the City of Westbrook and many other stakeholders.

The proposed Western Channel Design concentrates the modifications to enhance fish passage in the western channel. Any structural modifications to increase recreational boating opportunities at Saccarappa Falls would be limited to the eastern channel, as any recreational enhancements in the western channel could adversely impact fish passage. The Denil ladders in the existing tailrace area would have a trash rack and gate to restrict boater access, but boats will be able to use the western channel. No modifications are proposed in the eastern channel to promote or enhance fish passage, so the eastern channel is available for structural enhancements of recreational boating. Therefore, the Western Channel Design allows boaters to safely use both the eastern and western channels for recreational boating. Warren is pleased to be able to accommodate the wishes of the City without compromising the fish passage design goals of the project and without adding to the cost of the work. The following paragraphs provide a general description of the recreational proposal being considered by the City. While these recreational elements are not part of Warren's design and/or this Surrender Application, information is being provided here because the City's proposals are related to Warren's Surrender Application and future use of the Saccarappa site.

As of the date of this Application, the City of Westbrook is contemplating structural modification at or near the Saccarappa site to enhance recreational opportunities and experience for boaters. One modification involves the installation of an inflatable gate structure in the general vicinity of the existing Bridge Street Bridge. A new "Bridge Street Bridge" is currently under construction immediately upstream from the existing Bridge. The existing bridge will be converted to a pedestrian walkway and become part of the pedestrian parks and walkways along the river. The inflatable gate structure would be built in the immediate vicinity of that pedestrian bridge. Preliminary design drawings for the City's proposal are included in Appendix G.

The inflatable gate structure would be operated to create a standing wave and hydraulic drop intended to enhance the experience for boaters. In the full upright position, the gate system will

extend approximately 6 feet above the bed of the river. In the full down position, there will be no obstruction of flow. The City has committed to operate the inflatable gate structure to be compatible with fish passage.

The second structural modification being contemplated by the City is described as minor sculpting of the upper eastern falls above the middle pool (between the upper and lower falls) and well downstream of the existing spillway. Preliminary design drawings for the City's proposal are included in Appendix G. These modifications in the upper eastern falls will be permanent, non-moveable structures and consist primarily of concrete or rock features combine with bedrock removal to create the desired enhancement to the whitewater features that already exist at the upper falls.

5.8.3 Manmade Features Upstream of Saccarappa Falls

The proposed work will lower the water levels within the Saccarappa impoundment by approximately 4.5 feet under average flow conditions. This section identifies any impact that the proposed change in water level in the Saccarappa impoundment may have on existing manmade features that draw water from, discharge into, or provide access to impoundment. It is anticipated that the impact to manmade features located adjacent to or within the river between Saccarappa Falls and Mallison Falls will be minimal.

Warren has conducted several field studies in the Saccarappa impoundment in order to identify manmade features that may be impacted by the proposed work. During each instance, photographs of features were documented. Additionally, Warren held public meetings on December 12, 2013 and August 26, 2015 to present the proposal to the public and address any questions. These meetings were also an opportunity for any affected property owners to voice concerns.

As a result of Warren's investigations, the following manmade features were identified: seven private docks, one public dock, one set of steps into the river, a city-owned boat launch located upstream from the Saccarappa Dam on the eastern shore, a Warren owned hand carry that is required under license Article 408, a canoe and kayak put-in area at Route 237 on the Little River, a water intake pipe, and a culvert. The impact of the proposed work on each item is addressed in this section. No other features were identified that draw water from, discharge into, or provide access to the portion of the Presumpscot River located between Saccarappa Falls and Mallison Falls.

5.8.3.1 Private Docks

Warren identified seven private docks within the Saccarappa impoundment, shown below in Figures 5-10 through 5-16. Except for two, each of these docks appears to be seasonal. After visually assessing each structure, Warren anticipates that the impact of the proposed drawdown on each of these structures will be negligible. The seasonal structures are installed and removed each

spring and fall, hence it is anticipated that a majority of the private docks will simply need to be installed closer to the proposed shoreline. It is possible that some private docks may need to be slightly reconfigured after the drawdown.

The existing docks in Figure 5-12 and Figure 5-15, appear to be permanent docks. The dock in Figure 5-12 appears to be located directly adjacent to an existing structure. The dock in Figure 5-15 appears to be located adjacent to a lawn area. The docks do not appear to be structurally sound and may need to be removed and replaced. This, however, is not due to the proposed project, but rather due to the condition of the existing structure. The current integrity of the dock will not be affected by the proposed drawdown. Photographs of each dock identified are included below.

Figure 5-10: Private Seasonal Dock

Figure 5-11: Private Seasonal Dock

Figure 5-12: Private Permanent Dock

Figure 5-13 Private Seasonal Dock

Figure 5-14: Private Seasonal Dock

Figure 5-15: Private Permanent Dock

Figure 5-16: Private Seasonal Dock

5.8.3.2 Steps

An existing set of steps leading to the Presumpscot River was identified within the Project impoundment, shown in Figure 5-17. The proposed drawdown of the impoundment will leave a gap between the bottom step and the proposed water surface elevation. It will be unnecessary to construct additional steps that lead to the proposed surface elevation, as bathymetry data indicate that this newly exposed area will be relatively flat and easily traversable. After drawdown vegetation in this area will migrate to stabilize the exposed bank. It is anticipated that the small amount of foot traffic in this area will not lead to erosion.

Figure 5-17: Steps to River

5.8.3.3 Hand Carry Launches

There are two existing hand carry boat launch areas located within the Saccarappa impoundment. One is owned by Warren and one is owned by the City of Westbrook.

The hand carry launch that is owned and maintained by Warren is located near the existing forebay of the powerhouse on Warren (Article 408) property. The launch that is owned and maintained by the City of Westbrook is located approximately 1,000 feet upstream of the eastern spillway. A seasonal dock also exists at the City of Westbrook hand carry launch site. Drawdown of the impoundment will result in a gap between the end of each existing hand carry boat launch and the water level that will exist once the spillway is removed.

Normal use of these sites post drawdown may result in rutting, erosion, and sedimentation into the river. In order to minimize this risk, each hand carry launch will be modified to provide continuous access to the water line by extending the existing crushed stone surface to the proposed water line. The extensions will be constructed during a low flow period, in accordance with the most recent State of Maine Erosion Control Best Management Practices and using clean materials to minimize siltation and impact to the river. The proposed modifications will each consist of an approximately 12’ by 12’ layer of crushed stone leading from the end of the existing erosion control mesh at the site to the new water line.

After visually assessing the seasonal dock at the City of Westbrook Hand Carry, Warren anticipates that the impact of the proposed drawdown will be negligible. The seasonal dock is installed and removed each spring and fall, hence it is anticipated that it may simply need to be installed closer to the proposed shoreline after the change in water level. Photographs of each launch area have been included below as Figures 5-18 and 5-19.

Figure 5-18: Warren Hand Carry Site

Figure 5-19: City of Westbrook Hand Carry Site

The Warren and City of Westbrook owned launches will remain publically accessible following the proposed project.

5.8.3.4 Little River Boat Carry

There is an existing hand carry boat launch area located on the Little River off of Route 237 in Gorham. The site is located approximately 0.5 miles upstream of the confluence of the Little River and Presumpscot River (Saccarappa impoundment). The drawdown model indicates that the surface water elevation will drop by an average of 4.0' within the Saccarappa impoundment. The current length of the Little River impoundment from the confluence with the Presumpscot River to the upstream limit of the impoundment is 7,600 feet. The length of the Little River impounded area from the confluence with the Presumpscot to the upstream limit of the impoundment after the removal of the spillways at Saccarappa will be 83 feet. Drawdown will occur in the Little River, however it will be much less and tapered as one travels upstream. The Little River Boat Carry is located approximately 7,500 feet upstream of the confluence. Any impact of the drawdown to the Little River Boat Carry will be minor.

Following removal of the spillways at Saccarappa, the hand carry boat launch into the Little River near Route 237 will no longer be suitable for launching boats except under unusually high water conditions. The reason is that this section of river will no longer be deep enough for launch boats except under high flow conditions. The trail from the parking site to the river can still be used by fishermen or hikers to access the Little River. The change in use brought about by lowering of water levels in the Presumpscot is unavoidable and cannot be mitigated.

5.8.3.5 Water Intake Pipe

An intake pipe for the irrigation system at the Rivermeadow Golf Course exists within the Saccarappa impoundment, approximately 0.5 miles upstream of the Saccarappa Falls. This pipe is located by the buoy depicted in the adjacent photograph.

Figure 5-20: Riverview Irrigation

On Thursday, May 21, 2015 Warren visited the Rivermeadow Golf Club in Westbrook. The grounds maintenance supervisor specified that the irrigation intake is used to irrigate the golf course. The maintenance supervisor indicated they have two intake pipes connected to a diesel pump. One intake is shallow (about 4 to 5 feet deep) and is visible from a boat (Figure 5-20). They also have a second intake that is longer and extends deeper into the river (about 10 to 11 feet deep). He indicated that if the water level in the Saccarappa impoundment is lowered by about 4 to 5 feet, he would simply switch intakes and use the deeper intake system. He indicated that lowering the water level would not have any adverse impact on the Club's intake and irrigation system.

5.8.3.6 Culvert

Warren identified a culvert that empties into the Presumpscot River within the impoundment area. The structure will not be impacted by the proposed project. Upon visual inspection, it appeared that the riprap that is placed around the structure to prevent erosion extends below the existing water surface. When the water level in the impoundment is lowered it may be necessary to extend the existing rip rap to minimize any erosion to exposed land between the existing and proposed surface water elevations. Refer to Figure 5-21.

Figure 5-21: Culvert

5.9 Land Management and Aesthetic Resources

The Saccarappa Project is located in the lower section of the Presumpscot River corridor. This area is dominated by the urban centers of Westbrook, Falmouth, and Portland. Much of the lower section is comprised of industrial, commercial, and residential development. The Saccarappa Project is located in the City of Westbrook, Cumberland County, Maine. Westbrook has a total land area of 11,111 acres and contains 3,525 developed acres, 2,640 farmed acres, and 886 acres taxed for tree growth. The remaining 4,060 acres consists of managed open lands, open water and wetlands, and roads (GPCOG 1993). Unlike the surrounding towns of Gorham and Windham, Westbrook is an urban setting with a larger population. The population of Westbrook in the 2010 census was 17,494 people (US Census 2010).

5.9.1 Land Management

5.9.1.1 Existing Conditions

The Saccarappa Project lands are subject to the City of Westbrook's Land Use Ordinances, including provisions for shoreland zoning in accordance with the 1971 Maine Shoreland Zoning Act, as amended. The ordinances control land uses and placement of structures within shoreland areas around protected natural resource features such as ponds, wetlands, rivers, and streams in order to control development-related impacts such as sedimentation and erosion, urban runoff, and fertilizer contamination.

In general, land-use categories within the Saccarappa Project area include agricultural, undeveloped/forestland, residential, commercial/industrial, transportation, and public/outdoor recreation. The Saccarappa Project facilities are located in a developed urban area of the City of Westbrook and the river banks extending upstream to the Mallison Falls Project is more undeveloped/forestland. These land-use categories are discussed in further detail below:

<u>Agricultural</u>
Agricultural land includes croplands, upland pastures, permanent pasturelands, inactive agricultural lands, and inactive urban land.

<u>Undeveloped/Forestland</u>
Undeveloped/forestland includes brush cover, wetlands, and second-growth forest stands consisting of mixed hardwood forests and coniferous forest species. Dominant species include red oak, red maple, sugar maple, American beech, black cherry, yellow bitch, white pine, and eastern hemlock.

<u>Residential</u>
Residential land use consists of low density residential development. Residential areas are more concentrated in the urban areas.

Commercial/Industrial

Commercial and industrial development is prominent in the lower section of the Presumpscot River in the vicinity of the City of Westbrook.

Transportation

Transportation facilities include roads, highways, and railroads. Maintained city roads make up the majority of the transportation features and follow the river on both sides.

Public/Outdoor Recreation

Public and outdoor recreation land is sparsely scattered within the Saccarappa Project area. The Presumpscot River watershed, in the vicinity of the Saccarappa Project, does not have a high concentration of public and outdoor recreation land uses. Major recreation attractions in the area are Sebago Lake and the Casco Bay. Recreation resources are discussed in further detail in Section 5.8.

5.9.1.2 Proposed Conditions

Land management is unlikely to be impacted after removal of the eastern spillway. No public facilities such as bridges or sewer lines will be adversely impacted.

5.9.2 Aesthetic Resources

5.9.2.1 Existing Conditions

The Saccarappa Project is located in the lower Presumpscot River corridor. The lower Presumpscot River corridor flows through the most densely populated urban area in Maine and, correspondingly, is dominated by the urban centers of Westbrook, Falmouth, and Portland. Within the vicinity of the Project, the land is primarily industrially and commercially developed. Residential development is interspersed along the river's shores, but mainly exists a distance away from the industrial and commercial zones nearest the banks of the Presumpscot River. Small strips of naturally vegetative habitat line the shores of the river corridor in the riparian zone. However, there is limited vegetation in the upland areas which contain isolated stands of trees.

As stated previously, the Saccarappa Project is located in the City of Westbrook. The shoreline of the five-mile impoundment includes considerable undeveloped and agricultural lands, however the Saccarappa Project dam and powerhouse is surrounded primarily by commercially and industrially zoned lands in the city center. The Saccarappa Project impoundment can be viewed from the canoe portage take-out located above the dam (Figure 5-22). The Project dam blends well with the urban environment (Figure 5-23). The Project can be seen from roads along the shoreline and from Saccarappa Park, an urban pedestrian park and walkway.

Figure 5-22: Project Dam Blends with Urban Environment

Figure 5-23: Impoundment, Dam and Bypass Reach

Charles S. Colgan of the Maine Center for Business and Economic Research recently published a study entitled "Job Development in Downtown Westbrook", which addresses some potential economic benefits associated with the removal of the Saccarappa Project (Colgan 2013). The benefits described in this report include short-term construction based benefits, recreational enhancement, the potential addition of a whitewater park at the Saccarappa site, guided rafting trips, and festival events. The report also contends that the addition of a whitewater park and improved recreational facilities will attract visitors who may not normally visit Westbrook as well as provide an immediate recreational value that will help local businesses employ and retain more workers.

5.9.2.2 Proposed Conditions

Aesthetic resources of the Saccarappa Project are expected to change slightly and be improved after the removal of the eastern spillway. The eastern spillway is currently visible from Bridge Street. Once the spillway is removed, people crossing the bridge or walking the park area near the bridge will see a free flowing river over the falls. The following photo, Figure 5-24, was taken from the Bridge Street Bridge looking upstream at the falls and eastern spillway. This view will change slightly when the spillway is removed.

Figure 5-24: Saccarappa, Eastern Falls

The western spillway is not visible from the bridge or the park. The overall scenery of the area will not change since the usage of the adjacent lands would remain the same. In downtown Westbrook, the industrial/commercial character of the area would remain.

SECTION 6.0
SCHEDULE

Warren proposes the following schedule with regard to the application for surrender of the Saccarappa Project:

December 2, 2015:	Warren files with FERC the application for surrender of the Saccarappa Project license, including the proposed modifications
	Application for MWDCA Approval and Water Quality Certificate filed with Maine Department of Environmental Protection
By January 31, 2016	Applications filed with U.S. Army Corps of Engineers and City of Westbrook
By March 1, 2016	FERC issues a public notice and requests comments within 30 days of the public notice
By April 1, 2016	FERC receives comments on the Surrender Application
By June 15, 2016	FERC issues Draft Environmental Analysis (DEA) and provides a 30-day comment period on the DEA
By August 1, 2016	MDEP issues final MWDCA permit
By August 15, 2016	FERC issues Final Environmental Assessment and Order ACOE issues final permit City of Westbrook issues final permit(s)
By August 31, 2016	Saccarappa Project hydro operations shut down
May 1, 2017	Warren completes construction and commences fish passage

SECTION 7.0
LITERATURE CITED

American Rivers and Trout Unlimited. 2002. Exploring Dam Removal A Decision-Making Guide. American Rivers and Trout Unlimited, Washington, D.C.

Bolduc, A.M., Thompson, W.B., and Meglioli, A. 1994. Surficial geology of the North Windham 7.5-minute quadrangle, Maine. Open File Report 94. Maine Geological Survey. Augusta, Maine.

Central Maine Power. 1995. Smelt Hill Fishway Operations Report 1995 Results: A Report on the Operation of Central Maine Power Company's Smelt Hill Fishway, Presumpscot River. Central Maine Power Company.

Central Maine Power. 1996. Smelt Hill Fishway Operations Report 1996 Results: A Report on the Operation of Central Maine Power Company's Smelt Hill Fishway, Presumpscot River. Central Maine Power Company.

Colgan, Charles S. 2013. Job Development in Downtown Westbrook. Prepared by the Maine Center for Business and Economic Research, University of Southern Maine.

Collins, M., K. Lucey, B. Lambert, J. Kachmar, J. Turek, E. Hutchins, T. Purinton, and D. Neils. 2007. Stream Barrier Removal Monitoring Guide. Gulf of Maine Council on the Marine Environment. [Online] URL: http://www.gulfofmaine.org/streambarrierremoval/Stream-Barrier-Removal-Monitoring-Guide-12-19-07.pdf. (Accessed December 11, 2013).

Cowardin, L.M., V. Carter V, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31. Washington, D.C.

Curtis, J. T. 1959. The Vegetation of Wisconsin, University of Wisconsin Press, Madison, 657 pp.

Federal Energy Regulatory Commission (FERC). 2002. Final Environmental Impact Statement for the Presumpscot River Projects. June 2002.

Greater Portland Council of Governments (GPCOG). 1993. Presumpscot River watershed management plan: phase one, inventory and analysis. GPCOG. Portland, Maine.

Gregory, S.V., F.J. Swanson, W.A. McKee, and K.W. Cummins. 1991. An Ecosystem Perspective of Riparian Zones. BioScience 41:540-551

Heinselman, M. L. 1970. Landscape Evolution and Peatland Types, and the Lake Agassiz Peatlands Natural Area, Minnesota, Ecol. Monogr. 40:235-261.

Hill, M.T, W.S. Platt, and R.L. Beschta. 1991. Ecological and Geomorphological Concepts for Instream and Out-of-Channel Flow Requirements. Rivers. Vol. 2, No. 3, pages 198-210.

Hussey, A.M. 1971. Geologic map of the Portland Quadrangle, Maine. Map GM-1. Maine Geological Survey. Augusta, Maine.

Hussey, A.M. 1981. Bedrock Geology of the Lower Androscoggin Valley- Casco Bay area, Maine. Open-File Report 81-29. Maine Geological Survey. Augusta, Maine.

Ichthyological Associates (IA), Inc. and Duke Engineering Services (DES). 1998. A baseline investigation of the fisheries resources in the vicinity of the Dundee, Gambo, Little Falls, Mallison, and Saccarappa Hydroelectric Projects, FERC Project No.'s 2942, 2931, 2941, 2932, and 2897, on the Presumpscot River, Cumberland County, Maine. Prepared for S.D. Warren Company, Westbrook, Maine. April 17, 1998.

Kleinschmidt Associates (KA). 2012. HEC-RAS Model. Filed with FERC on January 12, 2012.

Kleinschmidt Associates (KA). 1999. Application for new license for major water power project under 5 MW. Dundee Project (FERC No. 2942). January 1999.

Kologiski, R. L. 1977. The Phytosociology of the Green Swamp, North Carolina, North Carolina Agri. Exp. Sta. Tech. Bull. 20, Raleigh, N.C. 101 pp.

Louis Berger Group. 2001. Final Report: Impact Assessment of the Removal of the Little Falls, Mallison Falls, and Saccarappa Dams along the Presumpscot River. Prepared for the Federal Energy Regulatory Commission. July 2001.

Maine Department of Agriculture, Conservation, and Forestry. 2013a. Personal communication with Don Cameron of MDACF, rare and exemplary botanical features in proximity to the Saccarappa Project. November 8, 2013.

Maine Department of Agriculture, Conservation, and Forestry. 2013b. Maine Rare Plant List and Rare Plant Fact Sheets. [Online] URL: http://www.maine.gov/doc/nrimc/mnap/features/plantlist.htm. Accessed: November 10, 2013.

Maine Department of Environmental Protection. 2011. Presumpscot River Water Quality Model Recalibration and Status Report. July 2011.

MDIFW. 2013. Personal communication with MDIFW (John Perry) regarding Information Request for the Saccarappa Hydroelectric Project. Letter dated December 4, 2013.

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands (Second Edition). Van Nostrand Reinhold Company, New York.

Poff, N.L, J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The Natural Flow Regime: A Paradigm for River Conservation and Restoration. BioScience Vol. 47, No. 11, pages 769-784.

S.D. Warren. 2004. Historic Properties Management Plan, Saccarappa Project, Confidential Document. S.D. Warren Company. October 2004.

Shafroth, P. 2003. Natural Flooding and Dams: Effects on Riparian Systems. Southwest Hydrology 2 (March/Ap: 20-21).

Shafroth, P.B., J.M. Friedman, G.T. Auble, M.L. Scott, and J.H. Braatne. 2002. Potential Responses of Riparian Vegetation to Dam Removal. BioScience 52(8): 703-712.

Shaw, S. P. and C. G. Fredine. 1956. Wetlands of the United States, Their Extent, and Their Value for Waterfowl and Other Wildlife, U.S. Department of Interior, Fish and Wildlife Service, Circular 39, Washington D.C. 67 pp.

Smith, G.W. 1994. Surficial Geology of the Gorham Quadrangle, Cumberland County, Maine. Open-File Report 94-6. Maine Geological Survey. Augusta, Maine.

Solomon D.J. and M.H. Beach. 2004. Manual for provision of upstream migration for Eel and Elver (Anguilla anguilla). Environment Agency, Science Report SC020075/SR2. 63pp.

Stanley, E.H. and M.W. Doyle. 2003. Trading Off: The Ecological Effects of Dam Removal. Frontiers in Ecology and the Environment 1: 15-22.

Thompson, J.A. and Guidotti, C.V. 1989. Carboniferous metamorphism in Southern Maine; in Tucker, R.D., and Marvinney, R.G., 1989. Studies in Maine geology: volume 3- igneous and metamorphic geology. Maine Geological Survey. Augusta, Maine.

U.S. Census. 2010. American Fact Finder: Westbrook, Maine. [Online] URL: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed: October 28, 2013.

U.S. Department of Agriculture (USDA). 1974. Soil Survey, Cumberland County, Maine. Soil Conservation Service. Washington, D.C.

U.S. Fish and Wildlife Service (USFWS). 2013. Personal communication with USFWS Maine Ecological Services Field Office, Official Species List (Tracking # 05E1ME00-2014-SL1-0015). November 13, 2013.

U.S. Fish and Wildlife Service (USFWS). 2012a. Gulf of Maine Distinct Population Segment of Atlantic salmon (Salmo salar).

U.S. Fish and Wildlife Service (USFWS). 2012b. Small whorled pogonia fact sheet. [Online] URL: http://www.fws.gov/mainefieldoffice/Small_whorled_pogonia.html

U.S. Fish and Wildlife Service (USFWS). 2010. Division of Habitat and Resource Conservation. National Wetlands Inventory Maps, Publication Date: October 1, 2010. (Data accessed November 5, 2013).

U.S. Fish and Wildlife Service (USFWS). 1979. Classification of wetlands and deepwater habitats of the United States. Department of the Interior. Washington, D.C.

Virginia State University. 2000. Understanding the Science Behind Riparian Forest Buffers: Effects on Plant and Animal Communities. Virginia Tech College of Natural Resources, Blacksburg, VA. 16 pp.

Wilson, Deborah B. and Bruce J. Bourque. 2000. Phase II Archaeological Survey Report for Five Archaeological Sites on the Presumpscot River Located Within Dundee Project, Gambo Project, Little Falls Project, and Saccarappa Project. Prepared for S.D. Warren Company. February 21, 2000.

APPENDICES

APPENDIX A: ADDITIONAL INFORMATION REQUEST MATRIX

		Additional Information Request	Pertinent Section of Surrender Application
Construction Activities	1	Provide a construction schedule that includes specific construction activities and approximate duration for each activity such as: clearing and grading, staging, demolition of the spillway, construction of fish passage facilities, etc.	Section 4.2.2: Construction; Appendix I: Construction Schedule
	2	Provide an approximation of the construction season during which construction activities will typically be feasible, taking into account weather and flow conditions.	Section 4.2.2: Construction; Appendix I: Construction Schedule
	3	Describe and quantify, where possible, what clearing and grading will be necessary for access roads, staging areas, and other aspects of construction	Section 4.2.2: Construction; Appendix G: Conceptual Design Drawings
	4	Discuss and quantify, where possible, any impacts resulting from construction activities on environmental resources including, but not limited to: erosion, vegetation, public access, wildlife, fisheries, water quality, noise levels, etc.	Section 4.1.1: Environmental Impacts; Section 4.2.2.2 Construction Impacts Appendix F: Evaluation of Potential Soil Erosion and Sedimentation
	5	Discuss whether these impacts will be temporary or permanent and how the timing of construction may affect these impacts.	Section 4.1.1: Environmental Impacts; Section 4.2.2.1 Construction Impacts
	6	Propose measures you will implement to avoid, reduce, or mitigate any adverse impacts.	Section 4.1.1: Environmental Impacts
	7	Describe your proposed methods for demolishing the east spillway and excavating the upper falls diversion channel, i.e. hydraulic hammer, blasting, etc. Include a description of any project-specific adverse impacts of these methods and any proposed measures for reducing or mitigating impacts. Your description should include how the timing of construction may impact environmental resources.	Section 4.2.2.1: Construction Sequence; Appendix I: Construction Schedule
	8	Provide details regarding the final state of the tailrace fill area. Will this area be: filled with concrete; topped with soil and revegetated; left as uncapped loose fill material; or left in some other state?	Section 4.2: Western Channel Design; Appendix G: Conceptual Design Drawings
	9	Sheet 12 in Appendix B shows two staging sites, one on the large island and another on the west bank adjacent to the forebay. The drawing provides the size of the staging site located on the island, but does not provide that information for the one adjacent to the forebay. Provide the area of the staging site adjacent to the forebay.	Appendix G: Conceptual Design Drawings
	10	Your application indicates that a pile of spoil material will be left on the island following construction. Describe the nature of the spoil material (size and shape) and the dimensions of the pile that will be left on the island. Will this pile be visible from the shoreline and will there be any impacts to the visual quality of the island because of the pile? Will the pile be contained? Could the materials erode over time and enter surface waters? Identify potential alternatives, including off-site disposal, and discuss the merits of the alternatives.	N/A - All material will be trucked off site. Section 4.2.2 Construction and Appendix G: Conceptual Design Drawings.

Additional Information Request			Pertinent Section of Surrender Application
Impacts of Changes in Water Levels	11	How far upstream does the project impact water levels in the Little River currently? Quantify the distance upstream from its mouth that the Little River will be impacted by the change in water levels under the proposed surrender.	Section 5.2.1.2: Water Quantity, Proposed Conditions
	12	Quantify the area of land along the Saccarappa and Little Rivers that will be dewatered under your proposal.	Section 5.2.1.2: Water Quantity, Proposed Conditions
	13	Quantify the impacts to wetlands including: (a) acreage of wetlands impacted during all construction activities and whether impacts are temporary or permanent, (b) acreage of wetlands which will be dewatered due to the drawdown of the impoundment, and (c) acreage of new wetlands which will form in the dewatered areas. This analysis should be site- specific and include the locations where impacts will occur and the types of wetlands affected. Consider providing additional maps, similar to the wetlands inventory map included in your application, zooming in where needed to show details.	Section 5.5.2.2: Wetland Resources, Proposed Conditions; Appendix M: Wetland Survey
	14	For each of the 12 features mentioned in your application, please provide a description of the feature, its location, and to what extent it will be impacted by the change in water levels in the two rivers.	Section 5.8.3: Recreation Resources, Manmade Features
	15	For the boat take-out required under Article 408, discuss whether this feature will remain publicly accessible following surrender of the license.	Section 5.8.3.3: Recreation Resources, Manmade Features, Hand Carry Launches
	16	Identify any other features that draw water from, discharge into, or provide access to the affected reaches, which may be impacted by the proposed surrender.	Section 5.8.3: Recreation Resources, Manmade Features
Cost of Surrender Activities	17	17. Provide separate cost estimates for each of the following: (1) demolition and removal of east spillway; construction of diversion channel at upper falls; (3) construction of Denil fish ladder including associated repairs to existing infrastructure and filling of the tailrace; (4) annual cost of operating and maintaining the Denil ladder including the fish counting facility and (5) demolition of all project features.	Section 4.2.3: Construction and Post-Construction Cost for Western Channel Design
Transmission Line	18	Describe your plan for the transmission line following surrender of the project. Discuss the options of leaving the transmission line in place and removing the transmission line. For each option, discuss the merits, costs, environmental impacts, and any proposed mitigation.	Section 2.0: Existing Facilities

Additional Information Request			Pertinent Section of Surrender Application
Alternatives	19	For each alternative, provide detailed information including: (a) a description of the alternative; (b) cost estimates; (c) impacts on environmental resources including, but not limited to: fish passage, eel passage, water levels in both the Presumpscot and Little Rivers, historic properties, and recreation; and (d) reasons why you did not pursue each alternative. You must provide supporting information, data, and documentation for any conclusions you draw regarding costs and effects on environmental resources.	Section 4.1: Alternatives Analysis
	20	Therefore, one of your alternatives (above) should include removal of all project structures and installation of a nature-like fishway. Your analysis must include: (a) the impact of the removal of all project structures on water levels upstream of the project including the Presumpscot and Little Rivers; (b) information regarding the flow distribution between the east and west channels at various flow levels (similar to what you have provided for the proposed action); (c) a description of the impacts of this alternative on Environmental resources including, but not limited to: fish passage, historic properties, and recreation; and (d) provide cost estimates of this alternative.	Section 4.1: Alternatives Analysis
Rare, Threatened and Endangered Species	21	Provide an update regarding this [mussel] consultation including documentation of any consultation that has occurred.	Section 5.3.4: Mussels
	22	Provide an analysis of the potential to affect these species and respond to Maine DIFW's comments. Your response must include relevant information regarding the species' habitat preferences, nesting and foraging behaviors, and whether suitable habitat occurs in the project area. In addition, you must analyze whether construction activities and post- surrender conditions will impact these species.	Section 5.6: Rare, Threatened and Endangered Species
Water Quality Certification	23	Upon receipt of this letter, you must apply for water quality certification. Response must provide documentation of application.	II. Initial Statement

Additional Information Request			Pertinent Section of Surrender Application
Cultural Resources	24	Explain whether the island was surveyed, discuss the results of the survey, and submit the results of the survey with your response to this letter. Please note that some information regarding cultural resources is protected and should be filed as **Privileged** information. If the island was not included in the previous survey, please address how you will determine if historic or culturally significant resources are on this island.	Section 5.7.2 Historic and Cultural Evaluations
	25	Provide a more thorough description and maps of the historic sites you mention, such as "site 8.20" and "Section 9 and 15 of the Oxford Canal." In your application, you say that removal of the eastern spillway may benefit these sites by reducing long-term erosion. Please provide analysis and discussion to support this conclusion.	5.7.3 Historic and Cultural Sites Located within the Project Area
	26	Provide a detailed description of impacts of the proposed surrender on historic resources, including the effects to the dam, powerhouse, mill, canal, and the island. Provide a summary of the impacts to each of these facilities based on site-specific information and include any pertinent data documentation to support conclusions.	Section 5.7.4: Historic Structures at the Saccarappa Dam
	27	You indicate that you will consult with the Maine SHPO to develop appropriate measures to resolve any adverse effects of the surrender on the historic facilities. In your response to this letter, please provide an update on your consultation. Once we have received the requested information, the Commission will be able to make a determination of affect, identify appropriate mitigations measures, and fulfill our responsibilities under Section 106 of the NHPA including consultation with the Advisory Council and Maine SHPO.	Section 5.7.4: Historic Structures at the Saccarappa
Fisheries	28	Provide further discussion of: (a) whether, and to what extent, the falls at the project dam were ever passable to anadromous fish; (b) what alterations to the site occurred prior to S.D. Warren's involvement and did those alterations affect fish passage at the site; and (c) in what ways did construction of the existing dam alter fish passage. Support your discussion and conclusions with documentation and data specific to the project area	Section 5.7.4 History of Fish Passage at Saccarappa
	29	(a) Can the goal of diverting water from the eastern side of the channel into the diversion channel be achieved with slopes of 5% or less? (b) If the slopes of the diversion channel were limited to 5% or less, as requested by the resource agencies, what will be the impacts to fish passage? (c) Please describe the suitability of the channel for recreation if the slopes were less than 5%. Include an analysis of fish passage and flow levels under this scenario similar to the one you include in your application under the proposed diversion channel design.	N/A - This design option is no loger under consideration.
	30	Summarize and provide the data for fish counts at the Cumberland Mills dam since it began operation on May 1, 2013. We understand that this data is required to be filed with the Commission in an annual report due July 31, 2014; however, we request it now as it is relevant to the Commission's analysis of your surrender application. This request does not change the requirement to file the report under Article 406.	Section 5.3.3: Catadromous and Anadromous Species; Appendix K: 2013 and 2014 Fish Passage Effectiveness Testing at Cumberland Mills

APPENDIX B: FERC ORDER ISSUING SUBSEQUENT LICENSE FOR THE SACCARAPPA PROJECT (10/02/2003)

105 FERC ¶ 61,013
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;
William L. Massey, and Nora Mead Brownell.

S.D. Warren Company

Project Nos. 2897-003
2932-003
2941-002
2931-002
2942-005

ORDER ISSUING SUBSEQUENT LICENSE

(Issued October 2, 2003)

1. This order issues a subsequent license to S.D. Warren Company (S.D. Warren) for the 1,350-kilowatt (kW) Saccarappa Project No. 2897, located on the Presumpscot River in Cumberland County, Maine. In separate orders issued concurrently with this one, we are issuing subsequent licenses to S.D. Warren for the Mallison Falls and Little Falls Projects Nos. 2932 and 2941, respectively, and new licenses for the Gambo and Dundee Projects Nos. 2931 and 2942, respectively, all of which projects are also on the Presumpscot River. The present order also contains a description of the multi-project proceeding in which the five projects were evaluated, as well as a discussion of issues common to some or all of the five projects.

I. The Multi-Project Proceeding

Project Descriptions

2. The five projects addressed herein are located on the Presumpscot River[1] in southern Maine in the Towns of Gorham and Windham and the City of Westbrook, in Cumberland County. The Presumpscot River originates at the outlet of Sebago Lake and

[1]The Presumpscot River has been found to be a navigable waterway of the United States. Central Maine Power Company, 36 FPC 967, 968 (1966).

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

extends approximately 25 miles to the Atlantic Ocean at Casco Bay. Seven tributaries feed the Presumpscot River between Sebago Lake and the Saccarappa Project, the most downstream of the projects.

3. There are seven jurisdictional hydroelectric projects along the river's length. The five projects under consideration here span a river reach of about 12 miles from Windham (about three miles downstream of Sebago Lake) to Westbrook (about 10 miles upstream from Casco Bay). Upstream of these five projects are the Eel Weir Hydroelectric Project No. 2984, also owned by S.D. Warren, and the North Gorham Hydroelectric Project No. 2519, owned by FPL Energy Maine Hydro LLC. An eighth project, the Smelt Hill Hydroelectric Project No. 7718, was located downstream of the Saccarappa Project at the mouth of Casco Bay. This project had been owned by Central Maine Power Company, which transferred it to the Maine Department of Marine Resources (Maine DMR). On July 5, 2002, the Director, Division of Environmental and Engineering Review, granted Maine DMR's application to surrender the project and remove the dam. State of Maine Department of Marine Resources, 100 FERC ¶ 62,013 (2002). The Smelt Hill dam was removed in October 2002.

4. S.D. Warren's six hydroelectric projects operate continuously to generate electricity that is used at S.D. Warren's paper mill at Westbrook. S.D. Warren also owns and operates a co-generation facility that produces power by burning waste products from its paper mill in Westbrook and produces steam used in the mill for processing paper. However, because it is less expensive to produce the hydroelectric energy than the co-generated energy, the demands of the mill are met first by the hydroelectric facilities, which provide about 22.5 percent of the mill's energy demands. In addition, the non-jurisdictional Cumberland Mills dam, immediately downstream of the Saccarappa Project, and also owned by S.D. Warren, provides water storage for the S.D. Warren paper mill.

5. The five subject Presumpscot River projects produce approximately 40,500,000 kilowatt hours (kWh) of electricity per year, with a combined installed capacity of 7,450 kW. The operation of these facilities allows S.D. Warren to generate inexpensive and reliable power for its paper mill operations. Capacity and energy in excess of that used by the mill is sold on the open market.

6. Farthest upstream is the Dundee Project No. 2942, located at river mile (RM) 21.9. The Dundee Project includes a 1,492-foot-long, 50-foot high concrete dam that creates a 197-acre impoundment, extending 1.7 miles upstream to the tailwaters of the North Gorham Project, and a powerhouse integral with the dam, containing three turbine-generator units with a total rated generating capacity of 2,400 kW. The Dundee Project also includes a 1,075-foot-long tailrace channel, which creates a bypass reach.

7. About three miles downstream of the Dundee Project, at RM 18.6, is the Gambo Project No. 2931. The Gambo Project includes a 300-foot-long, 24-foot-high concrete dam, a headgate structure, an intake and power canal, and a powerhouse containing four turbine-generator units with a total rated generating capacity of 1,900 kW. The Gambo dam creates a 151-acre impoundment. The project has a 300-foot-long bypass reach between the dam and the powerhouse tailwaters.

8. Immediately downstream of the Gambo Project is the Little Falls Project No. 2941, located at RM 16.9. The Little Falls Project includes a 310-foot-long, 14-foot-high L-shaped concrete and masonry dam that creates a 29-acre impoundment extending 1.7 miles to the tailwaters of the Gambo Project, and a powerhouse integral with the dam, containing four turbine-generator units with a total rated capacity of 1,000 kW. The project has a 300-foot-long bypass reach between the upper section of the dam and the powerhouse tailwaters.

9. Less than one half mile downstream of the Little Falls Project is the Mallison Falls Project No. 2932 at RM 16.4. This project includes a 358-foot long, 14-foot-high concrete, masonry and cut granite diversion dam, a headgate structure, an intake power canal, and a powerhouse containing two turbine-generator units with a total rated generating capacity of 800 kW. The Mallison Falls dam creates an 8-acre impoundment. The project has a 675-foot-long bypass reach between the dam and the powerhouse tailwaters.

10. Finally, five miles downstream of the Mallison Falls Project is the Saccarappa Project No. 2897 located at RM 11.3. The Saccarappa Project consists of two 10 to 12-foot high concrete diversion dams separated by an island, a headgate structure, a concrete-lined forebay, and a powerhouse containing three turbine-generator units with a total rated generating capacity of 1,350 kW. This project also includes a 345-foot-long tailrace channel and has two bypass reaches measuring 475 and 390 feet long extending from the respective diversion dams to the downstream end of the tailrace channel.

11. The five projects are operated in a run-of-river mode so that the impounded reservoirs are maintained at near constant levels year round. The powerhouses are manually operated and use flows from S.D. Warren's upstream Eel Weir Project at the outlet of Sebago Lake and various minor tributaries to the Presumpscot River downstream from Sebago Lake. As currently licensed, there are no required minimum flow releases to the bypass reaches at any of the five projects.

Background

12. The five Presumpscot River projects were constructed in the early 1900's, although dams have existed at some of the project locations (Mallison Falls and Saccarappa) for over 250 years. The original licenses for the five Presumpscot River projects were issued

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

in separate actions between 1979 and 1981. The original expiration dates for these licenses ranged from 1999 to 2001, but in 1996, at S.D. Warren's request, all of the licenses were modified to expire on January 26, 2001, to enable a coordinated review at relicensing.[2] The major projects – Dundee and Gambo – continue to operate under annual licenses issued by the Commission on February 28, 2001. The minor projects -- Little Falls, Mallison Falls, and Saccarappa – have continued to operate under the terms and conditions of their existing licenses pending Commission action on the applications for relicense.[3]

13. S.D. Warren filed applications for new licenses for the five Presumpscot River projects on January 22, 1999. S.D. Warren proposes the continued operation of all five of the projects, but does not propose to install any new capacity at any of the projects. S.D. Warren proposes the following environmental measures at all of the projects: (1) continuation of run-of-river operations and daily headpond monitoring; (2) avoidance of impoundment drawdowns during May and June; (3) implementation of impoundment refill procedures after drawdown; (4) institution of operational measures to provide downstream eel passage; (5) implementation of a Recreation Facility Enhancement Plan; and (6) provisions for the protection and mitigation of adverse effects on identified archeological sites. S.D. Warren proposes a number of other significant environmental measures to apply to some, but not all, of the five projects, such as the provision of specified minimum flow releases into the bypass reach and the installation and operation of upstream eel passage facilities,[4] as well as various other measures to enhance and/or protect recreation, aesthetics, and historic resources.

14. The Commission issued a public notice of the applications on April 23, 1999, requesting comments, protests, and motions to intervene. Timely motions to intervene were filed by the U.S. Department of the Interior (Interior); Friends of the Presumpscot

---

[2] S.D. Warren Company, 74 FERC ¶ 62,036 (1996).

[3] The three original minor licenses waive applicability of Section 15 of the FPA, and S.D. Warren has filed for subsequent licenses. Therefore, under Section 16.21(a) of the Commission's regulations, 18 C.F.R. § 16.21(a), S.D. Warren may continue to operate these minor projects in accordance with the terms and conditions of the minor licenses after they expire, until the Commission acts on its applications.

[4] S.D. Warren proposes to provide seasonally adjusted minimum flows to the bypassed reaches of the Mallison Falls, Gambo, and Dundee Projects, and to install upstream eel passage for the Dundee Project. However, S.D. Warren does not propose to install upstream or downstream fish passage facilities at any of the five projects on the basis that no anadromous species occur in the project reaches.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

River (Presumpscot Friends); Friends of Sebago Lake; Maine Council of the Atlantic Salmon Federation (Maine Council); the State of Maine, State Planning Office (State Planning Office); and Trout Unlimited.

15. Late motions to intervene were filed by the U.S. Environmental Protection Agency (EPA); P.R. Hennick (in the Dundee proceeding only); Sebago Lake Anglers Association (in the Dundee proceeding only); Allan Desjardin; and American Rivers. The Commission granted these late-filed motions to intervene on April 14, 2003. In addition, a late motion to intervene was filed by Representative Janice E. Labrecque of the Maine House of Representatives, which the Commission granted on April 26, 2002. Presumpscot Friends oppose the relicensing of the Little Falls, Mallison Falls, and Saccarappa projects.

16. On December 4, 2000, the Commission issued public notice that the applications were ready for environmental analysis and solicited comments, recommendations, and terms and conditions. In response, comments were filed by: Interior; State Planning Office; American Rivers and Presumpscot Friends (jointly); the City of Westbrook; Trout Unlimited; and Friends of Sebago Lake.[5] S.D. Warren filed reply comments on April 18, 2001.

17. Comments focused particularly on upstream and downstream fish passage and dam removal. Interior, the State of Maine resource agencies, American Rivers/Presumpscot Friends, Maine Council /Friends of Sebago Lake, and Trout Unlimited all recommended that the Commission consider the removal of the three minor project dams (Little Falls, Mallison Falls and Saccarappa) as an alternative to licensing, or, at a minimum, order the installation of fish passage facilities for anadromous species at all five dams. These parties maintained that dam removal would allow for the re-establishment of Atlantic salmon and other anadromous (American shad, blueback herring) and catadromous (American eel) fish runs in the Presumpscot River, as well as benefit the resident trout population. S.D. Warren opposed the removal of any of the dams.

18. The Commission staff's multi-project Draft Environmental Impact Statement (DEIS) for the relicensing of the five projects was issued on October 5, 2001. Comments

---

[5]Interior included comments from the Fish and Wildlife Service (FWS) and the National Park Service (NPS). The State of Maine included comments from the Maine Department of Marine Resources (Maine DMR), the Maine Atlantic Salmon Commission (Maine ASC), and the Maine Department of Inland Fisheries and Wildlife (Maine DIFW).

on the DEIS were filed by 12 entities and three individuals, and were considered in preparing the final multi-project EIS (FEIS).

19. On June 26, 2002, the Commission staff issued the FEIS, which like the DEIS, considered the following five proposed actions and alternatives: (1) the continued operation of the projects as proposed by the applicant; (2) the continued operation of the projects as proposed with additional or modified measures recommended by federal and state resource agencies, non-governmental organizations and other entities; (3) the continued operation of the projects as proposed with additional staff-recommended measures (the staff alternative); (4) the continued operation of the major projects at Dundee and Gambo with the removal of one or more of the three minor dams at Little Falls, Mallison Falls, and Saccarappa; and (5) no action. The FEIS considered three different dam removal alternatives: (1) removal of all three minor project dams; (2) removal of the Saccarappa Project dam only; and (3) removal of the Little Falls and Mallison Falls Project dams.

20. The FEIS concludes that the relicensing of the five Presumpscot River projects, as proposed by the applicant and with the additional staff-recommended measures, would be best adapted to a comprehensive plan for the proper use, conservation, and development of the Presumpscot River. The FEIS determined that the removal of one or more of the minor dams is not warranted as a means to restore anadromous species to the river, because obstacles to upstream migration exist downstream of these projects (i.e., the Cumberland Mills dam), and fish passage at the project dams would result in a higher production potential for the anadromous clupeids (American shad and river herring) than dam removal would. The FEIS finds that fish passage facilities at the five project dams would be warranted in the future, when fish passage at the downstream Cumberland Mills and Smelt Hill dams is achieved, and recommends that the licensee be required to file a fish passage implementation plan for the projects. The FEIS also recommends that the licensee design and install upstream eel passage at all five projects, and includes the prescription of Interior's Fish and Wildlife Service (FWS) for implementing shutdown periods to provide for downstream eel passage.

21. Other measures recommended by the FEIS include the provision of specific minimum flows to the bypassed reaches at the Dundee, Gambo, and Mallison Falls Projects; the implementation of a project operations and flow monitoring plan; the development of a shoreline buffer zone plan at the Dundee and Gambo Projects; the undertaking of a recreational use monitoring study; and the development of a recreational facilities enhancement plan and a historic properties management plan (HPMP).

22. The Commission has considered all of the comments and interventions filed in these proceedings in determining whether, and under what conditions, to issue the five new and subsequent licenses.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

Water Quality Certification

23. Under Section 401(a)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1), the Commission may not issue a license for a hydroelectric project unless the state water quality certifying agency has either issued water quality certification for the project or waived certification. Section 401(d) of the CWA, 33 U.S.C. § 1341(d), provides that state certification shall become a condition of any federal license or permit that is issued.

24. On January 14, 1999, S.D. Warren applied to the Maine Department of Environmental Protection (Maine DEP) for water quality certification (WQC) for the five Presumpscot River projects. S.D. Warren withdrew and refiled its applications for WQC on January 12, 2000, January 11, 2001, January 9, 2002, and December 30, 2002.

25. On April 30, 2003, Maine DEP issued a final WQC for the five projects, [6] with the following seven conditions: (1) run-of-river operations and minimum bypass flows at all five projects; (2) restrictions on impoundment drawdowns during May and June, and implementation of drawdown procedures; (3) upstream eel passage at all five projects; (4) operational and other measures for downstream eel passage at all five projects; (5) upstream fish passage facilities for anadromous fish at each project according to a phased implementation schedule; (6) reaeration measures (additional spillage) at the Dundee and Gambo projects to meet Class C dissolved oxygen standards; and (7) a recreational facility enhancement plan at each of the five projects. These conditions are attached to each license order as Appendix A, and those conditions applicable to each project are made part of each license (see ordering paragraph D). [7]

---

[6] Maine DEP had previously issued two draft WQCs for the five projects, and S.D. Warren had filed comments on both draft WQCs, raising substantive and legal objections. Subsequently, by letter dated March 28, 2003, S.D. Warren requested, pursuant to Rule 604 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.604 (2003), that the Commission initiate alternative dispute resolution procedures for the relicensing proceeding, to explore the potential for a comprehensive settlement. On April 21, 2003, the Secretary of the Commission issued a notice rejecting S.D. Warren's request, on the grounds that the proposal did not conform to the provisions of Rule 604 requiring the consent of all participants, since it lacked the signatures of all participants, and since Interior and American Rivers/Presumpscot Friends had specifically opposed the request.

[7] On May 29, 2003, S.D.Warren appealed the WQC to the Maine Board of Environmental Protection (Maine BEP). S.D. Warren argued that the issuance of the WQC did not constitute final agency action under Maine law because the WQC was being appealed, and that consequently no final WQC had yet been issued. By letter filed June 16, 2003, Maine DEP notified the Commission that, as confirmed by the Maine Attorney General's Office, the WQC became effective upon issuance and remains in

(continued…)

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

Coastal Zone Management Act

26. Under Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. § 1456(c)(3)(A), the Commission cannot issue a license for a hydropower project within or affecting a state's coastal zone, unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's federally-approved Coastal Zone Management Program (CZMP). The State Planning Office is responsible for reviewing the projects for consistency with the state's CZMP. The five projects are located outside the geographical boundary of the Maine's coastal zone, and State Planning Office has not defined a geographic area for reviewing federally licensed activities that are outside of the coastal zone but could potentially affect the coastal zone. Therefore, no consistency concurrence is necessary here.[8]

Essential Fish Habitat

27. Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1855(b)(2), requires federal agencies to consult with the Secretary of Commerce, through the National Marine Fisheries Service (NMFS), regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat identified under the Act. Under Section 305(b)(4)(B) of the Act, 16 U.S.C. § 1855(b)(4)(B), an agency must, within 30 days after receiving recommended measures from NMFS or a Regional Fishery Management Council, describe the measures proposed by the agency for avoiding, mitigating, or offsetting the effects of the agency's activity on Essential Fish Habitat.[9]

(continued…)
effect in the absence of a request for a stay, and that S.D. Warren has, therefore, obtained the requisite water quality certification under Section 401 of the CWA. Thus, we are incorporating the WQC conditions into the licenses, even though S.D. Warren's appeal remains pending. However, to the extent that particular conditions in the WQC relate only to a particular project, they become part of the license for that project only.

[8]In any event, State Planning Office, by letter dated May 3, 1999, indicated that, if the Presumpscot River projects received state WQC, State Planning Office would consider the projects, subject to the terms and conditions of the WQC, consistent with the enforceable policies of the Maine CZMP.

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

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

28. The Presumpscot River (included as the seawater mixing zone for the Casco Bay estuary) has been designated by the New England Fishery Management Council as Essential Fish Habitat for Atlantic salmon. NMFS, however, did not comment on the license applications at any point in the proceeding, nor did it recommend specific measures pursuant to the Act. Nonetheless, in the FEIS, Commission staff assessed the potential effect of relicensing the five projects on Atlantic salmon habitat. Staff concluded that relicensing the projects, as proposed by S.D. Warren, with additional staff- and agency-recommended measures for minimum flows and fish passage, would increase the available habitat for Atlantic salmon in the basin.[10] Because the relicensing of these projects, with these conditions, would not have an adverse effect on Essential Fish Habitat, no consultation was necessary.

Threatened and Endangered Species

29. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA), 16 U.S.C. § 1536(a)(2), requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. That section further requires that formal consultation with the FWS be initiated if the proposed agency action is likely to affect the listed species, unless through informal consultation the action agency and FWS determine that there will not likely be an adverse effect.

30. There is only one federally listed threatened or endangered species that exists in the vicinity of one of the five projects. By letter dated May 3, 2001, FWS indicated that the small whorled pogonia, a federally-listed threatened plant, occurs in the vicinity of the Dundee Project in North Gorham. However, as the FEIS concludes, and as further discussed in the individual order issuing a new licensee for the Dundee Project, the continued operation and relicensing of the five Presumpscot River projects, including the Dundee Project, as conditioned herein, will not affect the small whorled pogonia.

Historic Properties

31. Relicensing is considered an undertaking within Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (P.L.89-665; 16 U.S.C. 470). Section 106 requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places.

---

[10] This conclusion assumes the removal of the downstream Cumberland Mills dam.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

32. On July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may be affected by the relicensing of the Saccarappa, Mallison Falls, Little Falls, Gambo, and Dundee Projects. Execution of a PA serves to satisfy the Commission's responsibilities under Section 106 of the NHPA. S.D. Warren signed the PA as a concurring party.

Section 18 Fishway Prescriptions

33. Section 18 of the FPA, 16 U.S.C. § 811, provides that the Commission shall require a licensee to construct, operate, and maintain such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate. On February 2, 2001, Interior filed its preliminary fishway prescription for the five projects. Interior, through FWS, subsequently filed its final fishway prescription on February 7, 2002.

34. The prescription contains general provisions pertaining to the five projects, as well as provisions pertaining to each individual project. Appendix B of each license order contains the general provisions and the specific provisions that apply to the project being licensed in that order.[11] Because Section 18 is mandatory, the prescriptions applicable to each project are made conditions of the license for that project.

A. Anadromous Fish

35. FWS's fishway prescription requires the installation of upstream and downstream fish passage facilities at each project upon successful passage at the downstream Smelt Hill and Cumberland Mills dams. As noted earlier, the Smelt Hill dam was removed in October 2002.

36. The fishway prescription embodies a phased approach to developing upstream and downstream fish passage facilities at the five project dams. Phase 1 requires S.D. Warren to construct denil fish ladders at the Saccarappa dam no later than two years after fish passage is available at the Cumberland Mills dam, and at the Mallison Falls and Little Falls dams no later than two years after passage of specified numbers of American shad or blueback herring at the Saccarappa dam. Concurrent with construction of upstream fish passage facilities, S.D. Warren must install 1-inch trashracks and appropriate bypass facilities for downstream fish passage at the three projects. No Phase 1 fish passage facilities are required at the upstream Gambo and Dundee dams.

---

[11] For ease of administering the licenses, we have altered the numbering and placement of tables as submitted by FWS.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

37. Phase 2 requires the replacement of the denil fish ladders with fishlifts at each of the three minor projects and, pending review by the FWS and the Maine fisheries agencies of the Phase 1 fish passage program, installation of fishlifts and downstream fish passage facilities at the Gambo and Dundee dams. The Phase 2 facilities would be constructed at the three minor projects, once the Phase 2 design populations for targeted species have been reached. The upstream fish passage facilities required as part of Phase 2 at the Gambo and Dundee dams would be completed within 2 years of a target number of American shad and blueback herring being passed at the downstream Little Falls dam (Gambo facilities) and Gambo dam (Dundee facilities). The downstream fish passage facilities at Gambo and Dundee would be completed concurrent with the completion of upstream passage, or within 2 years of the fisheries agencies notifying the licensee that sustained annual stocking of anadromous fish upstream of the projects has been initiated.

38. We estimate that the total annualized cost for the installation of upstream and downstream fish passage facilities for anadromous fish at the five project dams, using the measures prescribed by FWS, would be about $2,199,450 for upstream passage, $479,020 for downstream passage, and $106,040 for lost generation due to attraction flows and zone-of-passage flows. In contrast, the value of power generated by the five projects, with the no-action alternative, would be about $1,639,030.

39. We agree that there would be no need for anadromous fish passage facilities at the project dams if the Cumberland Mills dam does not provide for fish passage. Should populations of anadromous fish gain access to the river immediately below the Saccarappa dam, fish passage would potentially benefit anadromous species. In the FEIS, staff estimated the production potential of the Presumpscot River for Atlantic salmon, American shad, and river herring. As described more fully in Section 4.3.2.2 of the FEIS, staff estimates that the Presumpscot River (including tributaries), with the alternative of relicensing the proposed projects with appropriate fish passage facilities, could support runs of 10,600 to 60,200 American shad, 198,000 alewife, 127,000 blueback herring, and potentially 62 to 186 adult salmon.

40. We conclude that fish passage facilities at the five Presumpscot River projects would be warranted in the future, when the fish passage issues at the Cumberland Mills dam are resolved. However, it is premature to require the design of specific passage measures at this time, as fish passage at the five proposed projects would depend on somewhat uncertain future events, in particular, fish passage at Cumberland Mills and anadromous fish population growth in downstream river reaches. Since future advances in fish passage technology, particularly in the area of downstream fish passage, are possible, different designs, based on the best available technology at that time, may better serve passage needs on the Presumpscot River. FWS's fishway prescription does not require the preparation and filing of design drawings at this time, so that deferring such actions would not conflict with the prescription.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

41. Since the construction of fish passage facilities at the five projects depends on future events, we must have a mechanism for monitoring those events, to determine when fish passage must be ordered, pursuant to the fishway prescription. To this end, we are requiring S.D. Warren to develop and file, for our approval, a fish passage implementation plan for the five proposed projects, that includes: (1) a schedule and format for filing an annual status report with the Commission, reporting the progress of restoration activities in the river, and fish counts at any downstream dams where anadromous fish have access; and (2) proposed time intervals for future development of individual fish passage design plans for the five project dams, once we determine that fish passage is required.[12]

B. American Eel

42. The fishway prescription requires the installation of upstream eel ladders at each of the five project dams. Providing upstream eel passage at the five projects would be a significant enhancement to eels ascending the Presumpscot River, improving access to about 12.2 miles of mainstem rearing habitat, plus habitat in the tributaries to the river. This enhancement can be implemented at a relatively low cost at each project.[13] Each license contains an article implementing the eel passage requirement of the WQC and the Section 18 prescription.

43. For downstream eel passage, the fishway prescription requires 8-hour-per-night shutdowns for 8 weeks (September through October). Because the fishway prescription is more stringent than the conditions of the WQC the prescription controls.

44. In addition to requiring the specific measures in its fishway prescription, Interior requests that the Commission reserve Interior's authority to prescribe fishways during the term of these licenses, including authority to prescribe fishways for Atlantic salmon,

---

[12] Fishway development should be based on a phased approach, as prescribed by FWS, whereby preparation of design plans at a given dam would be triggered by the passage of a specific number of anadromous fish at the next downstream dam. Future fish passage designs and construction schedules should be prepared by S.D. Warren, in consultation with the state and federal fishery agencies, and filed for Commission approval. We suggest that S.D. Warren, in consultation with the resource agencies, design the Phase 1 facilities with potential future upgrades in mind, since the prescription requires their replacement by fish lifts in Phase 2.

[13] The staff estimated the annualized cost of providing upstream eel passage to be about $5,790 at the Dundee Project and $4,850 at each of the other four projects. FEIS at 263.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

American Shad, alewives, blueback herring, and/or American eels, in the event that additional measures beyond those already prescribed are necessary in the future. Consistent with the Commission's policy, each license will contain an article reserving the Commission's authority to require such fishways as may be prescribed by Interior in the future for the respective projects.

Dam Removal

45. A number of non-governmental organizations (NGO), including the Presumpscot Friends, Friends of Sebago Lake, and Maine Council, as well as a variety of individuals, advocate the removal of the Little Falls, Mallison Falls, and Saccarappa dams. These groups and individuals cite the dams' negative effects on fishery resources in the Presumpscot River. The NGOs recommend the immediate removal of the Little Falls and Mallison Falls dams. The NGOs also recommend removal of the Saccarappa dam, contingent upon the removal of the Smelt Hill dam and installation of fish passage at the Cumberland Mills dam.

46. Interior, FWS, EPA, the Maine DMR, the Natural Resources Council of Maine, American Rivers, and the Sebago Chapter of Trout Unlimited recommend that dam removal be evaluated as an alternative to relicensing, but do not specifically recommend dam removal for any of the five projects.

47. To support their recommendations, the agencies and NGOs cite events that have occurred since the relicensing process began. These include: (1) the closing of S.D. Warren's pulp processing mill and the subsequent improvement in the water quality downstream from Cumberland Mills; (2) angling activity that, stimulated by the rewatering of the bypassed reach downstream from S.D. Warren's Eel Weir Project, has exceeded expectation; and (3) the construction of a new gas-fired power plant in Westbrook that may offer an alternative energy source to S.D. Warren to replace the energy lost by decommissioning the three minor projects.

48. Commission staff evaluated three discrete dam removal alternatives in the FEIS: (1) removal of the Little Falls, Mallison Falls, and Saccarappa dams; (2) removal of the Little Falls and Mallison Falls dams only; and (3) removal of the Saccarappa dam only. The environmental effects of these three alternatives are described in detail in Section 4.3 of the FEIS.

49. The agencies and NGOs recommend or support dam removal of the Little Falls, Mallison Falls, and/or Saccarappa dams primarily to enhance aquatic resources in the Presumpscot River. We support restoration of anadromous Fish and American eel in the Presumpscot River. However, we are not convinced that removal of any of these three projects is in the public interest.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

50. Removing one or more of the dams would enhance habitat for Atlantic salmon, American shad, blueback herring, and resident trout species, but would likely reduce available habitat for alewife. However, the existing, relatively shallow run-of-river impoundments, with appropriate fish passage at the dams, would provide an equal or greater potential to restore the targeted clupeid species than dam removal by itself.[14] Indeed, staff's assessment of the dam removal alternatives, with and without fish passage on the remaining S.D. Warren dams on the river, shows that potential clupeid production (as a whole), with dam removal itself, would be slightly lower than would exist if fish passage were installed at the five S.D. Warren dams. Staff's analysis also shows that dam removal, with the installation of fish passage facilities at the remaining S.D. Warren dams, would result in a slightly higher level of clupeid production than the fish passage alternative. While we acknowledge than dam removal, with fish passage at the remaining dams, may potentially provide the best opportunity for anadromous fish restoration in the Presumpscot River, this is not certain. The difference between the dam removal alternatives and the fish passage alternative is relatively small and is within the margin of error for staff's analysis.

51. As with the anadromous clupeids, Atlantic salmon production in the Presumpscot River Basin would increase with any of the dam removal and fish passage alternatives. Based on Commission staff's analysis, salmon production would increase from 31 to 65 percent, and the total number of salmon returning to the river would increase by a maximum of 40 to 120 fish. Assuming a 10-percent exploitation rate (if fishing is allowed), dam removal would increase the potential catch by 4 to 12 fish, from a potential catch of from 6 to 18 fish, without dam removal.

52. The majority of benefits afforded to the anadromous species from removing one or more of the project dams would only be realized if these species have access to the Saccarappa Project. While the Smelt Hill dam was removed recently, S.D. Warren does not propose to construct fish passage at its downstream Cumberland Mills dam, nor are we aware that the resource agencies have begun to pursue passage at the dam. Thus, unrestricted passage up to Saccarappa remains uncertain.

53. Because of the current obstruction to upstream fish passage at the Cumberland Mills dam, limited fisheries benefits would occur with immediate implementation of any of the dam removal alternatives. Accordingly, there does not appear to be a clear advantage, from a fish restoration perspective, for any of the dam removal alternatives. The better option, even if fish passage is provided at Cumberland Mills, would be to proceed with phased development of fish passage facilities at the five dams, as recommended by Commission staff and prescribed by Interior.

---

[14] Clupeids are tolerant of a wide range of habitat conditions, FEIS at 126.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

54. All the dam removal alternatives evaluated by staff in the final EIS would cost somewhat less than operating the projects with fish passage.[15] However, S.D. Warren relies on the power generated at the five Presumpscot River projects to meet the electricity needs at its paper mill in Westbrook. Because there is a need for the power generated by the projects, and because installation of fish passage facilities would provide adequate fish passage, we will not require removal of any of the dams.

Recommendations of Federal and State Fish and Wildlife Agencies Under FPA Section 10(j)

55. Section 10(j)(1) of the FPA, 16 U.S.C. § 803(j)(1), requires the Commission, when issuing a license, to include license conditions based upon recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661, et seq., to "adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat)" affected by the project. If the Commission believes that any such recommendation may be inconsistent with the purpose and requirements of Part I of the FPA, or other applicable law, Section 10(j)(2) of the FPA, 16 U.S.C. § 803(j)(2), requires the Commission and the agencies to attempt to resolve such inconsistencies, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies. If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

56. Only FWS filed Section 10(j) recommendations for the Presumpscot River projects.[16] The new licenses for each of the five projects contain conditions consistent with recommendations for: (1) run-of-river operation; (2) project operations and flow monitoring plan; and (3) recreation use monitoring.[17]

---

[15] Removal of three dams would cost approximately $1 million. Removal of Little Falls and Mallison Falls, with fish passage at Saccarappa, would cost approximately $1.1 million. Removal of Saccarappa, with fish passage at Little Falls and Mallison Falls, would cost about $1.3 million. Installing fish passage at the three dams would cost about $1.5 million.

[16] The FWS filed one set of recommendations under Section 10(j) pertaining to all five of the projects.

[17] FWS recommends recreation use monitoring and filing a report on recreation use every six years. In the FEIS, Commission staff properly determined that these two recommendations do not fall within the scope of Section 10(j). Under Section 10(a) of

(continued…)

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

57. Commission staff made an initial determination that some of the recommendations of FWS were inconsistent with the substantial evidence standard of Section 313(b) and the comprehensive planning and public interest standards of Sections 4(e) and 10(a) of the FPA. In the DEIS, staff concluded that FWS's recommendations for (1) year-round minimum flows in the Mallison Falls, Gambo, and Dundee bypassed reaches; and (2) shoreline management plans at each of the five projects were inconsistent with Part I of the FPA. As detailed in the DEIS, Commission staff concluded that these would not provide environmental benefits commensurate with their costs, and that the alternative measures Commission staff recommended would adequately protect fish and wildlife.

58. By letter dated October 1, 2001, Commission staff advised FWS of its preliminary determinations. In an attempt to resolve the apparent inconsistencies, Commission staff met with representatives of FWS, the Maine DEP, and S.D. Warren on February 19, 2002. We discuss Commission staff's attempt to resolve the apparent inconsistencies for the Saccarappa Project in Section II of this order. Our Section 10(j) discussion and findings relative to the apparent Section 10(j) inconsistencies for the Mallison Falls, Little Falls, Gambo, and Dundee projects are found in each of the respective companion orders.

State and Federal Comprehensive Plans

59. Section 10(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a hydroelectric project is consistent with federal and state comprehensive plans for improving, developing, or conserving waterways affected by the project.[18] Under Section 10(a)(2)(A), federal and state agencies filed a total of 19 qualifying comprehensive plans for the state of Maine. Of these, we identified and reviewed eight federal and six state plans relevant to the Presumpscot River projects, [19] and found no conflicts.

(continued…)
the FPA, we are adopting recreation use monitoring and reporting provisions for each project, as recommended by Commission staff, which differ slightly from those recommended by FWS.

[18]Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2003).

[19] (1) Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan. U.S. Department of the Interior. May 1986. 19 pp.; (2) Fish and Wildlife Service. 1989. Final Environmental Impact Statement – Restoration of Atlantic Salmon to New England Rivers. U.S. Department of the Interior. Newton Corner, Massachusetts. May 1989. 88 pp. and appendices; (3) National Marine Fisheries Service. Atlantic salmon (*Salmo salar*) – Amendment 1 to the New England
(continued…)

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

II. The Saccarappa Project No. 2897

Background and Relicensing Proposal

60. The Saccarappa Project was originally licensed in 1979, with an expiration date of October 1, 1999.[20] By order issued January 26, 1996, the license expiration date of the Saccarappa Project, as well as the other four Presumpscot Projects, was modified to January 26, 2001.[21] The Saccarappa Project is currently operating under the terms and conditions of its existing license.

(continued…)
Fishery Management Council's Fish Management Plan on Atlantic salmon. October 1998; (4) National Marine Fisheries Service. 2000. Fishery Management Report No. 36 of the Atlantic States Marine Fisheries Commission: Interstate Fishery Management Plan for American eel (*Anguilla rostrata*). April 2000. 78 pp.; (5) National Marine Fisheries Service. 1999. Fishery Management Report No. 35 of the Atlantic States Marine Fisheries Commission: Shad and river herring – Amendment 1 to the Interstate Fishery Management Plan for shad and river herring. April 1999. 77 pp.; (6) National Marine Fisheries Service. 2000. Technical Addendum 1 to Amendment 1 of the Interstate Fishery Management Plan for shad and river herring. February 2000. 6 pp.; (7) Fish and Wildlife Service. Undated. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service. Washington, D.C. 11 pp.; (8) National Park Service. 1982. The Nationwide Rivers Inventory. U.S. Department of the Interior. Washington, D.C. January 1982. 432 pp.; (9) Fish and Wildlife Service. Maine Department of Inland Fisheries and Wildlife. Maine Atlantic Sea-Run Salmon Commission. Maine Department of Marine Resources. 1987. Saco River Strategic Plan for Fisheries Management. U.S. Department of the Interior. Laconia, New Hampshire. January 1987. 180 pp.; (10) Maine Atlantic Sea-Run Salmon Commission. 1984. Strategic Plan for Management of Atlantic salmon in the State of Maine. Augusta, Maine. July 1984. 52 pp. and appendices; (11) Maine Department of Conservation. 1993. Maine State Comprehensive Outdoor Recreation Plan, Volume 1. Augusta, Maine. December 1993. 193 pp.; (12) Maine Department of Conservation. 1982. Maine Rivers Study – Final Report. Augusta, Maine. May 1982. 181 pp.; (13) Maine State Planning Office. 1987. State of Maine Comprehensive Rivers Management Plan. Augusta, Maine. May 1987. Three volumes; (14) Maine State Planning Office. 1992. Maine Comprehensive Rivers Management Plan. Volume 4. Augusta, Maine. December 1992.

[20] 9 FERC ¶ 62,063 (1979).

[21] 74 FERC ¶ 62,036 (1996).

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

61. As we noted earlier, the Saccarappa Project is the furthest downstream of the Presumpscot River projects. The project consists of a 322-foot-long diversion dam formed by two concrete overflow structures that are separated by an island. The east overflow section is 220 feet long and 10 feet high, while the west section is 102 feet long and 12 feet high. The dam creates a five-mile-long impoundment extending upstream to the tailwaters of the Mallison Falls Project, with a surface area of approximately 87 acres. The Saccarappa Project also includes: (1) two free-flowing bypassed reaches measuring 475 and 390 feet long on either side of the island; (2) a 380-foot-long and 36-foot-wide intake canal cut into bedrock; (3) a 60-foot-long headgate structure; (4) an 80-foot-long concrete-lined forebay; (5) a 49-foot-wide by 71-foot-long powerhouse; (6) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kW for a total project installed capacity of 1,350kW; (7) a 345-foot-long tailrace channel formed by a 33-foot high concrete guard wall; and (8) a one-mile long, 2.3-kV transmission line/generator lead.

62. As currently licensed, the Saccarappa Project operates in a run-of-river mode and has no required minimum flow releases to the bypass reaches and negligible storage capacity. The Saccarappa Project, along with the other four Presumpscot River projects, provide base-load power to S.D. Warren's Westbrook paper mill. The project generates approximately 7,600,000 kilowatt-hours (kWh) of electricity annually.

63. In its application for a subsequent license for the Saccarappa Project, S.D. Warren proposes to maintain the existing leakage flows of 5 cfs in the eastern bypass reach and 8 cfs in the western bypass reach, but does not propose additional bypass flows. S.D. Warren's other proposals, which apply also to the other four projects, are described in our general discussion of the relicensing proposals, supra.

Section 10(j)

64. FWS recommends that S.D. Warren develop a Shoreline Management Plan (SMP) that would include all licensee-owned lands abutting the project within 500 feet of the high water elevation that are determined to be needed for project-related purposes, such as protecting fish and wildlife habitat, providing public access for recreation, or protecting sensitive, unique, or scenic areas.[22] However, FWS did not identify any such lands. Commission staff did not agree with the FWS recommendation for a SMP, including the 500-foot buffer zone, explaining (in section 4.3.5 of the DEIS), that a SMP is typically required only for major projects when there is a need to resolve a particular

[22] This recommendation falls under Section 10(j) only to the extent that it relates to the protection of, mitigation of damage to, and enhancement of, fish and wildlife, not to the extent that it relates to recreational or other purposes.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

resource issue (e.g., when a threatened or endangered species is present near areas of project recreational use).

65. At the February 19, 2002, Section 10(j) meeting, FWS stated that Commission staff's recommendation not to require a SMP for the Saccarappa Project did not adequately consider either the changing resource values of the concerned agencies or the expected increase in recreational use that would result from increased minimum flows in the river and improved water quality. In addition, the FWS stated that staff's SMP recommendation did not consider the Casco Bay watershed planning efforts. FWS indicated that it was more concerned that the scope of the planning effort involves all five of the Presumpscot River projects, including Saccarappa, than with the specific width of the buffer zone. Commission and FWS staff agreed that the primary goal of a SMP would be to ensure that S.D. Warren continues its involvement in the Casco Bay Estuary Project (CBEP) planning process.

66. Neither FWS nor any other entity provided new information at or after the Section 10(j) meeting to justify the need for a SMP at the Saccarappa Project to protect, enhance, or mitigate damage to fish and wildlife. Because no need has been shown for an SMP at the Saccarappa Project for these purposes, we conclude that the recommendation for development and implementation of an SMP would be inconsistent with the comprehensive development standard of Section 10(a) of the FPA and with the substantial evidence standard of Section 313(b) of the FPA. Licensing the project as proposed, with staff's recommendations and other agency conditions, will adequately protect, enhance, and mitigate damages to fish and wildlife, by providing for run-of-river operation, management of impoundment levels, and fish passage. Therefore, we will not require development of such a plan.[23]

Applicant's Plans and Capabilities

67. In accordance with Sections 10(a)(2)(C) and 15 of the FPA, 16 U.S.C. §§ 803(a)(2)(C) and 808, we have evaluated S.D. Warren and its record as a licensee with respect to the following: (A) compliance history and ability to comply with the new license; (B) safe management, operation, and maintenance of the project; (C) need for power; and (D) transmission service.

---

[23]Although recreational purposes and uses are not within the scope of Section 10(j), coordination with the CBEP in the development of any revised final recreation plan for the project is a reasonable measure under Section 10(a) to ensure that S.D. Warren remains cognizant of local planning efforts as they relate to project recreational facilities and opportunities. In Article 408, we include the CBEP as an entity to be consulted in the preparation of the final recreational plan.

A. Compliance History and Ability to Comply with the New License

68. We have reviewed the relicense application and S.D. Warren's record of compliance with the terms and conditions of the existing license. We find that S.D. Warren's overall record of making timely filings and compliance with its license is satisfactory.

B. Safe Management, Operation, and Maintenance of the Project

69. We reviewed S.D. Warren's management, operation, and maintenance of the Saccarappa Project. The project is exempt from the requirements of Part 12, Subparts C – Emergency Action Plans (EAP), of the Commission's regulations. In addition, the project is not subject to Part 12, Subpart D – Inspection by an Independent Consultant, of the Commission's regulations. We find that the project works are safe and that the licensee's record of managing, operating, and maintaining these facilities presents no reason to believe that the licensee cannot continue to safely manage, operate, and maintain these facilities. The continued operation of the Saccarappa Project would pose no threat to public safety if operated and maintained according to good engineering practices and the normal regulations governing our hydroelectric licenses.

C. Need for Power

70. We assessed the need for power by reviewing the needs in the operating region in which the project is located - southern Maine, within the Northeast Power Coordinating Council (NPCC) region of North American Electric Reliability Council (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a 10-year period. NERC's report[24] on annual supply and demand projections indicates that, for the period 2000-2009, the demand for electric energy in the NPCC region will grow at an average rate of 1.2 percent annually.

71. The Saccarappa Project generates about 7,600,000 kWh annually with an installed capacity of 1,350 kW. All of the power from the project is used at S.D. Warren's paper mill. The mill's annual electricity demand is about 180,000,000 kWh and the mill's load demand is about 21,000 kW.

---

[24] Reliability Assessment 2000-2009: The Reliability of Bulk Electric Systems in North America, NERC, October 2000.

72. If licensed, the project would continue to meet part of S.D. Warren's power needs. The project would displace existing and planned nonrenewable fossil-fueled generation, which contributes to the production of nitrous oxides and sulfurous oxides that contribute to air pollution, as well as carbon dioxide, which contributes to the phenomenon of global warming.

73. We find that the project power would continue to be useful in meeting part of the need for power in southern Maine in both the short and long term.

D. Transmission Service

74. The project includes a 2.3-kV transmission line and generator lead extending approximately 1 mile to the licensee's paper mill in Westbrook. S.D. Warren proposes no new transmission facilities at the project, and the project, as proposed, would not affect the existing licensed transmission facilities.

Comprehensive Development

75. Sections 4(e) and 10(a)(1) of the FPA, 16 U.S.C. §§ 797(e) and 803(a)(1), respectively, require the Commission, in acting on license applications, to give equal consideration to the developmental and environmental uses of the waterway on which a project is located. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

76. In determining whether a proposed project will be best adapted to a comprehensive plan for developing a waterway for beneficial public purposes, pursuant to Section 10(a)(1) of the FPA, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corp., 72 FERC ¶ 61,027 (1995), we employ an analysis that uses current costs to compare the costs of the project and likely alternative power, with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. Our economic analysis provides a general estimate of the potential power benefits and costs of a project and reasonable alternatives to project-generated power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. In making our decision, we consider the project power benefits, both with the applicant's proposed mitigation and enhancement measures and with our modifications and additions to the applicant's proposal.

77. Under the no-action alternative, the Saccarappa Project would generate an average of 7,600,000 kWh of electricity annually, have an annual power value of $307,570 (40.47

mills/kWh), and a total annual cost of $135,700 (18.24 mills/kWh). This results in a net annual benefit of $168,960 (22.23 mills/kWh).

78. As proposed by S.D. Warren, the Saccarappa Project would generate an average of 7,493,000 kWh of electricity annually, have an annual power value of $303,240 (40.47 mills/kWh), and a total annual cost of $176,200 (23.78 mills/kWh). This results in a net annual benefit of $125,070 (16.69 Mills/kWh).

79. As proposed by S.D. Warren and with additional staff-recommended and agency-required measures, including the Phase 1 and Phase 2 fish passage requirements for anadromous fish, the Saccarappa Project would generate an average of 6,584,000 kWh of electricity annually. The project would have an annual power value of $266,450 (40.47 mills/kWh) and a total annual cost of $483,590 (124.60 mills/kWh). This results in a net annual benefit of -$553,900 (-84.13 mills/kWh).

80. Because anadromous fish passage at the Saccarappa Project is dependent on the installation of fish passage facilities downstream at Cumberland Mills dam, an uncertain prospect, it is possible that none of the Phase 1 and Phase 2 fish passage facilities for anadromous fish at the Saccarappa dam will have to be constructed. Under that scenario, the Saccarappa Project would generate an average of 7,172,000 kWh of electricity annually. The project would have an annual power value of $290,350 (40.47 mills/kWh) and a total annual cost of approximately $185,040 (40.11 mills/kWh). Therefore, the resulting annual net benefit of the Saccarappa Project without the fish passage facilities would be $102,960 (0.36 mills/kWh).

81. Under the dam removal alternative, S.D. Warren would no longer use the Saccarappa Project to generate power. Hence, the annual power benefit would be the cost of purchasing replacement energy, or -$307,570. The only annual costs would be those associated with the removal of the dam, or $101,840. The resulting annual net benefit for the dam removal alternative would be about -$409,410.

82. Based on our independent review and evaluation of the Saccarappa Project, the recommendations of the resource agencies and other stakeholders, the dam removal alternative, and the no-action alternative, as documented in the FEIS, we have selected the proposed action with the additional staff-recommended and agency-required measures as the preferred alternative. The project, as conditioned herein, will be best adapted to the comprehensive development of the waterway for beneficial public purposes.

83. We selected this alternative because: (1) issuance of a new license would allow S.D. Warren to maintain a beneficial, dependable, and an inexpensive source of electric energy; (2) the electric energy generated by the project would continue to offset the use of fossil-fuel-fired generation and capacity, thereby conserving non-renewable resources

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

and reducing atmospheric pollution; and (3) the required environmental measures would either protect or enhance water quality, fish and terrestrial resources (including wetlands), public use of recreation facilities and resources, land uses, and historic and archaeological resources in the Presumpscot River and the area affected by the project.

84. The alternative we are adopting includes the following measures:

(1) operation of the Saccarappa Project in a run-of-river mode (Article 401);

(2) maintenance of leakage flows from the dam into the bypassed reaches;

(3) possible future installation of upstream and downstream fish passage facilities for American shad and river herring, as generally prescribed by FWS, and development and implementation of a fish passage implementation plan (Article 406);

(4) design and installation of upstream eel passage facilities, and development and implementation of an eel passage implementation and monitoring plan (Article 404);

(5) development and implementation of a plan for downstream eel passage, including provisions for project shutdowns and conducting a 3-year downstream migrating eel study to assess timing of peak eel movement (Article 405);

(6) development of an impoundment drawdown management plan (Article 402); and

(7) development of a recreational facilities enhancement plan (Article 408) and monitoring of recreation use after construction of the recreation facilities (Article 409).

License Term

85. Section 15(e) of the FPA, 16 U.S.C. § 808 (e), specifies that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years from the date on which the license is issued. The Commission's policy establishes 30-year terms for projects with little or no proposed redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount thereof; and 50-year terms for projects with an extensive amount thereof. It is also the Commission's policy to coordinate to a reasonable extent the license expiration dates of projects in a river basin, in order that subsequent relicense proceedings can also be coordinated.[25]

[25] See 18 C.F.R. § 2.23 (2003).

86. The new license for the Saccarappa Project, as well as for the other four projects, requires a moderate amount of construction and environmental mitigation and enhancement measures, and we are therefore issuing the subsequent license for the Saccarappa Project for a 40-year term. This determination does not include the costs of constructing the Phase 1 and Phase 2 fish passage facilities for anadromous fish, which is dependent upon the occurrence of certain events. We are issuing new or subsequent licenses for the other four projects for similar 40-year terms. Issuing licenses with 40-year terms for all five of the projects will continue to facilitate contemporaneous expiration of licenses of projects in the same river basin, and thereby further the Commission's policy for coordinated treatment of future relicensing proceedings.

The Commission orders:

(A) This license is issued to S.D. Warren Company (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the Saccarappa Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G, filed on January 22, 1999:

Exhibit G Drawing	FERC No. 2897-	Showing
G-1	1003	Project Area Map
G-2	1004	Transmission Line Layout

(2) The project works consisting of: (a) a 322-foot-long concrete dam [with a crest elevation of 69.95 feet U.S. Geological Survey (USGS) datum], comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3-kilovolt (kV) transmission line/generator lead; and (j) other appurtenances.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

The project works are more specifically described in Exhibit A of the application (pages A-1 to A-11) and shown by Exhibit F drawings, filed January 22, 1999:

Exhibit F Drawing	FERC No. 2897-	Description
F-1	1001	Plan of Dam and Cross Sections
F-2	1002	Powerhouse Plan and Section

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

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

(D) This license is subject to the water quality certification conditions applicable to the Saccarappa Project No. 2897 submitted by the State of Maine Department of Environmental Protection pursuant to Section 401(a) of the Clean Water Act, as those conditions are set forth in Appendix A to this order.

(E) This license is subject to the fishway prescription applicable to the Saccarappa Project No. 2897 submitted by the Department of the Interior's U.S. Fish and Wildlife Service, as set forth in Appendix B to this order.

(F) The following sections of the FPA are waived and excluded from the license for this minor project: 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the FPA that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(G) This license is subject to the articles set forth in Form L-9 (October 1975), entitled, "Terms and Conditions of License for Constructed Minor Project Affecting Navigable Waters of the United States," and the following additional articles.

Article 201. The licensee shall pay the United States the following annual charges: for the purposes of reimbursing the United States for the costs of administering Part I of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commissioner's regulations in effect from time to time. The

authorized installed capacity for that purpose is 1,350 kilowatts (kW). This annual charge shall be effective as of the first day of the month in which the license is issued. Under regulations currently in effect, projects with authorized capacity of less than or equal to 1,500 kW will not be assessed an annual administrative charge.

Article 202. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved drawings. The set of originals must be reproduced on silver or gelatin 35 mm microfilm. The duplicate sets are copies of the originals made on diazo-type microfilm. All microfilm must be mounted on type D (3-1/4" x 7-3/8") aperture cards. The licensee shall submit one copy of FORM-587 with the aperture cards.

Prior to microfilming, the Commission Drawing Number (2897-1001 through 2897-1004) shall be shown in the margin below the title block of the approved drawing. After mounting, the Commission Drawing Number must be typed on the upper right corner of each aperture card. Additionally, the Project Number, Commission Exhibit (e.g., F-1, G-1, etc.), Drawing Title, and date of this license must be typed on the upper left corner of each aperture card.

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

Article 301. At least 60 days before starting construction of the fish passage facilities required by this license, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections-New York Regional Office Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of the final contract plans and specifications, including a blasting plan, if applicable. The Commission may require changes to the plans and specifications to assure construction is performed in a safe and environmentally sound manner. Construction may not commence until authorized by the Regional Engineer.

Article 302. At least 60 days before starting construction of the fish passage facilities required by this license, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections-New York Regional Office Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of the Quality Control and Inspection Program (QCIP) for the Commission's review and approval. The QCIP shall include a sediment and erosion control plan.

Article 303. Before starting construction of the fish passage facilities required by this license, the licensee shall review and approve the design of contractor-designed

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

cofferdams and deep excavations. At least 30 days before starting construction of the cofferdams, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections-New York Regional Office Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections) of the approved cofferdam construction drawings and specifications, and the letters of approval.

Article 304. At least 60 days before starting construction of the fish passage facilities required by this license, the licensee shall submit one copy to the Commission's Division of Dam Safety and Inspections-New York Regional Office Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections) of the Temporary Emergency Action Plan (TEAP) for the Commission's review and approval. The TEAP shall describe emergency procedures in case of failure of a cofferdam, any large sediment control structure, or any other water retaining structure that could endanger construction workers or the public. The TEAP shall include a notification list of emergency response agencies, a plan drawing of the proposed cofferdam arrangement, the location of safety devices and escape routes, and a brief description of testing procedures.

Article 305. Within 90 days of completion of construction of the flow measuring equipment specified in Article 403, any fish passage facilities required by Articles 404, 405 and 406, and recreational facilities specified in Article 408, the licensee shall file, for Commission approval, revised Exhibits A, B, F, and G to describe and show the project facilities as-built. The licensee shall submit six copies to the Commission, one copy to the Commission's Regional Director, Division of Dam Safety and Inspections, and one to the Director, Office of Energy Projects.

Article 401. The licensee shall operate the project in a run-of-river mode, with an impoundment elevation of 69.95 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.

Article 402. The licensee shall manage water levels in the Saccarappa 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 and the Commission 2 weeks prior to any planned drawdowns and as soon as possible, but no later than 10 days after any unplanned (or emergency) drawdown.

Article 403. Within 180 days of license issuance, the licensee shall file, with the Commission, for approval, a project operation and flow monitoring plan to document compliance with river-of-river operation and the impoundment drawdown restrictions, as required by Articles 401 and 402 of this license, and Conditions 1.A. and 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 and the impoundment drawdown 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 69.95 feet U.S. Geological Survey datum and notify the Maine Department of Inland Fisheries and Wildlife of any planned drawdowns;

(2) 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;

(3) 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;

(4) a description of the methods and schedule for installing, calibrating, operating and maintaining the monitoring equipment;

(5) specific measures that would ensure that the monitoring system operates under all conditions (including loss of external electric power to the project);

(6) a description of the relative extent of manned versus automatic operation of the monitoring equipment;

(7) 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; and

(8) 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.

The project operation and flow monitoring plan shall include provisions consistent with the emergency notification requirements for run-of-river operation and drawdowns required by this license. In addition, should impoundment elevations and impoundment drawdowns, 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.

Article 404. The licensee shall develop and implement an upstream American eel passage plan. The plan shall include provisions to install, operate, maintain, and evaluate, as appropriate, upstream fish passage facilities for American eel at the Saccarappa Project. The purpose of the plan is to enhance upstream passage at the Saccarappa Project and movement throughout the Presumpscot River drainage. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules.

Within 180 days of license issuance, the licensee shall file, for Commission approval, an upstream American eel passage plan that includes, at a minimum:

(1) final detailed design drawings and other design criteria for the proposed upstream eel passage facility;

(2) the proposed location of the upstream eel passage facility, determined in consultation with the Maine Department of Marine Resources (MDMR) and the U.S. Fish and Wildlife Service (USFWS);

(3) quantification of the flows required to operate the upstream eel passage facility;

(4) an operation and maintenance plan, including a schedule for operating the installed upstream eel passage facility;

(5) an erosion and sedimentation control plan, if ground-disturbing activities are required as part of the eel passage design and construction; and

(6) a schedule for implementing the plan, which provides for installing the upstream eel passage facility within 2 years of license issuance.

The upstream American eel passage plan also shall include provisions to evaluate the effectiveness of the upstream eel fish passage facility. The monitoring provisions of the plan shall include a description of the study methodology employed, as well as a schedule for: (1) implementing the monitoring provisions; (2) consulting with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results (in the form of a final report), along with any recommended changes to the facility, agency comments, and the licensee's response to agency comments with the Commission.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

If the results of the monitoring indicate that changes in project structures or operations are necessary to facilitate upstream eel passage, the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

The licensee shall prepare the upstream American eel passage plan in consultation with the MDMR, the Maine Department of Environmental Protection, and the USFWS. The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the upstream American eel passage plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 305 of this license.

Article 405. Beginning September 1, 2004, and annually thereafter, the licensee shall cease generation at sunset for at least 8 hours per night from September 1 through October 31, as required by Prescription 5 of Appendix B. The licensee shall determine the timing of the generation shutdown each year in consultation with the Maine Department of Marine Resources (MDMR) and the U.S. Fish and Wildlife Service (USFWS). The purpose of the shutdown period is to provide out-migrating American eel safe and timely passage downstream past the project via flows over the project dam.

The licensee shall, in consultation with the MDMR and the USFWS, conduct a 3-year study to determine the specific timing of the generation shutdown, so as to provide the optimum benefit for eel out-migration. Within 180 days of license issuance, the licensee shall file, with the Commission, for approval, a plan to monitor eel out-migration in the Presumpscot River. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules. The monitoring plan shall includes, at a minimum:

(1) a provision to monitor eel out-migration past the project for the first 3 years after initiating the generation shutdowns in accordance with this article;

(2) a description of the study methodology employed; and

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

(3) a schedule for: (a) implementing the plan and monitoring provisions; (b) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (c) filing the results (in the form of a final report), along with any recommendations for changes in the timing of generation shutdowns, agency comments, and the licensee's response to agency comments with the Commission.

The licensee shall prepare the downstream American eel passage and monitoring plan in consultation with the MDMR, the Maine Department of Environmental Protection (MDEP), and the USFWS. The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

The Commission reserves the right to require changes to the downstream American eel passage and monitoring plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in the timing of generation shutdowns are necessary to effectively pass eels downstream past the project, the licensee may petition the MDEP and the USFWS to adjust the timing and duration of the generation shut downs. The Commission, based on the monitoring results and any recommendations filed by the licensee and agencies, may direct the licensee to make such reasonable changes in project facilities and operations, as necessary. Any structure built pursuant to this article shall be shown on the as-built drawings filed pursuant to Article 305 of this license.

Article 406. Within 180 days of license issuance, the licensee shall file, with the Commission, for approval, a fish passage implementation plan for the installation, operation, maintenance, and evaluation, as appropriate, of upstream and downstream anadromous fish passage facilities at the Saccarappa Project. The purpose of the plan is to monitor the need for fish passage at the five Presumpscot River projects to enhance populations of Atlantic shad and blueback herring in the Presumpscot River. The licensee shall prepare a single plan for its Dundee, Gambo, Little Falls, Mallison Falls, and Saccarappa projects to ensure coordination of fish passage among the projects.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

The plan shall include, at a minimum:

(1) a schedule and format for filing an annual status report with the Commission, on the progress of anadromous fish restoration efforts in the Presumpscot River, including efforts to provide fish passage at the downstream Cumberland Mills dam and fish counts at any or all downstream dams where fish passage has been installed;

(2) a description of the specific criteria (e.g., the number of fish passing the next downstream dam) that would trigger the development of individual fish passage design plans for the five Presumpscot River dams; and

(3) an estimated schedule (or proposed time intervals) for installing fish passage facilities at each of the five project dams, once the Commission determines that fish passage is required in accordance with the U.S. Fish and Wildlife Service's (USFWS) fishway prescription.

The licensee shall prepare the fish passage implementation plan in consultation with the Maine Department of Environmental Protection, the Maine Department of Marine Resources, the Maine Atlantic Salmon Commission, the Maine Department of Inland Fisheries and Wildlife, and the U.S. Fish and Wildlife Service. The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.

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

Article 407. Authority is reserved, by the Commission, to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the Interior during the term of the license under Section 18 of the Federal Power Act.

Article 408. Within 1 year of license issuance, the licensee shall file, for Commission approval, a Recreational Facilities Enhancement Plan for the Saccarappa Project. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

The plan shall, at a minimum, provide final details of the licensee's plans and schedules to construct, operate, and maintain the following recreational enhancements at the project, consistent with conceptual plans provided in Section 2.5.3 and shown in Figure E.2.5-1 of the license application:

(1) a formal canoe portage take-out and car-top boat access upstream of the dam, with signage and parking; and

(2) a provision to mechanically remove vegetation.

This plan should include, at a minimum, the following elements: (1) final design drawings and a construction schedule for each of the enhancements listed above; (2) site-specific measures to control erosion and sedimentation during, and subsequent to, construction of the proposed facilities; and (3) a discussion of how the needs of the disabled were considered in the planning and design of each recreation facility.

The licensee shall prepare the revised final recreational facilities enhancement plan in consultation with the Maine Department of Environmental Protection (MDEP), the Maine Department of Conservation (MDOC), the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Department of Marine Resources (MDMR), the Maine Historic Preservation Commission (MHPC), the National Park Service (NPS), the town of Windham, Gorham Trails, the Casco Bay Estuary Project (CBEP), and the U.S. Fish and Wildlife Service (USFWS).

The licensee shall include with the plan documentation of consultation, copies of comments and recommendations received on the plan after it has been prepared and provided to the MDEP, MDOC, MDIFW, MDMR, MHPC, NPS, the town of Windham, Gorham Trails, CBEP, and USFWS; and specific descriptions of how the MDEP, MDOC, MDIFW, MDMR, MHPC, NPS, the town of Windham, Gorham Trails, CBEP, and USFWS, are accommodated by the plan. The licensee shall allow a minimum of 30 days for the consulted entities to comment and make recommendations prior to filing the plan with the Commission for approval. If the licensee does not adopt a recommendation, the filing shall include the licensee’s reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No ground-disturbing or land-clearing activities for new recreational facilities shall begin until the Commission notifies the licensee that the plan is approved. Upon approval, the licensee shall implement the plan, including any changes required by the Commission. Any facilities built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 305 of this license.

Article 409. Within 3 years of license issuance the licensee shall file, for the Commission approval, a plan for monitoring recreational use at the project. The purpose of the recreational use monitoring is to determine the adequacy of the recreational enhancements required in Article 408 to meeting recreational demand at the project. 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, at a minimum, shall include:

(1) a statement of methodology including the type and frequency of monitoring measures;

(2) a provision to monitor boating and angler use;

(3) a provision to assess the recreational needs at the project;

(4) an implementation schedule that would ensure completion of the monitoring of recreational use so that a recreational use report, based on the monitoring data, and any recommendations shall be filed with the Commission by December 31, 2009. The recreational use report may be filed in conjunction with the "Licensed Hydropower Development Recreation Report" (Form 80) for the licensee-owned Gambo and Dundee Projects, (P-2931 and P-2942, respectively);

(5) a provision for subsequent monitoring and filing, with the Commission, of a recreational use report every 12 years thereafter, and if there is a need for additional facilities, measures proposed by the licensee to accommodate recreation needs in the project area. The recreational use report may be filed in conjunction with the Form 80 for licensee-owned Gambo and Dundee Projects (P-2931 and P-2942, respectively); and

(6) a schedule for consulting with the Maine Department of Conservation (MDOC), the Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Department of Marine Resources (MDMR), U.S. Fish and Wildlife Service (USFWS), prior to the recreational use report being filed with the Commission. The licensee shall file the summary of consultation and any proposed action with the Commission. If the licensee does not adopt any recommendations proposed by the above listed agencies, the filing shall include the licensee's reasons, based on site-specific conditions.

The licensee shall develop the recreational use monitoring plan in consultation with the MDOC, MDIFW, MDMR, and the USFWS. The licensee shall include with the

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

plan documentation of consultation, copies of comments and recommendations on the completed plan after they have been prepared and provided to the MDOC, MDIFW, MDMR, and the USFWS, and specific descriptions of how the MDOC, MDIFW, MDMR, and the USFWS comments are accommodated by the plans. The licensee shall allow a minimum of 30 days for the MDOC, MDIFW, MDMR, and the USFWS 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.

Article 410. The licensee shall implement the "Programmatic Agreement Among the Federal Energy Regulatory Commission, and the State of Maine, State Historic Preservation Officer, for Managing Historic Properties That May Be Affected By A License Issuing to the S.D. Warren Company For the Continued Operation and Maintenance of the Presumpscot River Projects in Maine," executed on July 15, 2002, including but not limited to the Historic Properties Management Plan (HPMP) for the project. In the event that the Programmatic Agreement is terminated, the licensee shall implement the provisions of its approved HPMP. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee shall obtain approval before engaging in any ground disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effect.

Article 411. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, such action includes, as

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the licensee may grant permission without prior Commission approval are:

(1) landscape plantings;
(2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings;
(3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and
(4) food plots and other wildlife enhancement.

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

Before granting permission for construction of bulkheads or retaining walls, the licensee shall:

(1) inspect the site of the proposed construction;
(2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and
(3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline.

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

(c) The licensee may convey easements or rights-of-way across, or leases of, project lands for:

(1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained;
(2) storm drains and water mains;
(3) sewers that do not discharge into project waters;
(4) minor access roads;
(5) telephone, gas, and electric utility distribution lines;
(6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary;
(7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and
(8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for:

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

elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

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

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

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

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

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

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

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

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

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

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

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

By the Commission.

(S E A L)

Magalie R. Salas,
Secretary.

Appendix A

Water Quality Certification Conditions for the Saccarappa (P-2897), Mallison Falls (P-2932), Little Falls (P-2941), Gambo (P-2931), and Dundee (P-2942) Hydroelectric Projects, Issued April 30, 2003, by the State of Maine Department of Environmental Protection

THEREFORE, the Department APPROVES the applications of S.D. WARREN COMPANY and GRANTS CERTIFICATION that there is a reasonable assurance that the continued operation of the PRESUMPSCOT RIVER HYDRO PROJECTS, as described above, will not violate applicable water quality standards, SUBJECT TO THE FOLLOWING CONDITIONS:

1. **Water Levels and Flows**

   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 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 1 foot of full pond when flashboards are in place and within 1 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.

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 6 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 6 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.

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. **Impoundment Drawdown and Refill Procedures**

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% of the outflow from Sebago Lake shall be used to refill the impoundments while flows from each project are maintained at 75% or more of the outflow from Sebago Lake.

3. **Upstream Eel Passage**

A. Upstream eel passage facilities shall be installed and operational at all projects within 2 years following the issuance of a new FERC license for the projects.

B. The applicant shall, at least 60 days prior to construction or upon such other schedule as established by FERC, submit final design and operational plans for the

upstream eel passage facilities required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive the approval of DEP prior to construction. In reviewing the plans, the DEP will consider the recommendations of DMR.

C. The applicant shall, in consultation with the Department of Marine Resources, conduct a study or studies to determine the effectiveness of the upstream eel passage facilities required by this condition.

D. The applicant shall, concurrent with the commencement of facilities operation or upon such other schedule as established by FERC, submit plans for a study or studies to determine the effectiveness of the upstream eel passage facilities required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive the approval of DEP prior to implementation. In reviewing the plans, the DEP will consider the recommendations of DMR.

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 upstream eel passage effectiveness studies, along with any recommendations for changes in the design and/or operation of any passage facilities installed pursuant to this condition.

F. The applicant shall be responsible for taking such actions as are needed to effectively pass eels upstream through the projects. After reviewing the study results, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require reasonable changes in the design and/or operation of the upstream eel passage facilities installed pursuant to this condition as may be deemed necessary to effectively pass eels upstream through the projects.

4. **Downstream Eel Passage**

A. The applicant shall, immediately following the issuance of a new FERC license for the projects, institute operational measures to provide downstream eel passage at all projects. These measures must include suspending generation at each project for at least 4 hours per night for at least four one-week periods during the downstream eel migration period. The timing of the generation shutdown shall be determined each year, in consultation with the Department of Marine Resources, to maximize the expected benefit for downstream eel migration.

B. The applicant shall, in consultation with the Department of Marine Resources, conduct a 3-year study to determine the exact timing of the generation shutdown, so as to result in the optimum benefit for downstream eel migration.

C. 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 to determine the exact timing of the generation shutdown required by Part B of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive the approval of DEP prior to implementation. In reviewing the plans, the DEP will consider the recommendations of DMR.

D. 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 the downstream eel passage study, along with any recommendations for the exact timing of the generation shutdowns required by this condition.

E. The applicant shall be responsible for taking such actions as are needed to effectively pass eels downstream through the projects. After reviewing the study results, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require changes in the timing of the operational shutdowns required by this condition as may be deemed necessary to effectively pass eels downstream through the projects.

F. In the event that downstream passage facilities are installed at a project pursuant to Condition 5 below, the applicant may, in consultation with the Department of Marine Resources, conduct a study to determine the effectiveness of these facilities in passing eels downstream through the project. Upon request by the applicant, and after reviewing the study results and the recommendations of DMR, the Department reserves the right to reduce or terminate the operational shutdowns required by this condition.

5. **Upstream and Downstream Anadromous Fish Passage**

Saccarappa Project

A. The applicant shall install and operate the following upstream fish passage facilities at the project:

- Phase I. A Denil "fish ladder," or other passage facilities of comparable efficiency in passing the target species, designed to pass at least 18,000 American shad, 109,000 blueback herring, and 273 Atlantic salmon annually. These facilities, which shall include a counting, trapping and

sorting facility, must be operational no later than 2 years after passage is available at the downstream Cumberland Mills Dam.

- Phase II. Convert or replace the Phase I passage facilities with a fish lift, or other passage facilities of comparable efficiency in passing the target species, designed to pass up to 58,000 American shad, 353,000 blueback herring, and 426 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission of initiation of Phase II restoration above Gambo Dam and (2) the capacity of the installed Phase I passage facilities has been reached for any of the target species.

B. The applicant shall install and operate downstream passage facilities designed to pass American shad, blueback herring, and Atlantic salmon at the project. These facilities shall be operational concurrent with the completion of upstream anadromous fish passage facilities at the project or within 2 years following notification by the Department of Marine Resources or the Atlantic Salmon Commission of sustained stocking of anadromous fish above the Saccarappa Dam, whichever comes first.

Mallison Falls Project

A. The applicant shall install and operate the following upstream fish passage facilities at the project:

- Phase I. A Denil "fish ladder," or other passage facilities of comparable efficiency in passing the target species, designed to pass at least 4,200 American shad, 26,000 blueback herring, and 32 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after passage of at least 2,960 American shad or 18,020 blueback herring in any single year at the downstream Saccarappa Project.

- Phase II. Convert or replace the Phase I passage facilities with a fish lift, or other passage facilities of comparable efficiency in passing the target species, designed to pass up to 44,000 American shad, 270,000 blueback herring, and 185 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission of initiation of Phase II restoration above

Gambo Dam and (2) the capacity of the installed Phase I passage facilities has been reached for any of the target species.

B. The applicant shall install and operate downstream passage facilities designed to pass American shad, blueback herring, and Atlantic salmon at the project. These facilities shall be operational concurrent with the completion of upstream anadromous fish passage facilities at the project or within 2 years following notification by the Department of Marine Resources or the Atlantic Salmon Commission of sustained stocking of anadromous fish above the Mallison Falls Dam, whichever comes first.

Little Falls Project

A. The applicant shall install and operate the following upstream fish passage facilities at the project:

- Phase I. A Denil "fish ladder," or other passage facilities of comparable efficiency in passing the target species, designed to pass at least 3,100 American shad, 19,000 blueback herring, and 15 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after passage of at least 2,960 American shad or 18,020 blueback herring in any single year at the downstream Saccarappa Project.

- Phase II. Convert or replace the Phase I passage facilities with a fish lift, or other passage facilities of comparable efficiency in passing the target species, designed to pass up to 43,000 American shad, 263,000 blueback herring, and 168 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission of initiation of Phase II restoration above Gambo Dam and (2) the capacity of the installed Phase I passage facilities has been reached for any of the target species.

B. The applicant shall install and operate downstream passage facilities designed to pass American shad, blueback herring, and Atlantic salmon at the project. These facilities shall be operational concurrent with the completion of upstream anadromous fish passage facilities at the project or within 2 years following notification by the Department of Marine Resources or the Atlantic Salmon Commission of sustained stocking of anadromous fish above the Little Falls Dam, whichever comes first.

Gambo Project

A. The applicant shall install and operate the following upstream fish passage facilities at the project:

- Phase I. No upstream fish passage facilities required.

- Phase II. A fish lift, or other passage facilities of comparable efficiency in passing the target, designed to pass up to 40,000 American shad, 244,000 blueback herring, and 153 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission of initiation of Phase II restoration above Gambo Dam and (2) passage of at least 620 American shad or 3,800 blueback herring in any single year at the downstream Little Falls Project.

B. The applicant shall install and operate downstream passage facilities designed to pass American shad, blueback herring, and Atlantic salmon at the project. These facilities shall be operational concurrent with the completion of upstream anadromous fish passage facilities at the project or within 2 years following notification by the Department of Marine Resources or the Atlantic Salmon Commission of sustained stocking of anadromous fish above the Gambo Dam, whichever comes first.

Dundee Project

A. The applicant shall install and operate the following upstream fish passage facilities at the project:

- Phase I. No upstream fish passage facilities required.

- Phase II. A fish lift, or other passage facilities of comparable efficiency in passing the target species, designed to pass up to 20,000 American shad, 122,000 blueback herring, and 64 Atlantic salmon annually. These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 2 years after (1) notification from the Department of Marine Resources, the Department of Inland Fisheries and Wildlife, and the Atlantic Salmon Commission of initiation of Phase II restoration above Gambo Dam and (2) passage of at least 4,020 American shad or 24,460 blueback herring in any single year at the downstream Gambo Project.

B. The applicant shall install and operate downstream passage facilities designed to pass American shad, blueback herring, and Atlantic salmon at the project. These facilities shall be operational concurrent with the completion of upstream anadromous fish passage facilities at the project or within 2 years following notification by the Department of Marine Resources or the Atlantic Salmon Commission of sustained stocking of anadromous fish above the Dundee Dam, whichever comes first.

All Projects

C. The applicant shall, at least 180 days prior to construction or upon such other schedule as established by FERC, submit final design and operational plans for the upstream and downstream anadromous fish passage facilities required by Parts A and B of this condition, prepared in consultation with the Department of Marine Resources and the Atlantic Salmon Commission. These plans shall be reviewed by and must receive the approval of DEP prior to construction. In reviewing the plans, the DEP will consider the recommendations of the ASC and DMR.

D. The applicant shall, in consultation with the Department of Marine Resources and the Atlantic Salmon Commission, conduct a study or studies to determine the effectiveness of the upstream and downstream anadromous fish passage facilities required by this condition.

E. The applicant shall, concurrent with the commencement of facilities operation or upon such other schedule as established by FERC, submit plans for a study or studies to determine the effectiveness of the upstream and downstream anadromous fish passage facilities required by Parts A and B of this condition, prepared in consultation with the Department of Marine Resources and the Atlantic Salmon Commission. These plans shall be reviewed by and must receive the approval of DEP prior to implementation. In reviewing the plans, the DEP will consider the recommendations of the ASC and DMR.

F. 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 upstream and downstream anadromous fish passage effectiveness studies, along with any recommendations for changes in the design and/or operation of any passage facilities installed pursuant to this condition.

G. The applicant shall be responsible for taking such actions as are needed to effectively pass anadromous fish upstream and downstream through the projects, insofar as passage is required in accordance with Parts A and B of this condition. After reviewing the results of the study, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require reasonable

changes in the design and/or operation of the upstream and downstream anadromous fish passage facilities installed pursuant to this condition as may be deemed necessary to effectively pass anadromous fish upstream and downstream through the projects.

6. **Reaeration Measures**

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 AM, and shall be in addition to the minimum bypass flows required by Condition 1 above.

B. The applicant shall, within 6 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 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.

7. **Recreational Facilities**

A. The applicant shall develop and implement a Recreational Facility Enhancement Plan for each project, which shall include, at a minimum, the following measures to maintain and/or enhance recreational access and use in the project areas:

Dundee Project

- Rerouting, stabilizing, and maintaining the existing canoe portage trail;
- Seeking an easement to provide walk-in angler access to the project bypass reach; and
- Investigating whether an existing access easement can be altered to permit fishery agency access for stocking purposes.

Gambo Project

- Enhancing and maintaining the existing informal canoe portage trail;
- Developing an interpretive sign to explain the history of the Oriental Powder Mill Complex;
- Providing walk-in angler access to the bypass reach;
- Developing parking and signs for carry-in boat access at the portage take-out location; and
- Assisting the Town of Gorham in regrading and enhancing the Gambo Road approach to the former bridge area immediately upstream from the dam.

Little Falls

- Establishing and maintaining a canoe portage trail;
- Assist Gorham Trails in developing parking, signage, and access for a carry-in boat launch at the Gorham Land Trust Property off of the Tow Path Road; and
- Donate approximately 0.8 acres of land on the island located off-shore of the Hawkes Property to the Gorham Land Trust.

Mallison Falls

- Establishing and maintaining a formal canoe portage trail;
- Providing signs for parking and access at the existing carry-in boat access site at the project powerhouse;
- Developing parking, signage, and access for a carry-in boat access site above the project dam;
- Seeking permission from the Department of Transportation and the Town of Gorham to provide a roadside pullout and carry-in boat access site next to the bridge abutment above the project dam; and
- Continuing to seek an easement or other opportunities to provide walk-in angler access to the bypass reach.

B. The applicant shall, within 12 months following the issuance of a new FERC license for the project or upon such other schedule as established by FERC, submit a Recreational Facility Enhancement Plan for each project as required by Part A of this condition. This plan shall be prepared in consultation with the Department of Conservation and the Department of Inland Fisheries and Wildlife, and shall include a schedule for implementation. This plan shall be reviewed by and must receive approval of the DEP.

8. **Limits of Approval**

This approval is limited to and includes the proposals and plans contained in the applications and supporting documents submitted and affirmed to by the applicant.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

9. **Compliance with all Applicable Laws**

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the projects in accordance with the terms of this certification.

10. **Effective Date**

This water quality certification shall be effective concurrent with the effective date of the licenses issued for the projects by the Federal Energy Regulatory Commission.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

Appendix B

UNITED STATES DEPARTMENTOF THE INTERIOR'S DECISION DOCUMENT, PRESCRIPTIONS FOR FISHWAYS PURSUANT TO SECTION 18 OF THE FEDERAL POWER ACT

10. Prescription for Fishways

Pursuant to Section 18 of the Federal Power Act, as amended, the Secretary of the Department of the Interior, as delegated to the Service, exercises her authority to prescribe the construction, operation, and maintenance of such fishways as deemed necessary.

10.1 General Prescriptions for the Presumpscot River Projects

A. This prescription for fishways is based on the assumption that fish passage or dam removal would be achieved at the downstream Smelt Hill Dam and the Cumberland Mills Dam, and that the Commission will not order the removal of the Saccarappa, Mallison Falls, and/or Little Falls Projects, as described in the DEIS. (DEIS, p. 28). Several interested parties, including the Department, have urged the removal of one or more of these projects. If, in its public interest consideration and licensing decision, the Commission orders the removal of one or more of these projects, the Department will modify its Prescription for Fishways accordingly.

B. Fishways shall be constructed, operated, and maintained to provide safe, timely, and effective passage for Atlantic salmon, American shad, blueback herring, and American eels at the licensee's expense.

To ensure the immediate and timely contribution of the fishways to the on-going and planned anadromous and catadromous fish restoration and enhancement program in the Presumpscot River, the following are included and shall be incorporated by the licensee to ensure the effectiveness of the fishways pursuant to Section 1701(b) of the 1992 National Energy Policy Act (P.L. 102-486, Title XVII, 106 Stat. 3008).

C. Design Populations

The total number of returning fish reaching the lowermost of the five projects covered in this relicensing would depend on a number of factors, including whether fishways are installed or dam removals are used to achieve passage. Overall fishway efficiency and cumulative losses of fish attempting to use the upstream and downstream fish passage facilities also would affect the total potential restored run of shad, river herring, salmon, and eels.

1. Shad and River Herring

Based on current estimates, restored runs of shad and river herring in the Presumpscot River could approach 75,000 Shad, 200,000 Alewives, and 450,000 Blueback Herring. The numbers of fish expected to pass each of the dams on the river are contained in the Department's Administrative Record and are summarized below (See Table 1).

2. Atlantic Salmon

Projections for restored runs of Atlantic salmon runs have been calculated, along with minimum levels of escapement at each dam needed to ensure that restoration and management goals are met. Those numbers of fish also are summarized below. It is unlikely, however, that the run of salmon would be large enough to affect the design of fishways at any of the five project dams. The more numerous species (Shad and Herring) typically determine the kind of fish passage that should be built at a hydroelectric project.

3. American Eel

American eels already are present in the area occupied by the five projects. While the Department does not have a precise estimate of the numbers of eels that would be expected to use fish passage at the projects, such passage would enhance the eel stocks and help achieve overall management goals. In addition, upstream passage needs for eels differ from those of salmon, shad, and river herring. Separate upstream eel fishways typically are installed at barriers in addition to those that are provided for anadromous fish.

Table 1. Summary of Fishway Design Populations

Project	Species	Phase 1*	Phase 2*
Saccarappa	American shad	18,000	58,000
	Blueback herring	109,000	353,000
	Atlantic salmon	273	426
	American eel	undetermined	undetermined
Mallison Falls	American shad	4,200	44,000
	Blueback herring	26,000	270,000
	Atlantic salmon	32	185
	American eel	undetermined	undetermined
Little Falls	American shad	3,100	43,000
	Blueback herring	19,000	263,000
	Atlantic salmon	15	168
	American eel	undetermined	undetermined
Gambo	American shad	--	40,000
	Blueback herring	--	244,000

	Atlantic salmon American eel	-- undetermined	153 undetermined
Dundee	American shad Blueback herring Atlantic salmon American eel	-- -- -- undetermined	22,000 122,000 64 undetermined

Note: Data provided by State agencies rounded to nearest (1,000) above 10,000.
(*) See Paragraph 10.1.E on Scheduling.

4. Other Species

Fish passage provided at one or more of the five projects would be expected to pass trout, landlocked salmon, and other riverine species. The numbers of riverine fish using the fishways are likely to be small, relative to anadromous and catadromous species.

D. Upstream fishways shall be operationa1 during the designated migration period at river flows up to 3,000 cfs (See Table 2), as measured at the USGS gage at Westbrook (#01064118). Downstream fishways shall be operated during the designated migration period whenever units are operated at the Presumpscot River projects.

Table 2. Upstream and downstream migration periods for species covered in this Prescription for Fishways. *

Species	Upstream Migration Period	Downstream Migration Period
Atlantic salmon	April 15 – November 15	April 1 – June 30 (smolts & kelts) October 15 – December 31 (kelts)
American shad	May 1 – July 15	August 1 – November 15 (juv.) May 15 – August 1 (adult)
Alewife & blueback herring	May 1 – July 15	July 15 – November 15 (juv.) May 15 – August 1 (adult)
American eel	April 1 – June 30 **	July 15 – November 15 ***

* Any of these migration periods may be changed during the term of the license by the Service, based on new information, in consultation with the other fishery agencies and the licensee.

** The eel upstream migration period will need to be refined as more information is made available. The Service is calling for the licensee to study the duration and timing

of upstream eel migration through the projects so that the effectiveness of this period can be evaluated.

*** July 15 – November 15 is the period set by the State of Maine for harvesting silver eels. The Service is initially using a reduced period, September 1 – October 31 as the downstream migration period for eels. The Service is calling for the licensee to study the magnitude and timing of downstream eel migration through the projects so that the effectiveness of the reduced period can be evaluated.

E. Scheduling

The timing of installation of fish passage at all five projects would be based on the growth of migratory and riverine fish populations in the Presumpscot River. American eels already are present in the river and would benefit from the immediate implementation of safe, timely, and effective upstream and downstream fishways. The Commission's DEIS also recommends permanent upstream eel fishways at all five projects (DEIS, p. 225).

A fishway must be installed at Saccarappa Dam as soon as passage is achieved at Smelt Hill and Cumberland Mills. The Commission will need to include appropriate license articles requiring preparation of detailed design plans, installation schedules, and studies to evaluate effectiveness of all upstream and downstream measures to be developed in consultation with the Service and other resource agencies. In order to allow for proper consultation with resource agencies and approval by the Commission of all design plans, permanent fish passage must be operational at the Saccarappa Dam within 2 years of the completion of fishway installation at Cumberland Mills Dam (or within 2 years of its removal or breaching). If Saccarappa Dam is not relicensed, and is subsequently removed, the Commission must place similar requirements for implementing fish passage at the license for the next upstream project (Mallison Falls). Numbers of fish counted at each barrier that would be sufficient to trigger installation of fishways at upstream dams is provided below in Table 3.

Upstream fish passage for American eels shall be fully operational no later than 2 years after the date of issuance of a new license. Downstream passage (shutdowns) shall be implemented as soon as the licenses are effective (30 days after date of license issuance). This will ensure that the existing eel resource in the Presumpscot River benefits from passage improvements as soon as practicable.

Table 3. Schedule for implementation of fish passage at Presumpscot River Projects.

Project	Phase 1	Phase 2
Saccarappa	**Anadromous Fish**: **Upstream passage** completed 2 years after passage is available at Cumberland Mills Dam. **Downstream passage** will be completed concurrent with the completion of upstream passage. However, in the event that the Department notifies the licensee that sustained annual stocking of anadromous fish above the project has begun or will begin within 2 years, the downstream passage facility shall be constructed within 2 years of this notice. **American Eel**: **Upstream passage** within 2 years of licensing. **Downstream passage** (shutdowns) within 30 days of licensing. (*)	**Anadromous Fish**: **Upstream passage** upgrade of capacity in accordance with design populations for Phase 2.
Mallison Falls and Little Falls	**Anadromous Fish**: **Upstream passage** will be completed 2 years after 2,960 American shad or 18,020 blueback herring are passed in any single season at Saccarappa Dam. (**)(***) **Downstream passage** will be completed concurrent with the completion of upstream passage. However, in the event that the Department notifies the licensee that sustained annual stocking of anadromous fish above the project has begun or will begin within 2 years, the downstream passage facility shall be constructed within 2 years of this notice. **American Eel**:	**Anadromous Fish**: **Upstream passage** upgrade of capacity in accordance with design populations for Phase 2.

	Upstream passage within 2 years of licensing **Downstream passage** (shutdowns) within 30 days of licensing. (*)	
Gambo	**American Eel**: **Upstream passage** within 2 years of licensing **Downstream passage** (shutdowns) within 30 days of licensing. (*)	**Anadromous fish**: **Upstream passage**, pending agency review of Phase 1 for the downstream projects, will be completed 2 years after 620 American shad or 3,800 blueback herring are passed in any single season at Little Falls Dam. **Downstream passage** will be completed concurrent with the completion of upstream passage. However, in the event that the Department notifies the licensee that sustained annual stocking of anadromous fish above the project has begun or will begin within 2 years, the downstream passage shall be constructed within 2 years of this notice.
Dundee	**American Eel**: **Upstream passage** within 2 years of licensing **Downstream passage** (shutdowns) within 30 days of licensing. (*)	**Anadromous fish**: **Upstream passage**, pending agency review of Phase 1 for the downstream projects, will be completed 2 years after 4,020 American shad or 24,460 blueback herring are passed in any single season at Gambo Dam. **Downstream passage** will be completed concurrent with the completion of upstream passage. However, in the event that the Department notifies the licensee that sustained annual stocking of anadromous fish above the

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

		project has begun or will begin within 2 years, the downstream passage shall be constructed within 2 years of this notice.

(*) Initially, downstream passage will be via spill resulting from project shutdown for 8 hours per day beginning at sunset from September 1 through October 31. The timing and magnitude of eel migration through the projects is to be evaluated and reported by the licensee and changed as deemed necessary and appropriate by the Service. There will be consultation at each step.

(**) The trigger numbers represent 20 percent of the estimated production of these species for each reach.

(***) Design of upstream fishways will be based on potential size of the runs of shad and blueback Herring. In the event that the shad and blueback herring trigger numbers are not reached, the Service, in consultation with the MASC, will assess the options for passing any runs of Atlantic salmon that may be present.

F. The timely installation of the prescribed fishway structures, facilities, or devices is a measure directly related to those structures, facilities, or devices and is necessary to ensure the effectiveness of such structures, facilities, or devices. Therefore, the Department's Prescription includes the express requirement that the licensee (1) notify, and (2) obtain approval from the Service for any extensions of time to comply with the provisions included in the Department's Prescriptions for fishways.

G. Regarding the timing of seasonal fishway operations, fishways shall be maintained and operated, at the licensee's expense, to maximize fish passage effectiveness throughout the upstream and downstream migration periods for Atlantic salmon, American shad, blueback herring, and American eel. The migration periods for these fish species in the Presumpscot River are shown above in Table 2.

H. The licensee shall keep the fishways in proper order and shall keep fishway areas clear of trash, logs, and material that would hinder passage. Anticipated maintenance shall be performed sufficiently before a migratory period such that fishways can be tested and inspected, and would operate effectively prior to and during the migratory periods. In consultation with the Service and other fishery agencies, the licensee shall develop a fishway maintenance plan describing the anticipated maintenance, a maintenance schedule, and contingencies. The plan shall be submitted to the Service for final review and approval, and the plan shall contain the consultation comments of the fishery agencies. If any agency recommendation is not incorporated, the licensee's explanation

shall be in the plan that is filed with the Commission. Upon approval by the Service, the licensee shall submit the plan to the Commission for approval.

I. The licensee shall develop plans for and conduct fishway effectiveness evaluations in consultation with the Service and other fishery agencies on all prescribed fish passage. The plans and results of effectiveness studies shall be submitted to the Service for final review and approval, and the plan shall contain the consultation comments of the fishery agencies. If any agency recommendation is not incorporated, the licensee's explanation shall be in the plan that is filed with the Commission. Upon approval by the Service, the licensee shall submit the plan to the Commission for approval.

J. The licensee shall provide personnel of the Service, and other Service-designated representatives, access to the project site and to pertinent project records for the purpose of inspecting the fishways to determine compliance with the fishway prescriptions.

K. The licensee shall develop, in consultation with and submit for approval by the Service, all functional and final design plans, construction schedules, and any hydraulic model studies for the fishways or modifications to existing fishways described herein.

10.2 Specific Prescriptions for the Presumpscot River Projects

10.2.1 Saccarappa Project (FERC #2897)

10.2.1.1 Phase 1

10.2.1.1.1 Upstream Fishways

Prescription item #1 – Construct a Denil fish ladder (4 ft. W x 1-on-8 slope) at the Saccarappa project powerhouse. The fishway is to include facilities for counting, trapping, and sorting in the exit channel, and have two gated entrances capable of collecting migrants in the powerhouse tailrace and at the west side of the spillway. The design of the Phase 1 Denil fish ladder should include provisions to facilitate the conversion to a possible future Phase II fish lift. Modifications are to be made to the tailrace guard wall to provide access for fish attracted to the spillway.

Prescription item #2 – Provide up to 30 cfs attraction flow at each of two fish ladder entrances (up to 60 cfs total attraction flow).

Prescription item #3 – Install a separate upstream fishway for American eels; the specific location of this eelway at the project and other design criteria to be determined by the U.S. Fish and Wildlife Service following consultation with the licensee and Maine Department of Marine Resources.

20031002-3076 Issued by FERC OSEC 10/02/2003 in Docket#: P-2932-003

10.2.1.1.2 Downstream Fishways

Prescription item #4 – Install trashracks with a 1-inch clear opening at the powerhouse turbine intake and gated surface bypass discharging up to 40 cfs during the downstream migration periods.

Prescription item #5 – Shutdown generation at sunset for at least 8 hours per night from September 1 through October 31 to provide out-migrating American eels safe and timely passage downstream via flows over the dam. To aid in the effectiveness evaluation of this item, monitor and report the timing and magnitude of eel out-migration past the project for 3 years.

10.2.1.2 Phase II

Prescription item #6 – Construct a separate Denil fish ladder at the spillway; include facilities for counting, trapping, and sorting. Attraction flow at the entrance of the Denil should be up to 30 cfs.

Prescription item #7 – Convert the Phase I Denil fish ladder at the powerhouse to a fishlift (hopper capacity: 750 gallon) when the capacity of the Denil fish ladder is reached (20,000 shad or 200,000 river herring). The Phase II fishlift will continue to have two gated entrances (powerhouse tailrace and west side of spillway), each discharging up to 30 cfs attraction flow, and retain existing or modified facilities for counting, trapping, and sorting.

APPENDIX C: FERC ORDER AMENDING LICENSE, SACCARAPPA (10/08/2014)

149 FERC ¶ 62,012
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

S.D. Warren Company Project No. 2897-042

ORDER AMENDING LICENSE

(Issued October 8, 2014)

1. On July 22, 2014, S.D. Warren Company, licensee for the Saccarappa Project (FERC No. 2897), file an application to modify the project to relocate the transmission line, add new electrical interconnection equipment, and to remove land from the project boundary. The project is located on the Presumpscot River in Cumberland County, Maine.

Background

2. The Commission issued an Order Issuing Subsequent License for the Saccarappa Project on October 2, 2003.[1] The project works consist of: (a) a 322-foot-long concrete dam [with a crest elevation of 69.95 feet U.S. Geological Survey (USGS) datum], comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3-kilovolt (kV) transmission line/generator lead; and (j) other appurtenances.

Proposed Amendment

3. The licensee proposes to modify the project facilities to establish a new interconnection with the electrical grid and to remove the existing transmission line. The new interconnection would be established through an existing overhead pole and would

[1] 105 FERC ¶ 61,013.

be located completely within the existing project boundary (inside the powerhouse and on grounds adjacent to the Saccarappa station parking lot). After the new interconnection is established, the existing project transmission line would be disconnected and removed. Because the land underlying the existing line would then no longer be necessary for project purposes, the licensee is requesting to remove those lands after removal of the old transmission line. The current project boundary includes approximately 10 feet to either side of the transmission line. The lands under the existing transmission line are heavily vegetated, no change to those lands is anticipated. After removal of the poles, the pole stubs would be cut below grade, and then covered with loam and seeded.

4. The licensee states that the proposed modifications to the project are for the purpose of facilitating the Maine Department of Transportation's reconstruction and realignment of the Bridge Street Bridge, and maintaining power delivery during that 2.5-year construction period.

Pre-Filing Consultation

5. The licensee submitted a draft of this proposed amendment to resource agencies and other stakeholders via an email dated June12, 2014. The following agencies commented on the proposal: Maine Department of Inland Fisheries and Wildlife on June 16, 2014; Maine Department of Environmental Protection on July 22, 2014; Maine State Historic Preservation Office (SHPO) on July 12 and 22, 2014; and the U.S. Army Corp of Engineers on June 13, 2014. None of the commenting agencies had any concerns regarding the proposed changes to the project. The Maine SHPO concluded that the proposed undertaking would have no adverse effect on historic properties.

Environmental Analysis

6. The construction for the new line would be minimal and would take place inside the powerhouse and adjacent to an existing parking lot. Ground disturbance in the area of the existing line would be limited to cutting the pole stubs to below grade and then filling and reseeding the area immediately on top of the pole cutting. No other construction, disturbance, or land use changes are proposed. Therefore, we conclude that there would be minimal, if any, environmental impacts resulting from the licensee's proposal to relocate the existing project transmission line.

Administrative Conditions

A. Project Description

7. The licensee submitted, with its July 22, 2014 amendment application, a supplemental Exhibit A that describes the new transmission line. Although the section of the licensee's supplemental Exhibit A under the heading "Proposed Modifications to Facilities and Project Boundary," conforms to the Commission's regulations, we

discourage supplemental Exhibit A filings in order to maintain a more complete record for the project. Therefore, in ordering paragraph (C) we will require the licensee to review, revise, and file a full Exhibit A describing the complete project and including the changes authorized in this order.

B. Exhibit Drawings

8. The licensee filed three Exhibit F drawings and two Exhibit G drawing with its application. We have reviewed the drawings and found that Exhibit F-1 and F-3 would be unaffected by the proposed work and do not need to be revised. Our review of the applicable exhibit drawings shows that they do not adequately illustrate the proposed changes. Exhibit F-2 and the two Exhibit G drawings include comments showing what will be removed and what is to be added; however, the drawings continue to display facilities and lands which would be removed from the project and do not show the new facilities. Therefore, in ordering paragraph (D), we will require the licensee to properly revise the exhibit drawings and remove the land, transmission line, and other electrical equipment which would no longer be part of the project and add the new facilities.

Conclusion

9. We have reviewed the licensee's application to amend its license to modify the project to relocate the transmission line, add new electrical interconnection equipment, and to remove land from the project boundary. We conclude that the licensee's proposal would have no impact on the operation of the project, or on any environmental resource in the project area. Approval of the proposal would allow for the unimpeded reconstruction and realignment of the Bridge Street Bridge. Therefore, the licensee's request to amend the license, as described above, should be approved.

The Director orders:

(A) S.D. Warren Company's request, filed on July 22, 2014, to modify the project to relocate the transmission line, add new electrical interconnection equipment, and to remove land from the project boundary, is approved.

(B) Ordering paragraph (B)(2) of the license for the Saccarappa Project is revised, in part, to read as follows:

> The project works consisting of: (a) a 322-foot-long concrete dam [with a crest elevation of 69.95 feet U.S. Geological Survey (USGS) datum], comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS

datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 200-foot-long, 12.47 kilovolt transmission line; and (j) other appurtenances.

(C) Within 60 days of completing the decommissioning of the existing power line, the licensee must file, for Commission approval, a revised Exhibit A that describes the facilities and operation of the entire project including the revisions to the electrical equipment approved in this order.

(D) Within 60 days of completing the decommissioning of the existing power line, the licensee must file, for Commission approval, revised Exhibit F-2 and Exhibit G-1 and G-2 drawings which remove the existing transmission line and old transformers and revise the project boundary to exclude lands within the existing transmission line right-of-way. The licensee must also show the new transformer on the Exhibit F drawing and transmission line on the Exhibit G drawings. The exhibit drawings must comply with sections 4.39 and 4.41 of the Commission's regulations.

(E) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825*l* (2012), and the Commission's regulations at 18 C.F.R. § 385.713 (2014). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Robert J. Fletcher
Chief, Land Resources Branch
Division of Hydropower
Administration and Compliance

APPENDIX D: COMMUNICATIONS

2013 Surrender Application

- Application for Amendment of License and Motion to Stay Processing of License Surrender Application, Matthew Manahan, Pierce Atwood, 03/28/2014
  Note: Document includes executed 'Agreement'
- Additional Information Request, Steve Hocking, FERC, 04/09/2014
- Withdrawal of Surrender Application, Steve Hocking, FERC, 09/24/2014

Agreement

- Public Meeting Minutes dated 11/19/2014
- Technical Meeting Minutes dated 02/05/2015, 04/17/2015, 05/21/2015, 07/14/2015, 9/22/2015
- Public Meeting Minutes dated 08/26/2015, 11/19/2015
- Cost Opinion Letter, William Ball, PE, Acheron, 08/17/2015
- Cost Estimate Review, Laura Wildman, P.E., Princeton Hydro, 08/28/2015
- Response to Cost Estimate Review, Barry Stemm, Warren, 09/14/2015
- Cost Estimate Review, Laura Wildman, P.E., Princeton Hydro, 09/21/2015
- Fish Passage Recommendations, Laury Zicari, USFWS, 09/21/2015
- Comments on Saccarappa Project Fish Passage Designs, Patrick Keliher, MDMR, 09/21/2015
- Response to Cost Estimate Review, Barry Stemm, Warren, 10/09/2015

2015 Surrender Application

- *Resource Agency Information Requests*
  - Information Request to MHPC, Sean Murphy, HDR, 11/12/2013
  - Information Request to NPS, Sean Murphy, HDR, 11/12/2013
  - Information Request to Maine DoC, Kelly McVane, HDR 11/04/2013
  - Response from Don Cameron, DoC,, 11/08/2013
  - Information Request to MDIFW, Kelly McVane, HDR, 11/04/2013
  - Response from John Perry, MDIFW, 12/04/2013
  - Information Request to USFWS, Kelly McVane, HDR, 11/12/2013
  - Response from USFWS, 11/13/2013
  - Information Request to MDIFW, Sarah King, Acheron, 05/13/2015
  - Response from John Perry, MDIFW, 05/13/205
  - Information Request to Aroostook Band of Micmac Indians, Sean Murphy, HDR, 11/12/2013
  - Information Request to Houlton Band of Maliseet Indians, Sean Murphy, HDR, 11/12/2013
  - Information Request to Passamaquoddy Tribe, Indian Township, Sean Murphy, HDR, 11/12/2013
  - Information Request to Passamaquoddy Tribe, Pleasant Point, Sean Murphy, HDR, 11/12/2013
  - Information Requests to Penobscot Nation, Sean Murphy, HDR, 11/12/2013
  - Response from Chris Sockalexis, Penobscot Nation, 11/20/2013

- *Agency Comments on Surrender Application*
  - Comment Matrix, Responses to Comments Received
  - Draft Surrender Application, William Ball, Acheron, dated 10/22/2015
  - Comments from Francis Brautigam, IFW, 11/20/2015
  - Comments from Laury Zicari, USFWS, dated 11/23/2015
  - Comments from Patrick Keliher, MDMR, dated 11/23/2015
  - Comments from Sean Mahoney, CLF & Ron Kreisman, FOPR, dated 11/23/2015
  - Comments from William Baker, City of Westbrook, dated 11/23/2015

PIERCE ATWOOD LLP

MATTHEW D. MANAHAN

Merrill's Wharf
254 Commercial Street
Portland, ME 04101

P 207.791.1189
F 207.791.1350
C 207.807.4653
mmanahan@pierceatwood.com
pierceatwood.com

Admitted in: MA, ME, NH

March 28, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: Saccarappa Project, P-2897, Application for Amendment of License and Motion to Stay Processing of License Surrender Application

Dear Secretary Bose:

On behalf of S.D. Warren Company ("Warren") I enclose an Application for Amendment of License and Motion to Stay Processing of License Surrender Application for the above referenced project.

Please let me know if you have any questions or need additional information.

Sincerely,

Matthew D. Manahan

Enclosure
cc: Service List

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

S.D. WARREN COMPANY	)	**Project Nos. P-2897, 2932, 2941, 2931,**
	)	**and 2942**

APPLICATION FOR AMENDMENT OF LICENSES AND MOTION TO STAY PROCESSING OF LICENSE SURRENDER APPLICATION

Pursuant to 18 C.F.R. §§ 4.201 and 385.212, S.D. Warren Company ("Warren") applies to the Commission for an amendment of licenses for the Saccarappa, Mallison Falls, Little Falls, Gambo, and Dundee water power projects ("the Projects"), and for a stay of the processing of the license surrender application for the Saccarappa Project ("Saccarappa") filed with the Commission on December 31, 2013 (the "Surrender Application"). Warren is filing this application to effect the *Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application*, dated March 14, 2014 (the "Agreement"), attached hereto as Exhibit A. In addition to Warren, the parties to the Agreement are the U.S. Department of the Interior and the U.S. Fish and Wildlife Service ("USFWS"), the Maine Department of Inland Fisheries and Wildlife ("MDIFW"), the Maine Department of Marine Resources ("MDMR"), City of Westbrook ("City"), Friends of the Presumpscot River ("FOPR"), and Conservation Law Foundation ("CLF") (collectively, the "Parties").

As provided in Section 3.0 of the Agreement, the Parties to the Agreement jointly make the requests contained herein. As provided in Section 1.5 of the Agreement, the Parties support this application and motion for stay, and it is Warren's understanding that the Parties will file letters in support of this application and motion for stay, as appropriate.

Warren requests that the Commission issue its amendment order by no later than July 31, 2014, as provided in Section 3.2.3 of the Agreement. As provided in Section 1.6.1 of the Agreement, if the Commission does not issue a Consistent FERC Order by that date, the Agreement becomes null and void.

The purpose of the Agreement and this amendment application and stay request is to allow the Parties time to engage in a collaborative, open, joint process to evaluate two fish passage design alternatives at Saccarappa and, if the evaluation results in selection of an alternative that is acceptable to Sappi, to allow the Parties the opportunity to attempt to reach agreement on design, surrender, decommissioning, post-construction operations and maintenance, and effectiveness testing of such alternative to the fish passage proposed in the Surrender Application.

Specifically, as provided in Section 3.2.1 of the Agreement, Warren requests that the Commission amend the licenses for the Projects to incorporate (1) the United States Department of the Interior's ("USDOI's") revised Section 18 prescription set forth in Section 2.1 of the Agreement, and (2) the amended Maine Department of Environmental Protection ("MDEP") Water Quality Certification ("WQC"), when MDEP issues it. Warren also requests that the Commission stay the processing of the Surrender Application until Warren files a request to lift the stay or files a request to amend the Surrender Application to incorporate a different fish passage proposal, as provided in Section 3.2.2 of the Agreement.

A. Initial Statement

(1) Warren applies to the Federal Energy Regulatory Commission for an amendment of license for the Projects.

(2) The exact name, business address, and telephone number of the applicant are: S.D. Warren Company, 89 Cumberland Street, Westbrook, Maine 04092; (207) 856-4584

(3) The applicant is a domestic corporation, licensee for the water power projects designated as Project Nos. P-2897, P-2932, P-2941, P-2931, and P-2942 in the records of the Federal Energy Regulatory Commission, issued on October 2, 2003.

(4) The amendments of license proposed and the reason(s) why the proposed changes are necessary, are: To allow the Parties time to engage in a collaborative, open, joint process to evaluate two fish passage design alternatives at Saccarappa and, if the evaluation results in selection of an alternative that is acceptable to Sappi, to allow the Parties the opportunity to attempt to reach agreement on design, surrender, decommissioning, post-construction operations and maintenance, and effectiveness testing of such alternative to the fish passage proposed in the Surrender Application.

(5)(i) The statutory or regulatory requirements of the state(s) in which the project would be located that affect the project as proposed with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes are: (a) Maine Waterway Development and Conservation Act (MWDCA), Maine Revised Statutes title 38, §§ 630 *et seq.*, which requires a permit for certain structural alterations of a hydropower project; (b) Mandatory Shoreland Zoning Law, Maine Revised Statutes title 38, §§ 435 *et seq.*, which requires municipalities to adopt zoning and land use ordinances consistent with minimum guidelines to protect "shoreland areas," including areas within 250 feet of the normal high water line of river.

(ii) The steps which the applicant has taken or plans to take to comply with each of the laws cited above are: Pursuant to Section 3.1 of the Agreement, Warren will submit to MDEP a request that MDEP amend its water quality certification for the Projects, as provided in Section

3.1.1 of the Agreement, and a request that MDEP stay the processing of the MWDCA and WQC application relating to the Surrender Application.

B. Required Exhibits

This is a non-capacity related application to amend a license for a water power project, and there are no exhibits that require revision in light of the nature of the proposed amendments.

C. Conclusion

For the foregoing reasons, Warren requests that the Commission amend the licenses for the Projects and stay of the processing of the Surrender Application for Saccarappa, as requested above.

Dated at Portland, Maine this day: March 28, 2014

Respectfully submitted,

Matthew D. Manahan
Pierce Atwood LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101
207-791-1189
mmanahan@pierceawood.com
Attorneys for S.D. Warren Company

CERTIFICATE OF SERVICE

I hereby certify that I will, within the timeframe and means established in 18 C.F .R. § 385.2010, serve the accompanying materials upon each person designated on the official service list compiled by the Secretary in this proceeding, unless such person is no longer a representative of the party to be served, in which case I will serve the accompanying materials on an alternate representative of that party.

Dated at Portland, Maine this day: March 28, 2014

Matthew D. Manahan
Pierce Atwood LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101
207-791-1189
mmanahan@pierceawood.com
Attorneys for S.D. Warren Company

TAB A

AGREEMENT TO REQUEST EXTENSION OF FISH PASSAGE DEADLINE AND STAY OF LICENSE SURRENDER APPLICATION

FOR THE SACCARAPPA PROJECT
(FERC No. 2897)

MARCH 14, 2014

By and Between:

S.D. Warren Company
U.S. Department of the Interior and U.S. Fish and Wildlife Service
Maine Department of Inland Fisheries and Wildlife
Maine Department of Marine Resources
City of Westbrook
Friends of the Presumpscot River
Conservation Law Foundation

AGREEMENT TO REQUEST EXTENSION OF FISH PASSAGE DEADLINE AND STAY OF LICENSE SURRENDER APPLICATION FOR THE SACCARAPPA PROJECT (FERC No. 2897)

1.0 INTRODUCTION AND GENERAL PROVISIONS

This agreement ("Agreement"), which includes and incorporates Appendix 1 hereto, all dated as of March 14, 2014, regarding the Saccarappa Project (FERC No. 2897) ("Project") is made and entered into by and among the following entities which shall, except as otherwise noted, each be referred to as a Party and collectively as "Parties."

- S.D. Warren Company ("Warren" or "Licensee");
- U.S. Department of the Interior and U.S. Fish and Wildlife Service ("USFWS");
- Maine Department of Inland Fisheries and Wildlife ("MDIFW");
- Maine Department of Marine Resources ("MDMR");
- City of Westbrook ("City");
- Friends of the Presumpscot River ("FOPR"); and
- Conservation Law Foundation ("CLF").

1.1 Definitions

The Parties agree that the following definitions shall have the meanings so noted throughout this Agreement:

1.1.1 "Consistent FERC Order" means an order issued by either FERC staff on behalf of the Commission pursuant to its delegated authority or by the Commission itself (1) that amends the Project license as requested in Section 3 of this Agreement, (2) that does not include provisions that any Party reasonably determines to be materially inconsistent with this Agreement, and (3) for which all administrative and judicial appeal periods have expired and for which no appeal has been filed within the appeal deadline.

1.1.2 "Consistent WQC" means an amended water quality certification ("WQC") issued by the Commissioner of the Maine Department of Environmental Protection ("MDEP") pursuant to Section 401 of the Clean Water Act with respect to the Project that (1) amends the Project's WQC as requested in Section 3 of this Agreement, (2) does not include provisions that any Party reasonably determines to be materially inconsistent with this

Agreement, and (3) for which all administrative and judicial appeal periods have expired and for which no appeal has been filed within the appeal deadline.

1.1.3 "FERC" means the Federal Energy Regulatory Commission.

1.2 Purpose and Goal

1.2.1 The purpose of this Agreement is to allow the Parties time to engage in a collaborative, open, joint process to evaluate two fish passage design alternatives at the Project, with the two design alternatives based upon Warren's announced intention to decommission the project and surrender its project license and, if the evaluation results in selection of an alternative that is acceptable to Sappi, to allow the Parties the opportunity to attempt to reach agreement on design, surrender, decommissioning, post-construction operations and maintenance, and effectiveness testing of such alternative to the fish passage proposed in Warren's December 31, 2013 FERC license surrender application (the "Surrender Application"). The evaluation of the two fish passage design alternatives will include an assessment of the inclusion of recreational features requested by the City, and their impacts. The two design alternatives are (1) the 30% Denil fish passage design ("Denil Alternative") included in both the Surrender Application and the MDEP MWDCA and WQC application (the "MWDCA Application"), and (2) the two-channel fish passage design alternative developed by CLF / FOPR consultant Laura Wildman of Princeton Hydro ("Two-Channel Alternative").

1.2.2 The goal of this Agreement is to determine the most appropriate form of fish passage at the Project site, upon surrender of the FERC license.

1.3 Agreement to be Incorporated in FERC and MDEP Orders

The Parties agree that each term of this Agreement is material and is in consideration and support of every other term and that it is essential that FERC and MDEP incorporate in their orders the stay and extension requested in Section 3 of this Agreement.

1.4 Successors and Assigns; Amendments; Entire Agreement

This Agreement shall be binding on the Parties and on their successors and assigns. This Agreement may be amended only by a writing duly executed by each of the Parties. This Agreement constitutes the Parties' entire understanding with respect to the subject matter hereof

and supersedes any and all prior oral or written agreements, understandings, or expressions with respect thereto.

1.5 Parties to Support Regulatory Approvals

The Parties agree to actively support this Agreement before FERC and MDEP for the purpose of obtaining a Consistent WQC and a Consistent FERC Order. With respect to the issuance by MDEP of an amended WQC under Section 401 of the Clean Water Act, the Parties agree to file written comments with MDEP supporting the issuance of an amended WQC that is consistent with the terms of this Agreement, if requested to do so by the Licensee. For those issues addressed herein, the Parties agree not to propose or otherwise communicate to FERC, MDEP, or any other federal or state resource agency any comments, certification, or license terms, conditions, or recommendations inconsistent with the terms of this Agreement, except that, if any Party reasonably believes another Party is failing to fulfill its obligations under this Agreement, that party may request that FERC or MDEP lift any stay on the processing of the Surrender Application and the MWDCA Application.

1.6 Requirement for Timely and Consistent FERC Order and Consistent WQC

1.6.1 In the event a Consistent FERC Order is not in place by July 31, 2014, then unless all Parties agree to amend this Agreement, this Agreement shall become null and void, and cannot, therefore, form the basis of any order issued by FERC. If the Agreement becomes null and void, the Parties agree that they will jointly request termination of any stay of FERC proceedings regarding the Surrender Application then in effect.

1.6.2 In the event a Consistent WQC is not in place by July 1, 2014, then unless all Parties agree to amend this Agreement, this Agreement shall become null and void and cannot, therefore, form the basis of any WQC issued by the MDEP or any order issued by FERC. If the Agreement becomes null and void, the Parties agree that they will jointly request termination of any stay of DEP proceedings regarding the MWDCA Application then in effect.

1.6.3 In the event this Agreement becomes null and void, then this Agreement shall have no validity or effect and all Parties shall be relieved of any obligation to comply with this Agreement except for the Parties' mutual obligations to make the joint termination requests provided for in paragraphs 1.6.1 and 1.6.2.

1.6.4 If any Party reasonably determines that an MDEP WQC order issued by July 1, 2014, or a FERC order issued by July 31, 2014 is materially inconsistent with this Agreement, then such Party must so notify all other Parties in writing by electronic delivery of this determination and the reasons therefor ("Inconsistency Notification"), all within seven days after the issuance of the MDEP WQC order or FERC order. If no such Inconsistency Notification is provided, then the amended WQC is a Consistent WQC and the FERC order is a Consistent FERC Order, if all administrative and judicial appeal periods have expired and no appeal has been filed within the appeal deadlines. If such Inconsistency Notification is provided, the Parties shall confer within seven days to determine if all Parties desire to (a) amend this Agreement to make it consistent with the WQC order or FERC order, or (b) appeal the WQC order or FERC order and amend the Agreement so that it does not become null and void during the pendency of the appeal(s); if the Parties are unable to agree to amend the Agreement, it is null and void pursuant to Section 1.6.1 or 1.6.2 above.

1.7 Appeals

The Parties agree that none of them will file a challenge to an amended WQC or a request for rehearing of an amended FERC license issued in this proceeding in response to the filings required by Section 2.5 unless the MDEP WQC order or FERC order contains provisions that are materially inconsistent with this Agreement. The filing of an appeal by any party does not nullify or supersede the provisions of paragraph 1.6.

1.8 Dispute Resolution

The Parties agree to work in good faith to resolve any disputes that may arise over the implementation of this Agreement. Any Party recognizing such a dispute shall notify the other Parties in writing and convene a dispute resolution consultation meeting among all of the Parties.

2.0 FISH PASSAGE

2.1 USDOI Section 18 Authority

2.1.1 USDOI hereby agrees to exercise its reserved FPA section 18 authority proposing to amend its Section 18 prescription, attached as Appendix B to the FERC licenses for Project numbers 2897, 2932, 2941, 2931, and 2942, as follows:

(i) to amend the third sentence of the second paragraph of Section 10.1(E) to provide as follows: "In order to allow for proper consultation with resource agencies and approval by the Commission of all design plans, permanent fish passage must be operational at the Saccarappa Dam within 4 years of the completion of fishway installation at Cumberland Mills Dam."; and

(ii) to amend the anadromous fish upstream passage section of Table 3 that applies to the Saccarappa Project, as follows: "**Upstream passage** completed 4 years after passage is available at Cumberland Mills Dam, or at such later time as may be designated by the Service by written notice to the Commission."

2.1.2 If no request for a trial-type hearing or an alternative to this amendment is filed within 30 days of the filing of this Agreement with FERC, the amended Section 18 prescription contained in Section 2.1.1 above will be USDOI's final amended prescription. If a request for a trial-type hearing or an alternative to this amendment is filed within 30 days of the filing of this Agreement with FERC, this Agreement shall become null and void, and cannot, therefore, form the basis of any order issued by FERC, unless the Parties agree to amend the Agreement. If the Agreement becomes null and void, the Parties agree that they will jointly request termination of the stay of all FERC proceedings regarding the Surrender Application.

2.2 Evaluation of Fish Passage Alternatives

2.2.1 Evaluation Process

2.2.1.1 The Parties will conduct and complete the tasks set forth in Appendix 1 of this Agreement through performance by the designated responsible party or parties as specified therein, and by the deadlines specified therein unless those deadlines are extended by mutual agreement or unless the Parties mutually agree that any tasks are not necessary or that a different party or parties is responsible for performance of a particular task. At the beginning of the evaluation process by the consultant chosen by the CLF and FOPR ("NGO Consultant") Sappi will perform the tasks described in Appendix 1, Task 1.0. Performing these tasks at the start of the evaluation process will allow the modeling that is required of the NGO Consultant in Task 2.0 to begin promptly.

2.2.1.2 The Parties will participate collaboratively and share information openly in the evaluation process. As it becomes available, the Parties will each share the data and other information located, developed and / or utilized ("Information") with the other Parties.

In the event the Two-Channel Alternative would utilize a fish counting facility at the Cumberland Mills Dam, the Information will include, without limitation, USFWS's and DMR's determination of the numbers of American shad and blueback herring that must be passed at the Cumberland Mills Dam to trigger (1) the deadline for installation of upstream fish passage at the Mallison Falls and Little Falls dams and (2) the deadline for installation of Phase 2 upstream fish passage at the Cumberland Mills Dam. Each Party will seek input from the other Parties on the meaning and appropriate use of the Information, and on whether additional or different information is needed to adequately evaluate and compare the Denil Alternative and the Two-Channel Alternative.

2.2.2 Written Determination

2.2.2.1 Unless the Parties agree that it is not necessary, Warren will prepare a written summary of its evaluation of both design alternatives, based on the Information. In its evaluation, Warren will provide its determination, made in its sole discretion but in consultation with the other Parties, of whether it will proceed with the Denil Alternative, the Two-Channel Alternative, or some combination of those designs.

2.2.2.2 In the event that Warren decides not to proceed with the Two-Channel Alternative on the basis of its cost in comparison to the cost of the Denil Alternative, the other Parties will have the opportunity to seek alternative sources of funding to offset the additional cost of the Two-Channel Alternative, subject to Warren's ability, in its sole discretion, to proceed with the Denil Alternative or some modification of that design.

2.3 Evaluation Funding

The City agrees to fund the consulting services of the NGO Consultant to perform the tasks assigned to the NGO Consultant in Appendix 1, up to a maximum of $50,000. Warren agrees to fund, up to a maximum of $150,000, (1) the consulting services of the NGO Consultant to perform the remaining tasks assigned to the NGO Consultant in Appendix 1, up to a maximum of $69,181, and (2) all work set forth in Appendix 1 for which responsibility is assigned to Warren, including all funding and performance undertaken by Warren as reviewer of work performed by other parties. Sappi will endeavor to reserve sufficient funds as part of its $150,000 maximum fund commitment to (a) prepare a 30% design plan for a counting facility, as specified in Appendix 1, Task 3.0b.D, and (b) develop construction and post-construction costs for both alternative design options pursuant to Appendix 1, Task 4.0.A & B. To maximize the

likelihood that funds will be available for this work, Sappi will seek, as much as reasonably possible, to perform these tasks before the other Sappi tasks listed in Appendix 1.

2.4 Evaluation Timing

2.4.1 The evaluation set forth in Section 2.2 will begin as soon as possible after FERC issues a Consistent FERC Order, and will be completed within one year after FERC issues a Consistent FERC Order. The Parties will conduct and complete the tasks set forth in Appendix 1 by the deadlines specified therein, unless those deadlines are extended by mutual agreement or unless the Parties mutually agree that any tasks are not necessary.

2.4.2 By no later than 15 months after FERC issues a Consistent FERC Order, Warren will file either (1) a request with FERC to lift the stay on the processing of the Surrender Application and a request with MDEP to lift the stay on the processing of the MWDCA Application, or (2) a revised Surrender Application and MWDCA Application which incorporate changes that have emerged from the evaluation process, along with a request that FERC and MDEP substitute the revised Surrender Application and revised MWDCA Application for the Surrender Application and MWDCA Application on file, and proceed expeditiously to process and decide on those revised applications.

2.4.3 Warren agrees to withdraw and refile its request to MDEP for water quality certification as needed to allow the time needed for the evaluation process contemplated by this Agreement, to avoid MDEP waiver of certification for failure of MDEP to act on the certification application within one year.

2.5 Filing of Amendment Applications to MDEP and FERC

Warren will file by no later than March 28, 2014 applications to MDEP and FERC to request (1) stays of the pending Surrender Application and MWDCA Application, and (2) amendments to the WQC and FERC license, as provided in Section 3 below.

2.6 Disposition of Project Land and Fish Passage Facilities

2.6.1 In the event the Licensee decides to sell or otherwise transfer the Project or any part thereof, then prior to such sale or transfer the Licensee shall inform any prospective buyer or transferee of the existence and obligations of this Agreement.

2.6.2 Warren and its successors and assigns shall be responsible for operating and maintaining all facilities and structures required to support the fish passage facilities that are ultimately constructed at the property, including fish counting facilities, if any. Such operations and maintenance will include cleaning, repairs, and maintenance of the fish passage facilities and operation of those facilities during the fish passage season, any effectiveness testing and subsequent adjustment agreed to by the Parties, and maintenance of other structures necessary to ensure the effective operation of the fish passage facilities. Warren will prepare an operation and maintenance ("O&M") procedure appropriately tailored for the final site configuration.

3.0 JOINT REQUEST TO MDEP AND FERC

The Parties agree that they will make the following requests to MDEP and FERC. These requests, and a copy of this Agreement, will be included in amendment applications filed by Warren with FERC and MDEP by no later than March 28, 2014.

3.1 Request to MDEP

3.1.1 Extension of Fish Passage Deadline

The Parties request that MDEP amend its WQC, attached as Appendix A to the FERC licenses for project numbers 2897, 2932, 2941, 2931, and 2942, so that:

(1) in Section 5, the second sentence of the first bullet in paragraph A of the Saccarappa Project section provides as follows: "These facilities, which shall include a counting, trapping and sorting facility, must be operational no later than 4 years after passage is available at the downstream Cumberland Mills Dam, or at such later time as may be designated by the U.S. Fish and Wildlife Service by written notice to the Federal Energy Regulatory Commission."; and

(2) it includes a new Section 11, entitled "Fish Passage Evaluation," which provides as follows: "The applicant shall make good faith efforts to comply with the Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application, dated March 14, 2014, including compliance with the deadlines provided therein."

3.1.2 Stay of MWDCA Application

The Parties request that MDEP stay the processing of the MWDCA Application until Warren files a request to lift the stay or files a request to amend the MWDCA Application to incorporate a different fish passage proposal.

3.1.3 Timing

The Parties request that MDEP issue its amended WQC and stay order as soon as possible to allow FERC to issue a Consistent FERC Order by no later than July 31, 2014.

3.2 Request to FERC

3.2.1 Extension of Fish Passage Deadline

The Parties request that FERC amend the licenses for Project numbers 2897, 2932, 2941, 2931, and 2942 to incorporate (1) USDOI's revised Section 18 prescription set forth in Section 2.1 above, and (2) the amended MDEP WQC, when MDEP issues it.

3.2.2 Stay of Surrender Application

The Parties request that FERC stay the processing of the Surrender Application until Warren files a request to lift the stay or files a request to amend the Surrender Application to incorporate a different fish passage proposal.

3.2.3 Timing

The Parties request that FERC issue its amended license by no later than July 31, 2014.

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

S.D. Warren Company

By: Thomas A Collins
Title: Vice President - Specialties
Date: 3-19-14

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

U.S. Department of the Interior and U.S. Fish and Wildlife Service

Larry A. Ziemi

By: Larry Ziemi
Title: Field Supervisor, Maine Field Office
Date: 03-27-2014

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

Maine Department of Inland Fisheries and Wildlife

By:

Title: Commissioner

Date: 3-14-14

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

Maine Department of Marine Resources

By: Meredith Mendelson
Title: Deputy Commissioner
Date: 3.27.14

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

City of Westbrook

By: Colleen Hilton
Title: Mayor
Date: March 21, 2014

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

Friends of the Presumpscot River

MICHAEL SHAUGHNESSY

By:

Title: PRESIDENT

Date: 3.14.2014

Agreement dated as of March 14, 2014 relating to the Saccarappa Project owned by S.D. Warren Company (Federal Energy Regulatory Commission License No. 2897).

Conservation Law Foundation

Sean Mahoney

By: Sean Mahoney
Title: Executive Vice-President
Date: March 14, 2014

Appendix 1
to
Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application

-- Saccarappa Fish Passage Design Assessment --

Notes:

(1) This Appendix 1 includes both the attached PowerPoint *Figures 1 and 2* and the attached Excel spreadsheet *Schedule for Performing and Completing Tasks* (the "Schedule"), which establishes the schedule for performing and completing the tasks set forth below, as agreed upon by the parties. Note that the tasks shown on the Schedule are dependent on weather and on others delivering their work products, among other variables, and the Parties understand that there may be some slippage in these time frames, but the Parties will endeavor, as much as possible, to adhere to the attached Schedule.

(2) In this document, reference to "NGO Consultant" is understood to mean the designated consultant of CLF and FOPR, and is further understood to allow participation, as appropriate, by other representatives of CLF and FOPR.

Task 1.0 – Provide Missing Data Relating to the Two-Channel Design Alternative

A. Provide bathymetric survey and mapping work as follows:

1. **Cross Sectional Survey:** At a minimum, fourteen cross sections will be prepared by Sappi in order to complete the modeling needed to assess the Two-Channel Alternative. These 14 cross sections are shown in yellow on Figure 1 and extend across the channel and into the overbank areas to the limit of the FEMA 500 year floodplain (shown approximately in blue on Figure 1) such that the larger storm flows can be adequately modeled. Survey data, whether existing or new, that are used

for the cross sections, will pick up key break points within the channel and the overbank areas, including but not limited to top of bank, bottom of bank, water surface elevation (WSEL) at the time of the survey, and any significant changes in grade below the WSEL. The USGS model will not be used for this effort. For all cross-sections that Sappi intends to create using existing data, sufficiently prior to the beginning of the field survey work Sappi shall provide to the NGO Consultant the cut cross sections developed from the existing data, showing the point data and source used to cut the cross sections. Should the NGO Consultant, DMR, or USFWS provide technical justification demonstrating that the existing data are not sufficient to prepare the cross sections required by the NGO Consultant, Sappi agrees to field survey these cross sections and/or collect additional field survey data to address any deficiencies. Sappi will deliver the survey data both as an updated base map in AutoCAD with the point survey taken for the cross sections included, and in the form of cut cross sections in AutoCAD format.

2. **Detailed Areas of Bathymetric Survey:** There are two areas on the current base mapping shown in red shading in Figure 1 (attached) that will be augmented with additional topographic and bathymetric surveys at a point frequency such that 1 foot contours will be created and will be added to the current base mapping. The new 1 foot contours in these two areas will be blended into the existing site contouring. It is anticipated that numerous additional cross sections will need to be created by others through these areas in order to increase the accuracy of the modeling. Sappi will provide an updated base map of the Saccarappa site in AutoCAD with contiguous contours throughout the entire base map. The base mapping for the area shaded in blue in Figure 2 shall be confirmed to reflect the existing structure in this location, with the contour lines for this area revised appropriately.

Responsible: Sappi
Reviewing/Assisting: Agencies, City, NGO Consultant

B. Provide Stage-Discharge Rating Curve Data:

Sappi will provide a modified stage-discharge rating curve at the upstream side of the Bridge Street bridge. The modified stage-discharge curve will include the flow range from 300 cfs to 28,000 cfs. It is anticipated that for this modified rating curve Sappi will augment the previously submitted tailwater rating curve based on the current Cumberland Mills dam configuration, and supplemented as relevant with data the Maine Department of Transportation (MDOT) gathered for MDOT's work on the Cumberland Street and Bridge Street bridge projects in Westbrook and/or the most recent version of the USGS HEC-RAS model of the Presumpscot River. Sappi agrees to consult with the Agencies and the NGO Consultant prior

to undertaking the studies and analysis required to develop the modified stage/discharge curve. During that consultation process, Sappi will provide a description of the methods, procedures and data to be used by Sappi. NGO Consultant and USFWS will review the data used to develop the curve as well as the final results to determine their suitability for use in the HEC-RAS split flow model. It is understood that at this time no additional stage discharge measurements will be taken and that the HEC-RAS split flow model will therefore remain un-calibrated during the preliminary design discussion.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

C. Compile available existing site data in Sappi's possession for review (*i.e.*, old mapping, design plans for existing structures on site, photographs of site (*i.e.*, western channel and falls) dewatered, and any existing profiles).

All relevant site data in Sappi's possession should be shared with all the project parties, to avoid duplication of data already collected.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

D. Review data in possession of upstream towns bordering river below Mallison Falls to ensure that there are no utility or intake pipes in the river.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

Task 2.0 – 30% Design, Two-Channel Alternative

A. Create a HEC-RAS model and perform a split flow analysis for existing conditions, using cross sections, survey, and other information provided by Sappi pursuant to Task 1.0. This HEC-RAS existing conditions model will be run at flow rates in the river ranging from 300 cfs to the estimated 500-year flood flow rate, with all existing structures in place. It is understood that this HEC-RAS model will not be calibrated due to the lack of field-collected stage-discharge data.

Responsible: NGO Consultant

Reviewing/Assisting: Sappi, Agencies, City

B. NGO Consultant design team site visit (field investigation), with USFWS, plus other parties participating if desired

This field investigation will be conducted to familiarize the NGO Consultant design team with the Saccarappa site. It is anticipated that this field visit will include full access to the site and a walk through of the western channel below the western spillway to the upstream side of the lower falls, and an investigation by boat of the upper western channel. Existing bedrock configuration in the western channel will be visually assessed and a potential location for the upstream rock ramp/grade restoration and/or flow restrictor or counting facility will be assessed.

Responsible: NGO Consultant
Reviewing/Assisting: Sappi, Agencies, City

C. Investigate multiple Two-Channel Alternative options (*i.e.*, materials used, flow restrictor, upstream ramp/bedrock modification, etc.)

The NGO Consultant will review all data available, and engage in an iterative evaluation process, including assessing with modeling as needed, multiple configurations for the Two-Channel Alternative design. As part of this iterative process, the HEC-RAS model will be utilized to determine the vertically and horizontally averaged depths and velocities for different configurations, comparing the results to referenced target species' passage abilities. If the NGO Consultant, following consultation with Sappi and the Agencies, determines that there are no potentially feasible options for a two-channel design due to significant and unsolvable engineering issues (e.g., hydraulic velocity, depth, or river bed structure, etc.), the NGO Consultant shall discontinue further design work on the Two-Channel Alternative.

The steps followed in the iterative evaluation process will be explained to the Parties by the NGO Consultant.

Responsible: NGO Consultant
Reviewing/Assisting: Sappi, Agencies, City

D. Counting Facility Option Design - 30%

Contemporaneous with the tasks outlined in Task 2.0.C., Sappi's consultant, working with assistance from the NGO Consultant, will assess the feasibility of counting facility options for use in assessing the preferred Two-Channel design, per Task 2.0.E. and provide sufficient information to the NGO consultant so that the modeling and assessment work required in Tasks 2.0.C and 2.0.E are possible.

Responsible: Sappi
Reviewing/Assisting: Agencies, City, NGO Consultant

E. Select the preferred Two-Channel Alternative design option and develop a 30% design

The NGO Consultant will propose a single design approach for the Two-Channel Alternative and develop plans to the 30% level, if the NGO Consultant determines that there is a potentially feasible option for a two-channel design. This will include proposed materials, design details as needed for preliminary design, determination of final slopes, a preliminary assessment of the need for sediment/substrate replenishment, preliminary assessment of the stability of the design under flood flow conditions, and a plan view illustrating the proposed features and configuration. The basis for selection of the preferred alternative and the dismissal of other alternatives will be summarized in brief written form by the NGO Consultant for Sappi, the Agencies, and the City.

Responsible: NGO Consultant, Agencies
Reviewing/Assisting: Sappi, City

F. Determine whether the design meets USFWS's biological and engineering review criteria for providing safe, timely, and effective fish passage.

The NGO Consultant will consult with the USFWS and the DMR to attempt to ensure, as necessary and appropriate, that fish passage at the Two-Channel Alternative is designed to provide safe, timely, and effective fish passage.

Responsible: NGO Consultant
Reviewing/Assisting: Sappi, Agencies, City

G. Review of recommended Two-Channel Alternative, and its basis.

Responsible: Sappi, Agencies ,City

H. Adaptive Management and O&M Plans

The NGO Consultant will describe a post-construction adaptive management plan for the Two-Channel Alternative. The NGO Consultant will identify the structures within the Two-Channel Alternative that will require long term maintenance, such that a long term O&M Plan can developed, comparable to the description of long-term maintenance developed for the Denil Alternative developed by Sappi.

Responsible: NGO Consultant
Reviewing/Assisting: Sappi, Agencies, City

Task 3.0 – 30% Design, Denil Alternative

A. Review the 30% design of the Denil alternative with Agencies, NGO Consultant, and the City to ascertain if the design is suitable to provide for safe, timely and effective fish passage and determine if any design modifications are necessary and appropriate to improve the safety, timeliness, and effectiveness of fish passage.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

B. Determine whether the design meets USFWS's biological and engineering criteria for providing safe, timely and effective fish passage, for purposes of this evaluation and comparison.

Sappi will consult with the USFWS and the DMR to attempt to ensure, as necessary and appropriate, that fish passage at the Denil fishway and the upper falls are designed to provide safe, timely, and effective fish passage, for purposes of this evaluation and comparison.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

C. Adaptive Management and O&M Plans

Sappi will describe the post-construction adaptive management and long term operation and maintenance plans for the Denil Alternative. Sappi's plan will identify the structures within the Denil Alternative that will require long term maintenance, such that the adaptive management and long term O&M Plans can be adequately compared to the adaptive management and O&M plans developed for the Two-Channel Alternative.

Responsible: Sappi
Reviewing/Assisting: NGO Consultant, Agencies, City

Task 4.0 – Evaluate Both Design Alternatives

A. Develop Construction Costs

Sappi will develop construction costs for both the Denil Alternative and the selected Two-Channel Alternative after consulting with other parties. These construction costs will be developed using the per-unit methodology that is commonly used to create project cost estimates. The NGO Consultant will provide input to Sappi regarding cost issues involved in the Two-Channel Alternative.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

B. Post-construction costs (O&M; monitor efficiency and effectiveness; fish counting; adaptive management; project works maintenance)

Sappi will develop post-construction costs for both the Denil Alternative and the Two-Channel Alternative after consulting with NGO Consultant and the other parties to determine the scope of post-construction activities.

Responsible: Sappi
Reviewing/Assisting: Agencies, NGO Consultant, City

C. Review of Cost Estimates for Construction and Long Term Costs

Responsible: Sappi
Reviewing/Assisting: Agencies, City

D. Final Review and Evaluation of Both Designs

Responsible: Sappi
Reviewing/Assisting: Agencies, City, NGO Consultant

Task 5.0 – Meetings / Conference Calls

A. Kick-off meeting in Westbrook to discuss roles and points of contact (who reports to whom); deliverables; and schedule

Responsible: Sappi, Agencies, NGO Consultant, City

B. Meeting / call after field data have been collected and summarized

Responsible: Sappi, Agencies, NGO Consultant, City

C. Meeting / call after modeling has been initiated

Responsible: Sappi, Agencies, NGO Consultant, City

D. Meeting in Hadley to review modeling results (for the Two-Channel Alternative design options)

Responsible: Sappi, Agencies, NGO Consultant, City

E. Meeting in Hadley to discuss selection of single alternative design

Responsible: Sappi, Agencies, City, NGO Consultant

F. Meeting in Hadley to discuss 30% designs (final) and costs for the two options (Denil Alternative and Two-Channel Alternative)

Responsible: Sappi, Agencies, City, NGO Consultant

G. Additional conference calls or meetings as may be required, budget permitting, for discussing various issues that arise

Responsible: Sappi, Agencies, City, NGO Consultant

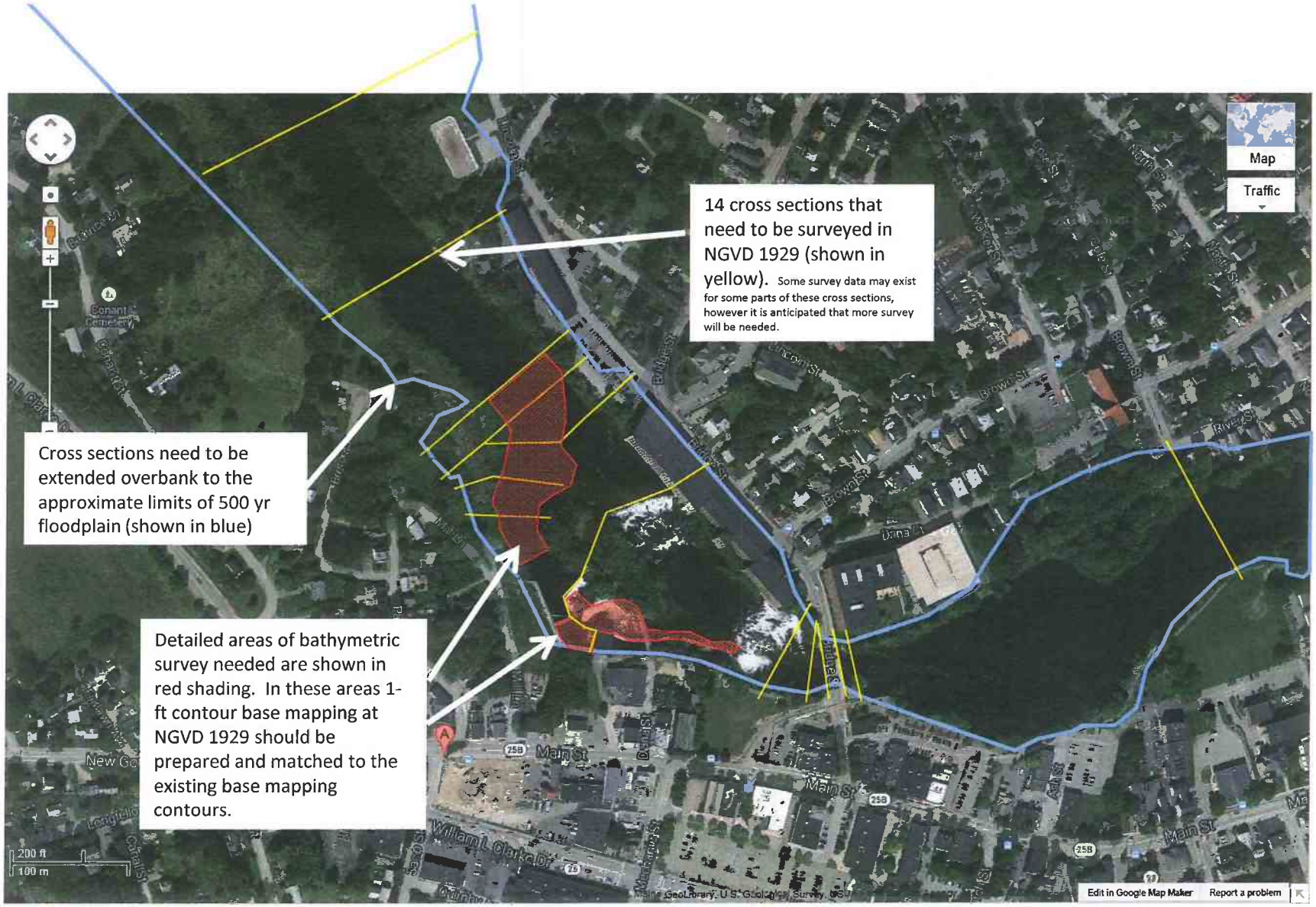


Figure 1: Field Survey Needs

Figure 2: Connecting Contours and Checking one Area on Existing Base mapping

This is the one area upstream that needs to be checked in the field with additional survey to see if in fact this shallow land mass exists.

These are the areas where the contours from the different surveys need to be connected/blended so we can cut cross sections.

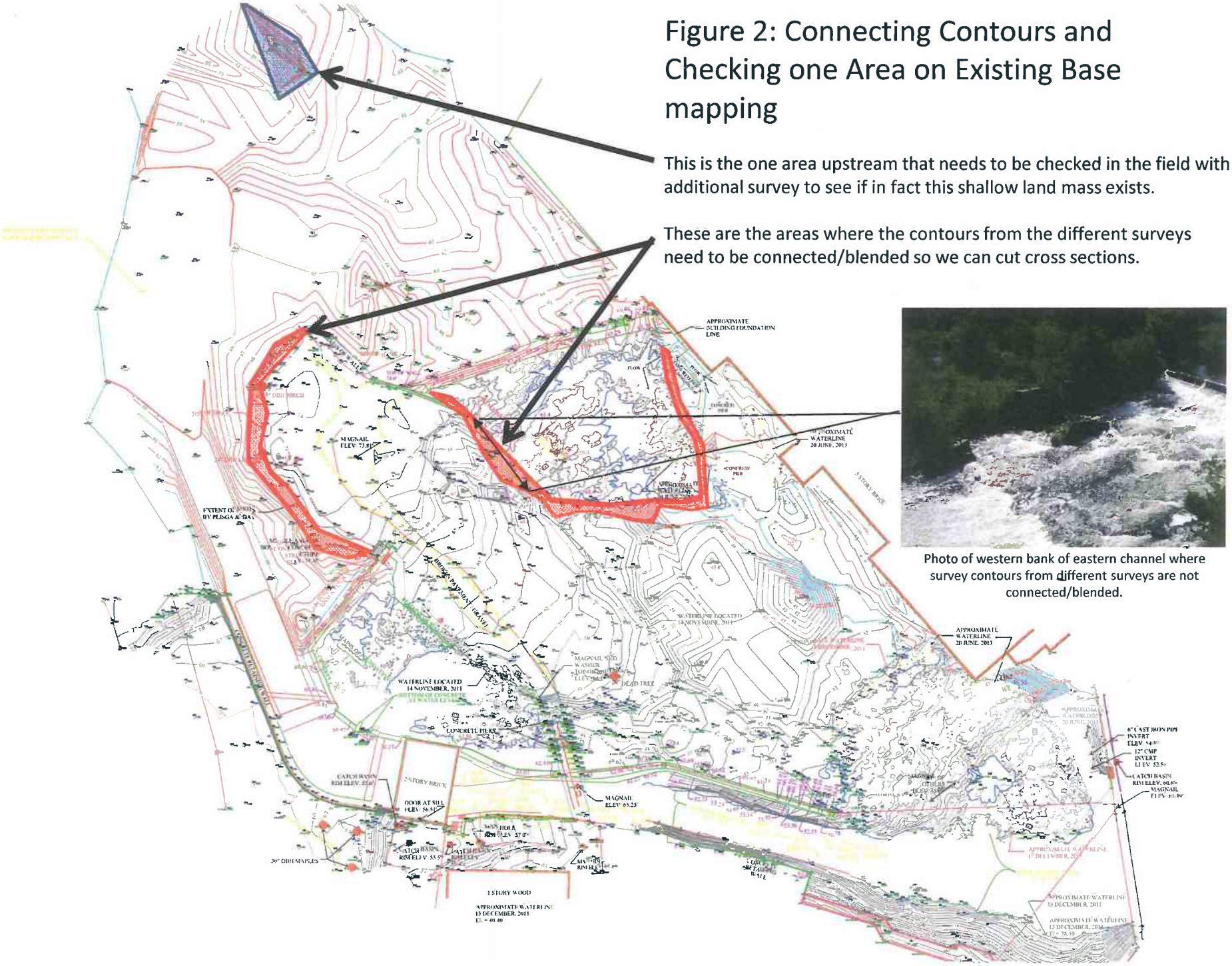


Photo of western bank of eastern channel where survey contours from different surveys are not connected/blended.

Princeton Hydro

Saccarappa Dam - Fish Passage Assessment

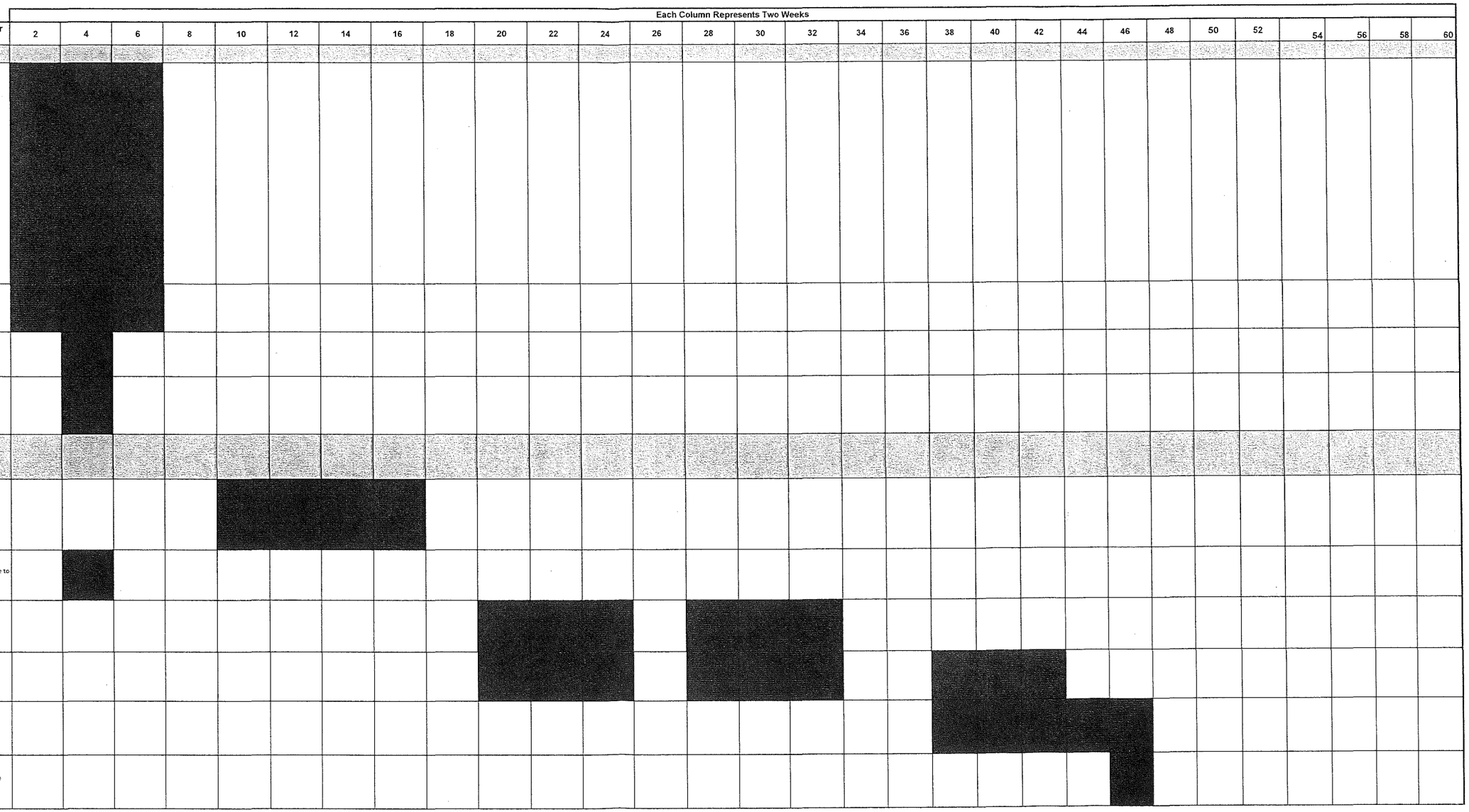
SCHEDULE FOR SCOPE OF WORK

13-Mar-14

Refer to Appendix 1 for detailed description of each task.

Each Column Represents Two Weeks

Task #	Notes Regarding Schedule	time allotted for task in weeks
1.0 Supplemental Data		
Task 1.0 A Provide bathymetric survey and mapping	Following final regulatory approval. The field work is to be completed at the earliest opportunity when it is safe to access the river. To meet safety requirements, the river flow must be at very low levels with no more than one turbine operational in the powerhouse and little or no flow over the spillway. This will require that flow release rates at Sebago and inflow from the drainage area below Sebago are as low as possible. The optimum time to accomplish the work is UNKNOWN but could be as late as July or August when inflow is minimal. The work is to be undertaken as soon as practical when conditions meet the safety requirements described above. Once the field data have been collected, about two weeks will be required to analyze the data, modify the base maps, and develop the cross sections.	6 weeks
Task 1.0 B Stage discharge rating curve data	Following regulatory approval.	6 weeks
Task 1.0 C Compile existing available site data	Following regulatory approval.	2 weeks
Task 1.0 D Review upstream data with utilities and towns	Following regulatory approval. Inquiries Complete. Results to be reported.	2 weeks
Task 2.0 30% Design, Two-Channel Alternative		
Task 2.0 A Create HEC-RAS model of existing conditions	Once data have been collected and reviewed and review meeting has been completed (assumes no need for revision). If revisions or additional field data are required, the schedule will need to be extended.	8 weeks
Task 2.0 B Site visit by NGO Consultant and others	Actual time required may be one to two days but should correspond to low water conditions during the site survey	2 weeks alloted for one to two day site visit
Task 2.0 C Investigate multiple two channel alternatives	Follows development of the existing conditions HEC-RAS Model.	12 weeks
Task 2.0 D Counting facility - Concepts & 30% Design	During Task 2.0 C & E	As Required
Task 2.0 E Selection of preferred Two Channel Alternative	Time allocated includes time for preparation of 30% design drawings	10 weeks
Task 2.0 F Determine whether design meets USFWS criteria	Time allocated during and following Task 2.0 E	Allowance for one meeting



{W4157732.1}

Task 2.0 G Review of recommended Two-Channel Alternative	Time required will vary depending on results of evaluation	Allowance for meetings over 6 week period.																														
Task 2.0 H Adaptive management and O&M plans		2 weeks																														
Task 3.0 Review of Denil Alternative																																
Task 3.0 A Review of Denil Alternative	Time allocated for up to two meetings	Two days																														
Task 3.0 B. Design criteria review	Same meetings for 3.0 A	Two days																														
Task 3.0 C. Adaptive management and O&M plans		2 weeks																														
Task 4.0 Evaluate Design Alternatives																																
Task 4.0 A Construction costs		4 weeks																														
Task 4.0 B Post construction costs		4 weeks																														
Task 4.0 C Review of cost		2 weeks																														
Task 4.0 D Final review and evlauate both design alternatives	6 weeks allocated for one or more meetings to review results of the entire evalualiton	6 weeks																														
Task 5.0 Meetings and Calls																																
Task 5 A-G	On-Going Series of Collaborative Meetings and Calls as described in the Appendix 1	Per Appendix 1	Meet			Meet/ Review					Meet/ Review				Meet/ Review				Meet/Discuss						Meet/ Review						

20140409-3015 FERC PDF (Unofficial) 04/09/2014

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 2897-039-- Maine
Saccarappa Project
S.D. Warren Company

April 9, 2014

Mr. Brad Goulet
S.D. Warren Company
89 Cumberland Street
Westbrook, ME 04092

Re: Request for amendment of license and stay of surrender proceeding

Dear Mr. Goulet:

We are in receipt of your March 28, 2014, filing of an application for amendment of license and request to stay the surrender proceeding for the Saccarappa Hydroelectric Project (FERC No. 2897).[1] As discussed below, although we support the evaluation of alternatives, we cannot amend your license without concurrence from the Maine Department of Environmental Protection (Maine DEP). In addition, in light of the necessary changes to your application discussed below, we recommend you withdraw the surrender application, filed with the Commission on December 31, 2013.

Background

The water quality certificate for the project (issued by the Maine DEP) and the U.S. Fish and Wildlife Service's (FWS) fishway prescription under Section 18 of the Federal Power Act require the installation of upstream and downstream fish passage facilities at the project.[2] The anadromous fish passage facility requirements are to be implemented in accordance with the Fish Passage Implementation Plan under

---

[1] *See* Order Issuing Subsequent License, 105 FERC ¶ 61,013 (issued October 2, 2003).

[2] The water quality certificate and fishway prescription were incorporated into the license by ordering paragraphs (D) and (E), respectively.

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Article 406.[3] In accordance with these requirements, you must install upstream and downstream anadromous fish passage facilities at the Saccarappa Project within two years of the installation of fish passage facilities at the downstream Cumberland Mills Dam (a non FERC-regulated dam). Fish passage facilities were installed at the Cumberland Mills Dam and became operational on May 1, 2013; therefore, you must install fish passage facilities at the Saccarappa Project by May 1, 2015.

On December 31, 2013, you filed an application for surrender of license for the Saccarappa Project. In your surrender application you propose to: demolish and remove the eastern spillway; fill in the project tailrace; construct a new Denil fish ladder; and modify the riverbed in the upper Saccarappa falls.

Request to Amend the License

In your March 28, 2014 application, you request to amend the license to extend the deadline for installing anadromous fish passage facilities at the project by two years (to May 1, 2017) in order to facilitate additional consultation regarding the surrender of the license. Specifically, you request additional time to evaluate two fish passage design alternatives for implementation during the surrender: 1) a Denil fish passage design (as described in your surrender application); and 2) a two-channel fish passage design alternative (you did not provide a description of this alternative in your amendment application).

Your filing includes documentation of consultation and agreement on the proposed amendment from the FWS, Maine Department of Marine Resources, City of Westbrook, Friends of the Presumpscot River, and Conservation Law Foundation. Your filing also documents the FWS' agreement to modify its Section 18 fishway prescription to allow for the extension of the deadline. You also say that you have filed a request with Maine DEP to modify the water quality certificate for the project in order to extend the deadline.

Request to Stay the Surrender Proceeding

In your application, you request that the Commission stay the surrender proceeding while you complete the evaluation of fish passage alternatives. You state that the stay would be effective until you either file a request to lift the stay, or file a request to amend your surrender application to incorporate a different fish passage proposal.

---

[3] *See* Order Approving Anadromous Fish Passage Implementation Plan, 109 FERC ¶ 62,183 (issued December 13, 2004).

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Discussion and Conclusions

Commission staff has thoroughly reviewed both your surrender application and your amendment application. Staff concludes that your surrender application lacks important information needed to complete our review of your application. As discussed in Appendix 1 (attached), we find that the surrender application does not include a discussion or information pertaining to alternatives. In particular, we note that, because the Commission cannot require or oversee the operation and maintenance of the fish passage facilities following surrender of the license, the Commission will analyze and consider alternatives that protect environmental resources but do not include features which require ongoing operation and maintenance under Commission oversight. We also request more information to support your conclusion that the Denil fish ladder alternative is preferred to the removal of project structures without a provision for manmade facilities.

Therefore, while we agree that there is a need to evaluate fish passage alternatives as described in your amendment application, because the deadline for the installation of fish passage is required by the water quality certificate, the Commission cannot amend the license to change this requirement without concurrence from the Maine DEP. In addition, regardless of whether the license is amended to extend the deadline for installation of fish passage, you must address the information needs described in Appendix 1 in order for the Commission to proceed with review of your surrender application. We do not believe it is necessary to wait for Maine DEP's concurrence on the amendment of license to begin evaluating fish passage alternatives and compiling the information described in Appendix 1.

The addition of the requested information, as well as incorporating the evaluation of a two-channel fish passage alternative as you describe in your amendment application, would be substantial enough to warrant a refiling of your surrender application with all of this information incorporated. Filing a new application with all of the information would also serve to clarify the record and reduce confusion from multiple additional amendments and supplements to the original application. Therefore, we recommend that you withdraw your surrender application.

Once you have withdrawn your surrender application, we recommend that you: evaluate the fish passage alternatives; compile the information described in Appendix 1; conduct the evaluation described in your March 28, 2014 amendment application; update the surrender application with the new information; submit the new application to interested parties for review and comment; address the comments and recommendations; and then file the new application with the Commission. Once your new application is complete, staff will issue a public notice. We make this recommendation without any prejudice towards your pending surrender application. In addition, because the Commission has not yet publicly noticed the December 31, 2013 surrender application

20140409-3015 FERC PDF (Unofficial) 04/09/2014

and there has been no opportunity for motions to intervene, withdrawing the surrender application at this time would not adversely affect any entity interested in the surrender proceeding.

Within 30 days from the date of this letter, please file a response to this letter including a discussion as to whether you agree with our recommendation to withdraw the application and proceed with evaluating alternatives and gathering additional information to be included in a new surrender application. The Commission strongly encourages electronic filing. Please file the requested information using the Commission's eFiling system at http://www.ferc.gov/docs-filing/efiling.asp. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY). In lieu of electronic filing, please send a paper copy to: Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Washington, D.C. 20426. The first page of any filing should include docket number P-2897-039.

If you have any questions pertaining to this letter, please contact Rachel Price at (202) 502-8907 or rachel.price@ferc.gov.

Sincerely,

for Steve Hocking
Chief, Environmental Review Branch
Division of Hydropower Administration and Compliance

Cc:
W/attachment

Via email:

Mr. William D. Baker Assistant
City Administrator Business &
Community Relations Westbrook
City Hall
2 York Street Westbrook,
ME 04092
wbaker@westbrook.me.us

Mr. John Banks, Director
Department of Natural Resources
Penobscot Indian Nation
6 River Road, Indian Island
Old Town, ME 04468
John.Banks@penobscotnation.org

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Mr. Francis Brautigam
Maine Department of Inland Fisheries & Wildlife
358 Shaker Road
Gray, ME 04039
Francis.Brautigam@maine.gov

Mr. Tom Chapman
U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301
Tom_Chapman@fws.gov

Mr. Jay Clement
U.S. Army Corps of Engineers
Maine Project Office
675 Western Avenue, #3
Manchester, Maine 04351
Jay.L.Clement@usace.army.mil

The Honorable Colleen Hilton
Mayor
Westbrook City Hall
2 York Street Westbrook,
ME 04092
chilton@westbrook.me.us

The Honorable Brenda Commander,
Tribal Chief
Houlton Band of Maliseet Indians
88 Bell Road Littleton, ME
04730
tribal.chief@maliseets.com

Mr. Dusti Faucher
Vice President
Friends of the Presumpscot River
PO Box 223
Windham, ME 04082-0223
coveredbridge45@maine.rr.com

The Honorable Kirk Francis, Chief
Penobscot Indian Nation
12 Wabanaki Way
Indian Island, ME 04468
kirk.francis@penobscotnation.org

Mr. Alex Hoar
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9587
Alex_Hoar@fws.gov

Ms. Kathy Howatt
Maine Department of Environmental Protection
Central Me Regional Office,
17 State House Station
Augusta, ME 04333-0017
kathy.howatt@maine.gov

Mr. Eric Hutchins
Fisheries Biologist
NOAA Restoration Center
55 Great Republic Drive
Gloucester, MA 01930
eric.hutchins@noaa.gov

Mr. Franklin Keel
Director
Eastern Regional Office
U.S. Bureau of Indian Affairs
545 Marriot St, Suite 700
Nashville, TN 37214
franklin.keel@bia.gov

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Mr. Patrick Keliher
Commissioner
Department of Marine Resources
21 State House Station
Augusta, ME 04333-0021
patrick.keliher@maine.gov

Mr. Ronald Kreisman
Friends of Presumpscot River
American Rivers
77 Mackworth Street
Portland, ME 04103-4531
kreisman@gwi.net

Ms. Sandra J. Lary
U.S. FWS- Ecological Services
Gulf of Maine Coastal Program
4R Fundy Rd
Falmouth, ME 04105
sandra_lary@fws.gov

Ms. Kathleen Leyden
Director of the Maine Coastal Program
Maine Department of Agriculture,
Conservation and Forestry
93 State House Station
Augusta, ME 04333-0038
kathleen.leyden@maine.gov

Mr. Sean Mahoney, Esquire
Conservation Law Foundation
47 Portland Street, Suite 4
Portland, ME 04101
smahoney@clf.org

Mr. Sean McDermott
Hydropower Program Coordinator
Habitat Conservation Division
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930
Sean.mcdermott@noaa.gov

Ms. Linda Mercer
Director, Bureau of Marine & Searun
Science
Department of Marine Resources
PO Box 8
West Boothbay Harbor, ME 04575-0008
linda.mercer@maine.gov

Mr. John Perry
Maine Department of Inland Fisheries
and Wildlife
284 State Street, 41 SHS
Augusta, ME 04333-0041
John.Perry@maine.gov

Mr. Mark Randlett Assistant
Attorney General Office of the
Attorney General
6 State House Station
Augusta, ME 04333
mark.randlett@maine.gov

Mr. Jerry Reid
Natural Resources Division Chief
Office of the Attorney General
6 State House Station
Augusta, ME 04333
jerry.reid@maine.gov

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Mr. Steve Shepard
U.S. FWS - Ecological Services
Maine Field Office
17 Godfrey Drive, Suite 2
Orono, Maine 04473
Steven_Shepard@fws.gov

Dr. Earle G. Shettleworth, Jr.
Director and State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, Maine, 04333-0065
Earle.Shettleworth@maine.gov

Ms. Nancy Skancke
NJS Law PLC
1025 Connecticut Ave., N.W.
Suite 1000
Washington, D.C. 20036
njskancke@njs-law.com

Mr. Harry Stewart
Director, New Hampshire Department of Environmental Services
29 Hazen Drive
Concord, NH 03301-6503
harry.stewart@des.nh.gov

Mr. Leon F. Szeptycki
Environmental Counsel
Trout Unlimited
1300 17th Street North, Suite 500
Arlington, VA 22209-3800
lszeptycki@tu.org

Mr. Andrew Tittler
U.S. Department of Interior
1 Gateway Center, Suite 612
Newton, MA 02458-2881
andrew.tittler@sol.doi.gov

Dr. Brett Towler
U.S. Fish and Wildlife Service
Northeast Regional Office
Fisheries Program
300 Westgate Center Drive
Hadley, MA 01035-9589
Brett_Towler@fws.gov

Mr. Douglas Harold Watts
Maine Council- Atlantic Salmon Federation
Friends of Sebago Lake
38-C Northern Ave.
Augusta, ME 04330
Info@Dougwatts.com

Dr. Gail Wippelhauser
Maine Department of Marine Resources
#172 State House Station
Augusta, ME 04333
Gail.Wippelhauser@maine.gov

Mr. Chandler Woodcock
Commissioner
Dept of Inland Fisheries and Wildlife
41 State House Station Augusta,
ME 04333-0041
chandler.woodcock@maine.gov

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Ms. Laury Zicari
U.S. Fish and Wildlife Service
Maine Field Office
17 Godfrey Drive, Suite 2
Orono, ME 04473
laury_zicari@fws.gov

Via postal mail:

The Honorable Reubin Cleaves, Chief
Passamaquoddy Tribe, Pleasant Point Reservation
P.O. Box 343
Perry, ME 04667-0343

The Honorable Edward Peter-Paul, Chief
Aroostook Band of Micmac Indians
7 Northern Road
Presque Isle, ME 04769

The Honorable Joseph Socobasin, Chief
Passamaquoddy Tribe, Indian Township Reservation
P.O. Box 301
Princeton, ME 04668

20140409-3015 FERC PDF (Unofficial) 04/09/2014

APPENDIX 1

Mr. Brad Goulet
S.D. Warren Company
89 Cumberland Street
Westbrook, ME 04092

Subject: Request for additional information regarding license surrender application

Dear Mr. Goulet:

We are in receipt of your December 31, 2013 filing of an application for surrender of the license for the Saccarappa Hydroelectric Project (FERC No. 2897).[4] In your surrender application you propose to: demolish and remove the eastern spillway; fill in the project tailrace; construct a new Denil fish ladder; and modify the riverbed in the upper Saccarappa falls. As discussed below, additional information is necessary in order to proceed with our review of your license surrender application.

General Comments

In your application, you conclude that certain permits and consultation are not required as part of this surrender proceeding. In addition, you reply to several concerns from resources agencies and the public stating that you are not required to mitigate for certain impacts. Under the Commission's regulations,[5] the Commission must review your surrender application to: identify and analyze potential impacts of the surrender; determine the appropriate disposition of project works; and require mitigation where appropriate. Any and all impacts and benefits of the proposed surrender must be identified and analyzed, regardless of whether mitigation will be required. Below, we identify additional consultation, permitting, and information that are needed to complete our review of your application.

Construction Activities

1. Provide a construction schedule that includes specific construction activities and approximate duration for each activity such as: clearing and

---

[4] *See* Order On Offer of Settlement and Issuing New License, 113 FERC ¶ 62,181 (issued December 8, 2005).

[5] 18 C.F.R. § 6.2

20140409-3015 FERC PDF (Unofficial) 04/09/2014

grading, staging, demolition of the spillway, construction of fish passage facilities, etc.

2. Provide an approximation of the construction season during which construction activities will typically be feasible, taking into account weather and flow conditions.

With the exception of wetland resources, you did not include a description of the impacts of staging, access roads, and other construction activities on environmental resources.

3. Describe and quantify, where possible, what clearing and grading will be necessary for access roads, staging areas, and other aspects of construction.

4. Discuss and quantify, where possible, any impacts resulting from construction activities on environmental resources including, but not limited to: erosion, vegetation, public access, wildlife, fisheries, water quality, noise levels, etc.

5. Discuss whether these impacts will be temporary or permanent and how the timing of construction may affect these impacts.

6. Propose measures you will implement to avoid, reduce, or mitigate any adverse impacts.

In addition to the general questions above, please provide additional information regarding the following construction activities.

7. Describe your proposed methods for demolishing the east spillway and excavating the upper falls diversion channel, i.e. hydraulic hammer, blasting, etc. Include a description of any project-specific adverse impacts of these methods and any proposed measures for reducing or mitigating impacts. Your description should include how the timing of construction may impact environmental resources.

8. Provide details regarding the final state of the tailrace fill area. Will this area be: filled with concrete; topped with soil and revegetated; left as uncapped loose fill material; or left in some other state?

9. Sheet 12 in Appendix B shows two staging sites, one on the large island and another on the west bank adjacent to the forebay. The drawing

20140409-3015 FERC PDF (Unofficial) 04/09/2014

provides the size of the staging site located on the island, but does not provide that information for the one adjacent to the forebay. Provide the area of the staging site adjacent to the forebay.

10. Your application indicates that a pile of spoil material will be left on the island following construction. Describe the nature of the spoil material (size and shape) and the dimensions of the pile that will be left on the island. Will this pile be visible from the shoreline and will there be any impacts to the visual quality of the island because of the pile? Will the pile be contained? Could the materials erode over time and enter surface waters? Identify potential alternatives, including off-site disposal, and discuss the merits of the alternatives.

Impacts of Changes in Water Levels

11. How far upstream does the project impact water levels in the Little River currently? Quantify the distance upstream from its mouth that the Little River will be impacted by the change in water levels under the proposed surrender.

12. Quantify the area of land along the Saccarappa and Little Rivers that will be dewatered under your proposal.

Your analysis of impacts to wetlands lacks detail. The U.S. Army Corps of Engineers specifically requests quantification of the impacts to wetlands.

13. Quantify the impacts to wetlands including: (a) acreage of wetlands impacted during all construction activities and whether impacts are temporary or permanent, (b) acreage of wetlands which will be dewatered due to the drawdown of the impoundment, and (c) acreage of new wetlands which will form in the dewatered areas. This analysis should be site-specific and include the locations where impacts will occur and the types of wetlands affected. Consider providing additional maps, similar to the wetlands inventory map included in your application, zooming in where needed to show details.

Your application identifies several features along the Saccarappa Project impoundment that could be impacted by changes in water levels: eight private piers; one set of steps into the river; a city-owned boat launch located upstream from the Saccarappa Dam on the eastern shore; a car-top boat take-out that is required under license Article 408; and a canoe and kayak put-in area at Route 237 on the Little River (identified by a

20140409-3015 FERC PDF (Unofficial) 04/09/2014

member of the public during the public meeting that you held). You state, generally, that the change in river level is small and unlikely to impact private property but it may impact two or three docks.

14. For each of the 12 features mentioned in your application, please provide a description of the feature, its location, and to what extent it will be impacted by the change in water levels in the two rivers.

15. For the boat take-out required under Article 408, discuss whether this feature will remain publicly accessible following surrender of the license.

16. Identify any other features that draw water from, discharge into, or provide access to the affected reaches, which may be impacted by the proposed surrender.

Costs of Surrender Activities

17. Provide separate cost estimates for each of the following:

    a. demolition and removal of the east spillway;
    b. construction of the diversion channel at the upper falls;
    c. construction of the Denil fish ladder including associated repairs to existing infrastructure and filling of the tailrace;
    d. annual cost of operating and maintaining the Denil fish ladder, including a fish counting facility; and
    e. demolition of all project features including west spillway, powerhouse, forebay, and tailrace.

Transmission Line

18. Describe your plan for the transmission line following surrender of the project. Discuss the options of leaving the transmission line in place and removing the transmission line. For each option, discuss the merits, costs, environmental impacts, and any proposed mitigation.

Alternatives

You did not include any discussion of alternatives in your application. However, comments from the Maine Department of Marine Resources on your application, and your response to those comments, indicate that several other fish passage options were considered. In your response to comments, you say that the proposed fish passage design

20140409-3015 FERC PDF (Unofficial) 04/09/2014

is preferable to the alternative of complete removal of all project structures without provision for manmade fish passage. In order for staff to assess fish passage options, please file details on what options you analyzed and your justification for eliminating those options.

19. For each alternative, provide detailed information including: (a) a description of the alternative; (b) cost estimates; (c) impacts on environmental resources including, but not limited to: fish passage, eel passage, water levels in both the Presumpscot and Little Rivers, historic properties, and recreation; and (d) reasons why you did not pursue each alternative. You must provide supporting information, data, and documentation for any conclusions you draw regarding costs and effects on environmental resources.

In comments on your surrender application, the U.S. Fish and Wildlife Service specifically requests that you analyze a "fish passage alternative that includes the removal of project structures and the installation of a nature-like fishway." In light of these comments and because the Commission cannot require or oversee the operation and maintenance of the fish passage facilities following surrender of the license, the Commission will analyze and consider alternatives that protect environmental resources but do not include features which require ongoing operation and maintenance.

20. Therefore, one of your alternatives (above) should include removal of all project structures and installation of a nature-like fishway. Your analysis must include: (a) the impact of the removal of all project structures on water levels upstream of the project including the Presumpscot and Little Rivers; (b) information regarding the flow distribution between the east and west channels at various flow levels (similar to what you have provided for the proposed action); (c) a description of the impacts of this alternative on Environmental resources including, but not limited to: fish passage, historic properties, and recreation; and (d) provide cost estimates of this alternative.

Rare, Threatened, and Endangered Species

You indicate that you will consult further with Maine Department of Inland Fisheries and Wildlife (Maine DIFW) regarding impacts of the proposed surrender on mussels in order to identify appropriate mitigation measures.

21. Provide an update regarding this consultation including documentation of any consultation that has occurred.

20140409-3015 FERC PDF (Unofficial) 04/09/2014

In your application you say that the New England cottontail rabbit (*Sylvilagus transitionalis*), listed federally as a candidate species and as a state endangered species, may occur within the project area. You also say that occurrences of upland sandpiper (*Bartramia longicauda*), a state threatened species, have been mapped within and in the vicinity of the project area. Maine DIFW recommends specific measures that may be necessary to avoid adverse impacts to the upland sandpiper.

22. Provide an analysis of the potential to affect these species and respond to Maine DIFW's comments. Your response must include relevant information regarding the species' habitat preferences, nesting and foraging behaviors, and whether suitable habitat occurs in the project area. In addition, you must analyze whether construction activities and post-surrender conditions will impact these species.

Water Quality Certification

Your application indicates that the proposed action does not require a water quality certificate under Section 401 of the Clean Water Act. However, the proposed action may result in a discharge to navigable waters and requires in-water construction activities.

23. Upon receipt of this letter, you must apply for water quality certification. Your response to this letter must provide documentation that you have applied for water quality certification.

Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Your proposed surrender is considered an undertaking pursuant to Section 106 of the NHPA. In addition, due to the removal of federal jurisdiction over the historic resources, and because you propose to demolish a component of the historic property, the proposed surrender is likely to have an adverse impact on historic properties.

In its comments on your application, the Maine State Historic Preservation Officer (Maine SHPO) requests a historic archaeological survey of the island between the two dams given that historic mill foundations are present in the area. In your response, you cite the 1997 Phase 1 Historic Archeological Survey conducted in the project area; however, it is not clear whether this survey included the island in question and the Commission does not have the results of this survey.

20140409-3015 FERC PDF (Unofficial) 04/09/2014

24. Explain whether the island was surveyed, discuss the results of the survey, and submit the results of the survey with your response to this letter. Please note that some information regarding cultural resources is protected and should be filed as **Privileged** information. If the island was not included in the previous survey, please address how you will determine if historic or culturally significant resources are on this island.

25. Provide a more thorough description and maps of the historic sites you mention, such as "site 8.20" and "Section 9 and 15 of the Oxford Canal." In your application, you say that removal of the eastern spillway may benefit these sites by reducing long-term erosion. Please provide analysis and discussion to support this conclusion.

26. Provide a detailed description of impacts of the proposed surrender on historic resources, including the effects to the dam, powerhouse, mill, canal, and the island. Provide a summary of the impacts to each of these facilities, based on site-specific information, and include any pertinent data documentation to support your conclusions.

27. You indicate that you will consult with the Maine SHPO to develop appropriate measures to resolve any adverse effects of the surrender on the historic facilities. In your response to this letter, please provide an update on your consultation. Once we have received the requested information, the Commission will be able to make a determination of affect, identify appropriate mitigations measures, and fulfill our responsibilities under Section 106 of the NHPA including consultation with the Advisory Council and Maine SHPO.

Fisheries

In several locations in your application you mention, but do not discuss in detail, the historical record of fish passage at the site and the alteration of the site by other parties prior to S.D. Warren's involvement at the site.

28. Provide further discussion of: (a) whether, and to what extent, the falls at the project dam were ever passable to anadromous fish; (b) what alterations to the site occurred prior to S.D. Warren's involvement and did those alterations affect fish passage at the site; and (c) in what ways did construction of the existing dam alter fish passage. Support your discussion and conclusions with documentation and data specific to the project area.

20140409-3015 FERC PDF (Unofficial) 04/09/2014

Several entities raise concerns regarding the proposed slope of the eastern channel following the proposed modifications to the upper falls. In particular, they are concerned that the slope of the diversion channel is more than 5%, and that this feature, which was modified to enhance recreation, will conflict with fish passage goals at the site. You state that the purpose of the diversion channel is to direct more flow into the western side of the channel in order to provide better fish passage conditions on the eastern side of the channel. You state that the diversion channel is not intended to provide fish passage.

29. (a) Can the goal of diverting water from the eastern side of the channel into the diversion channel be achieved with slopes of 5% or less? (b) If the slopes of the diversion channel were limited to 5% or less, as requested by the resource agencies, what will be the impacts to fish passage? (c) Please describe the suitability of the channel for recreation if the slopes were less than 5%. Include an analysis of fish passage and flow levels under this scenario similar to the one you include in your application under the proposed diversion channel design.

30. Summarize and provide the data for fish counts at the Cumberland Mills dam since it began operation on May 1, 2013. We understand that this data is required to be filed with the Commission in an annual report due July 31, 2014; however, we request it now as it is relevant to the Commission's analysis of your surrender application. This request does not change the requirement to file the report under Article 406.

Document Content(s)

P-2897-039.PDF.....1-16

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 2897-039--Maine
Saccarappa Hydroelectric Project
S. D. Warren Company

Mr. Brad Goulet
S. D. Warren Company
89 Cumberland Street
Westbrook, ME 04092

September 24, 2014

Subject: Withdrawal of Surrender Application

Dear Mr. Goulet:

On September 4, 2014, you filed notice that you are withdrawing your surrender application for the Saccarappa Project filed with the Commission on December 31, 2013. You made this notice, in part, to satisfy paragraph (E) of the Commission's July 30, 2014 order placing the surrender application in abeyance, among other things.[1] Paragraph (E) of the order required you to file a schedule with the Commission within 60 days for either withdrawing the surrender application or for completing analysis of additional fishway designs.

This letter acknowledges your September 4, 2014 notice of the withdrawal of your December 31, 2013 surrender application. If you have any questions about this letter, please contact Dr. Jennifer Ambler at (202) 502-8586 or jennifer.ambler@ferc.gov.

Sincerely,

Steve Hocking
Chief, Environmental Review Branch
Division of Hydropower Administration
and Compliance

---

[1] Order Amending Fishway Prescriptions, Incorporating Revised Water Quality Certification Conditions, Amending Fish Passage Plan, and Placing Surrender Application in Abeyance at 148 FERC ¶ 62,086 (2014).

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

December 1, 2014

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design, Public Meeting Notes:

Date of Meeting: November 19, 2014
Location: Westbrook High School, Westbrook, Maine
Time: 7:00 PM

Attendees:

Approximately 52 people attended the public meeting. Attached is a copy of a sign in sheet that was circulated during the meeting. Attendees were encouraged to sign in and provide their email address so they could be added to the list of interested parties and receive a notice of future meetings. Not everyone signed the sheet.

Presentation by S. D. Warren:

Barry Stemm, Project Manager for S. D. Warren opened the meeting and welcomed everyone to the meeting. Following some brief introductory comments, Mr. Stemm used a series of PowerPoint slides to start the meeting. A copy of the presentation is attached.

Questions and Comments:

Following the brief presentation, Mr. Stemm opened the meeting up to questions and comments. The following is a summary of attendees' questions and comments. This is a summary and not a verbatim transcript. The purpose of the notes provided below is to capture the essence of the issues raised by each question or comment. In most cases a question or comment resulted in a discussion of the issue(s) raised. The meeting lasted for almost 2 hours, until all questions and comments were heard. The meeting was not recorded.

- Will the company meet the schedule addressed in the presentation?
- What is the purpose of the Denil fish ladder?
- Why is only one Denil fish ladder needed?
- Recreational boaters would prefer a holding area on the north side of the falls.
- Where is the new Bridge Street Bridge going to be located in relation to the fishway project?
- What is the deadline for the alternative design to be completed?

- The visibility of the Denil fishway is a concern. Fish ladders are not very attractive. Reference the fishway in Damariscotta. The fishway should be hidden as much as possible.
- Could the Denil ladder be moved farther up the tailrace channel?
- Could Sappi (Warren) consider removing both spillways?
- Can Sappi (Warren) do studies to predict how the water will flow after the spillway is removed?
- Sappi should consider the importance of access to the lower pool for fishing and swimming. Fishing and swimming should be considered along with boating.
- Is flood control being considered as part of the design?
- William Baker, Assistant City Administrator for the City of Westbrook, explained the City's interest in enhanced public access and recreational opportunities and indicated that the process may lead to a new and different design for consideration. The public's input is an important part of the process.
- Will the location of the new Bridge Street Bridge interfere with fish passage?
- Will the center pier for the Bridge Street Bridge create an impingement hazard for boaters?
- What is the timing of the design process?
- Have recreation options such as walking, hiking, picnic areas and swimming been considered? Have there been any studies to find out what people want for recreational opportunities?
- There are many problems with Denil fish ladders. They don't work well and the aesthetics are poor. Fishing, boating, swimming, and viewing are important.
- What if there is no agreement on the design and time runs out?
- Will the river level above Saccarappa be lower than it is today?
- Will Sappi (Warren) continue to generate power at Saccarappa?
- Will the powerhouse building be removed?
- What type of educational opportunities are being considered? Will there be public access for educational opportunities?
- How many fish passed through the fishway at Cumberland Mills this year?
- Is the Cumberland Mills fishway open (operating) during salmon passage season?
- Does Sappi have to clean the fishway at Cumberland Mills?
- How will the decision be made to reach a final design?
- Will public meeting comments go to FERC?
- Comment was made about the fish passage in Damariscotta. It is a public attraction and an educational opportunity.
- Congratulations offered regarding the passage of approximately 9,300 fish at Cumberland Mills this year.
- Can the results of studies be made available on line? Encouraged making information available on line.
- Can the public vote on the options? At least a straw vote should be considered.
- Will the Maine DEP issue a 401 Water Quality Certificate?
- Will Sappi (Warren) pay for fish passage and other related work?
- What is Sappi's obligation?

- Will there be public access to the island when the project is done? The City should have access to the island in the future.
- What controls the construction of fishways at the other dams upstream of Saccarappa?
- Ron Kreisman, attorney for Friends of the Presumpscot River, offered comments regarding the process. He commended Sappi for doing the right thing, and indicated the parties were looking forward to the process. The NGOs have concerns about the Denil. O&M costs will need to be considered and compared. The cost of O&M goes on for decades. Who will have the obligation for on-going O&M costs? Fishways take long term O&M.
- Sappi (Warren) should look at other sites where fish passage has already been completed. Don't be locked into one narrow option. Consider the rock ramp on the Union River. People like to fish in rock-ramp fishways. Will fishing be allowed in a rock ramp fishway at Saccarappa? There is shad fishing on Cobbosseecontee Stream (Gardiner, Maine). Economic development will come with the project.
- Is Sappi (Warren) considering the liability issues related to public access?
- Will notes of this meeting be made available?
- When is the next meeting?
- How will conflicting interests be resolved?
- Who is working on the new design?
- Several individuals indicated their support for the process and were looking forward to the opportunity to have additional input.

Mr. Stemm thanked everyone for coming and for their participation in the meeting. He then closed the meeting.

S.D. Warren/Sappi Fine Paper – Saccarappa Hydroelectric Project

Date: 11/19/14 Time: 7:00 – 9:00 PM

Open Public Meeting – ATTENDANCE LISTING

Location: Westbrook High School

NAME (Print)	Street Address	City/Town	E-Mail	Phone
DAVID MACGHWAY	29 RAILWAY AVE	WESTBROOK	DAVEMACPORTLAND@GMAIL.com	
Shri Verrill	9 Forest St.	Portland	andrea.verrill@maine.edu	
BRAD Goulet			brad.goulet@sappi.com	
Leslie Bridgers	One City Center	Portland	lbridgers@pressherald.com	791-6364
David + Paula Sparks	46 Rousseau Rd	Windham	dsparks51@roadrunner.com	892-8905
Bob & Mary Weston	50 Rousseau Rd	Windham	weslor@mmc.org	892-8650
Gary Couture	1 Memory Lane	Scarborough	gary.couture@sappi.com	
Michael Foley	186 Bridge St.	Westbrook	mfoley@westbrook.me.us	807-2115
Warren Lain	22 Lunt Drive	Westbrook	drlain@newenglandchiropractic.net	332.7829
Victor Chau	18 Dale Ave	Westbrook	vchau@westbrook.me.us	
Jeff Callahan	138 Hartley St.	Portland	jeffreymcallahan@gmail	
Adam Carrier	202 Larrabee Rd	Westbrook	acarrier@infinityfcu.com	856-6035
Dana Eastman	33 Lowell St.	Westbrook	deastman1974@gmail.com	
David Miller	80 Woodford	Portland	dlivingstonemiller@gmail.com	518.9336
Ron Kreisman	77 Mackworth St.	Portland	ron@kreisman.net	699-4558
Sandra Cort	125 Harrisburg Ave # 8	Westbrook	sjcort@maine.rr.com	871-5867
Stephen Bodkin	550 Goding Rd	Acton	betterhmwc@metrocast.net	
Rob Mitchell	73 Bradley dr.	Westbrook	RMitchell@HVACserv.com	415-3858
Peter Burke	34 BROWN St	Westbrook	pabdab@gmail.com	632-7372
FARYL Wiley	14 Sadler	Bruns.	deepsix@midcoast.com	729-3384
JAMES Tierney	7 Drummond	Auburn	run437@hotmail.com	795-7855
Bill Blauvelt	11 Longwood Dr	Portland	bil.blauvelt@gmail.com	899-12157
Margaret Curtis	228 Hardy Rd	Westbrook	margaret.b.curtis@gmail.com	854-1285
Andrew Rice		Portland	arice@keepmecurrent.com	232-2221
MATT CRAIG			mcraig@usm.maine.edu	420-7673
Drew Gattine	578 Stroudwater St	Westbrook	dgattine@gmail.com	207 409 3477
Jack Barrett	Gorham			222.2417
JAMES GAYNE	52 PINE ST	PORTLAND	jgayne46@gmail.com	450 9510

NAME (Print)	Street Address	City/Town	E-Mail	Phone
Andrew Gagné	289 Gray Rd.	Falmouth	Andrew_Gagne@hotmail.com	435-513-2138
Matt Bowler	289 Gray Rd.	Falmouth	MSBowler87@Gmail	978-337-9258
Joe Kingston	182 Drake Rd.	Effingham NH	kingston90@twc.com	207-590-9214
Penny Kingston	182 Drake Rd	Effingham NH	kingston90@twc.com	603-812-5597
CHRIS TRAFFORD	3 AMY WOODS RD	WINDHAM, ME	CTRAFFORD@STARKANIDEA.com	207-671-0260
Justin Rice	657 Jefferson Rd.	East Waterboro, ME	JRICE1@gmail.com	207-329-6834
STEVE HEINZ	3 SPRUCE LANE	CUMBERLAND FOR ME	heinz@maine.rr.com	207-781-4762
BOB NASDOR	65 BLUEBERRY HILL LN	SUDBURY, MA 01776	BBB@AMERICANWHITEWATER.ORG	617-5844566
Ryan Galway	32 Sherwood Dr	Freeport Me	rcgalwa@hotmail.com	207-650-0978
ELLIOT PAPPAPORT	20 WEST ST. #6	PORTLAND	ERAPPAPORT012@GMAIL.COM	518 0595
Bree Baker	2 YORK ST	Westbrook	WBaker@Westbrook.me.us	591 8101
Janine Roberts	570 Main St	Westbrook	jroberts@ " " "	854-0644
Colleen Hilton	61 Berkeley St.	Westbrook	chilton@westbrook.me.us	232-0489
CAELI SHADIS	72 ROBERTS ST	PORTLAND	cshadis@live.com	228-4684
Bob Adam	159 Lincoln St #2	Westbrook	Bob@RJAdam.com	591 5190

Saccarappa Hydro Project

Public Meeting - Nov. 19, 2014

sappi

Purpose of this Meeting

1) To inform the public about the status of the Federal Energy Regulatory Commission* (FERC) license Surrender Process and the recent FERC Order granting extension of fish passage to allow for evaluation of alternative "nature like" fish passage options.

2) To inform the public about the opportunities to be kept informed and to comment on this process.

This meeting and future meetings and/or communication are an important part of this process, and will allow for all Stakeholders to be informed and involved in the course of actions that will ultimately determine the future of the Saccarappa Hydroelectric site.

* FERC: Federal Governmental Agency that Regulates most Hydro Electric Dams

AGENDA

1) Site Description

- As it is Today

2) Status of FERC License Surrender * and
Review of FERC Order for Extension of Fish Passage

- Major Tasks Related to Extension Agreement

3) What is “ Nature Like” Fish Passage

4) How the Public can be Involved and Comment on this Process

5) Questions and Comments

***Surrender: A Process Approved by FERC to Decommission a HydroElectric Station**

sappi

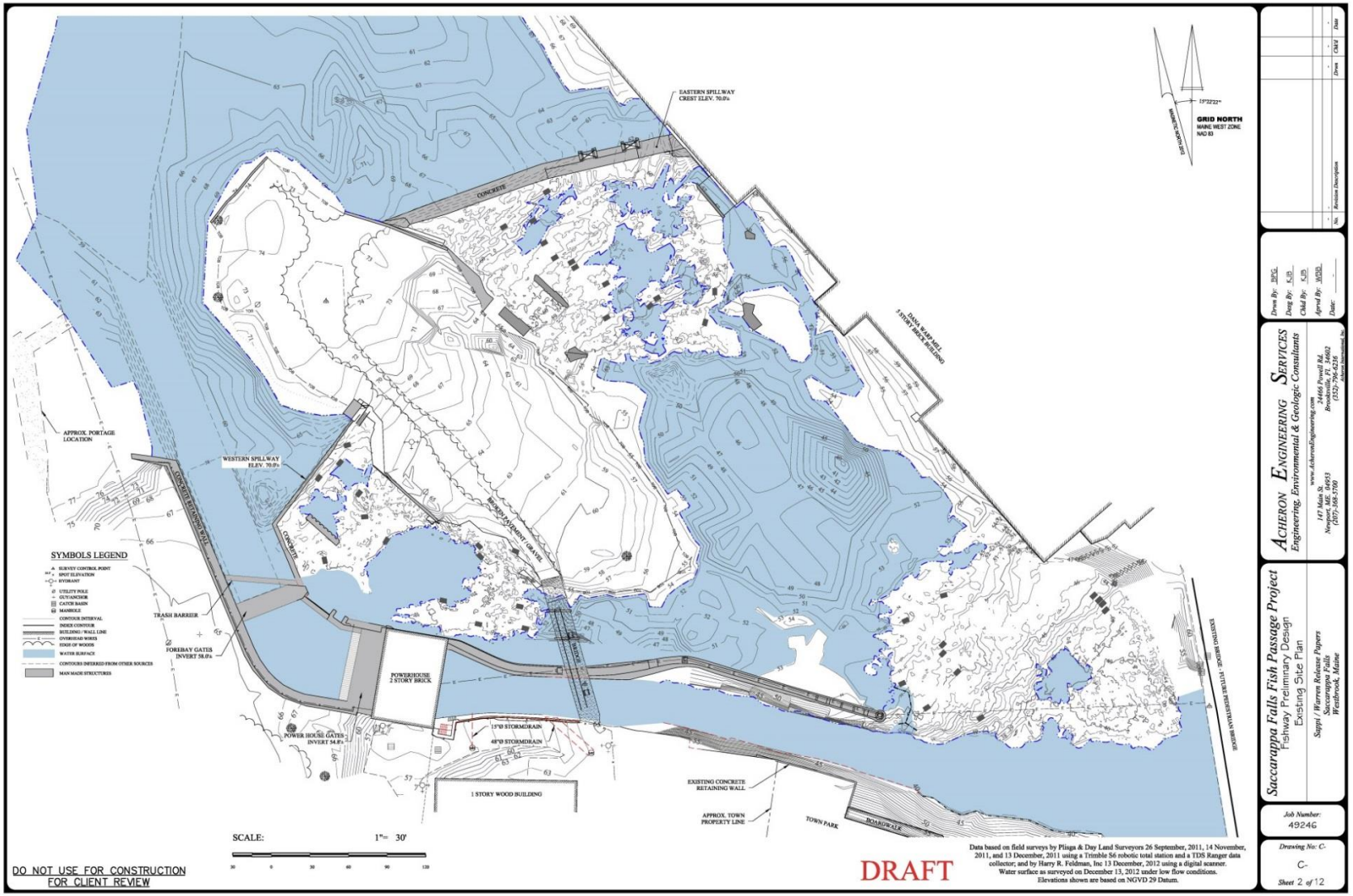
Public Meeting Process

- The meeting is not recorded.
- We are taking notes to capture comments and questions.
- The notes will become part of the public record.
- Please sign-in so the list of attendees can be recorded.
- You are welcome - during the presentations, or at the end - to ask questions or simply make a comment for the record. Please raise your hand and you will be recognized. There will also be time allocated at the end.
- We ask that only one person speak at a time so we can make notes of your question or comment.

Site – As It Exists Today

sappi

Site – As It Exists Today

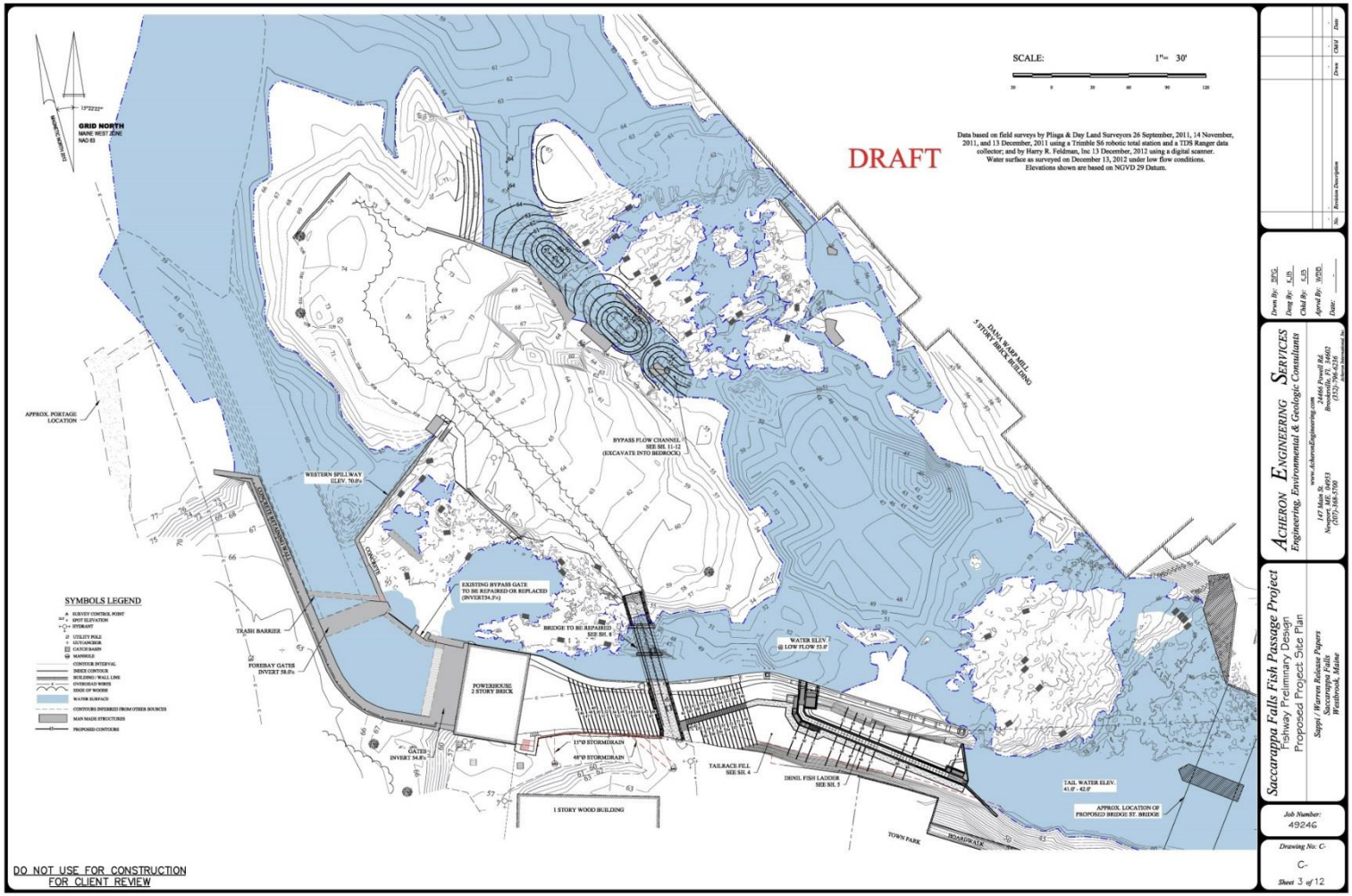


sappi

Site as Proposed with Denil Fishway

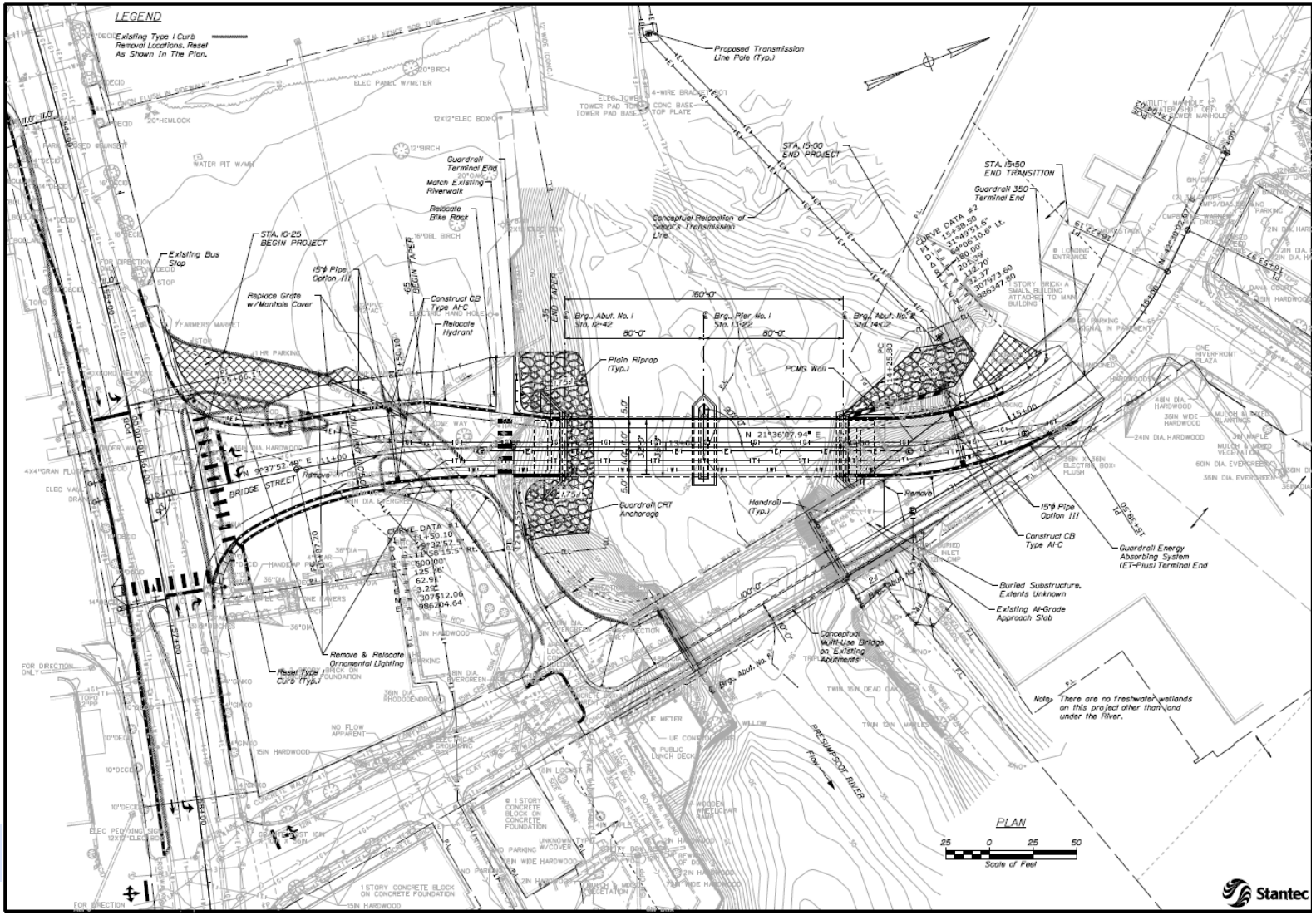
sappi

Site as Proposed with Denil Fishway



sappi

Bridge Street Bridge – ME D.O.T. Bridge Realignment Project



sappi

Status of FERC Surrender

- On December 31, 2013 SD Warren filed an Application of Surrender with the FERC to Surrender the Saccarappa Project (P-2897) License.
- On March 14, 2014 SD Warren and several groups* signed an Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application (Agreement).
- On March 28, 2014 SD Warren filed with FERC an Application for Amendment of License asking FERC to approve the Agreement.
- On July 30, 2014 FERC issued an Order Approving the Agreement.

* U.S. Department of the Interior and the U.S. Fish and Wildlife Service ("USFWS"), the Maine Department of Inland Fisheries and Wildlife ("MDIFW"), the Maine Department of Marine Resources ("MDMR"), City of Westbrook ("City"), Friends of the Presumpscot River ("FOPR"), and Conservation Law Foundation ("CLF")

The Alternative Fish Passage Evaluation - Process

- The Parties to the Agreement are working together on a Collaborative, Open and Joint Process to Evaluate Fish Passage Design Alternatives at the Site.
- The Agreement Allows the Parties Time to Evaluate Alternatives.
- All Alternatives will be based on Decommissioning of the Hydro Station.

<u>We Want All Stakeholders Participating in this process, Including:</u>

SD Warren

The City of Westbrook

Non-Governmental Organizations (NGO)

Land Owners & Abutters

Federal, State & Local Agencies

The Public

Alternative Fish Passage – Task List

- Provide additional bathymetric survey and mapping work
- Provide River Stage-Discharge Rating Curve Data
- Compile Available Existing Site Data
- Create a Models and Flow Analysis for Existing Conditions
- Conduct Site Field Investigation
- Investigate Multiple Two-Channel Alternative Options
- Counting Facility Option Design
- Select a 2-Channel Alternative & 30% Design
- Determine if Designs meet USFWS's Criteria
- Adaptive Management and O&M Plans
- Review the 30% Denil Design
- Evaluate Both Design Alternatives
- Review Design Costs (Construction & Long Term)
- Select Final Fish Passage Design

Other Considerations

There is More to this Process than Just Looking at Alternative Fish Passage.

- Recreational Opportunities:
  - Developing River Recreational features
  - Increased Public Access
  - Educational Opportunities
- Cost
- Shoreline Impacts

sappi

What is “Nature Like” Fish Passage?

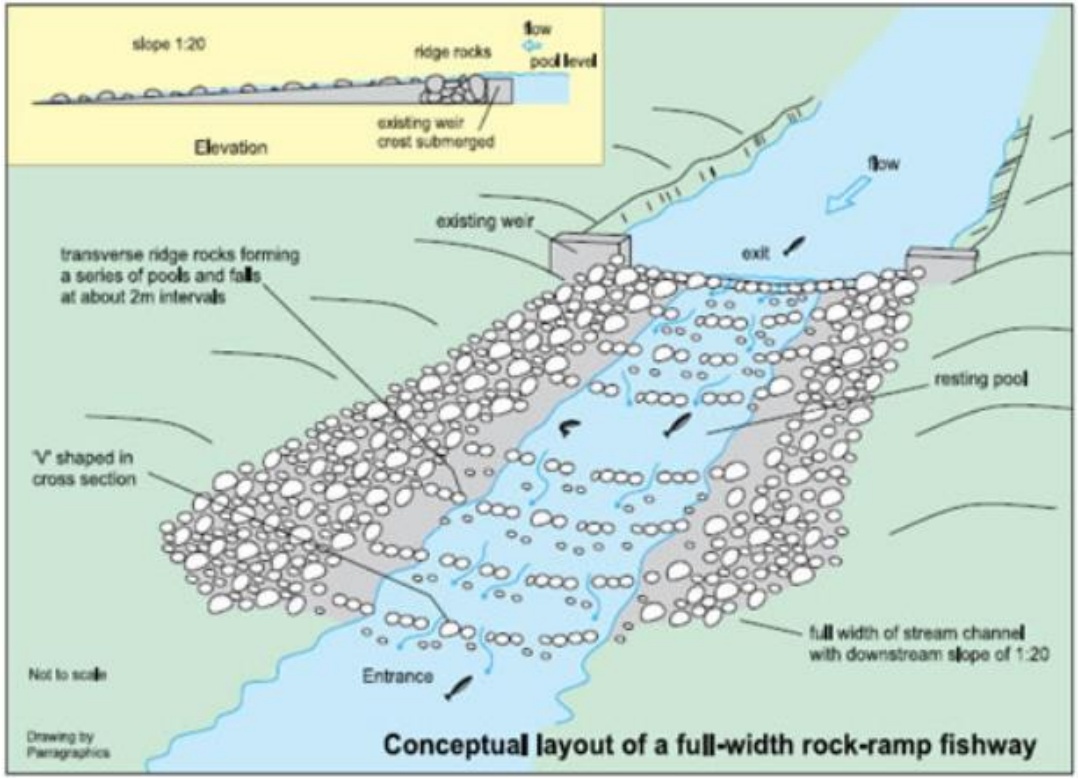
Nature-like Fishways (also called rock ramps and bypass channels):

- A nature-like fishway is a broad term for several styles of structures constructed with natural materials, with rock being the most common.

- The purpose of these nature-like fishways is to simulate natural river channels.

Source: US Army Corps of Engineers – Ecosystem Restoration Gateway

Concept Layout of a Full Width Rock Ramp Fishway



Source: Conceptual Layout of Full-Width Rock Ramp Fishway (Source: Thorncraft and Harris 2000)

sappi

Nature-like Fishway Design Challenges

- Typically require a wide, gentle slope
- Must work over a wide range of flow conditions
- Can’t strand or expose fish to predators
- Must withstand high storm flows without displacement or damage of boulders

Source: **Design and Evaluation of Nature-Like Fishways for Passage of Northeastern Diadromous Fishes by Haro, Franklin, Castro-Santos & Noreika**

Image #1 of a Nature Like Fish Passage

sappi

Image #2 of a Nature Like Fishway

sappi

How Can You be Involved in This Process?

•Get Listed as an “Interested Party” (can do this on the attendance list)

•Come to Public Meetings

•Express your Questions/Concerns/Comments now or submit to:

Barry Stemm
Sappi Fine Paper
89 Cumberland St.
Westbrook, ME 04092
Barry.Stemm@sappi.com

sappi

Questions
or
Comments

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design, Technical Review Meeting

Date of Meeting: February 5, 2015
Location: U.S. Fish and Wildlife Service
Northeast Regional Office
300 Westgate Center Drive
Hadley, MA
Time: 10:00 AM – 4:00 PM

Participants/Attendees:

Barry Stemm, S.D. Warren
Gail Wippelhauser, Ph.D., Maine Dept. of Marine Resources (by phone)
Laura Wildman, PE, Princeton Hydro
Jake Helminiak, PE, CFM, Princeton Hydro (by phone)
William Ball, PE, Acheron
Greg Allen, PE, Alden Labs
William Baker, City of Westbrook (by phone)
Gary Lacy, PE, Recreation Engineering and Planning (Consultant to City of Westbrook) (by phone)
Alex Hoar, USFWS
Curt Orvis, USFWS
Brett Towler, Ph.D., PE, USFWS
Steve Shepard, PE, USFWS (by phone)
Michael Shaughnessy, Friends of Presumpscot River
Ciaran Shaughnessy, Friends of Presumpscot River
Matt Manahan, Esq. Pierce Atwood for S.D. Warren (by Phone)
Ron Kreisman, Esq. for Friend of the Presumpscot (by Phone)

Brett Towler, the host of the meeting, opened the meeting by welcoming everyone to Hadley and to the USFWS district office. Brett reviewed the purpose of the meeting and the proposed agenda. Brett distributed a copy of the meeting agenda as provided below.

Saccarappa Fish Passage Alternatives Meeting

USFWS Regional Office, 300 Westgate Center Dr., Hadley, MA 10 AM, February 5, 2015.

Agenda (revised 2/2/2015 BT)

1. Introductions
2. Overview of Project
    - Review of goals; comparison of two alternatives at a feasibility level
3. Denil/Eastern Channel Option
    - Brief overview of the design concept for the upper falls on the eastern channel
    - Revisions of O&M to include estimates for cost

    - Remaining tasks, outstanding data needs
    - Denil Entrance Conditions and influence of adjacent spill over lower falls
4. Existing Conditions HEC-RAS Model
    - Review of concerns raised at December 8 meeting and how they were addressed
5. Rating Curve for Eastern Channel Pool
    - Comparison of Princeton Hydro's model vs. Alden's rating curve
6. Western Channel Photos
    - Discuss utility of the photos provided by SAPPI
7. Western Channel Option
    - Proposed concept discussed
8. Proposed Conditions Model
    - Presentation of the draft modeling for the western channel option
9. Comparison of Work-Energy requirements for Varying Slope/Velocity Conditions (Towler)
10. Recreational Features (Baker)
11. Open Discussion
12. Review of Schedule (Stemm)

Notes:

- Prior to the meeting, a call-in number and webinar link will be sent out via email.
- Please provide Brett Towler with the names of all attendees in advance
- Upon arrival at the USFWS RO, please park in front and sign-in with guard at the entrance; please bring your ID.

Brett then turned the meeting over to Laura Wildman (Princeton Hydro) to present the results to date on the so called two channel alternative or western channel alternative to fish passage at Saccarappa.

Laura Wildman:

- Opened a PowerPoint presentation (copy previously distributed).
- Review of the nomenclature for discussion of model results.
- Discussion of issues from the last meeting.
- Tailwater issue was addressed and corrected.
- Flow split in the previous model was set at 50-50 for the eastern and western channel based on management of flows over the spillways, gates and powerhouse.
- New model runs:
    - Turbine flow of 650 cfs
    - Remaining flow in eastern and western channel based on spillway dimensions and elevations.
    - Review of Manning N values.
    - Description of updated model.
    - Presented new profiles from HEC-RAS model.
    - Described profile of western channel.
    - Described raceway profile.
    - Comparison of two rating curves for intermediate pool (between the upper and lower falls).

- There are differences between the rating curve for the intermediate pool created by PH and the rating curve created by Alden.
- Reason for differences.
  - Alden used weir equation integrated over small sections.
  - N values and weir coefficients can vary.
  - No field verification available.
  - Which are we more comfortable with?
    - Does it need more study?
    - Are the differences significant enough to warrant more study?
  - The total difference is in the range of 6 to 12 inches in water levels.
  - Results are used to set the invert elevation of the Denil fishway proposed by Warren.
  - May be important to the modeling of the hydraulic grade line for the western channel.
  - Should review cross sections.
  - May be important to the issue of the hydraulic slope over the upper falls in the eastern channel.
  - Do we need calibration of the rating curve?
    - Ball suggested checking the pool elevation at low flow conditions from the LiDAR survey of the site.
    - Warren agreed to review data from the survey and provide data to PH.
- Review of photos of the western channel in PP presentation.
  - Review of 4 photos under different flow conditions up to 500 cfs +/-.
  - Various participants indicated that the conditions depicted in the 500 cfs +/- photo are likely passable for shad and river herring (Slide 10).
  - Some of the loose material can be moved rearranged to make conditions more suitable for passage (the area just upstream of the bridge).
  - Group would like to have photos at higher flow rates in the future to review. Warren indicated they will try to get photos under higher flow conditions.
- Review of proposed conditions model runs.
  - Very preliminary and represent a work in progress.
  - Looking at other options.
  - This is one of the options being considered.
  - Blue line is fish passage pathway.
  - Effectiveness study would follow blue line.
  - Represents zone of passage in western channel.
  - Slides showing filling of tailrace channel.
    - Consider fill placed at end of tailrace channel.
    - Could be a step pool or rough channel configuration.
  - Slides of entire western channel.
    - Structure required at upper end (possible fixed weir) to control flows into western channel.
    - Design based on 300 to 3,000 cfs river flow with max of 500 cfs in western channel.
    - Structure might be a weir or vertical slot control structure that limits flow but allows for fish passage.
    - Must not be a barrier.
    - Design flow for western channel of 0 to 500 cfs but can be flexible.
  - Model review.
    - Profile of the blue line.
    - No details yet on the control structure.

        - 600 feet with 3% to 4% slope.
        - Fill area has highest slope.
        - Steve Shepard: Why not remove the powerhouse?
            - Existing plan lengthens the fish passage pathway.
    - New flow split slide.
    - Profile of west channel. Blue line.
    - Velocity of flow in western channel.
        - Some velocities in the red zone.
        - HEC-RAS does not reflect the diversity of velocity in the channel.
    - Profile of eastern channel.
        - 142 feet at 5%
        - 53 feet at 10%
        - Not meant as a comparison.
        - Warren: May not reflect actual bedrock conditions in the channel.
        - Warren: More needs to be done to understand actual bedrock conditions.
    - Brett: Describing how USFWS will evaluate both options.
        - What will Brett need for comparison of options?
        - There is no modeling of the eastern channel.
    - Discussion of design flow criteria for project led by Brett.
        - Typically USFWS uses the 5% and 95% points on flow duration curve.
        - 3,000 cfs was added to the Saccarappa criteria because 3,000 cfs was the design flow at Cumberland Mills.
        - The project design and evaluation should be based on 300 to 2,250 cfs with consideration given to higher flows up to 3,000 cfs.
        - There should be a 3 tier approach to evaluating velocities in the passage channel:
            - Burst speeds in seconds
            - Prolonged speed in minutes
            - Cruising speed in hours.
        - The table provided reflects maximum velocity design criteria.
        - Need to take a broader view of velocity criteria.
        - There will be a comparison of alternatives with no perfect solution.
        - The evaluation process will drive the design.
        - Brett is concerned about the velocities shown on the screen.
        - Biological science and engineering judgment will drive the design process.
        - What is needed to move the process to the next step?
        - The process will need a comparable comparison of options.
        - What are the criteria for the comparisons?
        - Laura: PH has not determined that this is a feasible alternative.

    - Discussion of fish passage season.
        - Warren has indicated in the Surrender Application a passage season of May 1 through July 15, same as Cumberland Mills.
        - Gail: Warren should consider extending the season for salmon passage.
    - Discussion of other site with "nature like" fish passage.
        - Howland Bypass: 1000 ft. at 1.5%.
        - King Bypass: 600 ft. at 3.5%.
        - Inspected 10 sites. Most were challenging for shad passage.
    - Resumed general discussion of path forward for a decision.

- Schedule is tight.
- What are the criteria for the evaluation process?
- What is Warren going to have to do so the comparison and evaluation can be done?
- There is no optimal solution for this site.
- There are concerns about the western channel option and the Denil option but neither is a wash yet.
- The Service has concerns about passage at the upper eastern falls.
- How could the western channel option be improved?
- Gail:
    - The upper falls are a challenge.
    - There is no modeling of the eastern falls.
    - Has Warren considered diverting water flow into the western channel instead of the diversion channel?
- Brett:
    - The design from Warren is unchanged from the surrender application.
    - The Service has concerns with the Denil option as currently designed
- Steve:
    - Some issues are clearly not resolved.
    - Now there are multiple options to consider.
    - Options to passage over the upper falls should be considered.
    - Issues related to diversion of flow.
    - Recreation issues are valid and need to be considered.
- Brett:
    - Both options need to be at equal stages for the evaluation to be completed.
    - The Service finds one aspect of the Denil option unacceptable (the diversion channel and passage over the eastern falls).
    - What do the NGOs and Warren need to do to make a good comparison?
- Laura:
    - Should not think of the comparison of just two options.
- Barry:
    - Upper Eastern Falls Modeling was determined to be of little value two years ago when Warren was working on the Denil option.
- Brett:
    - Is this a concept for consideration?
- Laura:
    - This is the first step in an iterative process.
- Brett:
    - Is this a viable option that should be pursued further?
    - What is the group's opinion?
- Greg:
    - There may be some things that can be done to improve performance. There are always conflicts with the criteria related to length, slopes and velocities. Resting pools can sometimes help.
- Barry:
    - Warren is working to try to address issues related to the diversion channel.
    - There are no provisions in the option considered today to address fish the might ascend the lower falls.

- Brett:
    - He is less confident that PH can come up with a solution to the velocity issues in the western channel, particularly the lower section.
    - Those issues would not be addressed with resting pools or other structures.
- Barry:
    - The Service sent a letter to Warren.
    - Service says Upper falls design issues have so far not been addressed by Warren.
    - Service says the upper falls do not meet the Service's criteria.
        - What are the issues?
        - Are they described in the letter?
        - Fish passage evaluation.
        - How much modification can be done to the upper falls?
        - What are the options to the diversion channel?
        - Service needs more detail.
        - Warren is working on the upper falls issues.
- Steve:
    - Western channel is 600 to 700 feet long with a slope in the range of 3%. That is a concern.
    - Risk of shad passage.
    - How far does this process go before we sit down and negotiate a solution?
    - Would like to see less gradient and less length for the passage.
    - Velocity and distance criteria are critical.
- Brett:
    - He is working on a model but it is not ready yet.
- Laura:
    - Is not in favor of a Denil or other technical solution to passage.
- Curt:
    - Shad can pass a 3% channel.
    - There can be predator issues with "nature like" fish passage.
    - Entrance issues are the biggest weakness with technical fishways.
- Laura:
    - Brought up the issue of passage efficiency.
- Brett:
    - 60% to 80% is common for Denil fishways.
- Laura:
    - Long term sustainability is important to her. She wants to see a design with 7 generations of sustainability.
- Brett:
    - Wants to know what Warren is working on.
- Barry:
    - Suggested a conference call before the next meeting to discuss what Warren is working on.

- Based on a review of the schedule, the group agreed on a date around the middle of April for the next meeting. Meeting location is planned for Hadley, MA. Brett agreed to coordinate a date for the meeting.
- Laura will not do 30% design for the next meeting. There will be more work on the 1D model with refinement of the model and the design.

- Mr. Baker then led a discussion of recreation features.

- Mr. Baker described how the City helped facilitate the process with the NGO evaluation.
- The City is interested in make sure the selected option and the design includes provisions for recreational opportunities at the site.
- The falls are a major downtown attraction.
- Described the City's desire to be able to use the upper falls.
- The lower falls already exist and there are no plans to modify the lower falls.
- City is working on the design of a standing wave structure at the site of the existing Bridge Street Bridge.
- City has hired Gary Lacy to work with the team.
- The planned Obermeyer system below the falls can be collapsed during fish passage season.
- He understands there will be more work on the upper falls before a decision is made.
- What are the permitting agencies for the City's part of the project? DEP, Army Corps and the City.

- Discussion of the timing of the fish passage season led by Gail Wippelhauser.
  - DMR, IF&W and the Atlantic Sea Run Salmon Commission developed a management plan for the Presumpscot River in 2011.
  - It included considerations for Atlantic salmon.
  - There is salmon habitat in the Little River.
    - There is currently no stocking of salmon in the river.
    - Doubted there would be for the foreseeable future.
  - Stray salmon could be in the Presumpscot.
  - Passage season on the Presumpscot may need to be extended beyond the July 15th date in the Cumberland Mills Order.
  - Can use the cameras at Cumberland Mills to determine if salmon are passing through the fishway at CM.
  - The season may need to be extended from May 1 through November 15 or from May 1 through October 31st.

In Closing:

Alex Hoar Indicated this is an exciting opportunity for the City and all Stakeholders to work together and craft a Saccarappa site solution that will be great for the community.

Barry Stemm agreed with Alex's thought, and indicated that with so many stakeholders, with varied interests, all would need to offer some compromise to develop a solution that we all can feel good about.

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design, Technical Review Meeting

Date of Meeting:	April 17, 2015
Location:	Sappi/Warren Release Papers 89 Cumberland Street Westbrook, ME
Time:	10:00 AM – 2:30 PM; followed by a site visit at Saccarappa

Participants/Attendees:

Barry Stemm, S.D. Warren
Brad Goulet, S.D. Warren (arrived 11:30)
William Ball, PE, Acheron
Greg Allen, PE, Alden Labs
Sarah King, PE, Acheron
Gail Wippelhauser, Ph.D., Maine Dept. of Marine Resources
Brett Towler, Ph.D., US Fish and Wildlife Service (by phone & webinar)
Steven Shepard, US Fish and Wildlife Service (by phone)
Eric Dudley, PE, City of Westbrook
Laura Wildman, PE, Princeton Hydro
Richard Ampomah, Princeton Hydro
Gary Lacy, PE, Recreation Engineering and Planning (by phone & webinar)
Riley Gelatt, Recreation Engineering and Planning (by phone & webinar)

Briana O'Regan, Esq. for S.D. Warren
Matt Manahan, Esq. Pierce Atwood for S.D. Warren
Ron Kreisman, Esq. for Friends of the Presumpscot River
Michael Shaughnessy, Friends of the Presumpscot River
Aaron Frederick, Friends of the Presumpscot River
Sandy Cort, Friends of the Presumpscot River (by phone)
Dusti Faucher, Friends of the Presumpscot River (by phone)
Rachel Bouvier, Friends of the Presumpscot River (by phone)

Barry Stemm, the host of the meeting, opened the meeting by welcoming everyone to the Sappi. Barry reviewed the purpose of the meeting and the proposed agenda, which is outlined below:

- Presentation by Princeton Hydro

Proposed Fish Passage Option(s) and Data Review; feedback, recreation compatibility, questions & comments

- Presentation by S.D. Warren
  Revised Proposed Fish Passage Plan and Data Review; feedback, recreation compatibility, questions & comments

- Next Steps/Extension Agreement Schedule

- Saccarappa Site Visit

Introductions were made and then Barry turned the meeting over to Laura Wildman, Princeton Hydro, to present the results to date on the "two-channel alternative" plan addressing fish passage at Saccarappa.

<u>Laura Wildman, PE, Princeton Hydro Presentation</u>

PowerPoint presentation (*copy distributed prior to meeting*).

- *<u>Presentation Overview</u>:* Stated that existing conditions model and overview of proposed model(s) were detailed at previous technical review meeting. Gave a brief overview of:
  - <u>Existing Conditions Model:</u>
    - Existing conditions model has a single split; proposed conditions model has a double split.
    - Minor changes were made in existing conditions model:
      - A geometric modification in the western spillway increased the length/area of western spillway. Modeled as an "L" shape instead of straight.
      - Downstream bridge configuration in the existing model is the existing Bridge Street Bridge, not the proposed bridge.
  - <u>Proposed Conditions Model (Two-Channel Alternative, Western Channel Alternative):</u>
    - Guidelines used:
      - River herring are weakest swimmers, so maximum river velocity was based on their needs – 6 ft/s. This number is based on a diadromous fish table from USFWS.
      - Shad have the highest pool depth requirements, so depth based on shad. Based on diadromous table from USFWS.
      - *Brett*: There will be a public release of the diadromous fish chart within 30 days. Unsure whether any new changes have been made to this table – just informing that a new chart will soon be released. Confirm any revisions.
    - Other guidelines:
      - Haro, Belke, Castro Santos.
      - Model output will be used in conjunction with SMATH models. This will help with pool spacing, etc.

            - SMATH models represent a numerical approach for comparison of alternatives. They do not evaluate other factors, such as long-term maintenance, cost, sustainability, ownership, etc.
            - Brett will discuss SMATH later on in this meeting.

- *Western Channel Alternative*
    - *Overview:* Proposes removal of eastern spillway and western spillway; installation of a flow control structure at the upstream end of the western channel to restrict flow in the western channel. The power house would remain.
        - Steepest section of proposed channel is 4% (near existing western spillway).
        - Tailrace wall would be broken through and nature-like fish passage installed within this area. Approximate slope of this section would be 3% throughout.
        - Multiple pools would be created within the filled tailrace section w/ modification of bedrock (4%)
        - Average slopes range between 2% and 4% throughout all sections of fish passage.
        - Velocities:
            - All calculations based on 300 cfs and 480 cfs through western channel, with a total river flow of 600 cfs.
            - Some modifications will be needed in certain areas (most notably at the location of the current spillway) to bring velocity down below river herring target velocity of 6 f/s.
            - *Greg:* How do flows correspond to river flows?
                - *Laura*: Total flow is 600 cfs, restrictor will keep flow below 300 – 480 cfs in western channel for total river flows up to 3,000 cfs.
            - Weir has not been designed, however may consist of different notches to regulate flows into the western channel under varying river flows. Princeton Hydro's focus thus far has been surface elevations and design flows, not weir specifics.
            - *Steve:* Will the existing foot bridge be removed?
                - *Laura*: All design scenarios include the removal of the bridge.

- *Western Channel Passage with Switchback at Tailrace*
    - Overview: Purpose of this design is to decrease velocities and flow rates, while still separating western and eastern channels.
        - Switchback in tailrace is the only design difference.
        - This design option has reduced velocities, however:
            - Shad don't like switch backs
    - Design slopes still peak at 4% at the western spillway/upper western falls.
    - Conceptual: Has not yet been fully modeled.
    - *Bill*: Clarify WSEL difference between middle and eastern channel – what is middle channel?

        - *Laura*: Middle channel is the northern portion of the western channel (between tailrace and island).

- *Eastern Channel Fish Passage with Switchback Tailrace Route*
    - Conceptual: This option has not yet been fully modeled.
    - Overview: Passage through tailrace; western channel above fishway exit blocked; eastern channel used for fish passage, with western channel used for recreation.
        - *Bill*: Clarify, would there be flow in western channel during passage season?
            - *Laura*: During the passage season there may be balancing issues, however outside the fish passage season the amount of flow in the western channel could be regulated.
        - *Greg*: Would there be something (weir) to block fish at the existing foot bridge?
            - *Laura*: Yes, there would be something to block fish from passing at the lowest feature above the fish passage exiting the tailrace.
        - *Bill*: What are the three star-like objects on the plan?
            - *Laura*: Areas for potential recreation enhancements.

- General Discussion:
    - *Laura:* Can S.D. Warren be open to the possibility of having a structure that allows access to the eastern channel if the western channel passage is not effective? If the western channel passage is extremely successful, such a gate could limit access to the eastern channel.
    - *Laura:* It is necessary to plan for adaptive management, as we do not know the realities of how the fish will use these structures, as well as other behavioral issues that may need to be addressed post implementation.
    - *Laura:* This/these same concept(s) could be used with a Denil option.
    - *Laura:* It is necessary to evaluate the eastern channel prior to a full comparison.
    - *Laura*: Opines that while the velocities on the switchback proposal are more suited to successful fish passage, shad have evidenced behavior indicating they are not as successful ascending switchbacks. So far, Princeton Hydro believes the switchback model is preferable. Final judgement should be held off until a more thorough assessment of the eastern channel has been made.
    - Princeton Hydro's goal is to brainstorm and discuss more, evaluating based on SMATH and anticipated fish behavior.
    - *Greg:* How do you envision the lower section to look? Pool, riffle?
        - *Laura*: Yes, steps may need depth, depending on requirements for shad depth between pools. There will be a 2% slope (grade). Would like to avoid steps within the 3% range, as it will go into large drops that need to be accounted for in design.
        - *Richard*: Currently, biggest drop is less than 1 foot, over riffles.
        - *Bill*: The drop between pools is less than 1 foot, but the riffles remove drop?
        - *Laura*: Yes, you cannot see the drop. More like a roughened slope.

- *Bill:* The wall is extended to accommodate the switchback. This narrows the channel width. Does this alter the channel velocity?
    - *Laura*: It was challenging and did change things, but it is addressed in the model.
- *Steve*: Did you consider an alternative switchback that used the full width of the western channel, moving it out of the tailrace? Turning at bridge and emptying into eastern channel? This would take full advantage of the pool.
    - *Laura*: Design was limited by the existing grade.
    - *Steve*: Hydraulic blocker?
    - *Laura*: There was a significant issue with existing and proposed grades as well as the presence of bedrock.
- *Brett*: What are the average velocities at the switchback turn?
    - *Laura*: They are low in the turning pool (reference velocity graph over passage length in the power point presentation), then they go up in the last portion after the turning pool (2%), the average channel depth is 3.67' at flow = 300 cfs and 4.44' at flow = 480 cfs.
    - *Brett*: It is counterintuitive that it slows.
    - *Laura*: The area is 30' wide, so it is a lot longer than pictured.
- *Gary*: A few comments from a recreational standpoint:
    - There is the potential for safe navigation through the designs.
    - Expressed concern regarding safety issues within switchback.
        - *Laura*: Switchback area is not for recreational use.
    - It is necessary to make sure that people do not go where we do not want them.
        - *Laura*: The eastern channel would be open for recreation, not the western channel (under the western only passage options).
    - *Greg*: Typo on slide 17; 480 cfs NOT 400 cfs.
    - Discussion of when to hold S-MATH model presentation by Brett. Barry: consensus that Brett will discuss S-MATH before lunch break.

<u>Brett Towler, PhD, USFWS Presentation, SMATH Modeling</u>

Brett began presentation of S-MATH models by showing model on screen (S-MATH software available on-line)

- <u>Overview:</u>
    - There are a variety of ways to evaluate fish passage:
        - Velocity
        - Height barriers
        - Width
    - USFWS uses three fish passage models to evaluate fish passage facilities. Brett has created a computer implementation of each model. The computer implementation allows for an evaluation of discrete elements of fish passage design. Behavior is not included in these models.
    - While the PDF versions of these models are static, S-MATH is dynamic and alterable.
    - Three models are Fatigue Model (Castro-Santos), Survivorship Model (Haro), and Work Passage Model (Belke).

- Survivorship Model (Haro)
    - The program allows you to input basic conditions that fish are exposed to such as velocity, temperature of the water, fish size, type, barrier length and calculates the percentage of fish expected to pass the barrier.
    - *Laura*: Length of fish and temperature of water information should be provided by regulatory agencies, as standard desired input information is not readily available.
        - *Brett*: USFWS uses these tools to evaluate passage designs and they are being shared so that designers understand how designs will be evaluated.

- Fatigue Model (Castro-Santo)
    - This program estimates the distance that fish can travel based on a prescribed swim speed. It calculates:
        - T – How long a fish can swim before it fatigues
        - D – How far a fish will have swum once it tires out
    - *Laura*: What size should be used for target species?
        - *Brett*: There is a point where a fish gets to a size where fatigue effects become "non-existent", so it is important to use the correct fish size. Fish size will need to be recommended by wildlife biologists.
        - *Gail*: DMR can provide data regarding appropriate fish size.

- Work Passage Model (Belke)
    - This model calculates the minimum energy costs along a path, and relative effects of varying slopes and velocities.
    - *Greg*: How and when should these models be used? How should the work passage model be used?
        - *Brett*: The smaller the spatial scale, the better the results. Small scales limit the effect of behavior on calculations, i.e. they should not be used on Laura or Bill's models over a 1,000 foot fishway, as you do not know how a fish will behave within that distance.
    - *Laura*: Models will allow for a comparison of ideas.

*** Lunch break 12:00pm – 12:30pm ***

Barry Stemm, S.D. Warren and William Ball, PE, Acheron, S.D. Warren Passage Alternative

PowerPoint presentation *(copy distributed after meeting)*

- *Introduction*:
  Barry thanked to all previous presenters and supplied an outline for the S.D. Warren presentation and opened a power point presentation:
    - Discussion of how revisions were conceived.
    - Review of Western Channel alternatives
    - Conceptual Design Drawings
    - Modeling results
    - New Sebago Lake Level Management Plan (LLMP)

        - This was approved by FERC two weeks ago and will impact river flows
    - Recreational access opportunities allowed for in S.D. Warren option
    - Nature like passage option
    - Barry noted that feedback is important to S.D. Warren and that they want to accommodate as much feedback as possible into their design. The S.D. Warren design has been updated to address the feedback/concern that the diversion channel may act as a barrier and provide attraction flow.
    - The Denil is the best way for fish to ascend the lower falls and facilitates fish counts.
    - S.D. Warren and agencies had concerns regarding previous nature like passages proposed.

- *S.D. Warren's Nature Like Denil Option*
    - Project involves the removal of the eastern and western spillways and ancillary structures
        - Addresses desire by stake holders and FERC to not leave structures in the water.
        - Power house forebay area in the upper Western channel will be filled in to facilitate passage.
        - Denil is a proven technology.
        - Denil ladders are easy to maintain.
    - Barry handed presentation over to Bill to discuss the proposed design.
    - *Bill:* Took some time to orient technical team to S.D. Warren's proposed site plan, including pointing out the stationing system utilized, cross-section locations, which appear in further slides.
    - *Laura:* Question regarding the number of cross-sections used for modeling.
        - *Bill:* Cross-sections were input at 100 foot intervals for modeling. The cross-sections that are included in the presentation are engineering cross sections, not modeling cross sections. (The model developed by Acheron includes a total of 28 sections over the 700-foot length in the western channel for an average spacing of 25 feet.)
    - The S.D. Warren option involves modifications to the bedrock in the area of the western spillway. An upstream hydraulic control will be created by fill at the upstream portion of the western channel to elevation 64' (cross-section A-A) at station 650. This is the same elevation as the hydraulic control at the head of the eastern channel. Generally, fill is proposed in the upstream portion of the western channel and cut is proposed near the existing spillway. Refer to the cut and fill profile in the power point presentation.
        - *Laura:* What does the blue represent?
            - *Bill:* Blue is the water level – backwater derived from stage/discharge curve by Alden.
            - *Laura*: Disagrees with Greg's statement; and says that under no circumstances would backwater go all the way up the western channel.
            - *Bill*: Proposes that he carry on with the presentation, as Laura's question may be addressed further in the presentation.

        - *Laura*: Confirms the total length of bedrock cut – 350' to 470' for a total cut length of ~120' (based on cross-section in presentation).

- *Discussion of HEC-RAS Model:*
    - Split flow analysis. The major difference between the Warren model and Princeton Hydro model is the configuration of the control in the western channel – modification of bedrock to match eastern channel control elevation.
    - *Laura:* Asked why Acheron did not use the model that was received and derived by Princeton Hydro to model S.D. Warren's proposed option.
        - *Bill:* Sappi will make Acheron's model available to Laura for review.
    - The calculated flow split is approximately 50/50 for the eastern and western channels for river flows between 300 cfs and 2,250 cfs.
    - Bill reviewed the slide with velocities in the western channel under various river flow conditions (see PowerPoint slides).
    - Conclusions:
        - The S.D. Warren configuration addresses DMR's concerns regarding the bypass channel by eliminating it The S.D. Warren proposal also addresses recreational needs.
    - Bill handed the presentation over to Barry.

- *Sebago Lake LLMP*
    - The Sebago Lake Level Management Plan was recently revised. The revision aims to maintain consistent river flows while maintaining the lake at 266' – 262' (between 5/1-6/15 and 11/1, respective target dates). Previously, river flow was regulated to maintain a consistent lake water level.
    - Proposed normal outflow is between 500 cfs and 1,167 cfs. These flows from Sebago Lake do not take tributary runs into account. Barry turns over to Bill.
    - Existing Flow Duration Curve
        - Influenced by historic LLMP.
        - S.D. Warren believes that the shape of this curve will change significantly based on the new LLMP.
            - 5th percentile flow will likely be higher.
            - Curve will likely become steeper, recognizing the target flow of 500 cfs to 1167 cfs.
              95th percentile will likely be lower. It is currently ~ 2,250 cfs. Bill turns presentation over to Barry.
- *Recreational and Public Use*
    - In proposed Warren scenario the entire river, save the Denil fishway structure, will be available for recreational use. A Denil design would allow for a fish viewing and counting area at the Denil exit, which could be open to the public.
        - No restricted areas.
        - Asked Gary if there were additional potential recreational areas.
          Gary:
            - Rock ramp should be looked at for safety, however both channels area available for passage.
            - Must be careful to ensure safety near Denil exit/entrance.

        - Plenty of area for whitewater features.
- *Bill* addresses *Laura's* previous question: Bedrock cut causes the backwater to the spillway. *Laura* disagrees. *Greg* states that the blue lines are figurative and not based on actual results.
- *Barry* recaps the benefits of S.D. Warren's proposal. The modified proposal addresses previous DMR concerns by removing existing structures from water, eliminating bypass reach. It also provides proven and low-maintenance fish passage, and opens the entire river to recreation, etc.
- *Brett*: Agrees with the characterization of the flow duration curve (LLMP) and thinks that this flow curve will be more fish friendly. Poses a question to *Gail and Steve:* Will fish that are unable to ascend the nature like fish passage drop back to the pool, or would they drop back below the Denil to the Cumberland Mills impoundment?
    - *Steve*: They may drop down to the pool, or impoundment depending on whether it is day or night and how exhausted they are. If it is not too turbulent they would most likely drop back to the central pool, or Cumberland Mills impoundment if turbulence is an issue in the pool.
    - *Bill*: S.D. Warren evaluated the exit point of the Denil fishway and the velocities at Station 0 + 00 in the western channel to determine exactly what fish may encounter at the exit point of the Denil. They found that fish would encounter a low velocity from the western channel. The western channel blends with the eastern channel below the exit of the fish ladder. The velocity in the western channel is approximately 1 ft/s – 2 ft/s. This velocity will give them a reason to turn left and continue to ascend the western channel.
    - *Greg*: Once fish ascend the ladder they will encounter a steady flow of 1-2 ft/s. If they are not exhausted and want to continue swimming they will continue up the western channel, if they are exhausted they will fall back within the middle pool, or possibly to the Cumberland Mills impoundment.
- *Laura*: Questioned whether Acheron's model is actually a split flow model.
    - *Bill*: Acheron's model started with the same cross-sections as Princeton Hydro and continued down both the western and eastern channels. It is a split flow model.
- *Laura*: Questioned velocities in the upper falls area of the western channel. Wanted to compare velocities in the vicinity of the modified western spillway to velocities in the area of the modified eastern spillway.
    - *Laura*: Hesitant to believe that the proposed control structure will lessen velocities as significantly as they do in Princeton Hydro's model.
- *Eric*: Suggested a diversion structure south of the island – Barry and Bill state that this was already considered.
    - *Laura*: Fish passage through the eastern spillway was blocked in her models.
    - *Barry*: Warren considered adding a structure, but did not want to preclude any fish migrating near the Dana Warp side of the passage from passing through the western channel.

- *Laura*: Voiced concerns about S.D. Warren and Princeton Hydro using inconsistent models.
    - *Brett*: Did not disagree with Laura's concerns. Stated that the most likely passage is through the western channel, as well as that the Warren plan would allow fish to overnight in the middle pool without needing to reascend the Denil ladder.
- *Greg*: Warren could potentially fill in the area south of the island tip to improve river hydraulics and straighten the western passage channel.
- *Laura*: The fill associated with the upstream control in the western channel will need a core structure design to stop seepage. Princeton Hydro has seen issues in similar structures without a core structure design. Stated that the fixed weir approach is a good, natural idea. Also, S.D. Warren proposes a lot more slope modification than Princeton Hydro.
- *Bill*: The Denil ladder is steeper than the passage proposed by Princeton Hydro, which accommodates a lessened slope upstream of the ladder. The cut downstream of the western spillway shows up on the plan view sheet, but not on the profile sheet. In the vicinity of the western spillway, there is a bedrock cut from elevation 66' to 58' below the spillway and a bedrock cut from elevation 65' to 57' cut at the spillway. These numbers are based on the plan view drawing.
- *Brett*: Noted that he likes the direction that the models are going in. He has concern between STA 400 and STA 650, where high velocities occur over a 200'+ stretch. Questioned what structures may be proposed to give fish a chance to rest, possibly boulder clusters with low velocity areas, and/or jetties along the shore side.
    - *Laura*: Reminded Brett that this portion of the design was cut into bedrock and suggested that any such areas be cut into bedrock in such a way to provide lower velocities. Brett agreed, if this was feasible.
    - *Gary*: Both jetties and boulders mid or off-channel would benefit recreational uses. They would enable boaters to eddy-hop upstream.
- *Brett* stated that design details, such as manning's numbers, would be left to designers.
- *Eric*: Did Princeton Hydro address any recreational uses in their design?
    - *Laura*: Princeton Hydro's current goal is to agree on really good fish passage. Once this has been agreed on, recreation will be integrated.
- *Bill*: Did not bring thumb drives with model, presentation, etc. This information will be made available within the next few days.

<u>Next Steps</u>

- Barry went over the next steps in the design process. This included:
    - S.D. Warren looks to receive feedback from agencies, and would like time to review, address and integrate recommendations. Gail agreed.
    - *Barry:* We're concerned about schedule, so can you give a timeline for feedback?
    - *Steve:* Agency feedback will be provided no later than <u>May 8, hopefully earlier that week.</u> *Brett* and *Gail* agree.
    - *Barry:* Next step is to get to selection of preferred two-channel alternative, including for preparation of 30% design drawings. But we'd like feedback first.

    - Scheduled another Technical Meeting for 5/21/15 in Westbrook to review agency input.
- *Brett* suggested that Bill and Laura have an interim conversation to ensure that the existing controls in their models are the same.
    - *Bill* said that the eastern channel models were the same and that he would provide a copy of Acheron's model of the western channel for review. He does not think there is a problem utilizing two models.
    - *Laura*: Disagreed with Bill. Stated that different models may have differences that yield varying outputs. Suggested that it would be more consistent and easier to compare results if models were the same.
    - *Barry* asked whether Acheron could put their information into Princeton Hydro's model. *Bill* said that it could be done, but there may be timing and cost concerns.
        - *Barry* and *Bill* will review and determine whether to input Acheron's information into Princeton Hydro's model.

- *Schedule*
    - *Barry:* Next task, end of April to June 22 is selection of preferred two-channel alternative. To keep to the schedule we should select the preferred two channel alternative by June 22, 2015.
    - *Barry:* Laura, you presented several concepts today. Which one will be advanced?
    - *Laura* will evaluate eastern falls.

*** Meeting ended at 14:25 ***

Following the meeting Barry led a tour of the Project Site. Laura, Richard, Bill, and Greg participated.

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design,
Technical Review Meeting to Discuss Agency Review Comments

Date of Meeting: May 21, 2015
Location: Teleconference
Time: 10:00 AM – 11:00 AM

Participants (By Phone):

Barry Stemm, S.D. Warren
Matt Manahan, Pierce Atwood, for S.D. Warren

William Ball, PE, Acheron
Kirk Ball, PE, Acheron
Sarah King, PE, Acheron

Greg Allen, PE, Alden Labs

Brett Towler, Ph.D., US Fish and Wildlife Service
Steven Shepard, US Fish and Wildlife Service

Gail Wippelhauser, Ph.D., Maine Dept. of Marine Resources

Bill Baker, City of Westbrook

Laura Wildman, PE, Princeton Hydro

Ron Kreisman, Esq., for Friend of the Presumpscot River
Michael Shaughnessy, Friends of the Presumpscot River

Barry Stemm, the host of the meeting, opened the meeting by welcoming everyone. Barry addressed the misunderstanding regarding the purpose of the meeting and said that he hopes to continue discussions regarding fish passage. Barry indicated that the S.D. Warren passage plan is the same as presented at the technical meeting on April 17th. Barry indicated that an O & M plan was sent out on May 20th for review. Barry then indicated that there were two items that were brought up in the previous technical meeting that he wanted to follow up on, the first concerning the water elevations in the intermediate pool between the upper and lower falls. He then turned the meeting over to Greg Allen, PE, Alden.

Greg: Alden looked into the HEC-RAS model provided by Princeton Hydro and found that the cross-section that was graphed was one where the water elevation was lower than the pool elevation. If the next cross-section upstream had been used, the output would have been within 2" of that in the Warren model, which means that the information in the Warren and Princeton Hydro models correspond well.

Laura: Which is more accurate, the higher elevation, or lower?

Greg: The cross-section that Warren suggests is more representative of the pool.

Laura: The next cross-section upstream should be used. It is slightly higher and more representative.

Greg: Alden reviewed previous and current models from Princeton Hydro and found that these correspond well with the Warren model.

Laura: Great. The bigger question is whether the HEC-RAS model needs to be revised. The answer is no. Different assumptions may lead to variations in the model but that is okay.

Greg: That summarizes my review. Turns meeting over to Barry.

Barry: Turns the meeting over to William Ball, PE, from Acheron for clarification of the second item.

Bill: Following the April 17th meeting, Princeton Hydro gave Warren a copy of their model. The proposed cross-sections of the western channel that Acheron developed for Warren and presented in the last meeting were inserted into the Princeton Hydro model. Acheron compared the velocity outputs of the Princeton Hydro and Acheron model versions and concluded that the models are very close.

Laura: We found this to be the case as well. Boundary and upper and lower limit information was different.

Barry: These are the only items that Warren wanted to follow up on prior to addressing the agenda of this meeting.

Brett: Can Laura or Bill give us the take home message regarding velocities?

Laura: Princeton Hydro dropped the Acheron cross-sections in and HEC-RAS came up with similar numbers. Princeton Hydro used more cross-sections than Acheron. Different boundary information. I am in a much better spot, comparing apples to apples – the same model.

Brett: So, take home message is that everybody is now comfortable that we are comparing apples to apples? Are we now playing in the same sandbox?

Bill: The data that was presented in the last meeting doesn't need to be amended or modified due to modeling issues. We are all playing with the same toy in the same sandbox. Laura correctly said that Princeton Hydro had substantially more cross-sections. As we go forward we need to consider and understand the differences in the boundary models.

Laura: Princeton Hydro is going with a similar upstream control structure. She is fine going forward as long as everybody uses the same model. Cross-sections may be modified as needed.

Barry: Hands meeting to Laura Wildman, PE, Princeton Hydro, to discuss progress on the Princeton Hydro model.

Laura: Princeton Hydro is continuing to work on designs. They are operating based on the June 8th deadline in the schedule.

Brett: There is no point in agencies reviewing Princeton Hydro's design until it is complete.

Barry: Will Warren receive agency comments on Princeton Hydro design once completed? Warren and the City want to be involved in the process because they will be constructing the final design.

Brett: Yes.

Steve: Informal conversations have happened. Apologies that this has not been more collaborative. We will do better moving forward.

Laura: Princeton Hydro has tried to be 100% collaborative and transparent.

Brett: The phone conversations that occurred can be characterized as being responsive to requests on how agencies may interpret designs.

Barry: Great. Let's keep it up. Laura is still working, so there is nothing to present. When should the next technical meeting be scheduled?

Laura: According to the schedule between July 6th and 20th. They will have the single proposed concept design complete by June 8th, as the schedule indicates that a two-channel alternative shall be reviewed June 8th – 22nd. We will work on the 30% design after June 8 and before July 6.

Barry: We are on task 2e. Confirms that everybody agrees.

Brett: The meeting to discuss feedback should occur within the July 6th – 20th period.

Laura: Agencies will have the complete concept plans, model, and PowerPoint by June 8th. The 30% design drawings will be available by July 6th.

Brett: Does everybody agree with this schedule? *Yes.*

Barry: You already have the design package for the Warren model for review. Warren is currently working to address Gail's comments.

Brett: Goes over Gail's comments:
- Request by agencies for structures providing velocity shadows for resting areas.
- Velocity duration curve, based on new flow duration curve (presented at last technical meeting) and based on the new Sebago Lake LLMP.

Barry: The flow management in the Eel Weir license is finalized. Warren is currently working on some clarifications.

Brett: We are talking about the duration curve from the PowerPoint presentation at the last meeting. Clarified that they would like to have this curve. If they do not receive it, he will develop his own. If Warren's curve is based on better information, please get it to Brett before review. Both Princeton Hydro and Warren designs will be evaluated based on the same curve.

Bill: Understood. We first need to evaluate and understand the impact to the Eel Weir license and evaluate how that will affect the flow duration curve. We will provide you with what you requested in a timely fashion.

Laura: Princeton Hydro would like a copy of this too.

Barry: Confirms schedule going forward. On June 8th Princeton Hydro concept design proposal will be complete. By July 6th Princeton Hydro's 30% design package will be complete. When should the next meeting be scheduled?

Brett: Wants 30 days to review the design before the meeting.

Barry: Meeting also needs to be scheduled so that there is time to review the 30% drawings.

Meeting will take place in **Hadley at 10:00 am on July 14th**. It is anticipated that the meeting will last 3 – 4 hours. Brett will confirm the meeting space and send an email out.

This is all that Warren proposed to discuss.

Brett: Can somebody reiterate the plan forward from July?

Laura: July 20th – August 17th: Construction cost and post construction cost.
August 17th – August 31st: Review of costs.
August 31st – October 12th: Final review and evaluation of alternatives.

Brett: In July we will have a better feel for the value of each fish passage design. Then a discussion of costs and post-construction impacts will be occur.

Barry: The dates make sense. The process is great, but asked if we can finish things early that would be great. Warren still has the surrender process and a public review process. Warren wants to build the proposed design so passage can be achieved by May 1, 2017 and this requires a lot of regulatory permitting. He views the schedule as a guideline, but if it can be expedited, that is great. Warren still has a long process.

Any other items?

Bill Baker: Felt good about the design options and use of Gary Lacy's input. His goal is that by review time these recreational issues will be reflected in the passage designs.

Brett: We can appreciate and support recreational features provided that they aren't a barrier to fish. We don't want to design something later for recreation that then compromises fish.

Bill Baker: Understood.

Michael: Is the reference to white water recreation?

Bill Baker: Recreation includes banks of the river, fishing, etc. Whitewater recreation is important at this stage because it needs to be incorporated into the design.

Gail: When do you want feedback on the adaptive management O&M plan?

Barry: July is fine. Anything else?

A conversation regarding the presence of alewives at Cumberland Mills followed. Barry indicated that he sent an email when he first started seeing them and that they are present currently, though not in great numbers. Last year they did not show up until May 20th. Gail asked if the camera was working. Barry said it was working very well and that Bill (Ball) was going to take and analyze the first week of data. Gail indicated that she would like to view a clip of the video taken at the entrance.

Michael indicated that he would like to take a look at the fishway. Barry said he can schedule a tour. Steve would like to visit multiple sites on the river and will contact Barry separately.

Barry said that he had seen some bass hanging out at the entrance and exit of the fishway. Most likely capitalizing on the feeding ground.

*** Meeting ended at 11:00 AM ***

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design, Technical Review Meeting

Date of Meeting:	July 14, 2015
Location:	USFWS Regional Office 300 Westgate Center Dr. Hadley, MA
Time:	10:00 AM – 3:30 PM

Attendees and Participants:

Brett Towler, Ph.D., US Fish and Wildlife Service (host)
Steven Shepard, US Fish and Wildlife Service
Gail Wippelhauser, Ph.D., Maine Dept. of Marine Resources
Barry Stemm, S.D. Warren
William Ball, PE, Acheron
Greg Allen, PE, Alden Labs
Laura Wildman, PE, Princeton Hydro

William Baker, City of Westbrook (by phone)
Gary Lacy, PE, Recreation Engineering and Planning (by phone)
Matt Manahan, Esq., Pierce Atwood for S.D. Warren (by phone)
Sarah King, Acheron (by phone)
Oliver Cox, Maine Dept. of Marine Resources (by phone)
Ron Kreisman, Esq. for Friend of the Presumpscot River (by phone)
Michael Shaughnessy, Friends of the Presumpscot River (by phone)
Sean Mahoney, Conservation Law Foundation (by phone)
Sandy Cort, Friends of the Presumpscot River (by phone)
Dusti Faucher, Friends of the Presumpscot River (by phone)

Brett Towler, the host of the meeting, opened the meeting by welcoming everyone to the meeting, asked attendees to introduce themselves and then reviewed the agenda, which is outlined below and was provided to attendees prior to the meeting.

1. Introductions and Attendance
2. FOPR Design Alternative
    - PH final phased approach
    - HEC-RAS modeling
    - 30% drawings
3. Warren Design Alternative
    - Technical information in response to resource agency comments

4. Whitewater Recreation
    - City of Westbrook's Obermeyer concept
5. Open Discussion
6. Schedule Review
7. Next Steps

Brett turned the meeting over to Laura Wildman, of Princeton Hydro.
(Note that throughout these notes, WBB denotes William Ball, while Bill refers to William Baker).

<u>Laura Wildman, PE, Princeton Hydro, FOPR Presentation</u>

- Opened a PowerPoint presentation (Slide 1: Proposed Two-Channel Design Alternative).

- Laura began by addressing several last minute changes in the Princeton Hydro concept. Prior to this technical meeting Gail had inquired about a few bedrock elevations. As a result Princeton Hydro made some modifications to their concept.

- Laura stated that overall, the concept is still a two-channel concept. The concept design presented today consists of modified bedrock in the upper eastern channel to control flow and support passage. The elevation proposed in the eastern channel is 62.3' and the elevation proposed in the western channel is 61.0', allowing for flow split. The proposed modifications to the western channel are the same as originally submitted earlier in June.

- (Slide 2: Two-Channel Design Alternative) The proposed concept consists of bedrock modification with no structure in the western channel. Bedrock modification is proposed in the eastern channel to control flow. Bedrock modification in the eastern channel will also include the addition of varied pools, etc. to diversify flow conditions.

  Laura explained that some "extra" structures shown on the plan will be submerged and may not be needed. No structure is proposed at the downstream end of the island, so that fish may utilize both channels. In the future this can be modified to limit passage to either the western or eastern channel, as needed, based on observations and effectiveness testing.

  Greg: Are the pools in the nature like fishway structures?

  Laura: There is some drop between the rock structures to limit the pools.

  Greg: Are the structures modeled with roughness or as weirs?

  Laura: Weirs.

  Greg: Does the structure act as a weir?

  Laura: No, but there is constriction of flow in the area. Structure is at the upstream end.

- Laura described the locations of fill areas, noting that the top layers of fill in the tailrace area will be important. Seep barriers will be used for any river fill. She explained that a specific material has yet to be determined, however clay or concrete could be used as subsurface seep control barriers.

  WBB: Where is the end of the existing flood wall between the western channel and tailrace?

  Laura: Points to location on plan. There will be bedrock present on both sides, hence the structure will not move laterally.

  Greg: What are the depths of pools in the nature like passage and can you explain pool spacing?

  Laura: The pools are 3' deep and long. The spacing is based on a HEC-RAS model and was designed to ensure velocities did not exceed maximums. An EEF analysis has not yet been performed.

  Greg: What is at the tailwater, near el. 43'?

  Laura: There are permanently submerged pools. These have no hydraulic signature. Princeton Hydro tried to limit the amount of structures in the design.

  Greg: How are the rock weirs specifically placed in the tailrace area?

  Laura: The rock weirs at the 180 degree turn were strategically designed. There is some wiggle room for the locations of the rest of the weirs.

  Greg: What is the drop amount designed for between weirs?

  Laura: 4-inches to 6-inches maximum.

  Brett: The structures look like weirs, but are rock?

  Laura: They are rock. There are a total of 46 structures. Some rocks are modeled with roughness, some with drop.

  Brett: What Manning's number was used?

  Laura: I do not have design details. I can get Richard on the phone if needed.

  Brett: How does this model compare to the April design?

- (Slide 3 – Sheet 2/3) Laura notes that the proposed design includes excavation in the upper-eastern channel. This will control flow and result in a central pool. The upper line

on the upper graph represents sediment, second line is bedrock, and lower line is the proposed elevation. There is some excavation proposed upstream. There will be a fixed elevation of 61' in the upper western channel. The elevation proposed in the eastern channel is 62.3'.

Brett: What information is the highest line (sediment) based on?

Laura: This line is based on bathymetry data from Warren. PH has issued follow up information requests to Warren, without answer. The Princeton hydro bathymetry was different in the last plans. Laura notes that the locations of the cross-sections depicted, are identified on Slide 2 by dashed green lines.

- (Slide 4, Sheet 3 of 3) Laura describes the cross-sectional information depicted on the slide.

- (Slide 5) Laura described the existing vs. proposed grades for the eastern channel.

- (Slide 6) Laura described the existing vs. proposed grades for the western channel and tailrace.

- (Slides 7 and 8) Laura described the proposed water surface elevations under varying flow rates, 300 cfs to 3,000 cfs and storm events, in the eastern channel and western channel.

  Brett: Why does the water surface elevation go up drastically at 500 year storm?

  Laura: If there was another cross-section in the model this may not be so pronounced.

  Gail: It appears that the tailwater over the lower weir needs modification.

  Laura: This is figurative and does not relate directly to calculations. The tailwater ranges from 41.6' to 44'.

  Gail: The water level is always 41'. Warren controls the level.

  Laura: Use the modeling information, not the depiction on the sheet.

- Laura discussed the velocity results of the last four slides. Princeton Hydro modeled the range of 300 cfs to 3,000 cfs. In the eastern channel (Slide 9), at 300 cfs the velocities were well below the 6 – 7 ft/s threshold. At 1,500 cfs the velocities begin to surpass the threshold. At 3,000 cfs the velocities are in the same range and exceed 6 ft/s, but not 7 ft/s. In the western channel (Slide 10) 300 cfs results in pretty low velocities, while 3,000 cfs yields some velocities that exceed the threshold. Note that the flow rate modeled is the total river flow, not the channel flow.

Brett: Asked to clarify extraneous blue line at the 2% section on Slide 10. Laura indicates that this is a stray line and erroneous.

- (Slides 11 and 12) Laura states that water surface elevations are broken up by different sections with varying flows and velocities. She thinks that it is helpful to see this information broken down by reach. Slide 11 depicts the eastern channel, while Slide 12 depicts the western channel.

Greg: Does each point represent the average velocity?

Laura: The average velocity within each reach is represented. A 1-D model gives the average across each section.

Brett: If the design added in diverse flow, would it be conservative to use average, knowing that there are lower velocities that the fish may use? Velocities may not be connected in a continuous route.

Laura: The cross-sections are not fragmented.

Brett: We need to make sure that velocities provide a contiguous route.

Laura: There needs to be a lot of observation and modification during and after construction to ensure successful passage.

Greg: Can you point out the switchback area in the graph on Slide 12? Laura does this.

Brett: Brett provided a description of the graph. Asks if this was modeled as conservation of water on both paths? At what point in the model does the water go this way (shows direction)?

Laura: We modeled using both methods that Greg recommended, but there was not a significant difference. Models were the energy method and momentum method. It is not designed to take the entire flow, and is in fact restricted to limit flow.

Brett: Two methods were used, but not the prior flow method. How close can HEC-RAS come in the switchback area, and is the momentum model more accurate?

Laura: Indicates that she is not a proponent of the 1-D model. Recommends that a serious look with regard to hydraulics for final design. Some areas could use more detailed modeling.

Brett: Based on prior experience, what is the gut feeling on velocities in a turn around like that?

Laura: Most of the area will be submerged. Laura does not picture velocities as severely as Brett. Also recommends that design addresses behavioral response in fish.

Greg: We need to take a closer look at the turn in the modeling.

Laura: A 1-D model will not answer all questions regarding the turn around.

Brett: Another issue is that he has seen people try to slow water with structures in a river, which adds turbulence and becomes an issue. Also, after a Manning's number of 0.05, turbulence may become an issue.

Laura: Asking too much from a 1-D model.

Brett: Wonders if a 3% slope is possible as it requires so much roughness that turbulence increases.

Laura: Indicates that Princeton Hydro has achieved 99% passage on a 5% slope for alewives. That section was 150' long. It was pretty short with good passage. There is not nearly as much room for adaptation once hydraulics have been set. Worried about west side still for alternatives and Denil. The wall could be extended father to move fish away from pool. Or a cutoff wall used to maintain depth. If the fish can make the Denil entrance then they will be able to enter the nature like passage entrance.

Barry: Boaters go over the falls. There is a portion that would drop down on rock.

Laura: The design would need to be modified to include a plunge pool.

The ultimate goal is to assess feasibility of the potential alternatives. Details will need to be looked at further. This approach is feasible. We will need to address and evaluate maintenance and adaptability of designs. Likes the flow diversity present in the nature like passage, and the technical adaptability of the Denil structure.

Gail: Sappi has control at 64' elevation, FOPR proposes to bring eastern bedrock control down to 62'. Which is better for overall passage? Will there be any headpond issues?

Barry: There are no pipes that would be impacted. Warren has analyzed the impacts of a 64' control on the impoundment, not a 62' control elevation.

Laura: Princeton Hydro has not done an upstream impact analysis.

Brett: FERC will address this in the permit.

Gail: If both channels are lowered will this affect the flow split?

Laura: It would, but she is comfortable with the flow split. It is still pretty balanced.

WBB: Sappi's approach is to return the area to its pre-dam state. They are comfortable with returning the elevation to 64' as this is where it was before the dams were built.

Brett: WBB, can you identify the very low flow notch? WBB states that he will discuss this today.

Laura: The adaptive management plan needs to be reviewed and input gathered and should be effective during and after the construction process. There are areas where the bedrock elevation is critical. Additional confirmation is necessary, as well as checking impacts of lowering the impoundment water level.

Gail: Should we consider a design that would make passage in one channel more ideal? I.e. more flow in one channel to make the other more ideal? It is noted that this may create a false attraction flow.

Laura: We can get both to work so that any fish ascending the lower falls are able to pass the eastern channel without delay.

Brett: Creation of a small prismatic channel to help control flow?

WBB: As fish exit the nature like passage and enter the western channel, WBB questions whether they would go down and rest in the pool. The Denil is short and not difficult. Brett indicates that it may be more likely that shad do this, as they don't do as well on a technical fishway.

Steve: At a lower flow they can pass each side. At a high flow they may not be attracted to certain areas.

Laura: We can only modify bedrock once. It requires less maintenance and is more walkaway than other options. Also, the first few structures could be designed so that they could be modified if needed. Both channels are meant to be feasible over all ranges of flows.

Barry: Removing bedrock is a challenge. It is difficult to put it back inexpensively.

Brett: Have you considered construction access?

Barry: We have talked to contractors, and it depends on the design, but generally we have looked at several options: (1) installing a wet road across the eastern channel, removing the western spillway, then working in the eastern channel; (2) installing a temporary bridge at the existing bridge location; and (3) gutting the powerhouse and sluicing water through the tailrace. The options have not been refined.

Bill: The City of Westbrook may seek funding to build a bridge from the viewing area to the island.

Barry: There are currently no plans to build a bridge that can handle heavy vehicles.

Brett: Is it impossible to access from the east?

Barry: Not impossible, but not very practical.

Laura: What is a wet road? Barry explains that it is riprap. Water goes through it and it is drivable.

- Brett suggests that we take a lunch break. Gary asks to discuss Obermeyer gate before 1:00 pm. Brett suggests an agenda modification to include a 5 minute break and then Gary's presentation.

Gary Lacey, PE, Recreation Engineering, City of Westbrook Presentation

- Bill Baker, City of Westbrook, opened the presentation by stating that an email had been sent out the day before with pictures of an Obermeyer gate in lay-down and stand-up positions. He indicated that the City of Westbrook's process will be to let the technical people decide on the final fish passage design option, and then work with them to try to integrate recreational concepts into that design. Bill turned presentation over to Gary Lacey.

- Gary, after confirming that everybody had seen the plans that had been emailed out, provided an overview of the proposed Obermeyer structure. Gary stated that the Obermeyer would be an adjustable feature, occupying the full width of the river downstream of the bridge. It would sit on bedrock and be used to create features in the water. It has an inflatable bladder and steel shield. The height and angle may be adjusted to create an obstacle in the water. The Obermeyer needs a stable downstream tailwater and an adjacent remote control area with power. During the fish passage season, the Obermeyer would lay flat and be completely submerged. It could be adjusted if needed and would only be operated outside of the fish passage season. Gary opened the floor to questions.

  Bill: Would like to confirm in a general sense whether any of the design teams have concerns about adding such a feature into their design plans.

  Brett: Would put in and take out stations need to be installed above and below the Obermeyer?

  Gary: The structure will be accessible from the put in downstream. If flow is sufficient, it may be accessible from above. Infrastructure is already in place.

Laura: How flat will the deflated structure be?

Gary: 2-3" lying flat.

Laura: Is it possible to install a fishway around the Obermeyer structure?

Bill: Gary proposed a bypass for possible year round use. It was the best, and least controversial option, to propose that the structure lay flat during the passage season.

Brett: What is required below the structure?

Gary: A solid, stable, level base – most likely a concrete subbase. Conduits typically run through concrete base to allow for remote connection.

Brett: Are there any complications due to completely submerging the Obermeyer?

Gary: No. They are designed to be submerged.

Brett: Issues with leaking air?

Gary: Conduit typically poured in concrete base.

Brett: Any oscillation issues?

Gary: Hasn't seen this problem. We can put restraining straps on them.

Brett: Shad may be sensitive to sound. Will there be any noise in the deflated position?

Gary: It can be installed flush with the ground (below grade).

Laura: Would this present any issues with downstream passage?

Gary: No. The upstream side is not high, and downstream side has a sloping face. There is a minor drop.

Laura: How is it operated during the season? Up during the day, down at night?

Gary: At a location in Boise, the position is alternated during different days. It remains down during the winter.

Brett: Will there be enough flow to get what you need out of the situation, if it is operated outside of the fish passage season?

Gary: The Obermeyer will be utilized to match the hydraulic capacity of the river. There are sensors that can have them flatten with enough head (flood situation).

- Discussion of status of the new bridge. Discussion addressed whether City is concerned that kayakers may hang around the new bridge piers. Bill Baker noted that construction crews will install deflection devices to keep boaters from getting trapped.

- Break for lunch. Reconvened at 1:05 pm.

<u>William Ball, PE, Acheron Engineering, S.D. Warren Presentation</u>

- WBB began by outlining the goals of the presentation, stating that the subjects of turbulence and weirs will also be discussed.

  WBB states that the Warren presentation will be focused entirely on a response to comments and questions by USFWS and MDMR dated May 6, 2015. Copies of the comments are provided within the presentation. WBB reviews agency comments:

  - Comment #1 (Slide 2) is self-explanatory. Warren appreciates these comments.

  - Comment #2 (Slides 2 and 3) included questions regarding modeling of the western passage. Warren response is that the modeling was not of a "flat surface", though they understand why agencies may have thought this was the case. This will be addressed later in the presentation. There have been no changes in the concept from the last model.

  - Comment #3 (Slide 3) addresses the need for velocity duration curves, which have been provided in this presentation.

  - Comment #4 (Slides 3 and 4) addresses eastern channel passability. Warren's response is outlined on this slide, and essentially is that Warren will return the eastern channel to its pre-dam state.

- WBB indicates that the following information is in no particular order and that this portion of the presentation is intended to facilitate discussion to try to arrive at an appropriate substrate for the surface of the fill area in the western channel.

- (Slides 5 – 13) WBB indicates that these slides contain a summary of some examples of study data for several USGS river studies. These studies depict roughness coefficients, rock diameters and show roughness and turbulence under high and low flow conditions, as well as some significant slopes. The purpose of these examples was to research how the surface may be built and how it would be placed. WBB indicated that Warren also looked at localized examples.

- (Slides 14 and 15) These slides depict the Sebasticook River in Newport, ME under low flow conditions, and then again under higher flow conditions. WBB noted that the photograph may be deceiving, as the granite structure on the left of the slide is, in fact greater than 3' long. The boulder in the center of the photograph is 3' in diameter.

- (Slides 16 and 17) These slides depict the Sebasticook River in Detroit, ME. These photographs depict the river during low and higher flow periods. The rocks in these photographs are also much larger than they appear to be.

- (Slides 18 and 19) These slides depict the Sebasticook River, directly below the eel trap in Newport, ME. These show the typical substrate for this section of river. WBB estimates that the slope in this section is 2%. WBB indicates that the substrate identified in slides 14 – 19 can be built and duplicated at Saccarappa.

- (Slide 20) This slide is a photograph of the upstream bedrock in the western side of the eastern channel, taken from the top of the dam. WBB indicates that this is what bedrock could look like. Bedrock has a certain strike and dip that will determine roughness following rock removal. Warren could fine tune the bedrock, or leave as existing.

  It will be necessary to determine the Manning's value appropriate for the substrates shown. Currently the Manning's number is 0.072 in upper section, and 0.062 in the exposed bedrock section.

  Brett: 0.072 is not unreasonable. The channel is definitely above a 0.05 and channels like this can range from 0.03 to 0.08. References a paper produced that interviewed hundreds of engineers, showing them pictures of channels and asking them to estimate the Manning's number. Study indicated a wide variety in responses.

  WBB: The Manning's number is a matter of judgment, and it a very important factor.

  Brett: To reiterate, the only option to determine an appropriate Manning's number is to reference photographs and use judgment. He agrees that Warren's values are within appropriate ranges.

- WBB states that the model does not use a weir as a control structure. Also, WBB states that the bedrock could look like previous picture, or could be shaped to look like what we want. The drawings may show a flat surface, but the images presented previously reflect what the channel will look like (substrate, bedrock).

  Laura: Suggests removing rocks in a jagged manner.

  Barry: Agrees that it is much more stable to do it that way.

  Brett: Roughness can be achieved by shaping bedrock or adding structures that create velocity shadows for a diversity of slow conditions.

  Laura: This can also be put into a HEC-RAS model.

  Brett: Model will give 1D answers. At the end of the day we want a 3D model.

Laura: The model will guide the final construction.

- WBB states that this substrate will produce a variety of habitat under high and low flow conditions. Differing velocity zones up and down, throughout the stream. The substrate is very suitable for this kind of situation.

- (Slides 21 - 25) Show model results with new output data. This is the same chart as presented at the last meeting and shows what fish will see under a range of flows as they exit the Denil fishway. We will likely never see a 300 cfs condition. 2015 was a very dry summer and Cumberland Mills measurements indicate a 450 cfs low flow at Cumberland Mills. In addition the release at Eel Weir will increase from 75 cfs to 125 cfs in the future. It we accept that this year is very dry and flow is still greater than 300 cfs and the flow will increase in the future, than 300 cfs is a very unlikely situation. We will be more likely to see flows in the 500 cfs – 1,000 cfs range, with occasional storms that increase the flow.

  Brett: Why are plots changed since April?

  WBB: Indicated that this is due to changes in Manning's value.

  Brett: Station 0 is Denil exit. What is the significance of the Denil exit?

  WBB: Indicated that Warren is showing the likely conditions that a fish will experience exiting the Denil.

  Brett: Can you go through the stations and tell us what is located at which station?

  WBB: Does this visually.

  Brett: Station 200 is likely difficult for fish. Station 335 is the old spillway location. Station 615 is at el. 64', the high point. The velocity drops here, as the section is quite wide. The biggest challenge will be at Station 550, in the upper reach of the western channel.

  Laura: Indicates that different flow rates were modeled. Princeton Hydro modeled 300 cfs to 3,000 cfs.

  Brett: The median flow appears to be 900 cfs, and average 700 cfs. There are some high velocities. Why not place less fill to increase cross-sections. A lot of fill is placed. This may lower the velocities.

  WBB: We underwent many iterations in this section. Changes resulted in unfavorable velocities in other areas. This is the best configuration. We would be happy to receive any ideas to improve the configuration.

Brett: Can I call and get the velocities in different cross-sections for different flow rates?

Laura: Indicates that her model contains different cross-sections, so they cannot be directly compared.

- (Slide 26) WBB explains that this slide depicts velocity conditions encountered as you move upstream. The profile shows pools, etc. The red line (orange) is the most important line. It depicts river flow of 1,000 cfs. Laura comments again on difference in models.

- (Slide 27) This slide contains a Flow Duration Curve (FDC) that reflects the changes in the Eel Weir license requested by agencies. The blue line is the original FDC developed from historic data, the red line represents anticipated flows.

  WBB explains the history of Sebago Lake as a water storage area that was created during the industrial revolution to fuel industry downstream, such that water could be stored and released during the entire year. The current focus of the lake is no longer industrial, but rather on home owners and fish passage. The way it worked previously was that Warren had to have the lake at a certain water elevation on August 1st of each year. They had to go to extreme measures to accomplish this, sometimes releasing more water than they wanted to. Ideally they would only release what was necessary to run the turbines. With the Eel Weir license modifications, it is anticipated that the number of low flow events will increase and the number of high flow events will decrease.

  Brett: In the new plan there is no level target? What about at other sites?

  Barry: Does not have paperwork with him.

  Brett: Do lines really cross at the median?

  WBB: Couldn't think of a reason that the median would change. This is a best estimate.

- (Slide 28) We were asked to provide a velocity distribution analysis. This chart shows the distribution for the entire range of flows at critical stations.

  Brett: Is it an annual or seasonal Flow Duration Curve? It looks like 50% of the time the flow is below 4.7 ft/s.

  WBB: These are flow duration curves for the fish passage season, May 1 to July 15.

  WBB: If this is not what you needed, let us know. We also made a flow depth curve for all sections (Slide 29).

  Gail: Is this maximum or average depth?

  WBB: Maximum.

- WBB asks if there are any other questions.

Brett: This was helpful to see. What are Laura's thoughts on evaluating at 3,000 cfs?

Laura: The precedent was set at 3,000 cfs. That said, it is important to know what we will expect for flows.

Brett: 2,250 cfs may be a little low for the upper end of the flow range.

WBB: All data from all sections taken is in the report.

Brett: With HEC-RAS you can interpolate or input cross sections. Which used?

Laura: Input. A TIN was used.

WBB: Interpolation.

Brett: Laura's design has more resolution. Knowing these are 30% design drawings, will these cross-sections be used in the final design?

Laura: It only matters for comparison now. Points out three differences in FOPR and Warren models:

- Type of diversity in grading. Diversity in bedrock excavation is needed to provide flow diversity. Grading on eastern channel is also different.

- Fill area locations and permeability and stability of fill areas. It is unlikely material will be replenished, hence must be stable for stormwater.

- Possibility of fish ending up in center pool and not being able to ascend the eastern falls.

Brett: Indicates that agencies support a two channel passage option. We need to clarify interpretation of bedrock and sediment probe information. What are the ramifications of 64' on each side for flow split?

WBB: Flow split stays the same as in April. Shaping of channels can affect the flow distribution, especially for lower flows.

Brett: Appreciates designs that are crafted into the bedrock. What is the appropriate design storm? This is an open question. Not appropriate at the 30% design stage, but rather for final design.

WBB: Will need to think about this.

Laura: Fill structures have more stresses when not entirely submerged and less when fully submerged. Maintenance may require additional plugging. If the mix loses the fines, it will act like a giant strainer.

WBB: The river is so controlled, this is likely not an issue. Once the spillways are removed the river will be returned to the conditions of the pre-dam site.

Laura: We have no bathymetric mapping of pre-dam site.

WBB: We think we do.

Brett: Are we more likely to encounter issues with intakes and erosion if the impoundment is lower than the 64' elevation? I.e. is 64' a threshold?

Laura: Has not analyzed this. And does not have history.

Barry: Based on our knowledge 64' appears to be the historic level of the impoundment. We do not want to artificially lower dam from historic levels. Land owners are already concerned. FERC may also have issues with lowering it below historic levels. We also want good passage and a natural site. We believe we are putting something back that is better. We believe that the eastern channel will be passable under many flow conditions. We want to remove as little rock as possible.

Laura: Project should be as walk-away as possible.

Greg: Chances are that fish will be through Denil faster than switch back. If passage takes the day, they may overnight in the pond.

Laura: Based on bedrock elevations, Princeton Hydro feels that this eastern channel will not be passable under any conditions, save for eels.

- Brett: We are closing on 3pm. Are there any questions? Greg heads out. 5 minute break.

Schedule

- Barry brings up counting facility. Laura indicates that she was not the primary on investigating the counting facility. This was Alden.

- Brett recollects that this is the last meeting to present designs, then there will be an evaluation period and decision. Laura pulls out upcoming schedule:

  - 4.0.a: Develop construction costs (SAPPI, 7/20 - 8/17)

  - 4.0.b: Post construction costs including O & M, counts, adaptive management (SAPPI, 7/20 - 8/17)

- 4.0.c: Review of costs (8/17 – 8/31)

- 4.0.d: Final evaluation of designs (8/31 - 10/12)

- Brett confirms that everybody agrees that there is enough technical information to evaluate designs. Gail and Brett are hopeful to leave with forward motion and perhaps some small homework assignments.

- Barry confirms that Task 2.e. has been completed. Also addresses Task 2.f., whether the design meets USFWS criteria (July 6 deadline). Brett indicates that he will need some more time to review PH design (July 20 deadline). Barry asks when feedback will be received and confirms that both parties will receive agency feedback on both designs.

- Brett thanks both parties for the process and effort.

- Barry says that Warren will need to hold a public meeting soon. Now that there are two designs they need to show the public what the options are and collect feedback between now and Task 4.0.d.

- Ron states that FERC expects public input on both alternatives. It is essential that the public meeting happens soon.

- Brett inquires about the broader FERC schedule. Barry says that we need to make a decision on the design to include in the AIR and in the Surrender Application. A discussion of the AIR follows. Barry says it consists of 20-30 items and Warren is currently working on putting it together. Barry goes over basic AIR sections.

- Bill states that the bedrock discrepancy is an issue. Laura reminds that this is just a few feet. Barry says that the water level has an impact on the AIR, as it will affect the impoundment level.

- Brett asks what the schedule is. Steve says we are obligated to what is in the schedule. There are a lot of pieces and the DEP is aware of the long term responsibility after FERC is removed from the situation. Barry indicates that this will probably increase scrutiny.

- Brett indicates that 2.e. is done, 2.f (Agency feedback) will be done within a few weeks, 2.g. is done, 2.h. is done, 2.d. needs to be addressed. Alden stated most likely the counting facility would be within switchback area for FOPR design. Discussion on how to count in both channels. WBB states that we need to take counting into account during the design process. It could not have been addressed earlier.

- Brett indicates that any recreational aspects need to be taken into consideration in the final design. There is differing opinion between Ron and Barry on Bill Baker's idea of when to incorporate recreational design. Whether this is now, or whether city design should be incorporated after fish passage has been designed. Brett wants to avoid late-

game changes. WBB suggests that we set a time frame for the City to propose modifications. Barry says that he will communicate with City and sets a date of 9/1/15 for City modifications to be provided.

- At this point, another technical meeting is needed to discuss final design selection. Brett suggests that he will send out a poll with possible meeting options to everybody in the next few days. Everybody agrees.

- Barry asks if there are other scheduling options to discuss. Suggests that the next technical meeting occur on the first Monday in September after Labor Day in Westbrook. All agree on the location. Laura may not be able to attend in person, however may be able to attend on the phone.

- Meeting ends at 3:35 pm.

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

S.D. Warren/Sappi Fine Paper, Westbrook, Maine
Saccarappa Hydroelectric Project – Open Public Meeting

Date of Meeting: August 26, 2015

Location: Westbrook High School, Room 114
125 Stroudwater Street
Westbrook, Maine

Time: 7:00 PM – 9:35 PM

Attendees and Participants:
Refer to Attachment 1: Attendance List

Meeting Minutes:
Barry Stemm, S.D. Warren's Project Manager for the Saccarappa Project and the host of the meeting, opened the meeting by welcoming everyone to the meeting, asking attendees to sign in and passing around the attendance sheets. Barry used a PowerPoint presentation during the meeting, which is included as Attachment 2: PowerPoint Presentation.

Meeting Overview:
Barry thanked everyone for attending, introduced himself and outlined the purpose of the meeting, which was displayed on slide 2:

1) Inform the public about the status of the Federal Energy Regulatory Commission (FERC) license order granting extension of the fish passage deadline to allow for evaluation of alternative fish passage options.
2) To review the progress on development of alternative fish passage solutions for the Saccarappa site, as well as solicit input and comments.
3) To inform the public about the opportunities to be involved and kept informed.

Barry stated that public meetings and communication are an important part of the process, as they allow all stakeholders to be informed and involved in the course of actions that will determine the future of the Saccarappa site.

Meeting Agenda:
Barry went over the meeting agenda (*Slide 3*), which is outlined below:

1) Status of the FERC order for Extension of Fish Passage

2) Review of the work to develop alternative fish passage options
   - Existing Site
   - Future Site Possibilities
     - Western Channel Design
     - Two Channel Design
3) Status of FERC Surrender
4) Other Considerations
5) How the Public can Continue to be Involved in this Process
6) Questions and Comments

Meeting Record:

(*Slide 4*) Barry indicated that S.D. Warren would not be recording the meeting, but meeting notes would be taken to ensure that all questions were addressed. The meeting notes would be made part of the public record. Barry noted the presence of a television news crew from WCSH. Barry encouraged attendees to sign-in, as well as ask questions during the allocated time at the end of the presentation. Barry requested that only one person speak at a time during the question and comment period, to facilitate note taking.

Status of FERC Order for Extension of Fish Passage:

(*Slide* 6) Barry indicated that the Extension Agreement parties have been and are currently working together on a collaborative, open and joint process to identify and evaluate fish passage design alternatives at Saccarappa. The parties have employed qualified experts to identify solutions that address stakeholder needs. Barry indicated that the purpose of the Agreement was to allow all parties time to evaluate alternatives and that all alternatives involve the decommissioning of the station. Barry identified the project stakeholders as the City of Westbrook, NGOs, Federal, State and Local Agencies, S.D. Warren Company and the general public.

Alternative Fish Passage Design Options

(*Slide* 7) Barry provided an overview of the design process, including: (1) gathering additional bathymetric survey and mapping, (2) providing river stage discharge rating curve data, (3) compiling available existing site data, (4) creating existing conditions models and flow analysis, (5) conducting a site field investigation, (6) investigating multiple two-channel options, (7) gathering stakeholder input, (8) designing counting facility options, (9) selecting a two-channel alternative, (10) determining whether the design meets USFWS criteria, (11) developing adaptive management and O&M plans, (12) evaluating 30% designs, (13) reviewing costs for each design, and (14) selecting the final design.

(*Slides 8, 9*) Barry provided an aerial image of the site as it exists today. In order to orient the audience, he identified the main components of the site. (*Slide* 9) Barry provided an existing site plan. This plan included bathymetric data and additional feature identification.

(*Slides 10, 11*) Barry provided an overview of the proposed Western Channel Design. Barry used a proposed site plan to orient the audience to this design. He stated that the proposed design includes the removal of both the eastern and western spillways and installation of a 190-foot Denil

fishway in the existing tailrace. He provided a description of a Denil fishway, and stated that for anyone familiar with the Cumberland Mills site, S.D. Warren currently utilizes a Denil fishway at the Cumberland Mills site. The proposed project would include some bedrock modification in the western channel to enhance fish passage. He indicated that under this option, no fish passage facilities would be installed in the eastern channel. In fact, the eastern channel would be restored to pre-hydro development conditions and be available for modifications by others to enhance recreational opportunities. Barry specified that the proposed concept would bring the eastern and western channels to the same hydraulic control, which is also the historic hydraulic control elevation of 64.0 feet. Barry stated that this design would lower the impoundment approximately 4 feet at average river flow of 900 cfs. He stated that the impoundment may be a little higher under higher flow conditions, or lower under lower flow conditions. He also indicated that this option would allow for a public viewing window at the Denil exit.

Barry identified the differences between this proposed design and the design that S.D. Warren proposed in 2013, which included decommissioning the existing hydroelectric facilities, removing the eastern spillway, and installing a Denil fish ladder in the tailrace of the hydroelectric facility. The primary difference is that the 2013 design left the western channel spillway intact and focused post Denil passage opportunities in the upper eastern channel.

(*Slide 12, 13*) Barry provided an overview of the proposed Two-Channel design. He indicated that this design included the construction of a weir and pool fishway in the existing tailrace, with proposed bedrock removal in both channels to enhance fish passage in both channels. The impoundment hydraulic control in the western channel would be at elevation 61.0 feet and the control in the eastern channel at 62.3 feet. He indicated that this would result in lowering the impoundment by approximately 5.6 feet at average flow conditions. The recreational opportunities in the upper channels associated with this design have yet to be defined.

Barry compared the similarities and differences between the two design options. This included that the western channel option was a single-channel option, while the two-channel option enhances passage in both channels. Additionally, both options would affect the impoundment water level differently.

<u>Status of FERC Surrender:</u>

(*Slide 14*) Barry provided an overview of the FERC Surrender process. On December 31, 2013 S.D. Warren filed an Application of Surrender with the FERC to Surrender the Saccarappa Project License; on March 14, 2014 S.D. Warren and several groups signed an Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application (Agreement); on March 28, 2014 S.D. Warren filed with FERC an Application for Amendment of License asking FERC to approve the Agreement; on July 30, 2014 FERC issued an Order Approving the Agreement for Extension of Fish Passage. S.D. Warren will re-file an Application of Surrender with FERC to Surrender the Saccarappa Project License in late 2015/early 2016.

<u>Other Considerations:</u>

(*Slide 15*) Barry identified other considerations that weigh into the selection of a fish passage design alternative at Saccarappa. These included recreational opportunities, educational

opportunities, economic impacts, cost of construction and maintenance, impacts to land-owners along the impoundment, and environmental impacts.

Methods of Public Involvement:

(*Slide 16*) Barry stated that the public may be involved in this process by attending public meetings, becoming listed as an interested party, and directly submitting questions/comments to Barry by September 11, 2015. Barry provided his contact information, and indicated that the feedback deadline is very important, as S.D. Warren must advance the design process in order to meet the May 2017 FERC requirement for fish passage installation.

Questions and Comments:

(*Slide 17*) Barry opened the floor to questions.

Paul Emery, City of Westbrook Council: I am thinking back to 1997, to a 200- or 500-year storm that we had that resulted in extensive flooding in Westbrook. S.D. Warren proposes to remove the Saccarappa Dam and has a dam at Cumberland Mills. The 1997 flood was expensive to the City of Westbrook. How will the removal of the Saccarappa Dam impact any future storm events, if at all?

Barry: When it comes to flooding, damage occurs at a blockage. Flooding occurs when water backs up at a blockage. Once the water exceeds a spillway height it will come downstream. Hence the removal of the Saccarappa Dam would only impact the area upstream of the facility. It would likely benefit this area. When restrictions are removed, the water will move more freely and be less likely to cause flooding .

Comment: The Obermeyer gate at Cumberland Mills appears to work very well at controlling flood events.

Barry: Cumberland Mills used to have fixed flashboards, but now has an Obermeyer (gate with inflatable bladders). This structure enables S.D. Warren to maintain a consistent water level.

Question: S.D. Warren will make the final decision of which fish passage option to select. Why is S.D. Warren the only one that gets to make this decision? Why not also other helpers in the process?

Barry: This is because S.D. Warren owns the property and holds the existing FERC license.

Question: How will cost impact your decision, and where will the money for the proposed project come from?

Barry: As with any business, cost will impact our decision. S.D. Warren will pay for the project. There will be an opportunity for other interested parties to raise money to support specific options.

Bob Nasder, American Whitewater: Isn't it ultimately FERC's decision? S.D. Warren will make recommendations to FERC and FERC will make the decision. Within the FERC process there will be an opportunity for interested parties to intervene, or inject feedback.

Barry: This is correct. FERC will issue the final order, along with any conditions.

Bob Nasder, American Whitewater: The goal of this process is to balance all values. This includes fish passage, recreation, etc.

Barry: I cannot speak for FERC, but this is my understanding.

Jerry Rideout: The purpose of opening the Smelt Hill Dam was to enable fish to swim upriver. Fish passage is the ultimate goal of the project and should not be back-seated in this conversation.

Roger Wheeler, Friends of Sebago Lake: The Eel Weir project was just relicensed. How will relicensed flows impact the selection of the design?

Barry: The latest flow duration curve has been considered in the design.

Carol Hayden: Will one plan ensure better fish passage? If passage is unsuccessful, will Sappi be required to come back and improve passage as necessary?

Barry: We do not yet know the answer to the first part of your question. With regard to the second part of your question, we do not know what conditions will be included in the final surrender order.

Michael Shaughnessy, FOPR: This installation of fish passage at Saccarappa is the culmination of 15 years of work. This site is a critical site. Sappi may own the site, but the river belongs to everybody. The FERC license has prescriptions in it for what species must be passed and how many. When passage at Saccarappa is successful, passage will be installed upstream. FOPR is concerned that fish are passed, not with what is built. FOPR wants the design to meet FERC target values. Salmon were historically present in Harrison. We don't know what the fish will do. We make guesstimates based on science. This is a generational issue. The FERC relicensing process is every 40 years. FOPR expects that if fish passage facilities are inadequate, the responsible parties must give back to the river.

David Sparks: Will the dams be removed before the fishway is constructed?

Barry: Generally, it is anticipated that something will be installed in the tailrace structure. The 2013 construction sequence consisted of getting equipment to the island (barge, temporary bridge, etc.), then removing the eastern spillway. We do not know what the exact construction sequence for the proposed project(s) will be. Often times the construction process is determined during the bid evaluation process based on what

means and methods the chosen contractor proposes to use. It is anticipated that fish passage installation and spillway removal may occur at the same time.

Sparks: Why can't steps go forward to remove the dams now, while the fishway design is being finalized?

Barry: The current amount of government oversight does not allow for this. Permits must be obtained from various agencies (ACoE, FERC, DEP) prior to any site modifications.

Sparks: Will you be able to meet the time frame that you have?

Barry: Yes.

Tom Newman: Can you talk about the effectiveness of the Cumberland Mills fishway?

Barry: We recently completed the third year of operation of the fishway at Cumberland Mills. We are still in the effectiveness study period. Last year we passed 9,300 fish. This year we have passed 2,600 fish. The effectiveness has not yet been determined.

Rob Mitchell, Friends of Westbrook River Park: I am pro-fish passage. I represent recreation. Cumberland Mills is the most important site for fish passage, as it is in series with Saccarappa. We cannot pass more fish at Saccarappa than are passed at Cumberland Mills. It is not prudent to minimize the consideration of recreation in fish passage.

Comment: We will not know what the potential for fish passage at Saccarappa is until an upstream spawning area has been established.

Barry: Cumberland Mills has been designed to handle 200,000 alewife per year. Saccarappa will be designed with similar thresholds.

Comment: If fish demands are higher, Sappi will need to take more steps.

Question: What did the area historically look like? If the falls are natural, wouldn't fish have already found a way by them? Are the lower falls natural?

Barry: The falls at Saccarappa are natural. They have always been a substantial impediment to fish. With the spillways removed we know that fish can pass under certain conditions.

Question: If kayaks can go down, fish can go up. Are passage advocates concerned with recreation?

Barry: The City wants to enhance existing recreation. Near the bridge they want to install a plate for a standing wave. In the Western Channel option there is also a possibility for alterations to the upper Easter Channel designed to specifically to improve recreational opportunity.

Question: A difference in the designs is the opportunity for a counting station. Isn't this a requirement?

Barry: Yes. Triggers to build the next upstream fishway is based on counts. We won't know what exactly is required until we receive the FERC order.

Question: Will both designs have counting stations?

Barry: Yes. They are proposed. The Denil option facilitates counting. Keep in mind that we have to count species, not just fish. We do not know if new on-site counting technologies will work for the Two-Channel design, as fish counting and identification is more challenging with this option.

Sandi Cortier, FOPR: The site has no representation of what it was pre-man-made alterations.

Barry: The site had been altered before S.D. Warren purchased it.

Rachel Bouvier, FOPR: Shout out to Rob for his positive attention to whitewater recreation's compatibility with fish passage. We need to consider that recreational opportunities are more than whitewater opportunities.

Question: Can any group talk about the amount of passage provided in the two options?

Landis Hudson, Maine Rivers: Fish passage potential is important. It can be difficult to strike a balance of art and science. The experience of the passage design firms is critical. Tell us about the experience and qualifications of the firms involved in the design options.

Barry: Two firms are looking at the flows, one is looking at the brick and mortar aspect of design. Warren and FOPR have employed Princeton Hydro. Laura Wildman, Project Manager, is high recognized as a fish passage expert. Warren has also hired Acheron Engineering and Alden. Acheron Engineering is highly qualified and designed the Cumberland Mills fishway. Alden handles the biology side of the design. Both firms are highly recommended and qualified.

Question: Will the timeline, or surrounding owners, impact which design is chosen?

Barry: Neither design will impact the May 2017 deadline of fish passage installation at Saccarappa. FERC will consider all input in its decision.

Question: What is up with the island? Why isn't that a resource for recreational opportunities?

Barry: We have discussed this with the City. They are interested.

Question: Do designs take the safety and comfort of downstream fish into consideration?

Barry: The real challenge is passing fish upstream.

Question: I have a problem with the term "recreation". Who will pay for this and what plan is the best?

Barry: The City is looking to build, erect and finance recreation. This will most likely occur using grant money. You will need to follow up with Westbrook to discuss the best recreational options.

Peter Burke: I live on the river. What would you rather look at? A concrete Denil fishway, or something like Damariscotta?

Barry: Everyone has their own opinions on aesthetics. The ladder area is inconspicuous.

Question: Will there be an opportunity for the public to view the Cumberland Mills fishway, to see what it looks like?

Barry: The Cumberland Mills fishway is in the middle of an industrial area. Sappi will try to accommodate individual requests, but cannot offer a public viewing.

Bob Nasder, American Whitewater: Clarification. Aesthetics are all part of the FERC process. I am unclear what we are arguing about. Is there a facet of one design that makes it superior?

Barry: Good question. This is hard to answer. There are different perspectives in each design. It isn't black and white. Is there a disagreement? There are just different focal points.

Scott Andersen, City of Westbrook: The City is hopeful that there isn't a problem or dispute. There will be some uncertainty. The City wants the right balance between passage and recreational opportunities. We are hoping that all parties will keep multiple goals in mind. FERC will look at all project goals.

Curt Crittenden: Most engineers have a weighted metric that they use to numerically evaluate options. Has this been developed?

Barry: Nature is subjective in its evaluation.

Comment: Everybody is trying to be fair and use the term "balance" when they refer to "trade-offs". A collaborative approach is better than balanced goals.

Dusti Faucher, FOPR: There are very distinct differences in the plans. The science of the Princeton Hydro (Two-Channel) design is more likely to pass the fish necessary to the impoundment habitat. In the other design, fish may become stranded in the eastern

spillway. We do not know which way they will turn at the end of the Denil ladder. Two Channel passage will increase the total number of fish passing the site.

Question Are there three design alternatives?

Barry: No. There are two.

Aaron Frederick, FOPR: Only one firm did the calculations necessary to find out whether fish would pass the eastern spillway. Gary Lacy said that the Princeton Hydro (two channel) design can be worked with for recreational opportunities. This isn't the time to go to battle. This is a cooperative ongoing design.

Question: What are the recreational differences between the two models?

Barry: The western channel design allows for passage in the western channel, leaving the eastern channel open for alteration of bedrock associated with recreation. The two channel option allows for passage in both channels. The features in the channels would not be compatible for alterations for recreation, but may be compatible with some forms of recreation in the east channel.

Sean Mahoney, CLF: We just heard that Gary said that two channel passage would work with recreational opportunities. This does not agree with what Barry just stated. The fundamental difference is which design will pass fish better.

Question: What works better? Why would we not save the money to blast the lower falls ledges? It seems like that would be more natural and better.

Barry: I don't think anybody wants to see the falls blasted. They are a natural resource.

Rob Mitchell, Friends of Westbrook River Park: Speaking to polarization, the issue is that the ability to add recreational features is greater in one design than in the other design. An option that tables recreational incorporation is not good for the City and its economic recovery. This will be essential in transforming Westbrook. I would love to see middle ground.

Question: Rob, do you support one design over another?

Rob Mitchell, Friends of Westbrook River Park: Yes. The Denil (western channel) option.

Peter Roberts: I am concerned about the effect of the designs on the river above the dam. What will happen to the impoundment shoreline? I have a dock. I am worried about the cost associated with extending it.

Barry: The elevation of the water in the impoundment will drop approximately 4 feet in the western channel design and approximately 6.4 feet in the two channel design. Nobody will lose frontage. *Barry pulls up Slide 21, which depicts anticipated water*

levels over the impoundment. Depending on where you are, the drop may not be as significant. Near Mallison Falls, the drop will be less. Near Saccarappa, greater. I understand your concern. The proposed western channel option will drop the water to its historic level. You may need to move your dock, but should not need to extend it. The existing power line will not change.

Question: What is the cost differential between the options? Will the two channel cost more?

Barry: We have draft cost values. The two channel option may be slightly more, however we have not finalized costs.

Steve Hines: At some point you will submit the conceptual design to FERC. When will this be?

Barry: Our goal is to submit the Surrender Application in late 2015, or early 2016. The plans submitted will be 30% design drawings.

Steve Hines: What is the difference between these 30% drawings and what you will submit?

Barry: We are still evaluating the aspects of both of the proposed design alternatives. This includes technical aspects and costs. What will be submitted to FERC will reflect the results of these evaluations.

Steve Hines: Will there be another public meeting before this goes to FERC?

Barry: Not regarding the selection of the passage design alternative. There are still opportunities for the public to submit feedback. *Barry refers to Slide 16.*

Bob Nasder, American Whitewater: Let's discuss the path forward. Can these design firms be charged with looking at recreational considerations within their designs and come up with a hybrid design? Sappi should do this, as they are the operators of the dam.

Michael Shaughnessy, FOPR: Recreation is one of the four goals of the FOPR. Compares the FERC relicensing process to Erin Brokovich with all of the files being loaded into the truck. We are thrilled to see that Westbrook is involved in the relicensing. It is about a lot of different things, including recreation. We must ensure that both fish and people can pass the dams. The opportunities to impact the relicensing are few and far between, as relicensing occurs every 40 years. Sea run fish stocks have dwindled. They are the core feed fish for many Gulf of Maine species. The Gulf of Maine is not in good shape. This meeting is to address passage. Recreation is compatible with both design alternatives. We need to identify the option that is better at passing fish and restoring natural stock species.

Question: Why are we looking at this as two plans? Can different portions of the plans be mixed and matched?

Barry Are you asking if features of both designs may be utilized in the final design? What you see tonight are the results of many iterations, the results of trying to boil down all options to get to the end goal of one design.

Comment: In the west channel design, we haven't discussed how recreational improvements may enhance passage.

Malory Shaughnessy, FOPR: I have a letter to read from friends of Casco Bay. I am sorry that Rob feels there is an either or duality to the solution. *FOCB Letter*: The restoration of fish stocks in the Presumpscot will affect fish stocks in the Gulf of Maine. Some species are failing, as we have limited their feed. Fish passage at Saccarappa will contribute to the health of the Casco Bay estuary. Presence of migratory fish may indicate a historic presence. The optimal passage at Saccarappa is essential to reinstating diversity in the Gulf of Maine.

Curt Crittenden: Features that add recreation to a river also oxygenate the river and provide resting areas for fish. Recreation and fish passage have similar goals.

Amanda Beal, FOPR: Bringing back a base for fishing industries is important. This is important because we outsource most of our food needs. We never know when we may need to feed ourselves and should prepare for this.

Question: The River is used for cooling and process water. It seems like Warren gets income from the electricity instead of a product. Many mills have closed lately. Will this effect Sappi?

Barry: Paper is the primary source of income for Sappi. Electricity produced at the dam has been historically used at the mill. Warren/Sappi runs one of the best paper companies in the world. Our core business is paper and we are always trying to run a good business.

Question: How many dams are on the Presumpscot River? If the dams were not on the river would it detrimentally impact Sappi?

Barry: There are 6 Warren owned dams. Brookfield Power owns one. If our dams were not present, it would have a detrimental impact on Sappi.

Darron Laughland, Swift Water Rescue: This area could be a valuable resource and regional asset to first responder training programs. Will the plan involve the removal of detritus from the river in the project vicinity?

Barry: The primary debris is located at the spillway sites. There are some foundations present. This is something that we can look at.

Keith Williams: I think there could be a hybrid design with two channels using a bladder system. In the late summer and fall the bladders could choke off water in the western channel and flow will be focused in eastern channel for recreation

Rob Mitchell, Friends of Westbrook River Park: The passage season is short. Kayaking season is much longer. It begins in March and goes into November. This is a long season of drawing people to the area. Recreational kayaking will bring more stimulus to the area than fish observation. We need a balance. The two channel design is impaired for feature addition.

Dusti Faucher, FOPR: Sappi is giving their license up. There will be no FERC jurisdiction after this happens. We will not have the ability to force changes to the plans after surrender. Two channel passage does not have fish passage features that may be washed away over time. Who will own the site? Who will take care of it after the surrender?

Question: Does each hydro station have a separate license?

Barry: Each station has an individual license and project boundary. There are five Warren stations downstream of Eel Weir.

Comment: I am moved by what Friends of Casco Bay said. There is regional significance to opening up the Sebago Lake habitat. There are broader implications.

Question: What type of passage exists at Cumberland Mills?

Barry: Denil. We are in the process of conducting effectiveness testing. Reports on effectiveness testing at Cumberland Mills may be obtained from the State through the DMR.

Question: Do you count downstream passage? What is the drop at Cumberland Mills?

Barry: We do not count downstream. There is no real way to accomplish this. The Cumberland Mills Drop is 22 feet, the Saccarappa drop is 30 feet.

Question: What is the length of the drop at Cumberland Mills?

Barry: The drop at Cumberland Mills is over a 300 foot long fishway.

Comment: We need to consider the economic tiers of people that make a living from Casco Bay and consumers of fish. This is way bigger than kayaking. There are opportunities for everybody to benefit from this. Thanks to Sappi for considering both options.

Comment: All communities on the Presumpscot River have made improvements in their waste water discharges to improve water quality. No stream will be successful until it sustains aquatic life. We can make this work for all parties.

Meeting ends at 9:35 PM.

End of Document.

Attachment 1: Attendance List

S.D. Warren/Sappi Fine Paper – Saccarappa Hydroelectric Project **Date: 08/26/15** **Time: 7:00 – 9:00 PM**

Open Public Meeting – ATTENDANCE LISTING **Location: Westbrook High School**

NAME (Print)	Street Address	City/Town	E-Mail	Phone
Robert Lowell	American Journal	Westbrook	rlowell@keepmecurrent.com	854-2577
Sarah King	Acheron	Newport		
William Ball	Acheron	Newport	wball@acheronengineering.com	745-8224
Gary Couture	1 Memory Lane	Scarborough	gary.couture@sappi.com	
MIKE STANDEL	8 MELISSA LN	STEP FALLS	MICHAEL.STANDEL@SAPPI.COM	
PHIL BROWN	259 HARDY Rd	WESTBROOK	PFBROWN@MAINE.RR.com	854-4793
Edward Mullen	231 Bridge St	Westbrook		
Jeff Callahan	138 Hartley St	Portland	jeffreymcallahan@gmail	329-3393
DALE RINES	29 Walnut Crest Rd	Gorham	pitchwood@gwi.net	854-2481
Jeremiah Carey	178 Longfellow St	Westbrook	carey0225@gmail.com	919-605-6239
CHRIS KENOYER	1879 ALNA Rd	ALNA, ME.	CKenoyer@tidewater.net	837-9135
Bob Weston	50 Rousseau Rd	Windham	RobWestonMaine@gmail	233-5824
Mary Weston	" " " "		MaryRobin50@aol.com	233-5824
Nick Giffis	4 Atlantic Dr	Windham	nick19298@gmail.com	207-831-6033
Brenda Emerson	11 Rue Rd	Livingston	limingtonnips@roadrunner.com	207 329 2111
Aaron Murray	5 Stage coach lane	Windham	aaron.murray@gmail.com	207(712-5495) (paddler)
Carolyn + Mike Parker	38 Maynard Rd	Windham	mlcarolyn@gmail.com	207-893-1627
Dan Sweeney	16 Baldwin St	Augusta	dsweeney@TRCSolutions.com	719-225-1688
Bill Blauvelt	11 Longwood Drive	Portland	bill.blauvelt@gmail.com	207-899-2157
Bob Adam	159 Lincoln St	Westbrook	Bob@RJAdam	207 591 5190
Michael Ross	45 Middle St.	Westbrook	crossisl@yahoo.com	—

NAME (Print)	Street Address	City/Town	E-Mail	Phone	
WAYNE BEZL	26 MASON RIDGE RD	KENNEBUNK	WABS@ME.COM	351-7327	
Carol Sue Hayden	20 Liza Harmon Dr. #22	Westbrook	cdhayhall@maine.rr.com	854-2112	
Joe STAPLES	85 BARSTOW Rd	GORHAM	INSECTSANDSTUFF@NETMAIL.COM	272 8209	
Sandy Cort	121 Harrisburg Ave #8	Westbrook	SSCORT@maine.rr.com	671 5867	
Bruce Cort	121 Harrisburg Ave #8	Westbrook	Bruce@CortSmall.com	892-5229	
Doug Roncarati	107 Lamb St Apt 1	Westbrook	doug.roncarati@yahoo.com	—	
BOB MASDON-PADDLER	65 BLUEBERRY HILL LN	SUDBURY, MA	BOB@AMERICANWHITEWATER.ORG	617 584456	
MARCH TRUDGSSON	67 WELLWOOD RD	PORTLAND ME	MARCH-TRUDGSSON@YAHOO.COM	671-9484	PADDLER G
Diana Skvorak	16 Dominion Road	Windham	drskvorak@yahoo.com	207-892-7212	
Evan Desmond	174 Falmouth RD	Windham	eddesmond0162@me.com	842-4284	Paddler
Mike Goodrich	P.O. Box 74	Waterboro	hockeynuts@Saccriver.net	415 3856	Paddler
William Knowles	30 LINCOLN St	WESTBROOK	PAPABILLKnowles@gmail.com	415-1213	
MIKE BAILEY	39 PIERCE ST	Westbrook	mbailey3@maine.rr.com	856-6819	
William Andrew	Alpine Dr	Windham	wandrew19@gmail.com	5530019	Paddler
CHRIS MATTOCKS	3 ANNA WOODS RD	WINDHAM	chris@hovermow.com	621-0260	Dutta
ANDREW CURRAN	PO BOX 603	WESTBROOK	andydogstar@msn.com	400 9836	PADDLER
Todd Mercer	222 Main St	Poland	Penobscotman@aol.com	513-8447	
Pam Adams	423 Stroudwater	Westbrook	ADAMS.Pamela207@gmail.		
Tom Collins	17 Crestwood	Gorham	Tom.collins.maine@outlook.com		
Nat Thompson	221 Spurwink Rd.	Scarborough	natt@maine.rr.com	831-8553	
ANN Roberts	173 Conant St	WESTBROOK	PROBERTSTE@MYFAIRPOINT.NET	854 0445	
Dick Labrecque	105 Hearthside Rd	Standish	RPLabr@MyFairpoint.net		
LANDIS HUDSON	87 MAIN St.	Yarmouth	LANDIS@MAINERIVERS.ORG		
JERRY RIDEOUT	35 EMMS ST	WESTBROOK	JERRYRIDEOUTJR@GMAIL	2327541	
Ragan Hedstrom	25 Walton St	Portland	relsemore@gmail.com	410-340-0410	
Paul Emery	665 SACO St #78,	Westbrook	Paul Emery Realtor@Maine.RR.com	207-831-5899	
Patrick O'Shea	1 Meadow Crossing Dr	Gorham	poshea@maine.rr.com	839-3494	
JOHN S. ANDREW	15 READ RD. 04082	So. WINDHAM		8929620	
STEVE HEINZ	35 PRUDE LANE	CUMB FSD	heinz@maine.rr.com	781-4762	
TIM BACHELDER	648 Spring St	WESTBROOK	tim@swoinsky.com	772-1877	
Keith Williams	48 Lantern Lane	Windham			
Peter & Nancy Frederick	305 Federal Rd	Parsonsfield	nancyrshom@gmail.com	234-9478	
PAUL J. MILLER	18 MALLARD DR.	GORHAM	PMILLER@OAKPOINT.COM	553-0276	
				207 893-1262	
CURT CRITTENDEN	13 FLORENCE ST	DOVER, NH	CURTCRITT@COMCAST.NET	603 767 3547	MVP PADDLER

NAME (Print)	Street Address	City/Town	E-Mail	Phone
Susan Bell	26 Mousam Ridge Rd	Kennebunk	susanbell29@me.com	603-361-5013
Richard Hall	20 Liza Harmon Dr #22	Westbrook	RHall15@maine.rr.com	207-854-2112
Dusti Traucher	79 Presumpscot Rd	Windham	coveredbridge28@yahoo	207-329-3027
Ron "	" "	"	lakes42@yahoo.com	207-319-5999
Warren Lynn	22 Lynt Dr	Westbrook	drlaine@newenglandchiropractic.net	231-7024
Paddler- David + Paula Sparks	46 Rousseau Rd	Windham	dsparks51@roadrunner.com	207-892-8905
Jim Francoeur	20 Westbrand Ave	Biddo	WESKI2@GMAIL.com	207 712 0925
paddler Matt Cyr	375 Gray Rd	Windham	Macyr@windhammaine.us	207-893-1919
Paddler molly cobb	520 Gray Road	Windham	mmcobb@accidentinspection.com	207-892-6410
Paddler Molly Skworal	16 Dominion Road	Windham	mskworal400@gmail.com	207-894-4455
paddler Ella Cote	6 hall road	Windham	ella0804@hotmail.com	(201)6274-1100
Peter Roberts	173 Canant St	Westbrook	PRoberts8@MyFamilyNet	
James Tierney	7 Drummond St	Auburn	run8378@hotmail	207-795-7855
Beata Lillefors	17 Alpine Dr	Windham	waterrat@tds.net	—
paddler Trevor Cote	Hacker Windham	Windham	tcote@cumberlandcounty.org	—
paddler Nathan Harvey	25 Dixey Ct	N. Conway NH	nate@greatglentrails.com	603-384-6276
SALLY MCKIBBEN	16 WHITNEY AVE	Ptld, Me.	sallymckibben@gmail.com	
Curtis Bohlen	CASCO BAY ESTUARY Partnership	Ptld	CBOHLEN@usm.maine.edu	207 780-4820
PADDLER Robert Mitchell	73 Bradley Drive	Westbrook	RMitchell@HVACServ.com	207 415-3858 paddler
PADDLER Chuck Mathieu	86 Spring St.	Lewiston	chuckwm16@gmail.com	207 399 1589
FOSL ROGER WHEELER	385 MENSTOMY RD	FRYEBURG	FRIENDSOFSEBAGO@YAHOO.COM	207-935-2994
MYKE JOHNSON	(moving)		mykejohnson@maine.rr.com	415-6575
Deirdre Mooney	56 Exeter St	Portland	Deirdre.Mooney@GMAIL.com	
Paddler Jacob Risch	465 Usiboe Rd	North Conway NH	jake.risch@gmail.com	603 730 7512
paddler Emma Carlson	Chinwaki Neck Rd	Wilcassset	ecarlson@chinwaki.org	

NAME (Print)	Street Address	City/Town	E-Mail	Phone
John Williams	30 Indian Point Rd	Nobleboro	john.williams@sappi.com	207 592 7773
JACK TRABUCCHI	54 VERANDA ST	PORTLAND	JACK.TRABUCCHI@gmail.com	207 578 2333
Rachel Bouvier	5 Fellows St	"	rbouv72@gmail.com	—
TOM TALIENTO	125 HARRISBURG AVE UNIT 12	WESTBROOK	ttaliento@northcenter.com	
Lucille Benedict	18 Wigeon Ln	Westbrook	lbenedict@me.com	—
MICHAEL STANZOHLESSY	68 CONANT	WESTBROOK	SMALLBIRDS FLYING@GMAIL.COM	
paddler Evan Sanborn	1118 River Rd	Buxton	etsanborn@gmail.com	
John McIntee Paddler	20 Forbes Lane Windham	Windham	JGint91@gmail.com	
Zach Loftis	4 Atlantic Drive	Windham		207-831-6055 paddler
Paddler Cindy Carroll	1032 North Rd	Parsonsfield	brunchingontqsi@roadrunner.com	207 432-1036
Charlie Governali	18 Old Ocean House Rd	Cape Elizabeth	fcgovernali@gmail.com	207-799-5842
Cathy Macleod	46 Sunnyfield Lane	Cumberland	cahmacleod@gmail.com	207-650-5559
Scott Anderson	Verrill Dana LLP	Portland	sanderson@verrilldana.com	253-4540
Paddler Alex Kerney	197 Western Ave	W Boothbay HBR	abk@mac.com	528-8446
DARRON LAUGHLAND	949 HIGH ST	SILVER LAKE NH	mtnman46@hotmail.com	
Sean Mahoney	53 Exchange St.	Portland	smahoney@clf.org	210-6439.
Ron Kreisman	77 Macworth St.	Portland	kreismanr@gwi.net	699 4558
Doug Smith	49 Hackey Rd.	Windham	wm_douglas_smith@hotmail.com	
Peter Fredericks	PO Box 10	Parsonsfield ME	gozzi78@gmail	207-553-6276
Tom Marjerison	27 East Elm St	Yarmouth	TMarjerison@MHOLAW.com	847-3292
Sam Marjerison	27 East Elm St	Yarmouth	y2019sammar@yarmouthschools.org	847-3292
Mike Parker	38 Maynard Rd	Windham	mike@prlt.org	894-8050
Marge Kleibacker	192 BROWN ST #3	Westbrook	margek767@gmail.com	854-0166
Sue Malcolm	70 Longwoods Rd	Falmouth	suev1@maine.rr.com	—
Lisa Kenerson	56 Sargent St.	Westbrook	lisakenerson23ck@gmail.com	655-6474
Karyn Marden	4 Hallmark Rd.	Cumb FSDE	karynmarden@yahoo.com	—
Bob + Janet Kuech	115 Narragansett St., #112	Gorham	rhkuech2@netscape.net	
PAUL DRINAN	POB 17834 PORTLAND	PORTLAND	PDRINAN@GMAIL.COM	
Benjamin Dionne	233 Yarmouth Rd	Gray	Bengdionne@aol.com	
Paddler Jeremiah Shields	315 Banks Rd	Parsonsfield	Jeremiahnshields@gmail.com	
Joshua Perry	12 Merganser Ln	Topsham	SPFD11@yahoo.com	
Brent Elwell	7 Cross St.	Newcastle	belwell18@hotmail.com	

Attachment 2: PowerPoint Presentation

Saccarappa Hydro Project

Public Meeting – Aug 26, 2015

Presented by Barry Stemm

sappi

Purpose of this Meeting

1) To inform the public about the status of the Federal Energy Regulatory Commission* (FERC) license order granting extension of the fish passage deadline to allow for evaluation of alternative fish passage options.

2) To review the progress on development of alternative fish passage solutions for the Saccarappa site - and solicit input & comments.

3) To inform the public about the opportunities to be involved and kept informed.

This meeting and future meetings and/or communication are an important part of this process, and will allow for all stakeholders to be informed and involved in the course of actions that will ultimately determine the future of the Saccarappa Hydroelectric site.

* **FERC**: Federal government agency that regulates most hydro electric dams

sappi

AGENDA

1) Status of the FERC order for Extension of Fish Passage

2) Review of the work to develop alternative fish passage options
   - Site – As it is Today
   - What the Site Might Become in the Future
     - Western Channel Design
     - Two Channel Design

3) Status of FERC Surrender

4) Other Considerations

5) How the Public can Continue to be Involved in this Process

6) Questions and Comments

sappi

Public Meeting Process

- This meeting is not recorded.
- We are taking notes to capture comments and questions.
- The notes will become part of the public record.
- Please sign-in so the list of attendees can be recorded.
- You are welcome and encouraged, at the end of the presentation, to ask questions or simply make a comment for the record. There will be time allocated at the end. Please raise your hand and you will be recognized.
- During the question and comment period we ask that only one person speak at a time so we can make notes of your question or comment.

Status of FERC Order for

Extension of Fish Passage

sappi

The Alternative Fish Passage Evaluation - Process

- The parties to the Agreement are working together on a Collaborative, Open, and Joint Process to Evaluate Fish Passage Design Alternatives at the site.
- The parties have employed the Best Experts to assist in identifying issues and developing solutions for the site that address the Needs of All Stakeholders.
- The site is complicated – the Agreement allows the parties time to evaluate alternatives.
- All alternatives will be based on decommissioning of the hydro station.

<u>Stakeholders:</u>

The City of Westbrook

Non-Governmental Organizations (NGO's)

Federal, State & Local Agencies

General Public, including abutting landowners and recreational enthusiasts

S.D. Warren Company

sappi

Evaluation Process – Major Task List

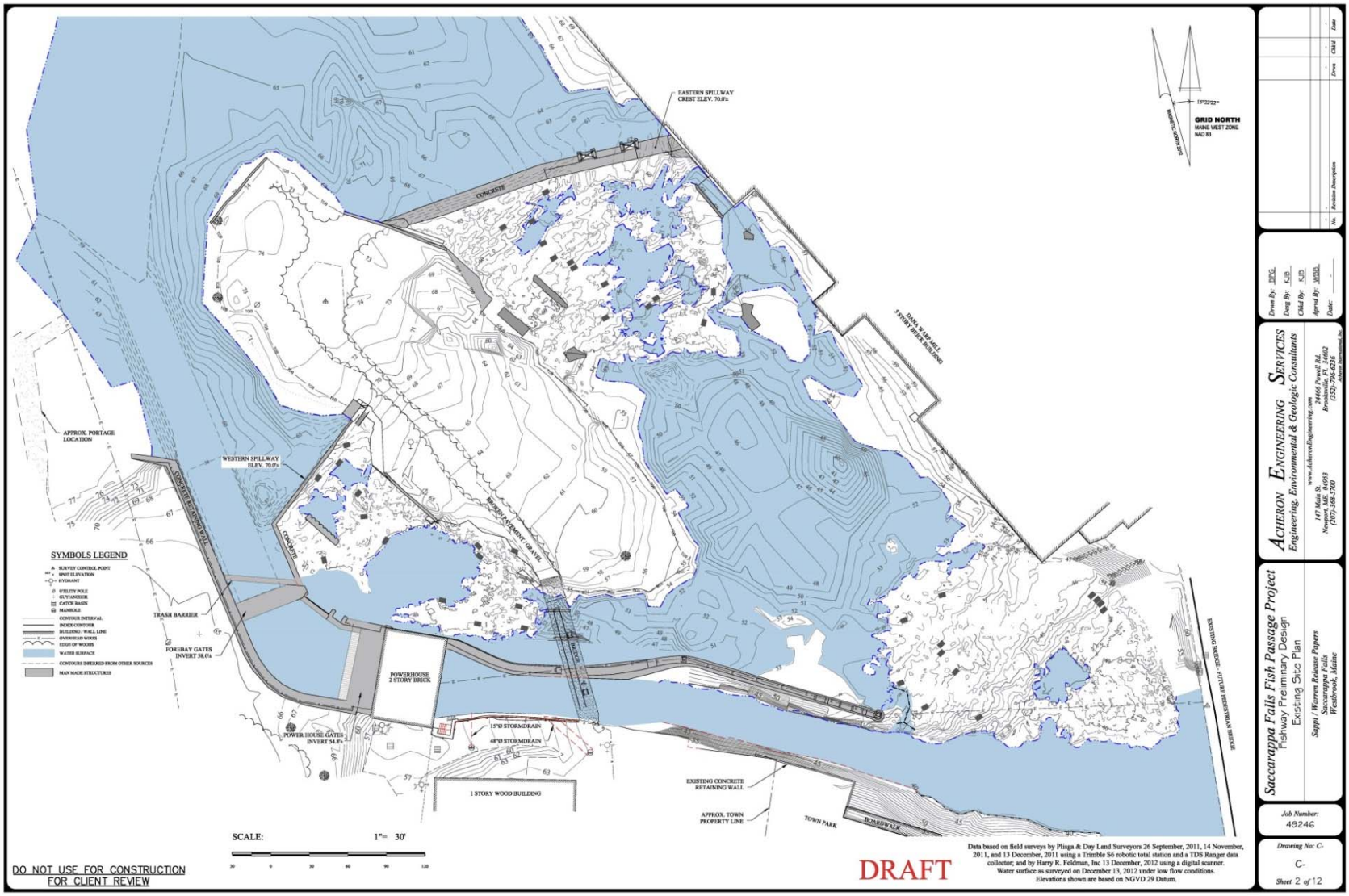
- Gather additional Bathymetric Survey and Mapping
- Provide River Stage-Discharge Rating Curve Data
- Compile Available Existing Site Data
- Create Models and Flow Analysis for Existing Conditions
- Conduct Site Field Investigation
- Investigate Multiple Two-Channel Alternative Options
- Solicit Stakeholder Input into Design Considerations
- Counting Facility Option Design
- Select a 2-Channel Alternative
- Determine if Designs meet USFWS's Criteria
- Develop Adaptive Management and O&M Plans
- Review and Evaluate the two 30% Designs
- Review Costs for Each Design (Construction & Long Term)
- Select Final Fish Passage Design

sappi

Site – As It Exists Today

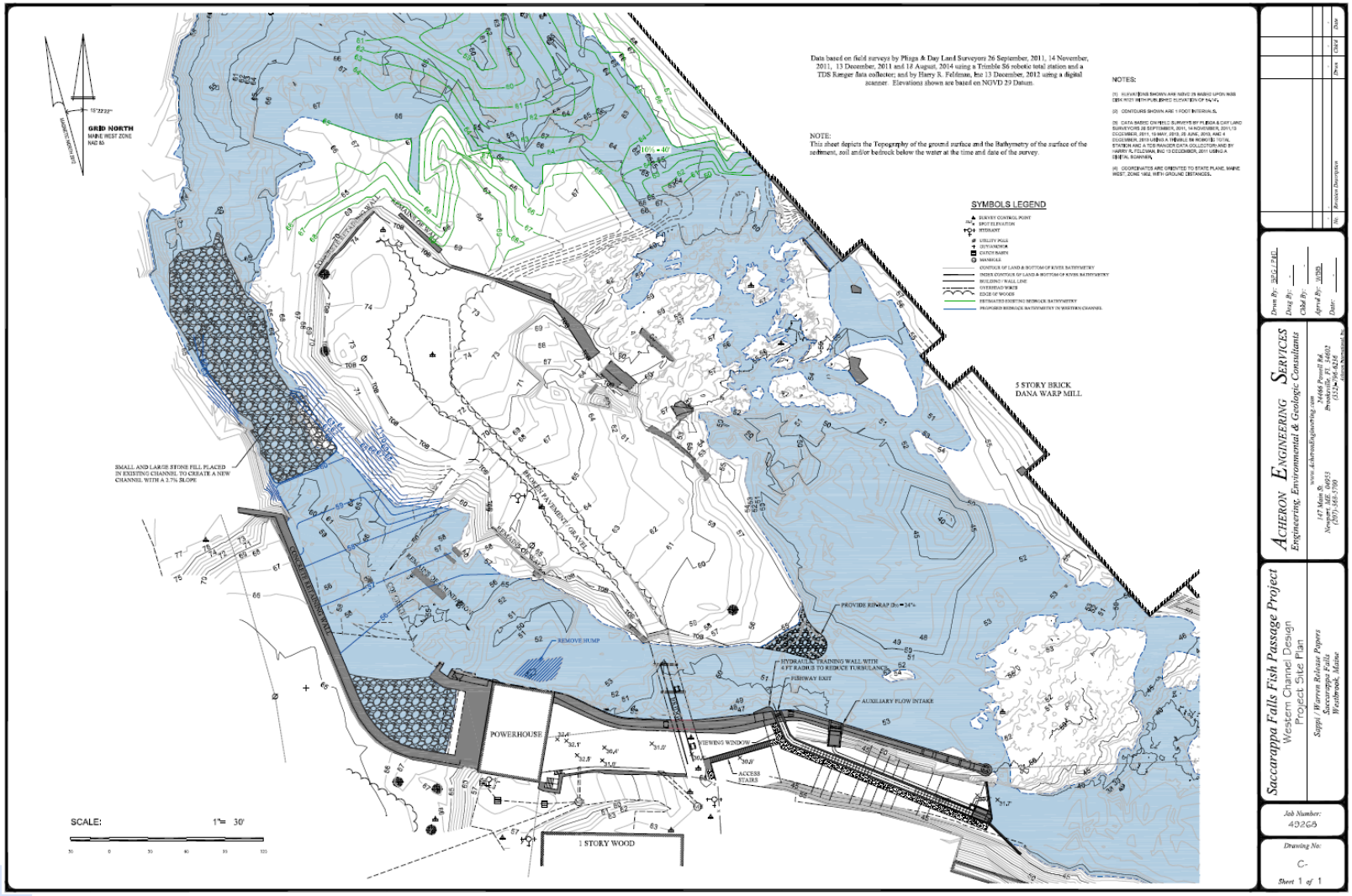
sappi

Site – As It Exists Today



sappi

Western Channel Design

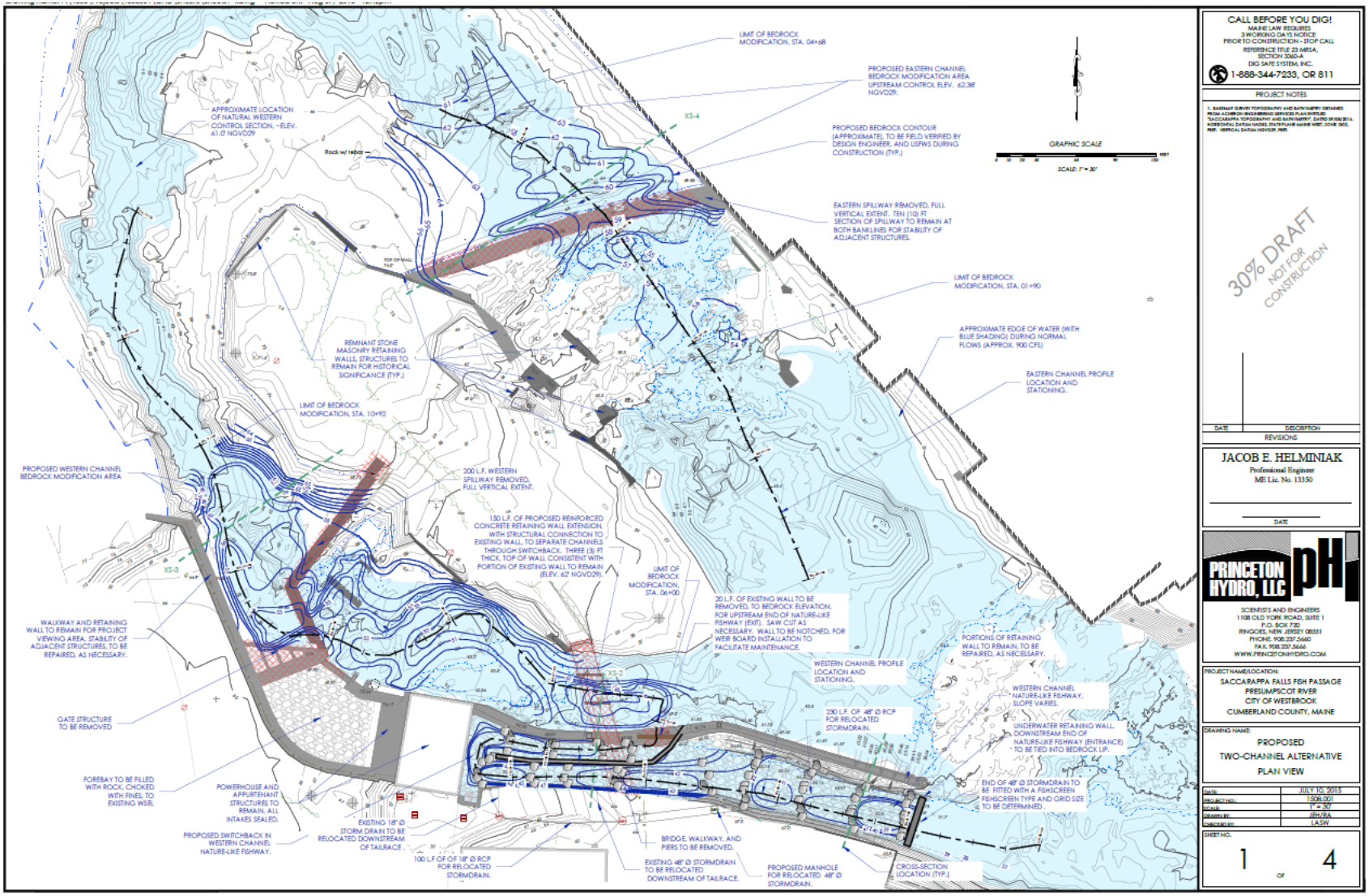


sappi

Western Channel Design - Features

- Removal of Both Existing Spillways (East and West Channels)
- 190 Foot Long Denil Fishway built in the Existing Tail Race (for comparison the Cumberland Mills Denil is ~300 Feet Long)
- Bedrock Removal in Western Channels to Enhance Fish Passage
- The Eastern Channel will be Restored to Pre-Development Condition
- The Eastern Channel is Available for Recreational Modification
- Impoundment Hydraulic Control at the Historic Elevation of 64.0 feet (Both Channels)
- This Design will Lower the Impoundment by an estimated 4 feet at Average Flow Conditions of 900 CFS
- Opportunity for Public Viewing Window at the Denil Exit

Two Channel Design



sappi

Two Channel Design - Features

- Weir and Pool Design Fishway built in the Existing Tail Race
- Bedrock Removal in Both Channels to Enhance Fish Passage in Both Channels
- Impoundment Hydraulic Control at Elevation 61.0 feet in the Western Channel and 62.3 Feet in the Eastern Channel
- This Design will lower the Impoundment by an estimated 5.6 Feet at Average Flow Conditions of 900 CFS
- Recreational Development Opportunities in the Upper Channels to be Defined

Status of FERC Surrender

- On December 31, 2013 S.D. Warren filed an Application of Surrender with the FERC to Surrender the Saccarappa Project License (P-2897) .
- On March 14, 2014 S.D. Warren and several groups* signed an Agreement to Request Extension of Fish Passage Deadline and Stay of License Surrender Application (Agreement).
- On March 28, 2014 S.D. Warren filed with FERC an Application for Amendment of License asking FERC to approve the Agreement.
- On July 30, 2014 FERC issued an Order Approving the Agreement for Extension of Fish Passage.
- S.D. Warren will re-file an Application of Surrender with the FERC to Surrender the Saccarappa Project License sometime in late 2015 or early 2016.

* U.S. Department of the Interior and the U.S. Fish and Wildlife Service ("USFWS"), the Maine Department of Inland Fisheries and Wildlife ("MDIFW"), the Maine Department of Marine Resources ("MDMR"), City of Westbrook ("City"), Friends of the Presumpscot River ("FOPR"), and Conservation Law Foundation ("CLF")

Other Considerations

- Recreational Opportunities:
  - Potential Development of In-River Recreational Features
  - Increased Public Access
- Potential Educational Opportunities
- The Potential for Positive Economic Impact
- Cost to Construct and Maintain
- Shoreline Impacts for Land Owners along the Impoundment
- Environmental Impacts

sappi

How Can You be Involved in This Process?

•Get Listed as an “Interested Party” (provide your information on the attendance list)

•Come to Public Meetings

•Express your Questions/Concerns/Comments - now or submit by September 11th to:

Barry Stemm
Sappi Fine Paper
89 Cumberland St.
Westbrook, ME 04092
Barry.Stemm@sappi.com

Note: We wil be circulating a summary of this meeting, including the materials presented tonight, within a few days so that others who could not attend this meeting will have an opportunity to review the materials and comment.

sappi

Questions
or
Comments

sappi

Thank you

Saccarappa Hydro

Informational Back-Up Slides

sappi

Federal, State and Local Permits

Federal Permits and Licenses:

- Federal Energy Regulatory Commission (FERC)
- U.S. Army Corps of Engineers

State of Maine Permits:

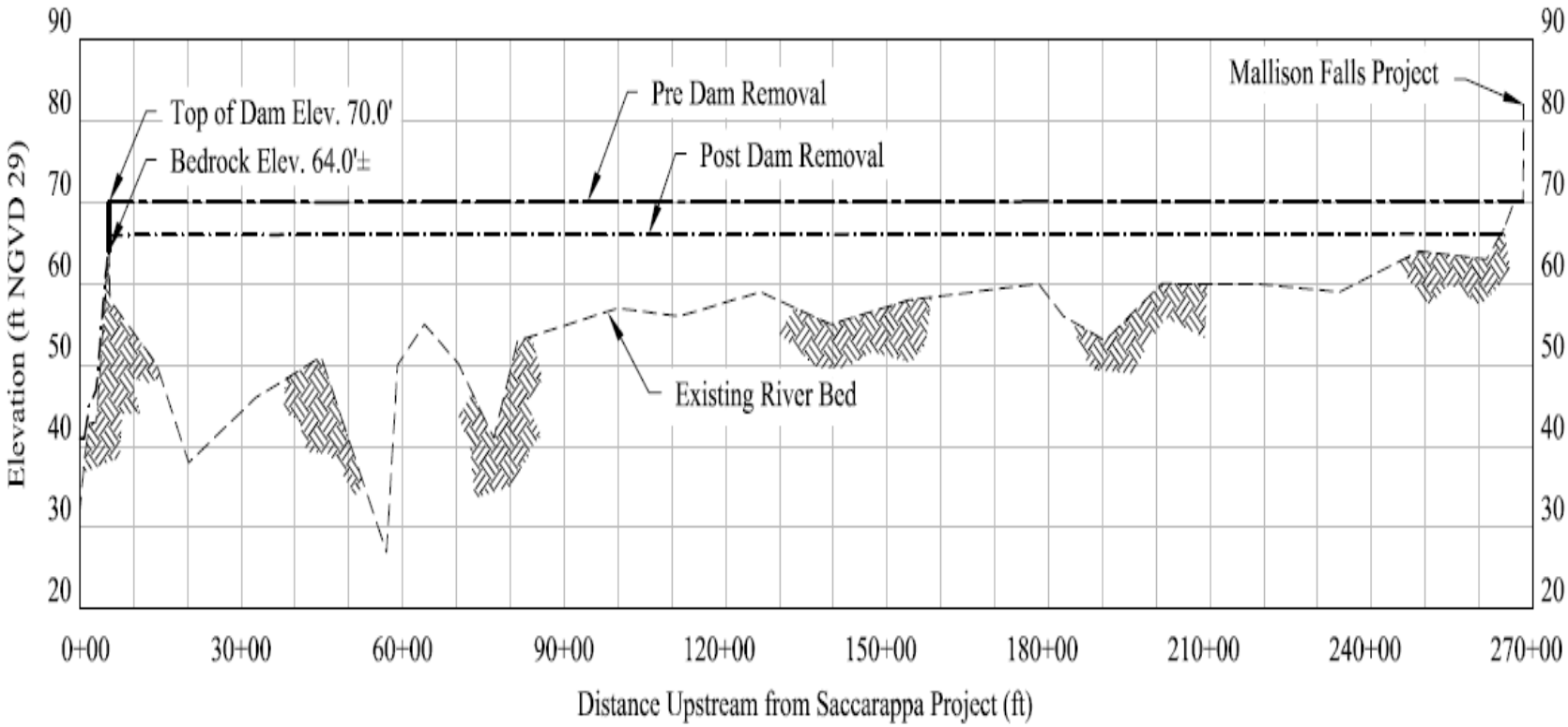
- Maine Waterway Development & Conservation Act (MWDCA)

City of Westbrook:

- Site Plan Review Application
- Flood Plain Hazard Permit Application
- Shore Land Zoning Permit Application
- Excavation/Fill Permit Application

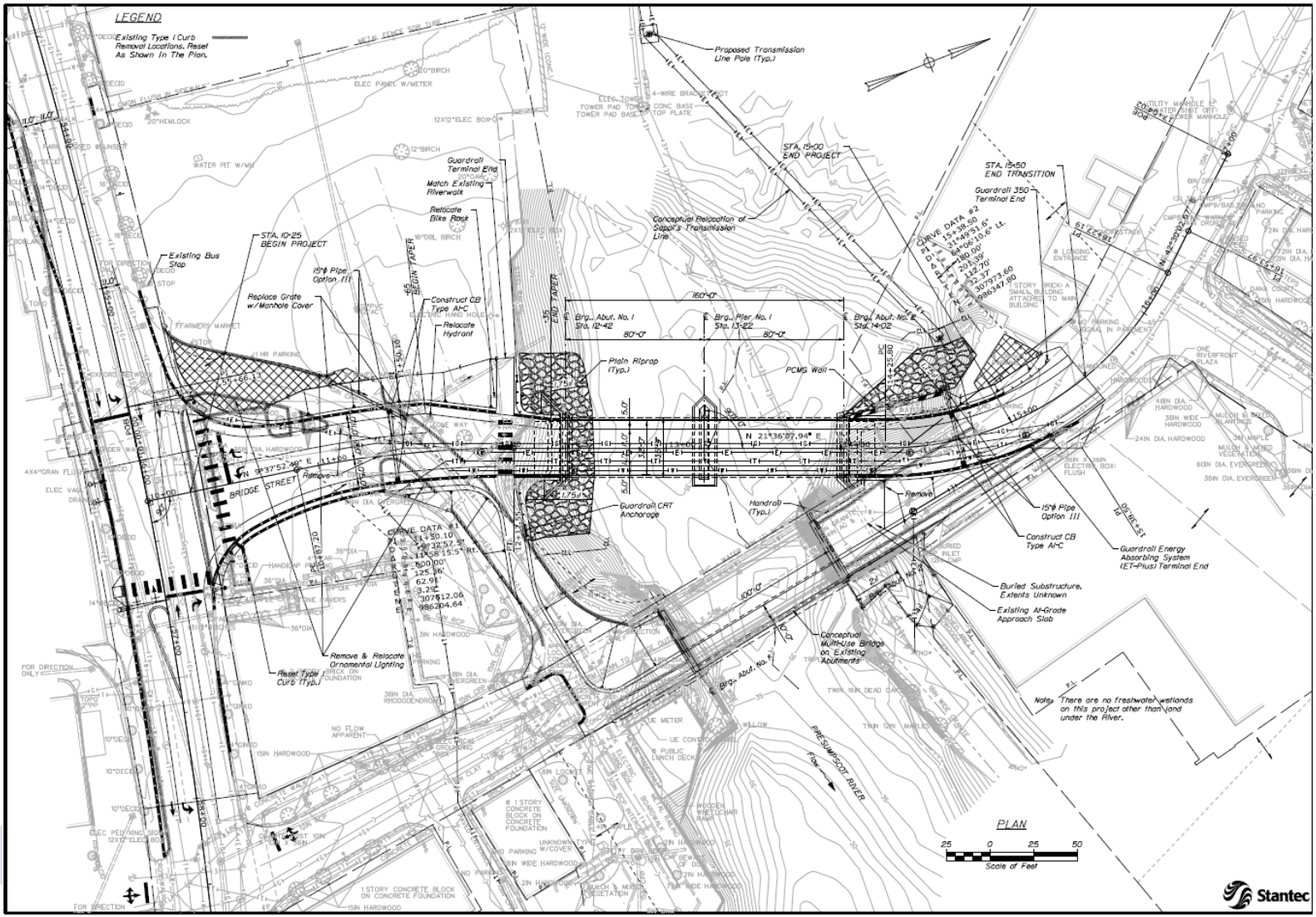
sappi

Saccarappa Impoundment
Water Surface Elevations – Western Channel Design
Pre and Post Dam Removal



sappi

Bridge Street Bridge – ME D.O.T. Bridge Realignment Project



sappi

Species	Saccarappa FERC License		Cumberland Mills Design Capacity
American Shad	18,000/Year		20,000/Year
River Herring	109,000/Year		200,000/Year
Atlantic Salmon	273/Year		Not Listed

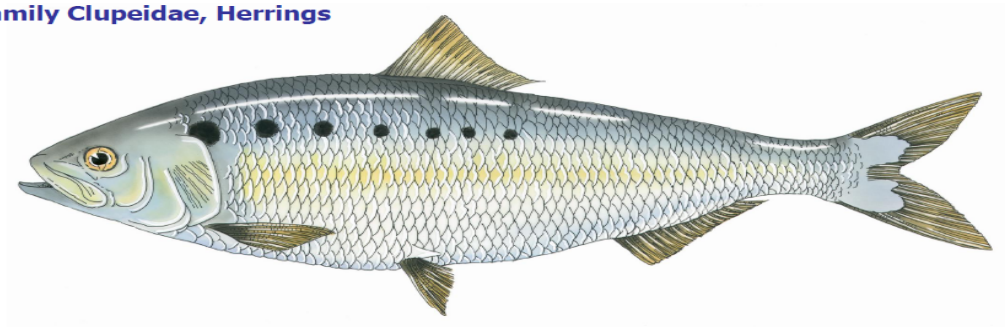
sappi

Fishway Target Species

American Shad

American Shad (Alosa sapidissima)

Family Clupeidae, Herrings



Common names: shad, Atlantic shad, white shad

Description: American shad are dark blue to green above with paler sides and a silver underbelly. Behind the upper edge of their gill cover is a large dusky spot that is usually followed by several small, less distinct, dusky spots. These fish have a laterally compressed body and a deeply forked tail fin. The midline of their belly is saw edged and sharp and their scales are large. They have only one dorsal fin and one anal fin. American shad are the largest members of the true herring family and can grow to 30 inches in length and weigh over 9 pounds.

Remarks: American shad are anadromous fish. Commonly known as 'the poor man's tarpon," Shad are highly sought after as a sportfish because of their feisty nature and their ability to leap. The most popular time of year to go shad fishing is in the spring when these fish are returning to their coastal streams and rivers to spawn. Although shad are primarily plankton feeders, they will take a variety of baits, lures and flies. Either light spinning or fly fishing gear is recommended.

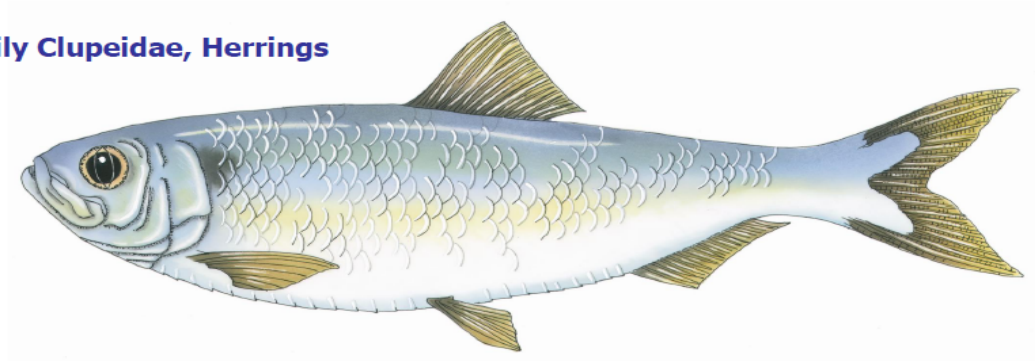
Source: Maine Dept. of Marine Resources

Fishway Target Species

Alewife - also referred to as River Herring

Alewife (Alosa pseudoharengus)

Family Clupeidae, Herrings



Common names: River herring, sawbelly, kyak, branch herring, freshwater herring

River Herring is a collective term used to describe both anadromous alewives and blueback herring. The alewife is the more common of the two species in Maine. River herring are anadromous (sea-run) fish that spend the majority of their life at sea but return to freshwater to spawn. Both species are native to Maine rivers. Alewives and blueback herring have co-evolved and co-existed with other native fish and wildlife in Maine's streams, rivers, ponds and lakes for thousands of years. The historical distribution of this species is throughout the Atlantic seaboard, from Newfoundland to the St. Johns River, Florida.

Source: Maine Dept. of Marine Resources

Types of Fish that move between Fresh and Salt Water

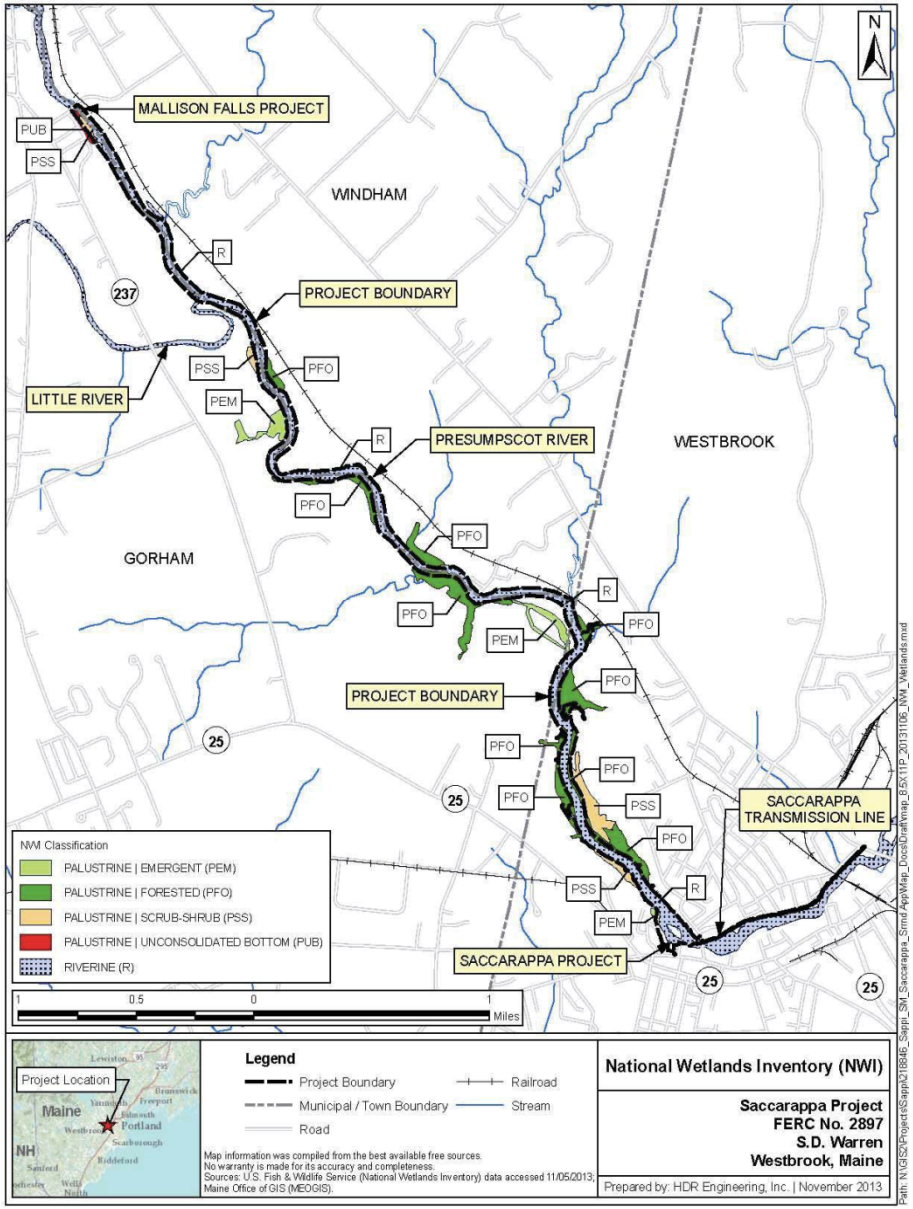
- **Diadromous** (migrate between freshwater and saltwater)
- Diadromous is a general category describing fish that spend portions of their life cycles partially in fresh water and partially in salt water. These represent both anadromous and catadromous fish. Diadromous fish are fish that migrate between freshwater and saltwater. The migration patterns differ for each species and have seasonal and lifecycle variations. Only one percent of all fish in the world are diadromous.

- **Catadromous Fish** (American Eel) These are Diadromous fishes which spend most of their lives in fresh water and migrate to the sea to breed.

- **Anadromous Fish** (Alewife, Blueback Herring, Shad, Atlantic Salmon). These are Diadromous fishes which spend most of their lives in the sea and migrate to fresh water to breed.

Saccarappa Hydro

<u>FERC Project Boundary</u>



sappi

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – Alternative Fish Passage Design, Technical Review Meeting

Date of Meeting:	September 22, 2015
Location:	Sappi 89 Cumberland Street Westbrook, ME
Time:	10:00 AM – 1:30 PM

Attendees and Participants:

Barry Stemm, S.D. Warren
Brad Goulet, S.D. Warren
Gary Couture, S.D. Warren
Greg Allen, PE, Alden Labs
William Ball, PE, Acheron (WBB)
Sarah King, Acheron
Matt Manahan, Esq., Pierce Atwood for S.D. Warren
Gail Wippelhauser, Ph.D., Maine Dept. of Marine Resources
Steven Shepard, US Fish and Wildlife Service
Brett Towler, Ph.D., US Fish and Wildlife Service (by phone)
William Baker, City of Westbrook
Ron Kreisman, Esq. for Friends of the Presumpscot River
Michael Shaughnessy, Friends of the Presumpscot River
Aaron Frederick, Friends of the Presumpscot River
Sean Mahoney, Conservation Law Foundation
Sandy Cort, Friends of the Presumpscot River
Dusti Faucher, Friends of the Presumpscot River

Barry Stemm, meeting host, welcomed everybody to the meeting. Barry went over the meeting agenda, stated that USFWS and MDMR comments on Western Channel and Two Channel design alternatives had been received on 9/21/2015 and 9/22/2015. Barry specified that each agency would have time to discuss their comments and address questions. Gail handed out copies of the MDMR comments. Barry provided an opportunity for amendments to the agenda, which yielded no proposed changes.

<u>Agenda:</u>

1. Welcome parties to meeting (Barry)
2. Comments or feedback from agencies on both design options.
3. Discussion of Brett's performance results (Brett and all)
4. Discussion of cost opinions (Bill to lead discussion)

5. Schedule and next steps (All)
6. Conclusion of technical portion
7. Open discussion.

Barry turned the meeting over to Steven Shepard, USFWS and Gail Wippelhauser, MDMR.

Steven Shepard, USFWS Comments

Steve indicated that USFWS had two primary concerns relating to the proposed designs.

1) Sappi proposes to restore the elevation of the impoundment to pre-project levels. FOPR proposes blasting additional ledge and lowering the impoundment below pre-project levels. Fish passage and river restoration are the primary goals of this project. It is preferable to restore the impoundment level to the natural, pre-existing condition. If the impoundment is lowered beyond this level, concerns arise regarding the impacts to sediment mobilization and other unforeseen conditions. USFWS wonders whether this lower level may readjust the bed conditions, possibly creating head-cutting, mobilization of sediment, and possible new impediments to fish passage within the impoundment. USFWS likes many aspects of both designs, but the proposed change in impoundment level in the FOPR design is substantial.

2) The Sappi and FOPR designs are similar in the western channel, however the FOPR design includes eastern channel modifications to enable passage in this channel. The FOPR design was reviewed not as two channel passage, but rather as primary channel passage with minor modifications to the eastern channel to prevent stranding. We have concerns that the FOPR east channel design might not work if the impoundment is not lowered sufficiently.

Steve indicated that there is not enough information available to determine whether artificially lowering the impoundment would be detrimental to habitat. Opened to questions.

Barry: Land owners along the impoundment are sensitive to the elevation change as well.

Steve: FERC will want to evaluate any detriment to sediment, impoundment levels, etc.

Barry: There exists more opposition to a lower impoundment level.

Gail: Let's review the HEC-RAS and SMATH models. When river herring and American shad migrate they don't eat so they have low energy, and they have a low tolerance to variations in temperature. These are two important factors in migration. The three models used for evaluation of each design are very telling.

1) Lower Falls: The Warren design proposed a Denil ladder. The FOPR design proposes nature like fish passage. The SMATH models indicated that the nature like passage is not easily passable based on energetics. Fish would need to stop to rest and would encounter delays. The switchback design is a problem.

2) Western Channel Upper Falls: Fish will need to rest during passage over the upper falls in the western channels. This will cause delays and result in high energy expenditure.

As we are unsure which way fish will turn when they exit the lower falls passage, MDMR would like to see both channels passable. The model was run at a water temperature of 18 degrees Celsius. The models for both scenarios were not good. FOPR's eastern channel model was better and the modeling for the Denil was better over the lower falls. MDMR would like to see a double Denil fish passage structure over the lower falls with FOPR's eastern and western passage over the upper falls. The FOPR design will result in minimal fill and hence will be more stable over time.

Steve: From a passage standpoint, it would be better to see the impoundment lower. However, the ramifications of lowering the impoundment are unknown. The lower falls modeling indicated that the Denil is the best option. The nature like passage was more difficult; modeling shows that the dog-leg turn is difficult to pass. The upper falls models yielded similar results. USFWS has similar concerns regarding placing fill in the river.

Gail Let's discuss the design capacity for the site. The single Denil proposed matches the passage capacity for the Cumberland Mills site. The Saccarappa prescription calls for two phases of passage. The first calling for a single Denil ladder, the second for another Denil ladder. We suggest that you replace the auxiliary attraction water service with a second Denil ladder, in essence creating a double Denil ladder. This would provide attraction water, as well as phase 2 capacity.

Barry: Would the entrances be next to each other, or would they be one structure? Would they both operate at the same time?

Steve: They need to operate simultaneously in order to work correctly and provide ample attraction flow.

Gail: Brett has a picture of a side by side Denil.

Brett: There is one double Denil in New York. Essentially it provides attraction water, while also providing passage. The operation and maintenance is more problematic for long term water attraction flow devices than it would be for a double Denil structure.

Steve: Will the double Denil fit in the tailrace?

Barry: Yes.

Steve: You would need to install a crowder at the exit to be able to count the fish, as the exit would be otherwise be too wide. USFWS would like to entertain the idea of a date certain for the installation of fish passage at the upstream projects, rather than based on fish counts at Saccarappa.

Barry: Are there any other comments or questions?

Steve: Indicated the both Warren and FOPR designs are similar in concept, but with different excavation and fill options. The project will be better off if we can leave ledge, instead of filling areas.

Barry: Agreed.

Steve: We have hit the high points.

Barry: We will need to take some time to digest the comments.

Barry then turns meeting over to Gail Wippelhauser, MDMR, to discuss MDMR comments. Gail indicates that she has no additional comments. The modeling was already summarized, though biological constraints were not discussed. Other than that, all of the topics have been covered.

Barry thanks Gail and states that the comments received from the agencies will be very helpful to Warren in its decision making process. Barry then turns to Brett for a discussion of the performance model results. Barry put SMATH modeling information on the screen to facilitate discussion. Brett states that he will give the nickel tour of the SMATH results.

Brett Towler, USFWS, SMATH Results

Brett began the discussion by asking Barry to identify the meeting attendees, which Barry did. Brett also asked Barry to open to Tab 1 of 6 on the SMATH modeling spreadsheet. Brett indicated that the SMATH modeling is a great tool, but that it was not the only thing that USFWS based their opinion on. The results of all three models were not black boxes, as they required expertise to interpret results. All models are based on published papers. All models were supplied to Warren and FOPR for their design phase. The comparison of the proposed modeling for the upper and lower western channel falls for Warren and FOPR designs assessed:

- *Fatigue*
- *Amount of Energy Expended*
- *Survivorship*: Produced a passage efficiency estimate, distinct from the entire project efficiency. Survivorship does not address behavior, which was looked at separately, but rather performance.

While there were differences in the upper designs, the estimated passage efficiencies for the upper channel passage designs were similar. The modeling for the lower falls designs showed that Warren's Denil passage was effective. Brett opened the discussion to questions.

Steve: The nature-like passage design by FOPR over the lower falls was treated as a roughened ramp and not as structures in the model. The upper nature like passage was broken into two sections; the lower section was modeled as a ramp. These two segments were then used to calculate the cumulative result.

WBB: I understand that the models were based on shad. What does the model say regarding river herring?

Gail: The survivorship model has information on prolonged swim speed for shad, not herring, so we did not run it for herring. We could have made assumptions, but the time was limited, so we only ran it for shad.

WBB: How might you interpret the results for herring?

Gail: Herring are smaller, so this may mimic results for smaller shad. We used the data from the Brunswick fishway to obtain minimum, average and maximum fish lengths. Generally, smaller fish are less able. Herring would have more of a problem.

Steve: Larger fish swim at greater velocities.

Gail: The temperature used in the model was 18 degrees C. As the temperature increases the ability of a fish to swim against a current decreases. Herring swim better at cooler temperatures, thus this would benefit them in the model (the model used higher temperatures).

Brett: The overall purpose of the modeling is to find a comparative result between the designs.

Gail: The results of all of the models support each other. The survivorship, fatigue and energy models all indicate the same thing.

Barry: This modeling is very helpful for Brett's stated purpose.

Ron: Sappi stated that their design was approximately 330' long. The models state that the design was 400' long. Which is correct? The model is sensitive to length, let's make sure that we are comparing apples to apples.

Gail: MDMR pulled the distance off of the plans received from WBB. If it is longer the survivorship calculations will drop and work required will increase.

Brett: Ron, the easy answer is that we do not need to get concerned regarding lengths of channels. The models utilize the channel velocity, which changes because the width of the channels changes over the length. From USFWS's point of view, there is not a significant difference. This is simply one method of evaluation. Warren's model looked better under this permutation.

WBB: The physical length of the channel is 400', but it appears that the analysis did not include the lower velocity sections of the upper channel. Is this a correct assumption?

Gail: We only picked fast sections for evaluation. The intent of this first pass was to pick trouble sections.

Brett: 330' comes from the high velocity areas.

WBB: Acheron checked the modeling results and has no issues with how the sections used in the model were chosen.

Brett: Princeton Hydro has resting pools in various places. The intent of this analysis was to provide a worst case scenario. We assumed that all fish would complete the run at the same time. We did not include any resting areas in the model so that we could have a conservative evaluation of passability based on the three models.

Ron: Requests that Gail run the SMATH model with Warren's entire length. If this modeling is to be used, the entire western channel should be modeled.

Barry: We will note that.

Steve: This would not substantively change the conclusions. The survivorship comparison would still be similar.

Gail: If WBB will send HEC-RAS information in Excel format, I will gladly run the model.

Steve: There is a difference in flows in the models. At flows over 1,500 cfs the results are not good. At lower flows they are better. We can predict the performance of a Denil, whereas nature-like passages do not perform well at high flows.

Brett: I agree. The lower nature-like FOPR design was the concern.

Barry: Any other questions or concerns?

Brett: The software is free. Anybody may use it to evaluate different conditions.

Barry: The software is very useful. Thank you. Next let's discuss the cost opinions. We have received some feedback and responded, however we have new feedback which will require time to respond to.

Gail: Can you walk us through the cost estimates?

WBB: What specifically would you like to walk through?

Gail: I do not prepare cost estimates. Can you help me understand what you have put together?

Brett: Walk us through the letter of August 17, 2015. Address highlights, assumptions and how estimates were prepared.

WBB: Generally an opinion of cost involves utilizing the 30% drawings to develop a list of individual work items, develop of estimated scope of work for each task and develop unit costs for each item within a given task. A list of assumptions was provided in the letter. 95% of unit costs came from RS Means, an industry standard source that is available

online. Each summary provided shows the results of this analysis and calculation. We try to do this the way a contractor would prepare a bid.

Gail: When you prepared the estimates, were some costs the same for both design options? In other words, was the cost the same for accessing the island for construction for the Warren and FOPR designs?

WBB: No. The designs included different options to access the islands, hence different costs.

Brett: Where have you accounted for fill and materials?

WBB: I will need to consult with staff at Acheron to identify these details. Trucking was a significant factor. We spent a lot of time researching material availability and costs. We spent a lot of effort to ensure that the cost opinions reflected the realities of the site.

Brett: Developing a cost opinion can be challenging at the 30% design phase. Do you have any certainty regarding the costs given the uncertainties in the cost estimate?

WBB: Our confidence is reflected in the 25% contingency carried on cost estimates for both design options. The recommended contingency is on engineering judgment and reflects the engineer's confidence in the process. When we evaluated a variety of factors, we decided that 25% contingency was appropriate. The typical minimum recommended contingency is 15%. Warren's could range from 10% to 30%. Contingency was applied in the same way to both opinions.

Bill Baker: Will the addition of a second Denil double the cost?

WBB: No, but we need to evaluate the specifics of that change before commenting on how it might or might not affect the cost opinion.

Brett: We are not expecting a big change in cost with the double Denil.

WBB: Doesn't disagree with Brett's statement. We would not be doubling the volume of concrete.

Ron: The two channel design removes the costs associated with fill. How are we to do a comparison when a major element of one design does not have the costs broken down?

WBB: We will respond to Laura's comments in writing.

Barry: What is the cost of fill for the western channel design? Right now we are utilizing the 30% design. Once the design has been finalized, we will be able to clarify this number. We can answer your question as to where the fill was incorporated, Ron.

Barry confirms that Gail's original question regarding the cost estimates was addressed and progresses to a discussion of the schedule and next steps.

Schedule and Next Steps

Barry states that we are currently in the period of Task 4.0. We are at a point where a final decision must be developed regarding our next steps. Ron agrees.

Steve: What steps forward are you contemplating?

Barry: We need to absorb agency feedback. We have a timeframe that we need to meet. We are pulling together a response to the AIR and a surrender application.

Ron: What is the deadline for the decision making?

Barry: We need to make a decision soon.

Matt: October 12, 2015 is the deadline. Changing this would impact the schedule and Warren does not have time. The Extension Agreement states that a new surrender application must be submitted within 15 months after the Consistent FERC Order. This is December 2, 2015.

Break for Lunch at 11:45 am; Meeting reconvenes at 12:20 pm

Barry notes that Bill Baker, City of Westbrook, left and the presence of Gary Couture, S.D. Warren. Barry opens the meeting for open discussion.

Open Discussion

Ron: FOPR and CLF are prepared to have a conversation of where they are at.

Matt: Feel free to do this. We need to get to a final decision.

Ron: Where is Warren at with all of this?

Barry: After the conclusion of the meeting today we need to make a decision in order to meet deadlines. We need to do this in a way that ensures that we maintain compliance with complex regulations surrounding the process and project.

Ron: We have fully heard from Brett and Steve regarding USFWS opinions. We don't want to debate. The technical meeting needs to transition into a settlement discussion. These conversations should be seen as a segue. They are not a protected, or confidential discussion. We will not address post operation costs and maintenance responsibilities. The purpose of this forum is not to address these.

Barry: We have a short time to make a decision.

Ron: I will address the time frame.

Ron thanks everybody and states that this was a revealing process. There were some disappointments, but there was a lot of work and progress.

1. *Costing Issues*: Ron asked when he could expect a response to the costing issue questions raised in Laura's last letter. Barry indicated that this would be possible within the next few weeks. Ron stated that they were disappointed in how the costing process was handled. There was a dearth of information provided to Laura and they felt that communication was non-responsive. The process did not feel collaborative, nor did it involve an accurate side-by-side comparison. Laura was not consulted with questions during the costing process. They felt the result of the discussions was pre-determined.

2. *Design Comments*: Where are we left now? Warren's design won't effectively pass the target species. It doesn't meet design guidelines. If this design goes forward we will oppose it vigorously. Future O & M guidelines are insufficient. Warren is asking to walk away and only operate Denil for as long as they own it. There is not much solace in this, as mills are closing left and right.

3. *FOPR Design:* Laura argued for additional elements and a gauging station to estimate water levels and advanced hydraulic modeling. There was no agency support. For example the comments on the 180 degree turning pool did not reflect the design. This could have been refined and tested. Agencies reviewed the SMATH models without resting areas. This was not the intention of the design. We felt that there were ways to evaluate this design that would have worked. If this design had been adopted, we would likely have supported Warren's "up and out" approach. There was an overall dismissal of the nature-like passage without providing effectiveness proof of the Denil. They are in operation, but are not necessarily effective. CLF and FOPR don't think their design was given a fair shot. If Warren is willing to work with FOPR and CLF to seriously look at the FOPR design again, they are willing to extend the deadlines.

Sean: It is important to get data from similar technical fishways to give us confidence that the Denil option will work at Saccarappa.

Ron continues to cite historic fishways. We don't want to let a failed fishway happen. Where does this leave us? The more that Warren presses a non-consensual design and O&M plans, the more it will bring to the forefront how Warren wants to relieve itself of the long term liability. Who is responsible if this doesn't work?

Ron said FERC essentially issued an integrated joint license for the five projects. The precedent shown here could have upstream implications. We believe that the double Denil structure with both upper channels passable will be sufficient. With great sadness we could live with this approach. We need to identify who is responsible if this fails. We understand the concern of lowering the impoundment. We appreciate that USFWS brings it up, but don't believe it is a substantial issue. This should be explored to identify any impact.

We are open to lengthening the process if it can be conducted in good faith and not in a hammering rod approach. Thank you for listening.

Matt: We have until October 12, 2015 to make a decision, or we won't comply with the agreement. What do you suggest we do?

Ron: FOPR and CLF are prepared to delay the operative fish passage date to May 2018 if a set of genuine steps would be taken. We will not lay out those steps here. We need an open, collaborative process. If we felt, after 6 months, that this was not the case we would not pursue this agreement.

Matt: Sappi cannot control the science of the Denil. This was a thorough analysis of options. I have a hard time understanding how an extension would change the result. We don't want to spend another year to get to the same place.

Ron: We think that the decision over the lower falls was based on incomplete information. If everybody feels like the ramp has been explored then let's move on.

Matt: Were you suggesting that FOPR and CLF take over the ownership and ongoing liability for the fish passage facilities?

Ron Not discussing this here.

Barry: Early on Sappi met with the agencies. The first pursuit was rock ramps for this site. That is where we were in the beginning. Once we looked at the challenges associated with this design option, we moved to the Denil option. We all would like to reach a compromise. Was there a suggestion that you would consider the double Denil over the lower falls and FOPR model over the upper?

Ron: Yes. We will oppose a situation that includes passage only in the western channel. We also need assurance that, if this is unsuccessful, Sappi will be held accountable.

Sean: Part of our frustration is the drag in responding to items. We appreciate that you need to digest the agency comments, but let's not take too long.

Matt: Regarding the cost opinion, Warren was required to deliver its opinion by 8/17. We received Laura's comments on 8/29 and had to circulate the final cost opinion by 8/31 to comply with the Extension Agreement, so there was insufficient time to respond by then.

Sean: A phone call, in lieu of waiting, would have sufficed.

Matt: This group could probably agree to move the October 12th deadline to facilitate discussions, but I am unsure of the December 2nd deadline, which is part of the FERC-approved Extension Agreement itself.

Sean: We appreciate the time and effort that the agencies have put into evaluating these options.

Barry: We also appreciate this.

Matt: Agencies, having heard what you have heard do you have comments as to whether it is worth going down this road?

Steve: Sappi now has enough information to craft passage with a good idea of what it should be. FERC will take a fresh look at the proposal and take the lead of agencies. We have enough information to move forward. Of course there are updates and other information that could be looked at. FOPR has had a good technical presence in this process.

Sappi has dealt fairly and honestly in this process. They extended the discussions to FOPR and CLF. I do not support taking more time. Let's move forward with the information that we have.

Gail: I have a different view. If Sappi would consider MDMR recommendations, there is additional work that could be done to assess the impacts of lowering the impoundment. I would support an extension to address this.

Barry: We have significant challenges with regard to the impoundment level. We would need to redo a lot of work that has already been done for the AIR. That will take time.

Ron: Given what Steve and Gail said, if there is not support for looking at the other designs, we are prepared to support the MDMR proposal, as long as it is proven that it does not harm the site. We also request a proposal that contains protective measures that address steps forward if the Denil does not work as designed.

Barry: Any other questions?

Meeting ended at 1:30 pm

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Sappi/Warren Release Papers, Westbrook, Maine
Saccarappa – MWDCA / WQC Public Information Meeting

Date of Meeting: November 19, 2015
Location: Westbrook High School
125 Stroudwater Street
Westbrook, ME
Time: 7:00 PM – 9:00 PM

Attachments: Sign-in sheet
Power Point presentation
Handouts

- Potential environmental impacts
- Permits that may be required
- DEP public participation information sheet

Meeting:

(Slide 1) Barry Stemm (Sappi), meeting host, opened the meeting.

(Slide 2) Barry reviewed the meeting agenda:

1. Purpose of this Meeting

2. Project Description (Barry Stemm –S.D Warren):
   a. Recent History -from 2013 to Today
   b. Site as it is Today
   c. Projected Site -Post Surrender

3. Potential Environmental Impacts (Bill Ball –Acheron Engineering)
   a. Key Issues Addressed in the MWDCA Permitting Process

4. Questions and Comments

Barry identified the handouts available at the meeting:

- DEP Information Sheet (Public comment to the DEP during the application process)
- Listing of: Federal, State and Local permits that may be required
- Environmental Impacts Summary

(Slide 3) Barry indicated that this is a public meeting, not a public hearing. Barry indicated that Warren will be taking notes during the meeting, to record substantive comments and questions, though these notes will not represent a verbatim transcript, and that these notes will be included in the MWDCA permit application. Barry asked attendees to please sign-in, as the list of attendees will also be included in the MWDCA permit application.

Barry indicated that Warren has reserved time at the end of the presentation for the public to ask questions, or make a comment for the record, and he asked that one person speak at a time.

(Slide 4) Barry described the overall purpose of this meeting. He stated that the meeting is part of the public information requirements for the MWDCA permit application. The process requires Warren to inform the public about the project proposed at the Saccarappa site, to solicit comments and questions from the public regarding the project and anticipated environmental impacts, and to inform the public about the opportunities for the public to comment to the Maine DEP during the MWDCA application process.

(Slide 5) Barry provided an overview of the recent history of the Saccarappa Surrender Project. On March 14, 2014, Warren entered into an agreement to request an extension of the fish passage deadline and a stay from the license surrender application that was filed on December 31, 2013. The parties that were involved in that agreement are the U.S. Department of the Interior, U.S. Fish and Wildlife Service, Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, City of Westbrook, Friends of the Presumpscot River, Conservation Law Foundation, and S.D. Warren. The purpose of the agreement was to allow the parties time to engage in a collaborative process to evaluate fish passage design alternatives. The agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

(Slide 6) Barry provided an aerial overview of the site and described major existing site features.

(Slide 7) Barry provided a plan overview of the project site that also contains bathymetry and described major existing site features.

(Slide 8) Barry provided a plan that highlights the upper and lower falls. He indicated that the site contains a split channel, as well as multiple sets of falls and that these natural features make fish passage design at the site difficult. Barry indicated that the entire drop over the site is 29'.

(Slide 9) Barry provided an overview of the design that was proposed in the December 31, 2013 surrender application. He provided a plan view of that design and outlined its major features. That design included the installation of a Denil fish ladder in

the tailrace channel, to facilitate passage of the target species over the lower falls, and included natural fish passage in the eastern channel, with the creation of a flow diversion channel, to facilitate passage of the target species over the upper falls.

(Slide 10) Barry provided a plan view drawing of the proposed fish passage design to be included in the FERC and DEP surrender applications. Barry indicated that this design was a result of collaborative efforts, and he outlined the major differences between this plan and the 2013 plan:

- The proposed plan involves the removal of both spillways.
- The proposed plan involves the replacement of excavated fill in the upper western channel.
- At the request of agencies, the proposed plan includes the installation of a double Denil fishway. This will address potential future fish passage, as it will allow twice the capacity of a single Denil ladder.

Barry showed the path that a migrating fish will follow, up the double Denil ladder, then up the western channel. Barry indicated that there are a series of resting pools proposed in the western channel. Barry stated that Warren had initially hoped to provide 100% natural fish passage, but realized that this would not be successful over the lower falls. Hence, Warren is proposing this hybrid design with technical passage over the lower falls and natural passage over the upper western falls. Barry stated that the proposed plan also leaves the eastern channel open to recreational features, which is important to the community.

(Slide 11) Barry introduced and turned the presentation over to William (Bill) Ball, PE, Acheron Engineering, to discuss the key environmental issues surrounding the project.

Bill explained that Acheron was retained by Sappi to assist in the preparation of permit applications and that his job at the meeting was to provide a brief summary of the anticipated environmental issues related to the Surrender Project. Bill stated that there are positive and a few, minor, negative environmental impacts addressed in the MWDCA application.

The MWDCA application primarily addresses the six areas depicted on the slide: traffic movement; environmental impacts and mitigation; long term impacts to existing soil stability, wetlands and the natural resources; fish and wildlife resources; flood control; and water quality.

(Slide 12) Traffic Movement: Bill indicated that the DEP requires information regarding traffic movement in the MWDCA application. Bill explained that the issue of

traffic with regard to this Surrender Project is exclusively related to construction. Bill stated that there are two primary types of traffic:

- Normal Vehicle Traffic - This is associated with construction workers commuting to and from the site. This traffic would arrive to the site in the morning and leave in the afternoon.

- Truck Traffic – This is necessary to deliver materials to and remove materials from the site. Based on Barry's previous project description, contractors will remove the spillway, which means that they will break up the spillways and use trucks to haul the debris off site. This traffic will be concentrated on Main Street, as the only access to the site is off of Main Street, using Mill Lane and Dana Street. Bill indicated that the MWDCA application contains maps that show the routes for hauling material to the site and hauling material out of the site.

Question: Where are Mill Street and Dana Street? Is there town access to Dana Street?

Bill: Located these streets on the aerial plan and points out access to the powerhouse.

Question: What is the timeframe for the project? When does Sappi anticipate this traffic will occur?

Barry: Warren hopes to begin the construction in approximately one year, in fall 2016.

Question: Is there potential for pedestrian traffic to the island?

Barry: Currently, there are no plans to allow for pedestrian traffic to the island. The existing bridge is structurally deficient and Warren is proposing removal.

Question: As a pedestrian, I would ask whether the bridge removal may be rethought.

Barry: There is opportunity for this after the project, however it is not planned as a part of this project.

Question: Will the powerhouse be impacted?

Barry: It is not in the way right now, but will likely be removed if it cannot be repurposed.

Question: I see a lot of people using the bridge. It may be good to consider leaving it intact.

Barry: The bridge is currently not open to the public for pedestrian traffic. It is not structurally sound and needs to be removed. There is future potential, but not as a part of this project.

Question: Who would pay for a new bridge?

Barry: That is currently unknown.

(Slide 13) Environmental Impacts and Mitigation: Bill stated that the proposed project will result in a lot of positive impacts and only a few negative impacts. Some positive impacts are that the project will open approximately 5 miles of river from Saccarappa Falls to Mallison Falls, and all of the tributaries, to anadromous fish and that the project will allow this section of the river to return to its natural state. The first dams were constructed at Saccarappa in the mid-1800s, creating an impoundment. With the removal of the spillways, this upstream area will be returned to its pre-dam state.

Potential wetland impacts associated with the Surrender Project fall into two broad categories, (1) impacts associated with the proposed modifications at the Saccarappa Falls site, and (2) impacts related to lowering the water level upstream of Saccarappa Falls to Mallison Falls.

(Slide 14) There will be permanent and temporary impacts associated with the proposed modifications at the Saccarappa Falls site.

Permanent Impacts: The removal of the spillways and ancillary structures in the forebay channel is a positive, permanent impact. The removal of these structures will expose a large area of benthic habitat across the entire river that does not exist today. The only potential negative permanent impact is related to the filling of the tailrace channel. This channel is manmade and not riverine habitat, but is hydraulically connected to the river.

Temporary Impacts: The temporary impacts are all related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the Surrender Project. There is an existing wet road upstream of the dam that was left in place the last time the dam was repaired. After construction, this existing wet road, as well as proposed cofferdams and wet roads, will be removed.

(Slides 15, 16) There will be impacts related to lowering the water level upstream of Saccarappa Falls to Mallison Falls.

According to analysis, the proposed project will result in a drop in water level of approximately 4.5’ under average flow conditions. This drop will cause additional shoreline to become exposed. The total anticipated area of new exposed shoreline

is approximately 5 acres. Wetland scientists were consulted to determine the impact that this drop in water level may have on wetlands within the project area. They concluded that existing wetlands will migrate toward the new shoreline. As they migrate, some areas of existing wetlands will become drier and will be replaced by vegetation that is not wetland vegetation. Wetland scientists evaluated the entire stretch of river between Mallison Falls and Saccarappa Falls. It was determined that in the worst case scenario, there will be zero impact to the amount of wetlands located in the project area, while in a best case scenario there will be a net gain in the amount of wetlands located within the project area.

Question: Tell us what will be used as fill in the upper western channel? How resistant will this material be to flood waters?

Bill: This material is being designed to stay in place under flood flow conditions. It will likely consist of a mix of 4' to 5' diameter rock down to smaller rock. This will also create great fish habitat.

Question: How much more will the drop be at lower flows, such as 450 cfs (recorded low flow at Eel Weir)?

Bill: The flow numbers that you refer to are the release flows at Eel Weir. Generally, a 450 cfs release at Eel Weir equates to approximately a 700 cfs flow at Saccarappa. This is due to runoff and tributary flow that is added to the river downstream of Eel Weir.

Question: How did you come up with 5 acres of new exposed land?

Bill: We conducted surveys at 1,000 foot intervals between Mallison Falls and Saccarappa Falls. We surveyed these cross sections and plotted them with existing and proposed water level information. This was used to calculate the amount of new shoreline at each interval.

Question: I currently have drivable access to the water. How much new area, and new wetland, will be created at my property? Will I need to deal with the DEP in order to regain access to the water? Will I receive help dealing with the DEP if this is the case?

Barry: It depends on exactly where you are. Five acres over 5 miles is not a wide strip. If embankments are steep the horizontal distance to the water will be minimized.

Question: Will I need a permit to regain access?

Bill: You need a permit to place fill. I don't have an answer to your question, but it has been noted.

Question: How does the 4.5' relate to horizontal distance to the river?

Bill: As Barry has described, it varies a lot. If you tell us where you are, we can look it up. The flat area was historically a flood plain. It was wooded, or contained wetland vegetation. The proposed project will restore the river upstream to the historic configuration.

Question: How long will it be until the exposed muck is walkable?

Bill: It will typically take 1 – 2 years to create the necessary root density. This is very fertile clay.

Question: The whole river is not mud. There is sand and bedrock closer to Mallison Falls. Will the drop vary with location?

Bill: At average flow conditions the difference in drop between Saccarappa and Mallison Falls will be 6". With increased flow this difference will go up.

Question: Can you make maps available?

Bill: Yes, they will be available after the meeting.

Question: If the river is lowered 4.5', how will this impact wetlands?

Bill: In some areas vegetation that is close to the river, and associated with water in the river, will migrate. This means that we will gain and lose approximately the same amount of wetland. In some areas the wetlands are independent of the river (i.e., associated with tributaries). This vegetation will expand downstream toward the new water line. This is why there will likely be an increase in wetland area due to the proposed project.

Question: Have you quantified the flood plain area?

Bill: No.

Question: What volume of sediments is stored behind the dam and will it be released?

Bill: There is very little accumulated sediment. There are deep areas upstream that have never filled with sediment. The river does not have much sediment because of the clayey soil. When erosion does

occur the clay goes into suspension and is not heavy enough to settle out and is carried downstream. We do not anticipate an erosion issue because we are reverting to the pre-dam state.

Question: Did you encounter any rapid producing bedrock?

Bill: No. The bedrock areas found were pretty deep. The impoundment becomes shallower as it approaches Mallison Falls. The stretch about ½ mile downstream from Mallison falls has a gravel and sand substrate and will become a shallow, flowing, riverine habitat. Under certain flows, kayaking and canoeing may be options. Essentially the portion of the impoundment that extends up Little River will return to riverine habitat.

Question: Was the water level constant for all of the designs considered?

Bill: No. The other design considered would have resulted in a drop 2' beyond that proposed in this design at average flow rates.

Question: Smelt Hill Dam was taken out 12 years ago. Did you use this as a reference for how long revegetation of the exposed area would take?

Bill: The geology at Smelt Hill is very different than that at Saccarappa. There is a lot more ledge in the area around Smelt Hill. A more recent example was the Fort Halifax Dam removal. The river carved a new path and vegetation was reestablished very quickly, which stabilized the banks.

Question: How will the project impact the trout habitat at Mallison Falls?

Bill: The Saccarappa Impoundment does not extend entirely to Mallison Falls Dam. The area between the Mallison Falls Dam and powerhouse (700') will not be changed at all due to the project.

(Slide 17) Fish and Wildlife:

Bill stated that this project will result in significant benefits to fish and wildlife resources. It will open up a section of river to anadromous fish and result in improvements to fish habitat at Saccarappa Falls. It may enhance native fisheries. There are no potential negative impacts to fish and wildlife.

Question: If western passage doesn't work how we want it to, who will pay to fix it? Are we compromising fish passage for recreation?

Barry: This site has always been an impediment to fish passage. There are a natural set of waterfalls here. We want to do the right thing. Fisheries experts suggested the use of a Denil ladder. This will be better than before man arrived on-site. It is a good plan for fish, and we are very optimistic that it will work well. We can discuss the technical specifications after the meeting. The comment regarding funding has been noted.

(Slide 18) Flood Control:
Bill stated that there is no existing flood control at this site. Saccarappa operates in run-of-river mode, which means that what water comes in, the same amount is released.

One positive aspect to this project is that it will result in a drop of 4.5 feet upstream of the site, which will result in 4.5' of increased capacity. This is not technically flood control, but it will reduce the risk of flooding.

(Slide 19) Water Quality:
Bill stated that after the project, dissolved oxygen levels will likely improve. Flow through powerhouse does not currently result in a gain or decrease in dissolved oxygen in the water. Travel over the cascading falls will add dissolved oxygen into the water.

Bill handed presentation back to Barry.

(Slides 20, 21) Barry goes over the handouts and DEP information sheets that were provided at the meeting.

(Slide 22) Barry outlines other federal, state and local permits for the project.

Federal Permits and Licenses:

- Federal Energy Regulatory Commission (FERC)
- U.S. Army Corps of Engineers

State of Maine Permits:

- Maine Waterway Development & Conservation Act (MWDCA)

City of Westbrook:

- Site Plan Review
- Flood Plain Hazard Permit
- Shoreland Zoning Permit
- Excavation/Fill Permit

(Slide 23) Barry opens the meeting up to additional questions and comments.

Question: Can Sappi send out an email to let us know when each permit is received?

Barry: Yes, we can do that.

Question: Will you be cleaning the river downstream of the dam?

Barry: The Cumberland Mills impoundment will not be impacted by this project. Any trash located within our project area will be removed.

Question: What will the flow distribution be?

Barry: After the project the flow split will be approximately 50/50 between the eastern and western channels.

Question: Will the character of the lower falls change?

Barry: No.

Question: What is the timeline?

Barry: Originally the license required that passage be constructed within two years after passage at Cumberland Mills. As a result of the agreement this was extended to May 2017. Our goal is to have passage in operation by May 2017. We hope to start construction in one year.

Question: Will there be monies set aside for ongoing maintenance of the fishway?

Barry: No money is proposed to be set aside. As long as Warren owns the site, we will maintain it. The liability falls to the site's owner.

Question: What is the orange barrier at Cumberland Mills?

Barry: It is a floating trash boom.

Question: Will passage be opened at Cumberland Mills for Atlantic salmon?

Barry: No. The State has given us the operating season for passage facilities, and it does not include the entire Atlantic salmon migration season.

Barry thanked everybody for coming and ended the meeting.

S.D. Warren/Sappi Fine Paper – Saccarappa Hydroelectric Project

Date: 11/19/15 Time: 7:00 – 9:00 PM

Public Meeting – ATTENDANCE LISTING

Location: Westbrook High School

ME-DEP MWDCA Permit Application and F.E.R.C. Surrender Application

NAME (Print)	Street Address	City/Town	E-Mail	Phone
David Sparks	46 Rousseau Rd	Windham	dsparks51@roadrunner.com	892-8905
Bob Weston	50 " " "	" "	RobWestonMaine@gmail.com	833-5824
Ryan Galway	32 Sherwood Dr	Freeport	rcgalway@hotmail.com	650-0478
Dale Rines	2a Walnut Cross Rd	Gorham	pitchwood@gwi.net	854-2481
Stephen Rines	40 Gray Rd	Gorham	srines2@maine.rr.com	839-2388
Rob Mitchell	73 Bradley Dr	Westbrook	RMitchell@HVACServ.com	415-3858
Matt Manahan	254 Commercial St.	Portland	mmanahan@pierceatwood.com	791-1189
Doug Smith	49 Laskey Rd.	Windham	wm-douglas-smith@hotmail.com	
Sylvia Wallingford	93 King St	Westbrook	bike-boydude@yahoo	854-2819
Brenda Edmands	25 Cole St #2	Westbrook	brem.edmands@gmail	939-9098
MATT CRAIG CBEP	34 BEDFORD ST.	PORTLAND	matthew.craig@maine.edu	228-8359
Scott Anderson	Verrill Dana	Portland	sanderson@verrilldana	774-4000
Nat Thompson	221 Spiswink Rd.	Scarborough	natt@maine.rr.com	831-8553
Aaron Frederick	77 Lovers Ln	Gorham	afrederick1@me.com	322-9131
Mike Parker	38 Maynard Rd	Windham		894 8050

S.D. Warren/Sappi Fine Paper – Saccarappa Hydroelectric Project

Date: 11/19/15 Time: 7:00 – 9:00 PM

Public Meeting – ATTENDANCE LISTING

Location: Westbrook High School

ME-DEP MWDCA Permit Application and F.E.R.C. Surrender Application

NAME (Print)	Street Address	City/Town	E-Mail	Phone
Mike Lancaster	25 Cole St.	Westbrook		
William Knowles	30 Lincoln St #14	Westbrook		207-415-1213
Bob Adam	159 Lincoln St #10	Westbrook		

S. D. Warren
Saccarappa Hydro
F.E.R.C. License Surrender and Fish Passage Project

List of Federal, State and Local Permits that may be Required

Federal Permits and Licenses

- **Federal Energy Regulatory Commission (FERC)**
- **U.S. Army Corps of Engineers**

State of Maine Permits

- **Maine Waterway Development and Conservation Act (MWDCA)**

City of Westbrook Permits

- **City of Westbrook, Site Plan Review Application**
- **City of Westbrook, Flood Plain Hazard Permit Application**
- **City of Westbrook, Shoreland Zoning Permit Application**
- **City of Westbrook, Excavation/Fill Permit Application**

I. ENVIRONMENTAL IMPACTS AND MITIGATION

The installation of fish passage and removal of spillways at Saccarappa Falls will make the section of river up to Mallison Falls and all of the tributaries accessible to migratory anadromous fish by facilitating passage over Saccarappa Falls. The environmental impacts associated with the proposed design primarily include temporary wetland impacts to wetlands along the edges of the river. There are two categories of wetland impacts associated with the Saccarappa fishway installation: those due to proposed modifications at the Saccarappa Falls site, and those related to lowering of the water level in the river between Saccarappa Falls and Mallison Falls.

Impacts Associated With Fishway Installation at Saccarappa Falls

The first category of potential impacts at the Saccarappa Falls site includes both temporary and permanent impacts. The removal of the eastern spillway, western spillway, and ancillary structures in the forebay channel is a positive, permanent impact. Removal of these structures will expose a large area of benthic habitat across the entire river that does not exist today. The only potentially negative permanent impact is related to the filling of the tailrace channel. Technically this man-made channel with concrete walls and smooth bedrock bottom is not riverine habitat but it is hydraulically connected the river. The proposed fishway is to be constructed on the fill to be placed in the tailrace channel.

Temporary environmental impacts at Saccarappa Falls are all related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the Surrender Project. Temporary wet roads that will double as cofferdams will be needed to gain access to the dam structures for demolition with excavators and trucks. Fortunately, there is an existing wet road upstream of the dam that was left in place the last time the dam/spillway was repaired. The existing wet road will be utilized for this project and will be removed as the dam is removed. Removal of that existing wet road will also be a permanent positive impact.

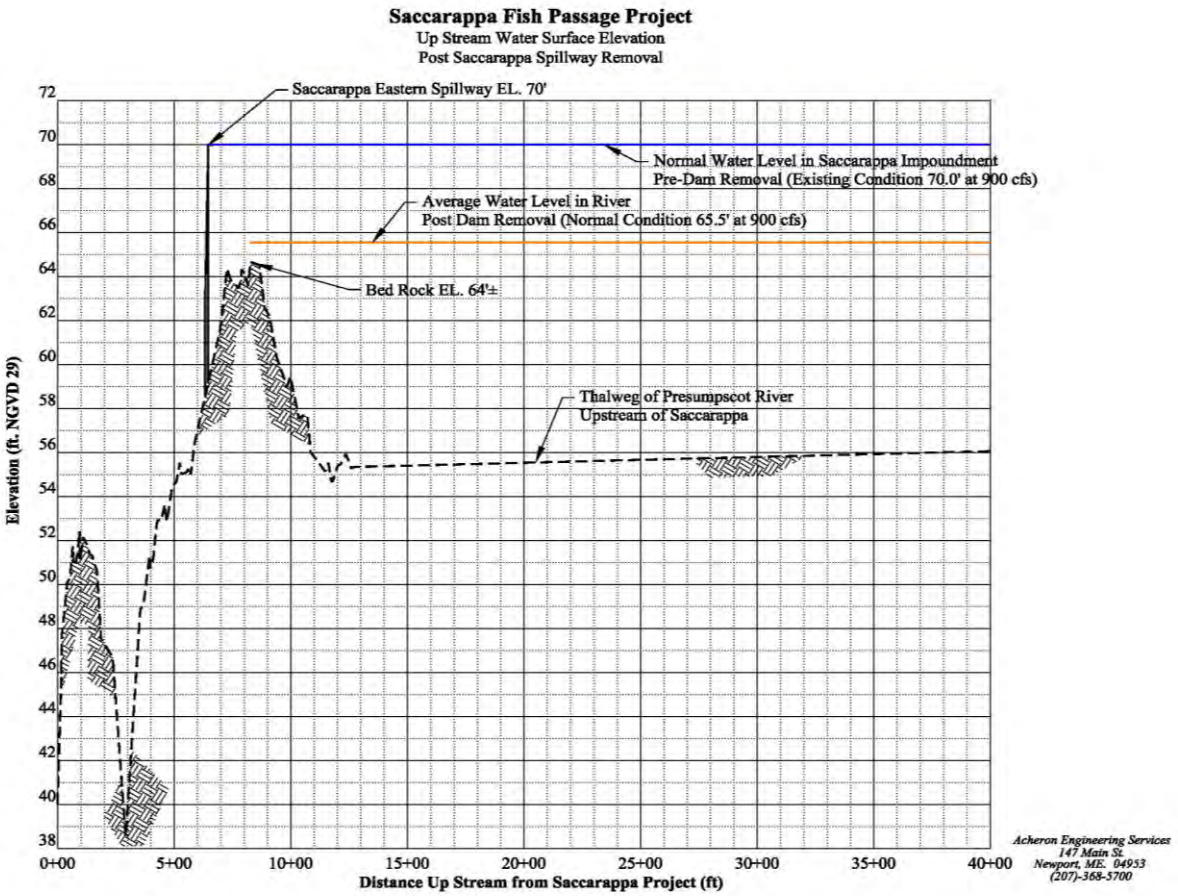
Impacts Associated With Lowering Impoundment Water Level

The second category of potential impacts is related to the lowering of the water level in the section of river between Saccarappa Falls and Mallison Falls.

Physical Characteristics of Proposed Impoundment Water Level

A bathymetric survey of the river area just upstream of the existing spillways was conducted in 2013 and indicates the lowest point of the bedrock upstream of the eastern spillway is at elevation 64.0’ +/-. The current elevation of the top of the dam is 70.0’ +/-. The future elevation of the water in the river, after the Saccarappa Falls dams are removed, will be dependent upon the distance upstream of the dams and the flow in the river. Under average flow conditions of 900 cfs, the water level in the section of river upstream of the Saccarappa Falls site will be lowered by approximately 4.5 feet below the spillway crest elevation of 70 feet. Figure 3 depicts the surface elevation of the impoundment post spillway removal.

Figure 3: Upstream Water Surface Elevation, Post Spillway Removal



Warren completed transects of the existing Saccarappa Impoundment in order to assess the effect of the proposed drawdown on the impounded sections of the Presumpscot and Little rivers. Transects were based on a series of four field surveys by Plisga and Day in 2011 and 2014. The results of this study, including a plan view of the rivers, a profile of the river pre and post dam removal, and cross-sectional views of each transect, are included in Surrender Application, Appendix F and are discussed in this section.

The current length of the Saccarappa Impoundment from the eastern spillway to the upstream limit of the impoundment is 26,046 feet. After the drawdown, the length of the Presumpscot River in the former impounded area from the location of the eastern spillway to the upstream limit of what will appear to be impoundment is 24,429 feet. The stretch of river above Saccarappa Falls will not be a manmade impoundment created by a dam. However, during low and moderate flow periods, this area will appear to be a flat, low velocity section of river and resemble an impoundment. Approximately 2,680 feet of existing impoundment below Mallison Falls will become free flowing river. This 2,680 foot section of the river will be a series of riffle and pool segments that will be quite shallow and have a visually discernible current. Some erosion of sediments that may have accumulated in this segment may be scoured into suspension during high flow periods in the river,

but a detailed inspection of this section of the river revealed little in the way of accumulated fine grained sediment.

The current length of the impoundment in the Little River from the confluence with the Presumpscot River to the upstream limit of the impoundment is approximately 7,600 feet. The length of the Little River impounded area from the confluence with the Presumpscot to the upstream limit of the impoundment after the removal of the spillways at Saccarappa Falls will be approximately 83 feet. In essence, all of the flat water section of the Little River from the confluence with the Presumpscot River to the Rt. 202 Bridge will be free flowing river with a series of riffle and pool segments. There will be no discernible flat water segment in the Little River caused by the backwater from the Presumpscot River.

In summary, the portion of the Presumpscot River that is the Saccarappa Impoundment and the portion of the Little River impounded by the Saccarappa Project (approximately 6.3 miles in both rivers) will revert back to the conditions that existed prior to construction of the first hydroelectric development at the Saccarappa site. Approximately 4.6 miles of the Presumpscot River above Saccarappa Falls will still have the appearance of an impoundment, even though the water level will be approximately 4 feet lower under average flow conditions after dam removal. The reason is that that bottom of the Presumpscot River from Saccarappa to Mallison is below elevation 64 feet, the elevation of the bedrock control at the Saccarappa site. Approximately 0.3 miles of the Presumpscot River below Mallison Falls and 1.4 mile of the Little River will change from impoundment to free flowing riffle and pool habitat. Removal of the eastern and western spillways at Saccarappa Falls will create approximately 19 acres of exposed embankment that is currently under water. Vegetation on the existing embankment will migrate down the slope with the reduced water level.

Wetland Impacts

The study conducted by Mark Hampton Associates, Inc. in August 2015 identified the impact of the proposed drawdown on these wetlands. Refer to Surrender Application, Appendix M for the "Assessment of Wetland Resources due to Lowering of Impoundment". In summary, the report concluded that the proposed fishway installation and associated lowering of the impoundment water level by approximately 4.5 feet under average flow conditions after spillways removal would result in no net loss of wetlands within the impoundment area. In fact, the report indicates that the proposed work may result in a slight increase in wetland area at locations within the area where surface water tributaries empty into the impoundment.

The report states that after drawdown, wetlands located adjacent to the impoundment will migrate with the lowering of water levels. Wetlands associated with streams, brooks, swales, and other tributaries emptying into the impoundment will not be affected by the drawdown, as they derive

their primary source of water from the stream, brook, or swale and not from the impoundment. After the drawdown the wetlands at these locations will expand to meet the new shoreline.

In summary, most of the wetland impacts will only exist for a short period of time during construction. Potential wetland impacts related to the lowering of the water level in the river upstream of the Saccarappa Falls are negligible because of the relatively small change in water level in the river pre- and post-dam removal.

II. FISH AND WILDLIFE RESOURCES

Refer to the Application for License Surrender for the Saccarappa Project that is included with this MWDCA permit application for a description of fish and wildlife resources. Below are references in the Surrender Application to specific MWDCA requirements.

A. A description of the existing and proposed impact to fish and wildlife that is located within the Saccarappa Project area is included in Section 5.3 Aquatic Resources and in Section 5.4 Wildlife Resources.

B. A description of any existing protected species is provided in Section 5.6 Rare, Threatened and Endangered Species, as well as potential impact to said species.

As discussed in those materials, the project will result in significant benefits to fish and wildlife resources. In addition to opening the Saccarappa impoundment to anadromous species, the area immediately upstream of the eastern spillway is currently submerged under 6 to 7 feet of water. Once the spillway is removed, approximately 1,000 square yards of shallow, riffle/pool type habitat will be created. The conversion from submerged impoundment habitat to riffle/pool type habitat will provide enhanced opportunity for macroinvertebrates and fish to colonize this area.

The physical substrate of this area will be broken rock, bedrock, and cobble similar to the physical substrate of the falls downstream of the eastern spillway. Given the roughness of the substrate, shallow depth of water flow (under low to moderate flow conditions) and excellent water quality (mostly derived from the outflow from Sebago Lake), these two areas will create excellent habitat for aquatic macro-invertebrates, resident fish species, and anadromous fish during both upstream and downstream migration seasons.

Opening the section of the Presumpscot River from Saccarappa to Mallison, the Little River and other smaller tributaries to anadromous fish runs will result in a significant benefit to fish and wildlife resources of the region. Resident fish species will benefit from the changes at Saccarappa. Fish and wildlife resources within the river segment will benefit from the the introduction of anadromous fish to the river above Saccarappa.

In December 2001, a report entitled “Draft Fisheries Management Plan for the Presumpscot River Drainage” was released by Maine Department of Marine Resources, the Maine Department of Inland Fisheries and Wildlife and the Maine Atlantic Salmon Commission. The report provides detailed management goals, objectives and strategies for fishery management of the Presumpscot River. The following is a direct quote from that report for Reach 3, Saccarappa Dam to Mallison Falls Dam, including Inkhorn Brook, Little River and Colley-Wright Brook.

"Reach 3. Saccarappa Dam to Mallison Falls Dam, including Inkhorn Brook, Little River, and Colley-Wright Brook

1) *Manage Reach 3 as a migratory pathway for American eel, American shad, Atlantic salmon (smolts and adults), blueback herring, and possibly striped bass, sea-run brook trout and sea-run brown trout.*
    a. *For American eel, upstream passage facilities at Saccarappa Dam will be completed within two years of licensing and downstream passage measures*[16] *will be operational within 30 days of licensing.*
    b. *For anadromous species, upstream and downstream passage facilities at Saccarappa Dam will be completed two years after passage is available at Cumberland Mills Dam*[17]*. The upstream passage should be equipped with a trapping and sorting facility. Assuming full restoration to the North Gorham Dam the upstream facility ultimately should be capable of passing a maximum of approximately 58,000 American shad and 353,400 blueback herring.*
    c. *Agencies will continue to consult with MDOT on fish passage through culverts.*

2) *Manage Reach 3 for sustained production of resident and diadromous species consistent with habitat capabilities. Annual production of diadromous species in Reach 3 is estimated to be 13,700 American shad; 83,500 blueback herring; 8,283 Atlantic salmon smolts; and 202 adult Atlantic salmon.*
    a. *Identify and map habitat (e.g. spawning, nursery) for selected species as funding is available.*
    b. *Monitor juvenile or adult abundances of selected species as funding is available.*
    c. *Maintain year-round leakage flow (13 cfs) at Saccarappa Dam.*

3) *Manage species in accordance with the Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fisheries Management Plan for Striped Bass, ASMFC's Interstate Fisheries Management Plan for American shad and river herring, and ASMFC's Interstate Fisheries Management Plan for American eel.*
    a. *Implement all regulations, assessment, and reporting requirements found in ASMFC management plans.*

4) *Promote existing and potential commercial fisheries for American eel.*

---

[16] On the basis of statewide eel harvest data, the fisheries agencies recommend an eight-week shutdown for eight hours each night. If the results of a three-year study conducted within the Presumpscot River indicate that the duration of the downstream migration is less than eight weeks on average, then the shutdown period can be reduced.

[17] Upstream and downstream passage for anadromous species will be completed concurrently. However, in the event that the fisheries agencies notify the project owner that a sustained annual stocking program of anadromous fish above a project has begun or will begin to occur within two years, the downstream passage at this project will be constructed within two years of the notification.

5) *Promote existing and potential recreational angling opportunities for American shad, adult Atlantic salmon, smallmouth bass, largemouth bass, chain pickerel, yellow perch, white perch, brown bullheads, black crappie, and possibly striped bass, sea-run brook trout, and sea-run brown trout.*

6) *Establish a year-round fishery for stocked trout in the Mallison Falls tailrace and bypass, or in the event of dam removal, any suitable free flowing reaches.*
    a. *Management is contingent upon availability of adequate public access.*
    b. *Stock legal-size trout, which may include brook trout and brown trout.*
    c. *Promulgate supporting regulations.*
    d. *Establish suitable year-round minimum flows at Mallison Falls Dam*
    e. *Maintain / enhance MDIFW access for stocking.*

7) *Manage the Little River for diadromous species and wild trout. Enhance recreational trout angling opportunities.*
    a. *Augment natural recruitment of a small population of wild brook trout by stocking legal-size trout to meet angler use and provide season-long (spring-fall) trout angling opportunities.*

8) *Manage Colley-Wright Brook for diadromous species and wild brook trout and brown trout. Provide a recreational fishery for brook trout and brown trout commensurate with the small size of this tributary and based on results of the MDIFW stocking study.*
    a. *Augment natural recruitment of wild brook trout by stocking legal-size trout to meet angler use and provide season-long (spring-fall) trout angling opportunities.*

9) *No recreational management for resident species is planned for Inkhorn Brook."*

The Surrender Project is compatible with and supportive of the management goals, objectives and strategies for fishery management set forth in this management plan.

III. IMPACTS TO WETLANDS, NATURAL ENVIRONMENT AND SOIL STABILITY

Impacts to Coastal/Inland Wetlands

Wetlands are generally defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Most formal wetland definitions emphasize three primary components that define wetlands: the presence of water, unique soils, and hydrophytic vegetation. USFWS (Cowardin et al. 1979) defines wetlands as follows:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

Riparian habitats are areas that support vegetation found along waterways such as lakes, reservoirs, rivers, and streams. The boundary of the riparian area and the adjoining uplands is gradual and not always well defined. However, riparian areas differ from the uplands because of their high levels of soil moisture, frequency of flooding, and unique assemblage of plant and animal communities (Virginia State University 2000). These habitats can range from mature forests to areas covered by emergent vegetation and shrubs. Riparian habitats are unique because of their linear form and because they process large fluxes of flow energy and materials from upstream systems (Mitsch and Gosselink 1993). Riparian areas and the associated vegetation provide important habitat for wildlife and may contain a higher number of species, both plant and animal, than surrounding upland areas due to the proximity to water. These areas may be important avian habitats for resident and migratory birds. Riparian habitats typically function as travel corridors for migratory wildlife species.

During the growing season in 1997, Warren completed a vegetative cover type mapping study in the Surrender Project area as part of relicensing of Warren's Presumpscot River hydropower projects. The landward boundary of the cover type extended from the edge of the Presumpscot River to a variable distance of between 300 to 500 feet horizontally from the river, terminating at logical landmarks, such as roads and railroad tracks (Kleinschmidt 1999). Interpretation of aerial photography was used to delineate between different cover types, and ground-truthing of the mapped cover types was completed in June 1997. As part of the study, all wetland cover types were ground-truthed, as were at least 20% of the upland cover types (Kleinschmidt 1999).

In August 2015, Mark Hampton Associates, Inc. conducted an assessment of wetland resources due to the proposed lowering of the Saccarappa impoundment. This assessment included identification of all existing wetlands located within the Saccarappa impoundment and the portion of the Little River impounded by the Saccarappa Project. The report details existing wetland conditions within the Project area. Refer to Surrender Application, Appendix M for the "Assessment of Wetland Resources due to Lowering of Impoundment".

Wetland Impacts

There are two categories of wetland impacts associated with the Surrender Project: those due to proposed modifications at the Saccarappa Falls site, and those related to lowering of the water level in the river between Saccarappa Falls and Mallison Falls.

The first category of potential impacts at the Saccarappa Falls site includes both temporary and permanent impacts. The removal of the eastern spillway, western spillway and ancillary structures in the forebay channel is a positive, permanent impact. Removal of these structures will expose a large area of benthic habitat across the entire river that does not exist today. The only potentially negative permanent impact is related to the filling of the tailrace channel. This man-made channel with concrete walls and smooth bedrock bottom is not riverine habitat but it is hydraulically connected the river. The proposed fishway is to be constructed on the fill to be placed in the tailrace channel.

Temporary impacts at Saccarappa Falls are all related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the Surrender Project. Temporary wet roads that will double as cofferdams will be needed to gain access to the dam structures for demolition with excavators and trucks. Fortunately, there is an existing wet road upstream of the dam that was left in place the last time the dam/spillway was repaired. The existing wet road will be utilized for this project and will be removed as the dam is removed. Removal of that existing wet road will also be a permanent positive impact.

The second category of potential wetland impacts is related to the lowering of the water level in the section of river between Saccarappa Falls and Mallison Falls. A bathymetric survey of the river area just upstream of the existing spillways was conducted in 2013 and indicates the lowest point of the bedrock upstream of the eastern spillway is at elevation 64.0' +/-. The current elevation of the top of the dam is 70.0' +/-. The future elevation of the water in the river after the dam is removed is dependent upon the distance upstream of the dam and the flow in the river. The maximum potential drop in water level in the river upstream of the dam under average flow conditions is about 4.5 feet.

The physical size and characteristics of the river upstream of the existing Saccarappa Project are not much different today than they were when the river was free flowing prior to construction of the first dam at the Saccarappa Falls site. The existing dams raised the water level only about 4.5 feet. The physical size and footprint of the river that exists today is similar to that which existed prior to the construction of dams at this site.

The study conducted by Mark Hampton Associates, Inc. in August 2015 identifies the impact of the proposed drawdown on these wetlands. Refer to Appendix M for the "Assessment of Wetland Resources due to Lowering of Impoundment". In summary, the report concluded that the proposed fishway installation and associated lowering of the impoundment water level by approximately 4.5 feet under average flow conditions after spillways removal would result in no net loss of wetlands within the impoundment area. In fact, the report indicates that the proposed work may result in a slight increase in wetland area at locations within the area where surface water tributaries empty into the impoundment.

The report states that at drawdown, wetlands located adjacent to the impoundment will migrate with the lowering of water levels. Wetlands associated with streams, brooks, swales and other tributaries emptying into the impoundment will not be affected by the drawdown, as they derive their primary source of water from the stream, brook, or swale and not from the impoundment. After the drawdown the wetlands at these locations will expand to meet the new shoreline.

In summary, most of the wetland impacts will only exist for a short period of time during construction. Potential wetland impacts related to the lowering of the water level in the river upstream of the Saccarappa Falls are negligible because of the relatively small change in water level in the river pre- and post-dam removal.

Additional description of the existing wetlands can be found in the Application for License Surrender for the Saccarappa Project that is included with this MWDCA permit application as follows:

A. Section 5.5.2 Wetland Resources provides a detailed description of the wetland types that are currently located within the Saccarappa Project area and describes impacts that the removal of the spillways may have on the existing wetlands located within the project site.

B. Appendix M: Wetland Study provides a detailed wetland evaluation of the Saccarappa Impoundment.

Impacts to the Natural Environment

The natural environment is described in detail in the Application for License Surrender for the Saccarappa Project that is included with this MWDCA permit application. Below are references to specific MWDCA requirements.

A. Section 5.9 Land Management and Aesthetic Resources addresses the varying existing land uses within the Saccarappa Project area, as well as the existing aesthetic character of the project area.

   Section 5.1 Geology describes the existing geological and topographic features of the project site.

   Section 5.5 Botanical Resources details the varying existing botanical resources in the vicinity of the project.

B. The proposed project will not have an adverse impact on existing land uses. This is addressed in:

   - Section 5.9.1 Land Management.
   - Section 5.1.2 Geology
   - Section 5.5.1 Botanical Resources
   - Section 5.9.2 Aesthetic Resources

As discussed in those materials, the project will result in significant benefit, and little or no harm, to the natural environment of any surface waters and their shorelands**.**

Impacts to Soil Stability

A detailed description of the stability of soil in the project area can be found in the Application for License Surrender for the Saccarappa Project that is included with this MWDCA permit application. The following outlines locations of items specific to the MWDCA Permit Application requirements.

A. Section 5.1 Geology outlines the general geology and soil conditions of the project area, including soil types and locations, as well as describes the impact of the proposed Surrender Project on the soils in the project area.

B. Appendix F: Evaluation of Potential Soil Erosion and Sedimentation contains an engineering report that addresses the existing conditions within the impoundment and an engineering judgment of the impact of the proposed Surrender Project on existing conditions.

The aforementioned information details how the proposed Surrender Project will not result in significant benefit or harm to soil stability.

IV. WATER QUALITY

A detailed description of the applicable water quality standards and classification, water uses, and existing water quality, and anticipated post construction water quality, can be found in the FERC Application for License Surrender for the Saccarappa Project that is included with this submittal package. Specific references within the Surrender Application are described below.

A. Section 5.2.2.1 Water Quality, Existing Conditions, describes the applicable water quality standards and classification for the upstream waters that are and will be affected by the Saccarappa Project. Applicable downstream water quality standards and classification is described at the end of this section.

B. A description of the existing water quality of the waters that will be affected by this project can be found in Section 5.2.2.1 Water Quality, Existing Conditions.

C. Section 5.2.2.2 Water Quality, Proposed Conditions, details the impacts of the removal of the Saccarappa spillway on the quality of water in the Presumpscot River.

As discussed in the attached Surrender Application, there is a reasonable assurance that the project will not violate applicable water state quality standards. In the worst case scenario, the project will not negatively impact the water quality of the river upstream of Saccarappa. In the best case scenario, dissolved oxygen levels may actually improve slightly over what exists today. The Surrender Application summarizes water quality studies that have been done on the Presumpscot River. This Surrender Project will not negatively impact any of the water quality parameters and some may actually improve.

For instance, lowering of the water level in the segment of the river upstream of Saccarappa Falls will slightly decrease the depth and increase the velocity under all flow conditions. Removal of the spillways will increase the area of benthic habitat for aquatic macroinvertebrates in the area upstream of the spillways. Suspending operation of the powerhouse will increase flows down the eastern channel thereby increasing the area of wetted benthic habitat suitable for fish and benthic macroinvertebrates over a large area of Saccarappa Falls.

Downstream Water Quality Standards

The Presumpscot River is classified as Class C waters from Saccarappa Falls to tidewater. Class C is the fourth highest classification. Class C water quality standards, as per 38 M.R.S.A. Section 465, are detailed below.

A. *Class C waters must be of such quality that they are suitable for the designated uses of drinking water supply after treatment; fishing; agriculture; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; navigation; and as a habitat for fish and other aquatic life.*

B. *The dissolved oxygen content of Class C water may be not less than 5 parts per million or 60% of saturation, whichever is higher, except that in identified salmonid spawning areas where water quality is sufficient to ensure spawning, egg incubation and survival of early life stages, that water quality sufficient for these purposes must be maintained. In order to provide additional protection for the growth of indigenous fish, the following standards apply.*

   1. *The 30-day average dissolved oxygen criterion of a Class C water is 6.5 parts per million using a temperature of 22 degrees centigrade or the ambient temperature of the water body, whichever is less, if:*

      a. *A license or water quality certificate other than a general permit was issued prior to March 16, 2004 for the Class C water and was not based on a 6.5 parts per million 30-day average dissolved oxygen criterion; or*
      b. *A discharge or a hydropower project was in existence on March 16, 2005 and required but did not have a license or water quality certificate other than a general permit for the Class C water.*

   This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004.

   2. *In Class C waters not governed by subparagraph (1), dissolved oxygen may not be less than 6.5 parts per million as a 30-day average based upon a temperature of 24 degrees centigrade or the ambient temperature of the water body, whichever is less. This criterion for the water body applies to licenses and water quality certificates issued on or after March 16, 2004.*

   The department may negotiate and enter into agreements with licensees and water quality certificate holders in order to provide further protection for the growth of indigenous fish. Agreements entered into under this paragraph are enforceable as department orders according to the provisions of sections 347-A to 349.

   Between May 15th and September 30th, the number of Escherichia coli bacteria of human and domestic animal origin in Class C waters may not exceed a geometric mean of 126 per 100 milliliters or an instantaneous level of 236 per 100 milliliters. In determining human and domestic animal origin, the department shall assess licensed and unlicensed sources using available diagnostic procedures. The board shall adopt rules governing the procedure for designation of spawning areas. Those rules must include provision for periodic review of

designated spawning areas and consultation with affected persons prior to designation of a stretch of water as a spawning area.

C. *Discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community. This paragraph does not apply to aquatic pesticide or chemical discharges approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency for the purpose of restoring biological communities affected by an invasive species.*

As discussed in the attached Surrender Application, there is a reasonable assurance that the Surrender Project will not violate applicable water state quality standards. In the worst case scenario, the project will not negatively impact the water quality of the river downstream of Saccarappa. In the best case scenario, dissolved oxygen levels downstream of Saccarappa will likely improve over what exists today. The improvement in dissolved oxygen level downstream will be derived from the cascade effect from water passing over the upper and lower falls rather than passing through the powerhouse. The Surrender Application summarizes water quality studies that have been done on the Presumpscot River. This project will not negatively impact any of the water quality parameters and some may actually improve.

DEP INFORMATION SHEET

Public Participation in the Licensing Process

Dated: October 2008 **Contact: (207) 287-7688**

SUMMARY

Maine law charges the Commissioner of the Department of Environmental Protection (D.E.P.) with evaluating license applications for many different activities that affect Maine's environment. Individuals and legal entities may participate at various points during license application processing. Individuals must recognize that the Commissioner's charge may, under certain circumstances, be overtaken by the Board of Environmental Protection (Board). This INFORMATION SHEET, in conjunction with consulting statutory and regulatory provisions referred to in this document, will assist with your understanding of the potential opportunities for participation in the Commissioner's process; other specific provisions that apply to the Board are not addressed in this INFORMATION SHEET. A failure to participate during the licensing process will result in a person's only option for influence over that decision being the filing of an appeal. D.E.P.'s *Rules Concerning the Processing of Applications and Other Administrative Matters (Chapter 2)*, 06-096 CMR 2, was promulgated, in part, to provide guidance on this process.

1. **PUBLIC ACCESS TO INFORMATION.** Records submitted to D.E.P. are generally available to the public under Maine's Freedom of Access Law, 1 M.R.S.A. §§ 401-410. Other than portions claimed to be confidential by law when submitted to D.E.P., all license application materials are readily available for review and copying at our offices in Augusta, Portland, Bangor, and Presque Isle.

2. **PUBLIC NOTICE.** Maine law requires applicants to publicly make known their intent to submit an application to D.E.P. It is the responsibility of an individual who is interested in following or participating in the license decision-making process to act after seeking out that notice or, if you are an abutter, to act when noticed directly by mail.

   A. **Public Informational Meetings.** Informational meetings are held by persons prior to submitting a licensing application to D.E.P. for the purpose of informing the public about an anticipated project. These meetings are held at a location near to a proposed project and are by design open to the public. Abutters to the anticipated project location receive notice in the mail of the meeting time and location, and notice is also published in newspapers serving the area of the project.

   B. **Application Filing.** Prior to filing an application with D.E.P., abutters to the project location receive notice in the mail of the anticipated filing date, and it is also published in newspapers serving the area of the project.

3. **INTERESTED PERSONS.** Individuals can acquire materials submitted to D.E.P., attend public informational meetings, provide comments and request that a public hearing be held on a filed application, request that the Board take jurisdiction over an application, and provide comments on a draft decision.

   A. **Maximum Participation.** Participation in a D.E.P. licensing decision to the maximum extent possible requires a person to submit a written request stating his or her desire to acquire material related to an application. The individuals who do are known as "interested persons." Once a request is filed, interested persons will be provided with the opportunity to inspect and copy materials on file at D.E.P.; they also receive direct notice of public informational, pre-application and pre-submission meetings, and public hearings. The timing of an interested person's request to be part of the process will determine the number of events potentially available to him or her.

B. Public Informational Meetings. Informational meetings are held to inform the public about environmental impacts that are anticipated from a project. Interested persons may ask questions at such a meeting. Questioners should be aware that answers may not be available during the meeting.

C. Pre-application and Pre-Submission Meetings. D.E.P. often meets with potential applicants to identify regulatory and processing issues that need consideration. Pre-application and pre-submission meetings will typically not be attended by interested persons, in part because such a meeting is not, by law, a "public proceeding" freely open to attendance under Maine's Freedom of Access Law. Although the decision to allow individuals other than an applicant to attend is D.E.P.'s to make, interested persons invited to attend such a meeting should expect only to observe, since public input cannot be received at this time in the licensing process.

D. Application Comments. Interested persons and any other member of the public may submit written comments, including technical information, at any time during the course of an application's processing. It is in that person's interest to submit information early in the process in order to ensure adequate time for consideration by the D.E.P. staff member evaluating the application.

E. Draft Order Comments. Interested persons will receive the Commissioner's draft licensing decision at least five (5) working days prior to final action. Written comments may be submitted on that draft decision. Reasonable notice of when the Commissioner anticipates issuing a final decision on the draft order will also be provided to interested persons.

F. Public Hearing Requests. People may request that a public hearing be held on a filed application within 20 days after its acceptance as complete for processing by D.E.P. Such a request must satisfy requirements found in Section 7 of Chapter 2. The Commissioner will typically order that a hearing be held where credible conflicting technical information appears to exist regarding a licensing criterion.

G. BEP Jurisdiction Requests. People may request that the Board assume jurisdiction over a filed application within 20 days after D.E.P. accepts it as complete for processing. Such a request must satisfy Section 17 of Chapter 2. Board jurisdiction is not available for windpower development projects.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, contact the D.E.P.'s Director of Procedures and Enforcement by calling (207) 287-7688. All Maine D.E.P. rules and laws are available via the internet by following the links provided at: http://www.maine.gov/dep/.

Note: D.E.P. provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs every citizen's rights.

Saccarappa Hydroelectric Project

MWDCA Permit Application and FERC Surrender Application

Public Meeting – November 19, 2015

sappi
Inspired by life

Barry Stemm

Agenda

1) Purpose of this Meeting

2) Project Description (Barry Stemm – S.D Warren):

- Recent History - from 2013 to Today
- Site as it is Today
- Projected Site - Post Surrender

3) Potential Environmental Impacts (Bill Ball – Acheron Engineering)

- Key Issues Addressed in the MWDCA Permitting Process

4) Questions and Comments

Handouts:

- DEP Information Sheet (Public comment to the DEP during the application process)
- Listing of: Federal, State and Local permits that may be required
- Environmental Impacts Summary

sappi
Inspired by life

Public Meeting not a Public Hearing

- There are people in the room who are making notes regarding every substantive comment and question.

- There will not be a verbatim transcript of everything that is said.

- The notes will be submitted to the ME-DEP with the permit application.

- We request that you sign in so the list of attendees can be submitted to the ME-DEP (There is a sign-in sheet on the table at the back of the room).

- You are welcome, at the end of the presentation, to ask questions or simply make a comment for the record. Please raise your hand and you will be recognized.

- We ask that only one person speak at a time so we can make notes of your question or comment.

sappi
Inspired by life

Purpose of this Meeting

This meeting is part of the stakeholder consultation requirements for:

- Maine Department of Environmental Protection (ME-DEP) -Maine Waterway Development and Conservation Act (MWDCA) Permitting

- Saccarappa Hydroelectric Project -Federal Energy Regulatory Commission (FERC) Surrender Application Process

  1. To inform the public about the project being proposed by Sappi at the Saccarappa site.
  2. To solicit comments and questions from the public regarding the project and the anticipated environmental impacts.
  3. To inform the public about the opportunities for the public to comment to the ME-DEP during the application process.

Intentional evolution
sappi

Recent History

On March 14, 2014, Warren entered into an agreement (the "Agreement") to request from the Federal Energy Regulatory Commission (FERC) an extension of the fish passage deadline for the Saccarappa Project and a stay of the license surrender application filed by Warren on December 31, 2015.

Parties to the "Agreement":

- U.S. Department of the Interior and U.S. Fish and Wildlife Service
- Maine Department of Inland Fisheries and Wildlife
- Maine Department of Marine Resources
- City of Westbrook
- Friends of the Presumpscot River & Conservation Law Foundation
- S.D. Warren Co.

The Agreement was to allow the Parties time to engage in a collaborative, open, and joint process - to evaluate fish passage design alternatives at the Saccarappa Dam site.

The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

Intentional evolution

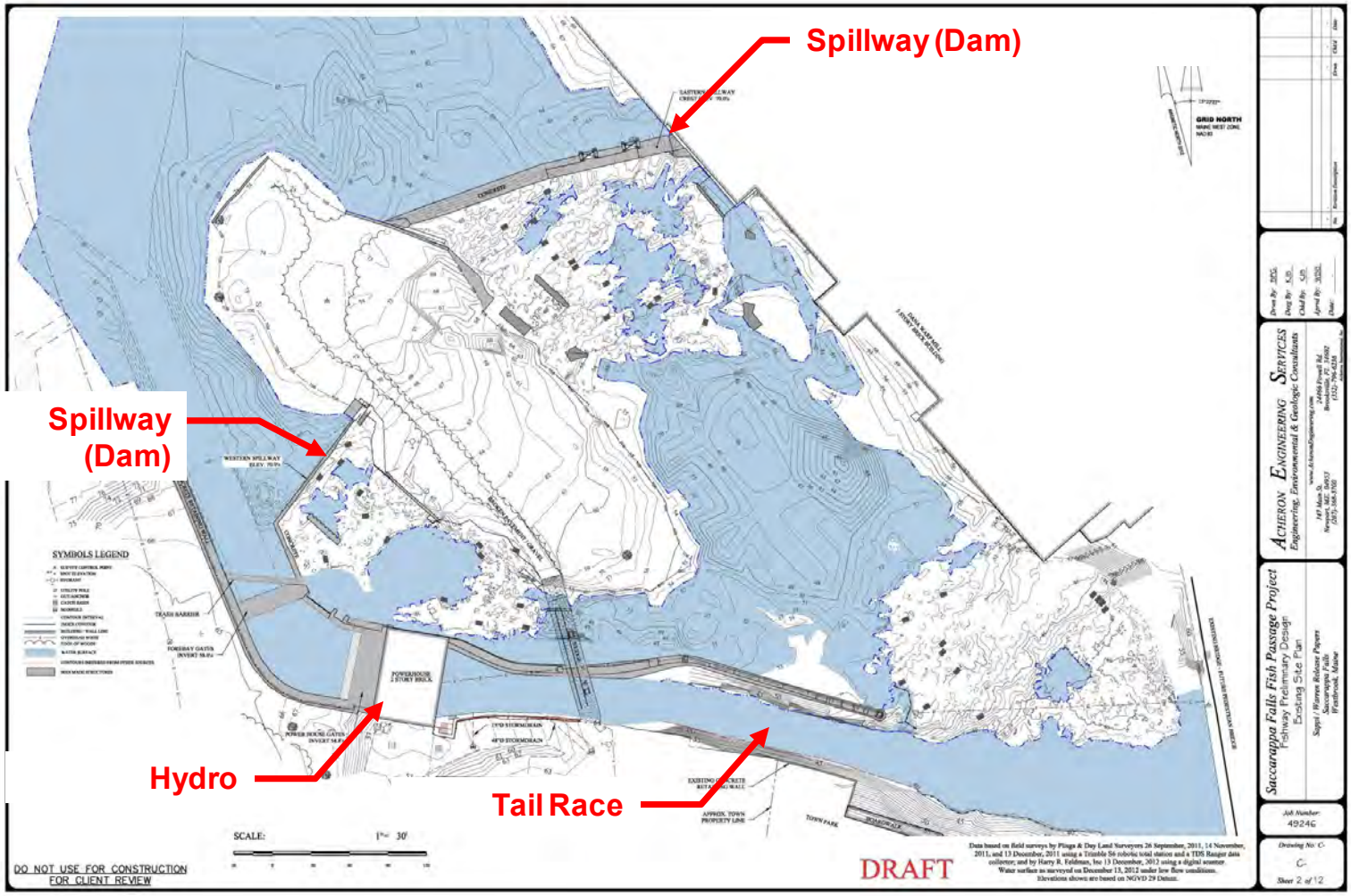
sappi

Aerial View of site – as exists today

Intentional evolution

sappi

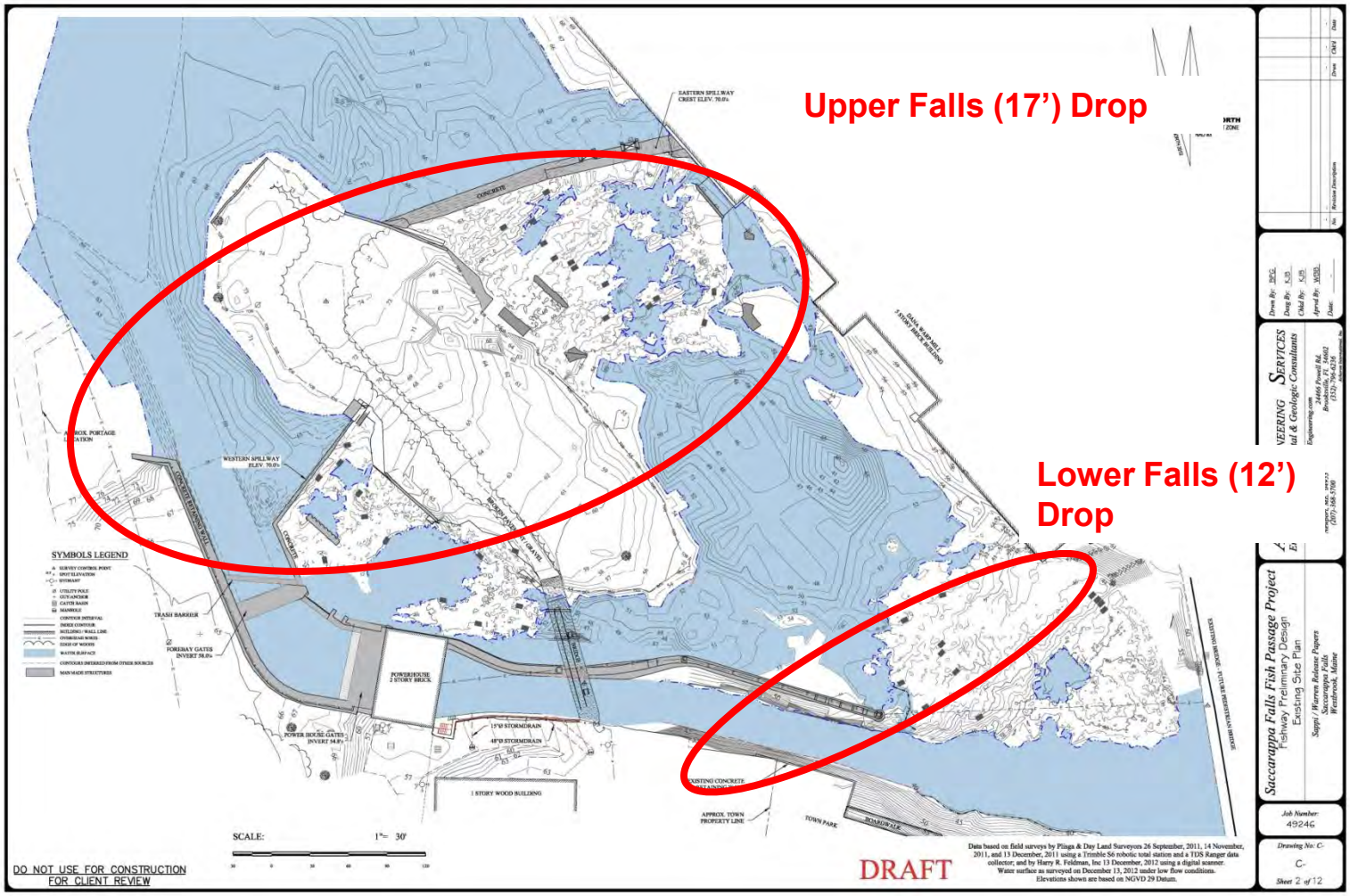
Bathymetric Site Plan – As It Exists Today



Intentional evolution

sappi

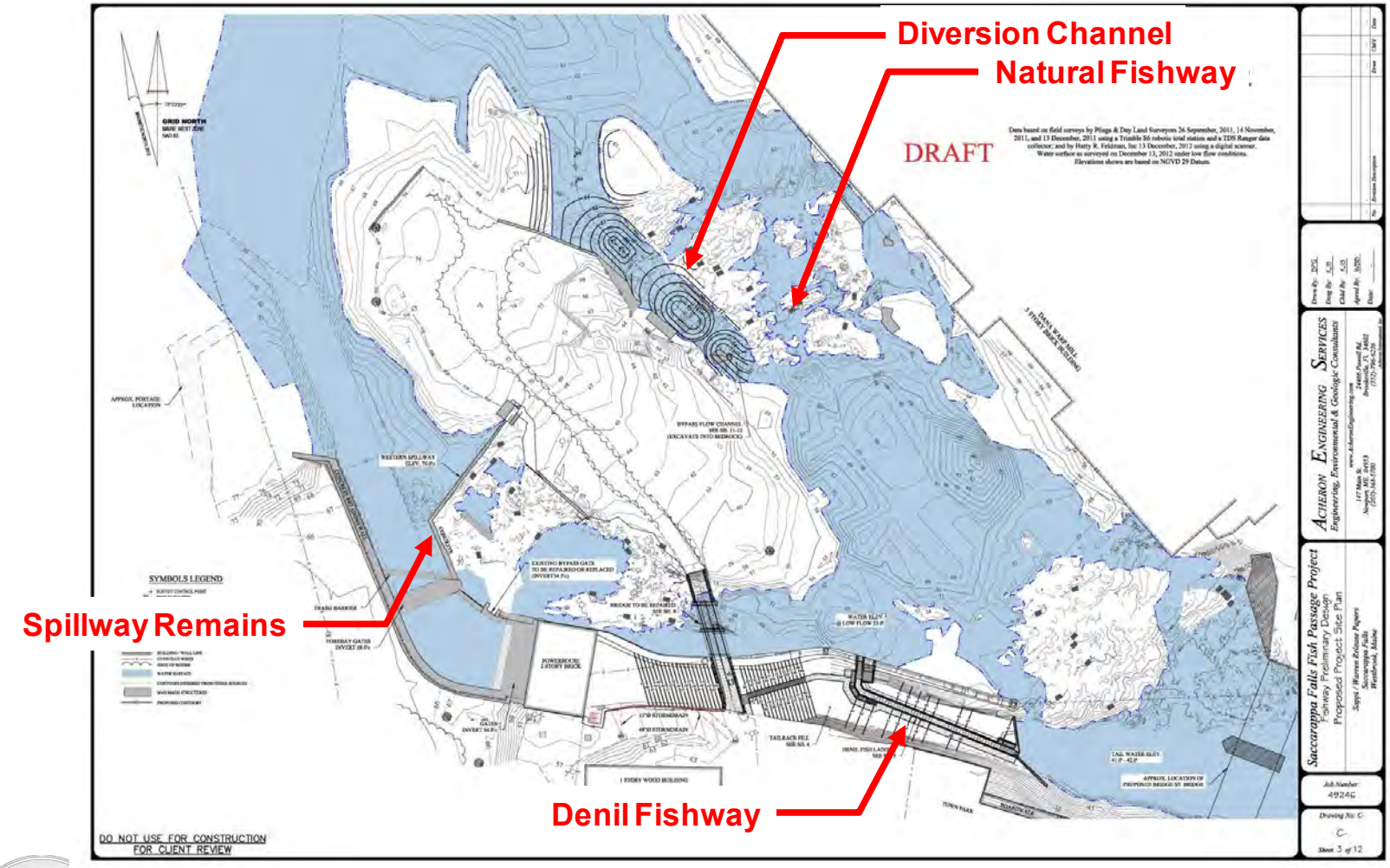
Upper and Lower Falls



Intentional evolution

sappi

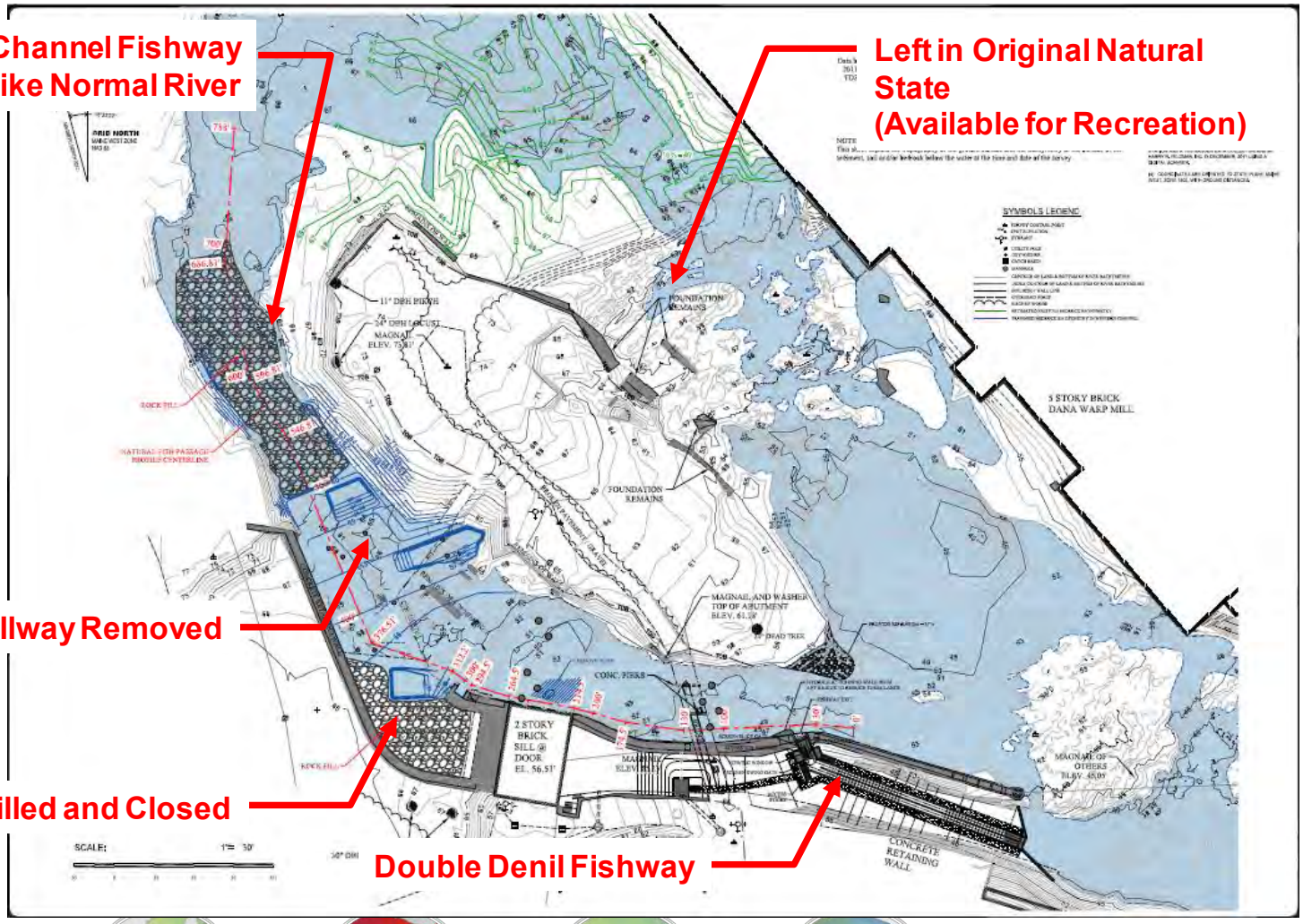
Design as filed with Original FERC Surrender in Dec 2013



Intentional evolution

sappi

Proposed New Fish Passage Design



Intentional evolution

sappi

The MWDCA Permit Application - Key Environmental Issues

<u>The Below Key Environmental Issues are Summarized on the Following Slides</u>

- Traffic Movement
- Environmental Impacts and Mitigation
- Long Term Impacts to Existing Soil Stability, Wetlands and the Natural Environment
- Fish and Wildlife Resources
- Flood Control
- Water Quality

Intentional evolution

sappi

The MWDCA Permit Application - Key Environmental Issues

Traffic Movement

- Warren has assessed the size and condition of all public roads expected to be utilized for the transportation of materials, equipment, and workers to and from the project site and determined that the proposed Surrender Project will have a negligible impact on traffic in Westbrook and the surrounding communities.

- During very limited periods residents and motorists along the anticipated travel route may experience an increase in truck traffic due to spoil disposal.

Intentional evolution

sappi

The MWDCA Permit Application - Key Environmental Issues

Environmental Impacts and Mitigation

- The proposed Surrender Project will have numerous environmental benefits and few, minor, adverse environmental impacts.
- One of the most significant positive environmental impacts will be opening ~5 miles of river from Saccarappa Falls to Mallison Falls, and all of the tributaries, to migratory anadromous fish.
- Removal of the spillways will allow the section of river up to Mallison Falls to return to its natural state that existed prior to construction of the first hydropower dam at Saccarappa in the 1800s.
- Potential wetland impacts associated with the Surrender Project fall into two broad categories.

  1) Impacts associated with the proposed modifications at the Saccarappa Falls site.
  2) Impacts related to the lowering of water level upstream of Saccarappa Falls to Mallison Falls.

Intentional evolution
sappi

The MWDCA Permit Application - Key Environmental Issues

Environmental Impacts – Permanent and Temporary

1) Permanent Impacts. The removal of the eastern spillway, western spillway and ancillary structures in the forebay channel is a positive, permanent impact. Removal of these structures will expose a large area of benthic habitat across the entire river that does not exist today. The only potentially negative permanent impact is related to the filling of the tailrace channel. This man-made channel with concrete walls and smooth bedrock bottom is not riverine habitat but it is hydraulically connected the river. The proposed fishway is to be constructed on the fill to be placed in the tailrace channel.
2) Temporary Impacts. Are related to the short term use of cofferdams and wet roads that are necessary to facilitate construction of the various elements of the Surrender Project. Temporary wet roads that will double as cofferdams will be needed to gain access to the dam structures for demolition with excavators and trucks. Fortunately, there is an existing wet road upstream of the dam that was left in place the last time the dam/spillway was repaired. The existing wet road will be utilized for this project and will be removed as the dam is removed. Removal of that existing wet road will also be a permanent positive impact.

Intentional evolution
sappi

3) Impacts related to the lowering of water level upstream of Saccarappa Falls to Mallison Falls

The MWDCA Permit Application - Key Environmental Issues

Environmental Impacts – Lowering of the Impoundment Water Level

Background: A bathymetric survey of the river area just upstream of the existing spillways indicates the lowest point of the bedrock upstream of the eastern spillway is at elevation 64.0’ +/-. The current elevation of the top of the dam is 70.0’ +/-.

The future elevation of the water in the river after the dam is removed is dependent upon the distance upstream of the dam and the flow in the river. The maximum potential drop in water level in the river upstream of the dam under average flow conditions is about 4.5 feet.

The physical size and characteristics of the river upstream of the existing Saccarappa Project are not much different today than they were when the river was free flowing prior to construction of the first dam at Saccarappa Falls. The existing dams raised the water level only about 4.5 feet. Therefore once the dams are removed, although lower by 4.5 feet, the physical size and footprint of the river upstream of the site will be very similar to what it is today.

Intentional evolution
sappi

The MWDCA Permit Application - Key Environmental Issues

Environmental Considerations - Long Term Impacts to Existing Soil Stability, Wetlands and Environment.

A study conducted in August 2015 identifies the impact of the proposed drawdown on these wetlands and concluded that the lowering of the impoundment water level by approximately 4.5 feet under average flow conditions would result in no net loss of wetlands within the impoundment area. In fact, the report indicates that the proposed work may result in a *slight increase* in wetland area at locations within the area where surface water tributaries empty into the impoundment.

The report concludes:

At drawdown, wetlands located adjacent to the impoundment will migrate with the lowering of water levels.

Wetlands associated with streams, brooks, swales and other tributaries emptying into the impoundment will not be affected by the drawdown, as they derive their primary source of water from the stream, brook, or swale and not from the impoundment.

After the drawdown the wetlands at these locations will expand to meet the new shoreline.

Intentional evolution

sappi

The MWDCA Permit Application - Key Environmental Issues

Fish and Wildlife Resources:

The project will result in significant benefits to fish and wildlife resources.

Removal of the spillways and installation of the Denil fishway will open the Saccarappa impoundment to anadromous species.

Once the spillways are removed, approximately 1,000 square yards of shallow, riffle/pool type habitat will be created. The conversion from submerged impoundment habitat to riffle/pool type habitat will provide enhanced opportunity for macroinvertebrates and fish to colonize this area.

The physical substrate of much of the impoundment will become broken rock, bedrock, and cobble similar to the physical substrate of the falls downstream of the eastern spillway. Given the roughness of the substrate, shallow depth of water flow (under low to moderate flow conditions) and excellent water quality (mostly derived from the outflow from Sebago Lake), these two areas will create excellent habitat for aquatic macro-invertebrates, resident fish species, and anadromous fish during both upstream and downstream migration seasons.

Intentional evolution

sappi

The MWDCA Permit Application - Key Environmental Issues

Flood Control:

The existing Saccarappa Dam does not include provisions to regulate or control flood flow rates or water levels for flood protection.

The existing Saccarappa Project is operated on a run-of-the-river basis, which means generally that inflow to the impoundment equals outflow. The proposed Surrender Project will operate the same way, as run-of-river, and does not propose any provisions for flood controls.

The Surrender Project will result in the lowering of water levels in the river upstream of Saccarappa by approximately 4.5 feet under average flow conditions. Removal of the Saccarappa Dam may therefore result in reduced water levels in the river between Saccarappa and Mallison Falls during certain flood flow conditions. Thus, the project may result in flood control benefits, and it will not create any flood hazards.

Intentional evolution
sappi

The MWDCA Permit Application - Key Environmental Issues

Water Quality:

The removal of the spillways at the Saccarappa Dam is expected to improve the water quality in the section of the river between Saccarappa and Mallison Falls.

There are not expected to be any negative impacts to water quality caused by the Surrender Project.

It is expected that dissolved oxygen levels may increase and benefit the overall aquatic environment.

Intentional evolution

sappi

DEP Informational Sheet (Page 1 of 2)

DEP INFORMATION SHEET

Public Participation in the Licensing Process

Dated: October 2008 **Contact: (207) 287-7688**

SUMMARY

Maine law charges the Commissioner of the Department of Environmental Protection (D.E.P.) with evaluating license applications for many different activities that affect Maine's environment. Individuals and legal entities may participate at various points during license application processing. Individuals must recognize that the Commissioner's charge may, under certain circumstances, be overtaken by the Board of Environmental Protection (Board). This INFORMATION SHEET, in conjunction with consulting statutory and regulatory provisions referred to in this document, will assist with your understanding of the potential opportunities for participation in the Commissioner's process; other specific provisions that apply to the Board are not addressed in this INFORMATION SHEET. A failure to participate during the licensing process will result in a person's only option for influence over that decision being the filing of an appeal. D.E.P.'s *Rules Concerning the Processing of Applications and Other Administrative Matters (Chapter 2)*, 06-096 CMR 2, was promulgated, in part, to provide guidance on this process.

1. **PUBLIC ACCESS TO INFORMATION.** Records submitted to D.E.P. are generally available to the public under Maine's Freedom of Access Law, 1 M.R.S.A. §§ 401-410. Other than portions claimed to be confidential by law when submitted to D.E.P., all license application materials are readily available for review and copying at our offices in Augusta, Portland, Bangor, and Presque Isle.

2. **PUBLIC NOTICE.** Maine law requires applicants to publicly make known their intent to submit an application to D.E.P. It is the responsibility of an individual who is interested in following or participating in the license decision-making process to act after seeking out that notice or, if you are an abutter, to act when noticed directly by mail.

   A. **Public Informational Meetings.** Informational meetings are held by persons prior to submitting a licensing application to D.E.P. for the purpose of informing the public about an anticipated project. These meetings are held at a location near to a proposed project and are by design open to the public. Abutters to the anticipated project location receive notice in the mail of the meeting time and location, and notice is also published in newspapers serving the area of the project.

   B. **Application Filing.** Prior to filing an application with D.E.P., abutters to the project location receive notice in the mail of the anticipated filing date, and it is also published in newspapers serving the area of the project.

3. **INTERESTED PERSONS.** Individuals can acquire materials submitted to D.E.P., attend public informational meetings, provide comments and request that a public hearing be held on a filed application, request that the Board take jurisdiction over an application, and provide comments on a draft decision.

   A. **Maximum Participation.** Participation in a D.E.P. licensing decision to the maximum extent possible requires a person to submit a written request stating his or her desire to acquire material related to an application. The individuals who do are known as "interested persons." Once a request is filed, interested persons will be provided with the opportunity to inspect and copy materials on file at D.E.P.; they also receive direct notice of public informational, pre-application and pre-submission meetings, and public hearings. The timing of an interested person's request to be part of the process will determine the number of events potentially available to him or her.

OC/F2003/r.1-2004/r.2-2008

Intentional evolution

sappi

DEP Informational Sheet (Page 2 of 2)

B. **Public Informational Meetings.** Informational meetings are held to inform the public about environmental impacts that are anticipated from a project. Interested persons may ask questions at such a meeting. Questioners should be aware that answers may not be available during the meeting.

C. **Pre-application and Pre-Submission Meetings.** D.E.P. often meets with potential applicants to identify regulatory and processing issues that need consideration. Pre-application and pre-submission meetings will typically not be attended by interested persons, in part because such a meeting is not, by law, a "public proceeding" freely open to attendance under Maine's Freedom of Access Law. Although the decision to allow individuals other than an applicant to attend is D.E.P.'s to make, interested persons invited to attend such a meeting should expect only to observe, since public input cannot be received at this time in the licensing process.

D. **Application Comments.** Interested persons and any other member of the public may submit written comments, including technical information, at any time during the course of an application's processing. It is in that person's interest to submit information early in the process in order to ensure adequate time for consideration by the D.E.P. staff member evaluating the application.

E. **Draft Order Comments.** Interested persons will receive the Commissioner's draft licensing decision at least five (5) working days prior to final action. Written comments may be submitted on that draft decision. Reasonable notice of when the Commissioner anticipates issuing a final decision on the draft order will also be provided to interested persons.

F. **Public Hearing Requests.** People may request that a public hearing be held on a filed application within 20 days after its acceptance as complete for processing by D.E.P. Such a request must satisfy requirements found in Section 7 of Chapter 2. The Commissioner will typically order that a hearing be held where credible conflicting technical information appears to exist regarding a licensing criterion.

G. **BEP Jurisdiction Requests.** People may request that the Board assume jurisdiction over a filed application within 20 days after D.E.P. accepts it as complete for processing. Such a request must satisfy Section 17 of Chapter 2. Board jurisdiction is not available for windpower development projects.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, contact the D.E.P.'s Director of Procedures and Enforcement by calling (207) 287-7688. All Maine D.E.P. rules and laws are available via the internet by following the links provided at: http://www.maine.gov/dep/.

Note: D.E.P. provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs every citizen's rights.

Intentional evolution
sappi

Federal, State and Local Permits

Federal Permits and Licenses:

- Federal Energy Regulatory Commission (FERC)
- U.S. Army Corps of Engineers

State of Maine Permits:

- Maine Waterway Development & Conservation Act (MWDCA)

City of Westbrook:

- Site Plan Review Application
- Flood Plain Hazard Permit Application
- Shore Land Zoning Permit Application
- Excavation/Fill Permit Application

Intentional evolution
sappi

Thank You

Questions or Comments

sappi

Inspired by life

Acheron Engineering Services

Engineering, Environmental & Geologic Consultants

August 17, 2015

Barry L. Stemm
Sappi/Warren Release Papers
89 Cumberland Street
Westbrook, Maine 04092

Re: Saccarappa Fish Passage, Opinions of Potential Construction and Post-Construction Cost

In accordance with your request, Acheron has prepared an opinion of potential construction and post-construction costs for the two designs being considered for fish passage at the Saccarappa site on the Presumpscot River in Westbrook, Maine. The two options are:

- The Western Channel Design that was developed by Acheron and Alden.
- The Two Channel Design that was developed by Princeton Hydro.

Both of the cost opinions summarized below are based on the scope of work and quantities of material required for construction as delineated on the preliminary design drawings. At this point, environmental and regulatory permits have not been obtained for either design so the scope of both designs may and likely will change as the designs are subjected to regulatory review by federal, state, and local agencies. Unit costs for both designs are based on R.S. Means and/or contractor bids for the recent Cumberland Mills fishway project.

As you are well aware, when bids are obtained from contractors based on final design plans and specifications, it is not uncommon for contractors' bids to vary over a wide range. These contractor bids are typically based on a detailed set of final design plans and specifications that define the scope of the construction in great detail. This fact demonstrates the potential variability of what it will cost to construct a particular project. The cost opinions presented below are based only on preliminary design drawings. There may be and likely will be substantial changes to the scope of the project as the design and permitting process is completed. The information provided below is Acheron's opinion of potential cost as of August 2015.

The following is Acheron's opinion of potential construction cost for each of the two designs.

Western Channel Design	$4,500,000
Two Channel Design	$5,300,000

The following is a list of assumptions made by Acheron as we prepared the two opinions.

1. The construction plan for the project calls for the contractor to gain access to the island with heavy construction equipment to remove the eastern portion of the eastern spillway. There are two options for access to the island. The contractor can either replace / repair the existing bridge or use a barge from the City of Westbrook's boat ramp above the dam. Since we had no way of estimating the cost of barging equipment to the island, we have included a cost to repair / replace the existing bridge.
2. The preliminary design drawings provided by Princeton Hydro do not provide sufficient detail for us to estimate the cost of re-routing the City of Westbrook's storm drain line that currently discharges into the tailrace channel. Therefore, we simply copied the cost opinion for this item from the Western Channel Design to the Two Channel Design.
3. The preliminary design drawing from Princeton Hydro calls for 13 steps in the tailrace fishway. Based on design criteria cited by Princeton Hydro, we believe that 26 steps will be required. Our cost opinion is based on 13 steps since that is what is shown on the PH drawings. If 26 steps are required then the cost will need to be adjusted upward to accommodate the change.
4. The drawings from PH do not include a temporary access road for contractor access to remove the western spillway. Acheron has included a cost for this issue in Item 10.
5. The preliminary design drawings for the Western Channel Design and the Two Channel Design include provision for the disposal of excess construction debris (concrete and bedrock) on the island. Warren intends to apply for permission from the regulatory agencies for disposal of excess construction debris but since Warren does not yet have a permit to do so and that permit may be denied, Acheron has assumed that all excess construction debris will be trucked up to 8 miles off site. This assumption is more conservative than assuming a permit for disposal will be forthcoming.
6. Acheron has included an allowance in both opinions for initial testing and startup. Since the nature and scope of the initial testing and startup is unknown at this time, we have used an allowance based on engineering judgment.
7. The cost opinion for the Western Channel Design does not include any provisions for bedrock removal or sculpting of bedrock in the eastern channel. This cost opinion does include removal of the eastern spillway and any earthen material left in the river from past maintenance work on the dam.
8. Both cost opinions do include provisions for decommissioning of the Saccarappa powerhouse, including removal of turbines and plugging all water pathways within the powerhouse. They do not include removal of the powerhouse.
9. Both cost opinions assume a reasonable amount of time will be afforded to contractors for the work. There is no provision made for an accelerated construction schedule.

The following is a summary of Acheron's opinion of potential construction cost for the major categories of construction work for each design.

S.D. Warren Co.

Westbrook, Maine

Saccarappa Fish Passage, Western Channel Design

Opinion of Potential Construction Cost, Based on Preliminary Design

August 2015

Item	Description	Potential Cost
1	Island Access Bridge	$ 247,000
2	Eastern Dam Temp Access and Denil Access	$ 81,000
3	East Dam Access Road	$ 97,000
4	Removal of East Dam	$ 158,000
5	Western Dam Access Road	$ 29,000
6	Western Dam Removal	$ 425,000
7	Western Channel Rock Removal	$ 310,000
8	Western Channel Natural Fish Passage	$ 208,000
9	Denil Fishway	$ 747,000
10	Tailrace Fill	$ 387,000
11	Stormwater Drainage System	$ 121,000
12	Cofferdams and Temporary Facilities	$ 142,000
13	Power House Decommission	$ 143,000
14	Testing and Startup	$ 30,000
	Sub-Total	$ 3,125,000
	Contractor Mobilization/Demobilization (15% Sub-Total)	$ 469,000
	Sub-Total	$ 3,594,000
	Contingency (25%)	$ 899,000
	Sub-Total	$ 4,493,000
	Opinion of Potential Construction Cost	**$4,500,000**

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Acheron Engineering Services
William B. Ball, PE
WBall@AcheronEngineering.com

S. D. Warren Co

Westbrook, Maine

Saccarappa Fish Passage, Two Channel Design By Princeton Hydro

Opinion of Potential Construction Cost Based on Preliminary Design

August 2015

Item	Description	Potential Cost
1	Rock Ramp Fishway in Tailrace	$ 1,381,000
2	Bedrock Removal in Eastern Channel	$ 417,000
3	Bedrock Removal in Western Channel	$ 376,000
4	East Dam Removal	$ 158,000
5	West Dam Removal	$ 425,000
6	West Channel Access Road to Island & Cofferdam	$ 67,000
7	Island Connector Road	$ 11,000
8	Eastern Dam Access Road	$ 30,000
9	Cofferdams & Temporary Facilities	$ 141,000
10	West Dam Access Road	$ 29,000
11	West Tailrace Wall Access	$ 74,000
12	Fishway Exit Access & Bridge Demo	$ 147,000
13	Forebay Rock Fill	$ 127,000
14	Stormwater Drainage System	$ 121,000
15	Power House Decommission	$ 143,000
16	Testing and Startup	$ 50,000
	Sub-Total	$ 3,697,000
	Contractor Mobilization/Demobilization (15% Sub-Total)	$ 555,000
	Sub-Total	$ 4,252,000
	Contingency (25%)	$ 1,063,000
	Sub-Total	$ 5,315,000
	Opinion of Potential Construction Cost	**$5,300,000**

Acheron

Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

Acheron Engineering Services
William B. Ball, PE
WBall@AcheronEngineering.com

The following is a summary of Acheron's opinion of potential post-construction cost for each design.

S.D. Warren Co.			
Westbrook, Maine			
Saccarappa Fish Passage, Western Channel Design			
Opinion of Potential Post Construction Cost			
August 2015			
Item	**Description**	**Potential Capital Cost**	**Potential Annual Cost**
1	Operation and Maintenance of Fish Passage	$ -	$ 6,000
2	Fish Counting	$ 6,000.00	$ 21,000
3	Adaptive Management	$ 50,000.00	$ -
4	Project Works Maintenance		$ 40,000
	Sub-Total	$ 56,000.00	$ 67,000
	Contingency (25%)	$ 14,000.00	$ 16,750
	Sub-Total	$ 70,000.00	$ 83,750
	Opinion of Potential Post Construction Cost	**$ 70,000.00**	**$85,000**
Acheron			
Engineering, Environmental & Geologic Consultants			
www.AcheronEngineering.com			

S.D. Warren Co.			
Westbrook, Maine			
Saccarappa Fish Passage, Two Channel Design			
Opinion of Potential Post Construction Cost			
August 2015			
Item	**Description**	**Potential Capital Cost**	**Potential Annual Cost**
1	Operation and Maintenance of Fish Passage	$ -	$ 56,000
2	Fish Counting at Cumberland Mills	$ -	$ 21,000
3	Adaptive Management	$ 180,000.00	
4	Project Works Maintenance		$ 40,000
	Sub-Total	$ 180,000.00	$ 117,000
	Contingency (25%)	$ 45,000.00	$ 29,250
	Sub-Total	$ 225,000.00	$ 146,250
	Opinion of Potential Post Construction Cost	**$ 225,000.00**	**$150,000**
Acheron			
Engineering, Environmental & Geologic Consultants			
www.AcheronEngineering.com			

If you have any questions regarding the cost opinions presented above, please contact me.

Sincerely,
Acheron Engineering Services

William B. Ball

William B. Ball, PE
President

August 28, 2015

Scientists, Engineers & Environmental Planners Designing Innovative Solutions for Water, Wetland and Soil Resource Management

MEMORANDUM

To: Barry Stemm

From: Laura Wildman

Re: Initial Saccarappa Cost Estimate Review

I have divided this initial review into three sections. The first refers to missing data that we still need to complete a detailed review of the two cost estimates prepared by Acheron Engineering. The second relates to potential discrepancies or inconsistencies that we identified during our initial review, and the third are our responses to the 9 comments that Acheron submitted on the front end of their August 17th, 2015 Opinions of Potential Construction and Post-Construction Cost.

Missing Information:

1. Until we receive the construction plan sheet and quantities table for the proposed Acheron design (similar the ones that was prepared for the Two Channel Design by Princeton Hydro and the Eastern Channel/Denil Design previously submitted to FEMA by Acheron) we cannot complete a detailed review of the two cost estimates. Approximate material quantities and unit prices are typically included on a cost estimate and are needed in this case to complete a comparison of the two design approaches. We realize that the quantity estimates are rough at this preliminary stage but can be used for comparison purposes.
2. We need to know more about the design of the fill placed in the upper portion of the western channel: What size of material is envisioned? What is the quantity of fill needed? Is there a central core wall proposed? Was construction of the core wall included in the cost estimate? Will the core wall be keyed into the underlying bedrock, and if so was bedrock excavation for the keying in of the wall included in the cost estimate?
3. What is the configuration of the proposed access road for the removal of the western spillway for the Western Channel/Denil Design? This will likely be addressed in the Construction Plan for the current Acheron Design.
4. Acheron refers to using RS Means and the contractor's bids for the Cumberland Mills fishway project to estimate these costs. Can we get a copy of the contractors cost estimate for the Cumberland Mills fishway, including a breakdown of the final project costs? The cost for the Denil seems low in the estimate and we would like to be able to compare this estimate to the cost of the downstream Denil. We will also need to understand the fill quantities proposed in the tailrace around the Denil, and if this is soil, rock or concrete. We do not agree that the nature-like fishway in the tailrace (which is primarily fill with rock sills and two concrete walls)

would be almost double the cost of the Denil fishway and counting facility, but we will need the additional data requested to investigate this further.

Potential Discrepancies/Inconstancies (based on initial review only):

1. Why would the rock excavation needed for the western channel modification on the Two Channel Design be more expensive than the rock excavation needed for the western channel for Acheron's proposed Western Channel Design? This counter intuitive considering the contours on the Acheron plan contours show a wider, flat bottomed channel in that reach. Princeton Hydro used a three dimensional tin (surface) of the existing and proposed conditions to determine our quantities for the rock removal. How was rock removal estimated by Acheron?
2. How could the cost for bedrock removal in the eastern channel be more expensive that the cost for bedrock removal in the western channel for the Two Channel Design when the quantity of rock excavation as per our quantities table is 1624cy for the eastern channel and 2721cy for the western channel.
3. Why is there a $127,000 cost for Forebay rock fill on the Two Channel Design and no equivalent cost for forebay filling for the Western Channel Design?
4. It is unclear what "Testing and Start up" refers to and why there is a $20K discrepancy between the two design approaches? If this is to test flows through the two designs near the end of construction and modify as needed, then the fill proposed in the western channel on the Acheron design will likely need as much testing as would the fill in the tailrace for the Two Channel Design.
5. The mobilization and demobilization costs seem high for both. Also we feel that it is more reasonable to assume that the cost for Mobilization/Demobilization and Contingency would be the same for both projects. However, because the cost estimate bases both on percentage you end with an inflated discrepancy in the cost between the two design approaches.
6. It is our opinion that the long term maintenance costs for the Western Channel/Denil Alternative will be significantly higher than for the Two Channel Alternative, based on similar technical and nature-like fishway projects previously constructed, as well as the fact that the Western Channel Design will include the maintenance and operation of both a technical fishway and a rock ramp fishway for the upper western channel. The nature-like fishway proposed in the tailrace of the Two Channel Design will likely only need annual maintenance (i.e. removal of debris) and the bedrock modifications will need no maintenance.

Addressing comments at the beginning:

1. This only applies to the construction plan for the Western Channel/Denil Design.
2. We agree with the assumption that modifications to the storm drain will be similar for both design approaches.
3. We believe the additional cost per step will be minimal (if needed), the final step configuration can be determined in a later phase of design if the nature-like fishway is considered for advancement by USFWS and SAPPI.

4. True, the access route is not shown on either Construction Plan (the PH design or the older Eastern Channel Acheron design) and we have no updated Acheron Construction Plan to see what they were proposing for this item.
5. We agree that it is best to be conservative with the cost estimate and assume offsite disposal until regulatory approval can be given for any onsite disposal. It may also be prudent to consider disposing of the spillway material in the fill within the forebay and tailrace for both design approaches, if it is suitably compacted and covered.
6. See #4 under *Potential Discrepancies/Inconstancies* above.
7. Yes the Western Channel design does not include any "sculpting of the eastern channel". We had thought that this was part of the Acheron design proposal based on the discussions in the technical meetings.
8. No comment
9. No comment

Princeton Hydro can resume our review of the two cost estimates once the data requested under *Missing Information*, is supplied to us.

Sappi Fine Paper

Westbrook Operations

S.D. Warren Company
89 Cumberland Street
P.O. Box 5000
Westbrook, ME 04092

Barry L. Stemm
Direct tel +1 207 856 4584
Direct fax +1 207 856 4456
Barry.Stemm@sappi.com

09/14/15

Ms. Laura Wildman
Director, New England Regional Office
Princeton Hydro
931 Main Street, Suite 2
South Glastonbury, CT 06073

SUBJECT: Response to Memo of August 28, 2015: Initial Saccarappa Cost Estimate Review

Dear Laura,

The following is S.D. Warren's response to the comments provided by Princeton Hydro in your memo dated August 28, 2015. The numbering of the responses below corresponds with the numbering in the PH memo.

Missing Information:

1. Construction Plan Sheet: An updated and revised construction plan sheet for the western channel design is attached.
2. Section of Upper Western Channel: The design of fill for the upper section of the western channel has not been completed; therefore Warren cannot provide design details at this time. The quantity of fill included in the cost opinion for the upper western channel forebay fill is 806 cubic yards. The surface of the fill was described at the July 14 technical meeting in Hadley. Design details regarding the core wall issue and rock fill in the forebay will be made during the final design stage if the Western Channel Design is selected and advances to that stage of design.
3. The location of the proposed temporary access road for removal of the western spillway is depicted on the construction plan sheet.
4. S.D. Warren is not prepared to release confidential information regarding contractors' bids or other financial information related to the Cumberland Mills fishway. The bids and other financial information related to that project are proprietary and confidential. However, in some instances, the unit costs for certain types of work on the Cumberland Mills project were considered to be more appropriate than unit prices from RS Means because of the similarities of the two projects.

   In addition, Warren relied on its three years of experience with the actual operation of the Cumberland Mills fishway to estimate O&M costs for the Saccarappa project.

Regarding the tailrace fill for the Western Channel Design, the cost opinion includes an allowance for 7,240 cubic yards of rock fill.

The cost of counting equipment for the Denil is not in the construction cost opinion. An allowance for that equipment is in the capital cost portion of the O&M cost opinion.

Potential Discrepancies or Inconsistencies

1. The rock removal in the Western Channel Design is not more expensive than the rock removal in the Two Channel Design. The unit cost for rock removal is the same in both cost opinions.
2. Again, the unit costs for rock removal are the same in both opinions. There are, however, differences related to trucking and disposal of the blasted rock. The cost opinions include provisions to use most of the excavated bedrock from the western channel as forebay fill. It is assumed that the quantity of excavated bedrock that exceeds the amount required for forebay fill would be trucked off site for disposal. It is assumed that all of the bedrock excavation in the eastern channel would be trucked off site for disposal.
3. The forebay rock fill for the Western Channel Design was included under a different item number.
4. Warren does not agree that post-construction adaptive management will be the same for the two designs, because:
    a. The Western Channel Design does not require adaptive management activities.
    b. The adaptive management plan for the Two Channel Design includes adaptive management activities for both the eastern channel modifications and the riffle/pool fishway in the tailrace as described in the adaptive management plan for the Two Channel Design.
5. The allowance for mobilization and demobilization is applied as the same percentage to both cost opinions.
6. Warren disagrees with the opinion expressed regarding potential O&M costs for the Western Channel Design. Based on Warren's experience with the Cumberland Mills Denil fishway, the only cost associated with operation and maintenance of the Denil fishway is the cost of daily inspections. The daily inspections take about 15 minutes per day. There has not been one instance during the past three years of operating the fishway at Cumberland Mills that required actual maintenance of the operating fishway. In the first year, one of the gate operators had to be replaced after the fishway was shut down but that was caused by a faulty gate operator and the cost was 100% covered under warranty. The fishway is started in the spring by pushing a button to raise the gates and is shut down in the fall by pushing another button. Warren has not had any O&M costs associated with the Cumberland Mills Denil other than the daily inspections.

    Warren's opinion is that the O&M cost in the upper part of the western channel will be similar for both designs. It is Warren's opinion that the weir/pool fishway proposed for the tailrace channel in the Two Channel Design will require higher maintenance than the Denil of Western Channel Design. Warren's view is that debris from

upstream could easily be flushed downstream through the open channel during high flow events into the weir/pool fishway and become lodged where it narrows around the switchback and will need to be removed manually. When this happens there is no means of access. Additionally, there is no means of access for any potential modifications to the rocks forming the weir/pool fishway should they require adjustment or repair.

Additionally, the Two Channel Design has two upper channels that need to be monitored/maintained while the Western Channel Design has only one.

All of these factors will make the Two Channel Design more expensive to operate and maintain.

Additional Comments:

1. Warren does not agree that the issue of access to the island only applies to the Western Channel Design. Construction of both designs will require access to the island by workers and heavy equipment. The cost opinion for the Western Channel Design includes an allowance to repair/replace the bridge across the tailrace for temporary access to the island. The cost opinion for the Two Channel Design includes a temporary wet road/cofferdam in the upper western channel as depicted on the PH construction plan. The cost opinions for both designs call for trucking excess rock and demo debris off site. All of the demo debris from the work in the eastern channel has to be removed off site. Access to the island is required for both designs.
2. No comment.
3. Warren does not agree that the cost per step for the Two Channel Design will be minimal. Construction of each weir/step in the tailrace fishway will require considerable time with workers and equipment to carefully select and place the rocks used to create each of the individual steps for the weir/pool fishway in the tailrace. Each weir will have to be built to the design elevation within a specified tolerance and the rocks will need to be bedded to minimize the risk of movement due to water flow and ice. The number of steps does impact the cost of constructing the tailrace fishway for the Two Channel Design.
4. The proposed temporary access road for demolition of the western spillway is depicted on the attached construction plan, Sheet 12. An allowance for this temporary access road is included in both opinions
5. No comment.
6. Comment addressed above.
7. Warren made it clear at the July 14 technical meeting in Hadley that the Western Channel Design did not include any sculpting of the eastern channel. Therefore, there is no allowance for sculpting of the eastern channel in the cost opinion for the Western Channel Design.
8. No comment.
9. No comment.

Best regards,
Barry

Barry Stemm
Engineering Department

Cc: Distribution List

September 21, 2015

Scientists, Engineers & Environmental Planners Designing Innovative Solutions for Water, Wetland and Soil Resource Management

MEMORANDUM

To: Barry Stemm, Sappi

From: Laura Wildman, PE, Princeton Hydro

Re: Saccarappa Cost Estimate Review

Princeton Hydro has reviewed the *Opinions of Potential Construction and Post-Construction Cost* prepared by Acheron on August 17th, 2015 and the Sappi's September 14, 2015 response to our initial review memo. Although Sappi has provided some additional data to us, and we now have the Construction Plan for the Western Channel-Denil Design with some of the quantities shown, Princeton Hydro still has not been provided enough information for us to complete a thorough and detailed review of the cost estimates.

More specifically, your memo of September 14, 2015 refers to multiple assumptions that Sappi has made during the preparation of the cost estimate that have not been documented or included in the cost estimate in a manner that allows for review. For example, neither the assumptions regarding disposal quantities and locations, nor information regarding the cost estimates of the Cumberland Mill fishway that were reportedly used in the cost estimate for the Saccarappa site were shared. Key design issues that significantly affect cost outcomes, such as the construction methods to be used Sappi's rock ramp fishway in the upper western channel, were also not shared. Some specifics:

1. In response to #1 under Potential Discrepancies or Inaccuracies, Sappi stated that "the unit cost for rock removal is the same in both opinions". That may be so, but since Princeton Hydro has not been given any of the unit prices utilized for the cost estimate and therefore we are not able to verify this. In addition our question was:

   > *Why would the rock excavation needed for the western channel modification on the Two Channel Design be more expensive than the rock excavation needed for the western channel for Acheron's proposed Western Channel Design? This counter intuitive considering the contours on the Acheron plan contours show a wider, flat bottomed channel in that reach. Princeton Hydro used a three dimensional tin (surface) of the existing and proposed conditions to determine our quantities for the rock removal. How was rock removal estimated by Acheron?*

   Thus, we are asking why the Western Channel Design has a total of $310,000 for rock excavation while the total for the Two Channel Design is $376,000, when the grading on Acheron's plan appears to show more rock excavation than is proposed for the western channel of the eastern channel. In addition, the Western Channel construction plan now shows 1,770cy for rock excavation, while Princeton Hydro's Two Design shows 2,721cy for our western channel rock excavation. Since this is

Princeton Hydro, LLC
□ 1108 Old York Road Suite 1, PO Box 720 Ringoes, NJ 08551 t. 908.237.5660 f. 908.237.5666
□ 1200 Liberty Place Sicklerville, NJ 08081 t. 856.629.8889
□ 120 East Uwchlan Avenue Exton, PA 19341 t. 610.524.4220 f. 610.524.9434
■ 931 Main Street South Glastonbury, CT 06073 t. 860-652-8911 f 860-652-8922
www. PrincetonHydro.com

counter-intuitive, we had been requesting information on how was rock removal estimated by Acheron, which has not been provided.

2. According to the assumptions described in Sappi's response to #2 under Potential Discrepancies or Inaccuracies, Acheron assumed that "all of the bedrock excavation in the eastern channel would be trucked off site for disposal" for the Two Channel Design. Princeton Hydro's vision was that any rock excavated from both the eastern or western channels could be disposed of as part of the base fill for the tailrace nature-like, thereby reducing disposal costs as well as the quantity of fill for the tailrace fishway. Again without a documented breakdown of the numerous assumptions that were used to prepare the cost estimate, Princeton Hydro cannot complete a detailed review of these comparative costs.
3. In response to #3 under Potential Discrepancies or Inaccuracies, Sappi stated that the "fill for the Western Channel Design was included under a different item number" but does not then tell us which item number it was included under, or how that item was broken down, making analysis of the cost estimates not possible.
4. In response to Sappi's response to #4 under Potential Discrepancies or Inaccuracies, we point out that Sappi's Western Channel-Denil Design will certainly require adaptive management during construction for both the bedrock excavation and rock-ramp fishway (i.e. fill reach), similar to any bedrock excavation or nature-like fishway reach of the Two Channel Design. Yet no costs for adaptive management for these two reaches were included in Sappi's cost estimate.
5. In response to Sappi's response to #5 under Potential Discrepancies or Inaccuracies, we fully understand that the same percentage was applied to both alternatives for mobilization and demobilizations, as we stated in our August 28th memo. However, what we stated was that "the mobilization and demobilization costs seem high for both" and that we felt "that it is more reasonable to assume that the cost for Mobilization/Demobilization and Contingency would be the same for both projects" instead of using a percentage that "inflated discrepancy in the costs between the two design approaches."
6. In response to Sappi's response to #6 under Potential Discrepancies or Inaccuracies, we believe that the excavated bedrock reaches in the upper eastern and western channels in the Two Channel Design will require little to no O&M, and believe that woody debris will flush through these two reaches similarly to how it already does on the eastern channel falls below the eastern spillway. As for the O&M for the tailrace nature-like fishway, many nature-like fishways exist around the world and we believe there is a consensus among experts that these nature-like fishways have lower maintenance needs than technical fishways. It should also be pointed out that the Western Channel-Denil Design similarly includes a rock ramp nature-like fishway in the upper western channel which would require O&M.

Hopefully as the project design progresses and a single design approach is selected more data will be collected and shared along with any assumptions made, so that a thorough and detailed review of the cost estimates by a third party reviewer is possible.

Sappi Fine Paper

Westbrook Operations

S.D. Warren Company
89 Cumberland Street
P.O. Box 5000
Westbrook, ME 04092

Barry L. Stemm
Direct tel +1 207 856 4584
Direct fax +1 207 856 4456
Barry.Stemm@sappi.com

Date 10/09/2015

Ms. Laura Wildman
Director, New England Regional Office
Princeton Hydro
931 Main Street, Suite 2
South Glastonbury, CT 06073

SUBJECT: Response to Memo of September 21, 2015: Saccarappa Cost Estimate Review

Dear Laura,

The following is S.D. Warren's response to the comments provided by Princeton Hydro in your memo dated September 21, 2015. The numbering of the responses below corresponds with the numbering in your memo.

1. Based on the 30% design drawings provided by PH, the Two Channel Design includes a larger quantity of rock removal in the western channel than the Western Channel Design.
2. The 30% design drawings provided by PH indicate that the rock fill in the tailrace channel is "TBD" (To Be Determined). The assumptions regarding this issue are explained in the response of 9/14/2015.
3. The cost allocated for forebay rock fill for the Western Channel Design is included in Item 8.
4. Warren's response regarding this issue has not changed, but note that the cost summary includes an allowance of $50,000 in case some unforeseen work related to adaptive management is required.
5. Warren explained its position regarding the use of the same percentage for mobilization and de-mobilization in both estimates in our prior response document. Warren's position on this issue has not changed based on comments from PH.
6. In its prior response, Warren explained in considerable detail its three years of experience regarding O&M costs for the Cumberland Mills technical fishway. In the face of that experience, PH persists with the notion, based on "a consensus of experts," that nature-like fishways have lower maintenance costs than technical fishways. Warren's estimates are based on three years of actual experience operating the Cumberland Mills fishway, the proposed features of both designs, and an indebt understanding of the Saccarappa site.

Best regards,
Barry

Barry Stemm
Engineering Department

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

PAUL R. LEPAGE
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

September 21, 2015

Barry Stemm
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000
Westbrook, Me 04092

RE: Comments on Saccarappa Project fish passage designs

Dear Barry:

The Maine Department of Marine Resources (MDMR) is writing to provide comments on the alternative fish passage designs for the Saccarappa Project. In our comments, we consider fish passage at the lower falls on the western channel (lower falls), at the upper falls on the western channel (upper west channel), and at the upper falls on the eastern channel (upper east channel). In preparing these comments we have reviewed results of the HEC-RAS modeling provided by Acheron Engineering and Princeton Hydro, results of the energetics modeling (fatigue, work, survivorship; all models run with 15.2, 19.1, and 22.1-inch American shad) provided by U.S. Fish and Wildlife Service (USFWS) and MDMR, and design populations contained in both the FERC Prescription and the Maine Water Quality Certificate.

Lower Falls

Denil design

Sappi has proposed a four-foot wide, approximately 100-ft long Denil fishway (with a single resting pool) for passage at the lower falls. The Denil entrance would be located at the west end of the lower falls near a natural low point in the ledge that concentrates flow. The entrance location was designed in consultation with the agencies, and was based on evaluations made during site visits and after review of aerial and surface photography capturing a wide range of flows. The Denil exit would be located in the west channel near the southern end of the island that separates the east and west channels. Results of the survivorship, fatigue and work models indicate that the Denil has a high probability of success. The survivorship model indicates 93-98% of American shad are expected to pass through the Denil fishway over the range of operating flows (Appendix A). The fatigue model indicates that even small American shad would be able to swim up the entire length of the Denil fishway, and the work model indicates American shad would expend 100-417 calories to swim up the Denil fishway.

OFFICES AT 32 BLOSSOM LANE, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550
FAX: (207) 624-6024

MDMR recommends that Sappi alter its current design by adding a second Denil fishway (i.e., install two, side-by-side, four-foot wide Denil fishways) in lieu of the dedicated auxiliary water system. The current Saccarappa Project license requires that upstream fish passage be provided in two phases, and the phase 2 facilities must be capable of annually passing 58,000 American shad and 353,000 river herring. Because a single four-foot Denil fishway has the capacity of passing 200,000 river herring or 25,000 American shad annually, a second Denil will be needed to meet the phase 2 capacity.

Nature-like design

Friends of the Presumpscot River (FOPR) has proposed a nature-like (roughened) channel that would be located in the powerhouse tailrace and consists of a lower 380-ft section, a 180° turning pool, and an upper 100-foot section that exits in the west channel. MDMR is not aware of any nature-like fishways that include a 180° degree turn. The fishway is designed to withstand a 50-year flood event, which presents a 2% annual chance of exceeding the design flow and the risk of damage or catastrophic failure. The capacity of this proposed nature-like fishway is not known, since there are neither standard capacity estimates for nature-like passage facilities, nor are there methods for estimating capacity in relation to discharge, slope, or other nature-like fishway design parameters. Furthermore, there are very few published studies that empirically describe the effectiveness or numbers of fish passed through nature-like fishways. Results of the survivorship, fatigue and work models indicate that the nature-like design has a low probability of success, primarily because of the length of the lower ramp of the fishway (380 feet). The survivorship model indicates that 60-77% of American shad are expected to pass both the upper and lower ramps at low flows, 30-60% at mediums flows, and 18-50% at high flows (Appendix B). The work model indicates that American shad would expend 475-2033 calories to pass through the nature-like fishway.

Upper West Channel

Both Sappi and FOPR have developed nature-like designs for passage in the upper west channel. Sappi proposes to remove ledge from the lower part of the western channel (approximately from transect 370' to transect 500') and add fill to the excavated part of the upper western channel (approximately from transect 500' to transect 700'). The fill would create a hydraulic control on the western channel at EL 64', thus matching the hydraulic control on the eastern channel. FOPR's design proposes to sculpt the western channel bedrock from approximately transect 100' to transect 547' (i.e., from the exit of the lower falls fishway - either design - to a narrow portion of the excavated western channel), then utilizes the natural grade with existing hydraulic control at EL 61.0 ft. The FOPR proposal has the advantage of long-term stability and reduced maintenance (because native bedrock is sculpted).

The results of the survivorship, fatigue, and work models for American shad indicate they both proposals likely will not provide safe, timely, and effective passage (Appendix A, Appendix B). The survivorship model indicates that the upper ramp of Sappi's design is expected to pass 69-83%, 17-51%, and 1-30% of American shad at low, medium, and high flows respectively, while the upper ramp of FOPR's design is expected to pass 44-68%, 5-38%, and 0-13.4% at low, medium, and high flows, respectively. The shorter length of the Sappi design (330 feet) likely accounts for the greater survivorship, relative to the FOPR design (390 feet). The work model

indicates that American shad would use 333-1,706 calories passing through Sappi's fishway design and 464-2,019 calories through FOPR's design.

Upper East Channel

Based on the bathymetry survey from the fall of 2014, and the HEC-RAS modeling done by Princeton Hydro, the results show that the eastern channel is highly likely to be impassable if the only action taken is the removal of the spillway coupled with minor channel modifications. FOPR proposed a nature-like design for the upper east channel that would entail removing ledge in order to reduce the hydraulic control from EL 64' to EL 62.38' and sculpting the bedrock downstream to create a passage route. Results of the survivorship model run for the worst-case scenario (a 15.2-in shad swimming against velocities at 3000 cfs) indicate that 73% of the shad would be expected to swim up the entire upper east channel, nature-like fishway (Appendix B).

MDMR RECOMMENDATIONS

- To pass upstream migrants over the lower falls, MDMR recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the attraction water supply system.

- Retain the fish counting facility that was included in the Denil design. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder.

- Provide passage on both the east and west channel using the nature-like fishways proposed by FOPR. MDMR believes that for this project to be successful both channels must be passable.

The Adaptive Management and O&M Plan Denil Fish Passage Alternative, dated December 2014, Sappi stated that it would be responsible for operation and maintenance of the fishway and would maintain the legacy structures for as long as Sappi owns the site and the structures, yet in the cost estimates provided by Sappi were silent on any associated costs. Effectiveness and ownership of the legacy structures post decommissioning are also not known. Because of the lack of clarity on these issues, MDMR recommend that all parties begin discussions on a final settlement and any final agreement would need to include the establishment of a fund to cover associated costs of studies, operation and maintenance of the legacy structures and fishways.

Sincerely,

Patrick C. Keliher
Commissioner

OFFICES AT 32 BLOSSOM LANE, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550
FAX: (207) 624-6024

Appendix A. Results of surivorship model for SDW proposal. Total survivorship for a small American shad (15.2 inches) at high stage velocity (4.24 ft/s) can be obtained by multiplying the corresponding survivorship in the lower (0.97) and upper sections (0.96), resulting in 0.93.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, lower Denil section	small	low stage	2.52	15.2	18	47.9	99%
	average		2.52	19.1	18	47.9	99%
	large		2.52	22.1	18	47.9	99%
	small	high stage	4.24	15.2	18	47.9	97%
	average		4.24	19.1	18	47.9	98%
	large		4.24	22.1	18	47.9	98%
Lower falls, upper Denil section	small	low stage	2.52	15.2	18	50.4	98%
	average		2.52	19.1	18	50.4	99%
	large		2.52	22.1	18	50.4	99%
	small	high stage	4.24	15.2	18	50.4	96%
	average		4.24	19.1	18	50.4	97%
	large		4.24	22.1	18	50.4	98%
Upper west channel, upper ramp	small	avg at 300 cfs	2.75	15.2	18	330	69%
	average		2.75	19.1	18	330	78%
	large		2.75	22.1	18	330	83%
	small	avg at 1500 cfs	5.03	15.2	18	330	17%
	average		5.03	19.1	18	330	37%
	large		5.03	22.1	18	330	51%
	small	avg at 2250 cfs	5.86	15.2	18	330	1%
	average		5.86	19.1	18	330	14%
	large		5.86	22.1	18	330	30%

Appendix B. Results of surivorship model for FOPR proposal. Total survivorship for a small American shad (15.2 inches) through the lower falls at high flow (4.4.ft/s) can be obtained by multiplying the corresponding survivorship in the lower (0.22) and upper sections (0.85), resulting in 0.18.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, nature-like design, lower 2% ramp	small	avg at 300 cfs	2.6	15.2	18	380	64%
	average		2.6	19.1	18	380	74%
	large		2.6	22.1	18	380	80%
	small	avg at 1500 cfs	3.9	15.2	18	380	36%
	average		3.9	19.1	18	380	53%
	large		3.9	22.1	18	380	64%
	small	avg at 3000 cfs	4.4	15.2	18	380	22%
	average		4.4	19.1	18	380	41%
	large		4.4	22.1	18	380	54%
Lower falls, nature-like design, upper 2% ramp	small	avg at 300 cfs	3.0	15.2	18	100	94%
	average		3.0	19.1	18	100	96%
	large		3.0	22.1	18	100	97%
	small	avg at 1500 cfs	4.4	15.2	18	100	89%
	average		4.4	19.1	18	100	92%
	large		4.4	22.1	18	100	94%
	small	avg at 3000 cfs	5.1	15.2	18	100	85%
	average		5.1	19.1	18	100	89%
	large		5.1	22.1	18	100	92%
Upper west channel, upper 1.5% ramp	small	avg at 300 cfs	3.5	15.2	18	390	44%
	average		3.5	19.1	18	390	59%
	large		3.5	22.1	18	390	68%
	small	avg at 1500 cfs	5.0	15.2	18	390	5%
	average		5.0	19.1	18	390	23%
	large		5.0	22.1	18	390	38%
	small	avg at 3000 cfs	5.9	15.2	18	390	0%
	average		5.9	19.1	18	390	3%
	large		5.9	22.1	18	390	13.4%
Upper east channel, nature-like, lower 2.5% section	small	avg at 300 cfs	2.7	15.2	18	120	93.5%
	average		2.7	19.1	18	120	95.3%
	large		2.7	22.1	18	120	96.4%
	small	avg at 1500 cfs	4.5	15.2	18	120	85.1%
	average		4.5	19.1	18	120	89.3%
	large		4.5	22.1	18	120	91.7%
	small	avg at 3000 cfs	5.3	15.2	18	120	78.5%
	average		5.3	19.1	18	120	84.6%
	large		5.3	22.1	18	120	88.1%
Upper east channel, nature-like, middle 2.0% section	small	avg at 300 cfs	2.3	15.2	18	35	99.2%
	average		2.3	19.1	18	35	99.4%
	large		2.3	22.1	18	35	99.5%
	small	avg at 1500 cfs	3.8	15.2	18	35	98.4%
	average		3.8	19.1	18	35	98.8%
	large		3.8	22.1	18	35	99.1%
	small	avg at 3000 cfs	4.8	15.2	18	35	97.4%
	average		4.8	19.1	18	35	98.1%
	large		4.8	22.1	18	35	98.6%
Upper east channel, nature-like, 2% step pool	small	avg at 300 cfs	1.6	15.2	18	60	98.6%
	average		1.6	19.1	18	60	99.0%
	large		1.6	22.1	18	60	99.2%
	small	avg at 1500 cfs	3.3	15.2	18	60	97.0%
	average		3.3	19.1	18	60	97.9%
	large		3.3	22.1	18	60	98.3%
	small	avg at 3000 cfs	4.1	15.2	18	60	95.7%
	average		4.1	19.1	18	60	96.9%
	large		4.1	22.1	18	60	97.6%

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Maine Field Office
17 Godfrey Drive, Suite 2
Orono, Maine 04473
207/866-3344 Fax: 207/866-3351

September 21, 2015

Barry Stemm
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000
Westbrook, Maine 04092

TRANSMITTED ELECTRONICALLY

RE: U.S. FISH AND WILDLIFE SERVICE FISH PASSAGE RECOMMENDATIONS
Saccarappa Hydroelectric Project, FERC No. 2897

Dear Mr. Stemm:

The U.S. Fish and Wildlife Service (Service) has consulted with the Licensee of the Saccarappa Hydroelectric Project (S.D. Warren Company, hereafter Sappi), the Friends of the Presumpscot River (FOPR) and the Maine Department of Marine Resources (MDMR). The Service has reviewed various materials prepared by Sappi and the FOPR in support of the fish passage proposals by the two parties. This letter presents the conclusions reached in the Service's review of conceptual fish passage designs that are intended to provide passage over the falls which will remain if the Saccarappa Project is decommissioned. This letter focuses solely on which designs seem most likely to provide safe, timely, and effective fish passage. It does not address other issues that may be factors or that should be resolved prior to the decommissioning of the Saccarappa Project (Project). These include capital cost, funding and conducting effectiveness testing and future operations and maintenance of the fish passage solution(s) selected, ownership of and jurisdiction over site post-licensing, counting of fish, and recreational issues, among others.

We offer our analyses of the Sappi and the FOPR fish passage designs in the broader context of the incremental restoration of the Presumpscot River that could be achieved if the Saccarappa dam is removed. That is, decommissioning of the Saccarappa Project and removal of the spillways will restore the impoundment to a natural river channel and eliminate turbine-related fish passage mortality. The goals of restoring riverine habitat, eliminating turbine mortality, and providing upstream passage closely align with the Service's mission to conserve, protect and restore fish and wildlife and their habitats.

Upstream fish passage at a decommissioned Saccarappa Project would require fish to ascend two successive sets of falls, lower and upper. It is our carefully considered opinion that a Denil fishway is the most efficient alternative for passing migratory fish over the lower and steeper portion of the falls. However, a paired Denil design is required to meet the phase 2 capacity described in the Saccarappa Project license. With regard to the spillway sections located at the upper falls on the east and west sides of the island, the fish passage designs developed by Sappi and the FOPR have converged on a generally similar nature-like fishway concept. Specifically, both the FOPR and Sappi designs call for modifying the ledges located on the east and/or west side of the island to create natural passage conditions. The Service agrees that this design concept can provide effective passage over the upper portion of the ledges. Details of our analyses and our recommendation follow.

BACKGROUND

Sappi met with the resource agencies in November of 2012 as the Cumberland Mills fishway neared completion. At that time, Sappi was required by the fish passage implementation schedule in the Saccarappa Hydroelectric Project license to begin a discussion the facilities required by the Service's fish passage prescription. Rather than provide a fish passage concept for the Saccarappa Project in the November 2012 meeting, Sappi proposed to surrender the project license and remove some of the project works. The parties recognized that surrendering the project license and removing some portion of the project works would still leave an impassable barrier to migratory fish. The Service and the State of Maine met with Sappi during the next seven months to investigate potential fish passage improvements that would be needed in the absence of the project. At Sappi's invitation, the City of Westbrook participated in this series of meetings. The City sought to identify and pursue recreational opportunities that would be compatible with fish passage as part of Westbrook's broader urban development plans.

Substantial progress was made by the summer of 2013. At that time, the agencies called a halt to further meetings without participation of the non-governmental stakeholders who were instrumental in securing the fish passage agreements during the relicensing of the Presumpscot River projects. The parties agreed to a two year Extension Agreement to provide time to investigate nature-like fish passage alternatives and as a result, Sappi withdrew the surrender application that was then before the Federal Energy Regulatory Commission (FERC). The Service has worked with Sappi and the FOPR since the fall of 2013 to investigate fish passage at a decommissioned Saccarappa Hydroelectric Project site. The meetings have focused on fish passage solutions for American shad, a Presumpscot River target species that often struggles to ascend high-gradient channels and technical fishways.

FISHWAY DESIGNS PROPOSED FOR THE LOWER FALLS

The lower falls have a vertical drop of approximately 12 feet, depending on river flow and the elevation of the Cumberland impoundment. It is the opinion of the Service that the lower falls may provide only limited passage opportunity at the east side of the falls, and only under certain low flow conditions. Thus, we do not support the lower falls as a primary route of passage in its current condition. The stakeholders investigated options to modify the eastern side of the lower falls to provide passage for river herring or American shad. However, challenging site constraints, such as the height of the falls and the limited footprint that is available to build an

instream nature-like structure, appear to rule out the feasibility of a nature-like fishway with an acceptable slope of two percent or less.

Denil Design

Sappi has proposed a 4-foot Denil fishway for the lower falls. The Denil fishway is capable of effectively passing significant numbers of American shad, especially when certain design elements such as 180-degree turning pools are avoided. The Service has used models of survivorship; fatigue and work to estimate effectiveness of the proposed Denil (see references). Results indicate that the Denil design has a high probability of success (Appendix 1). For American shad, 93 percent to 98 percent are expected to pass through the Denil fishway over the range of operating flows. The models predict that large shad will pass slightly higher rates than small shad. Neither the fatigue, nor the work models indicate excessive energy expenditure to pass through the Denil fishway.

Sappi proposes to locate the Denil entrance at the west end of the lower falls. This location is proximate to a natural chute (i.e., a low point in the ledge) that concentrates spillage flow. This advantageous entrance configuration was designed in consultation with the Service and the MDMR and based on evaluations made during site visits and after review of aerial and surface photography capturing a wide range of flows. The concentrated flow over the lower falls will likely enhance attraction to, and effectiveness of, the Denil entrance.

Capacity of the Denil fishway was also evaluated. A single four-foot Denil fishway has an annual capacity of 200,000 river herring or 25,000 American shad. These capacities are based on the estimated maximum number of fish passed in one hour (i.e., the peak hour of the peak day during the passage season) and extrapolated over an idealized, compressed seasonal migration period. Although greater numbers could be passed, exceeding the ideal capacity would result in crowding and some delay. The Saccarappa Project license includes phase 2 fish passage conditions requiring passage for 58,000 American shad and 353,000 river herring. The Service suggests that this phase 2 requirement can be met by altering the current Sappi lower falls design by adding a second, paired Denil fishway in lieu of the dedicated auxiliary water system. This may be less costly than the auxiliary water supply, as well as providing the necessary additional capacity.

Nature-Like Design

The FOPR has proposed a nature-like (roughened) channel with resting pools to pass American shad and river herring over the lower falls. The FOPR lower falls fishway design is located in the powerhouse tailrace. It is 480-feet long and includes a 380-foot section to reach the base of the powerhouse, 180-degree turn at the base of the powerhouse, and a 100-foot section to reach the central pool located downstream and to the east of the island. The 180-degree turn pool creates a switchback arrangement to provide additional length to reduce the desired fishway slope. This turn pool design feature is atypical—the Service is not aware of any nature-like structures that include a 180-degree turn. The Service's experience is that 180-degree turns are problematic for shad due to the confusing hydraulic cues created by flow separation at the wall and 3-dimensional velocity field created by the turn. The fishway is designed to withstand a 50-

year flood event, which presents a two percent annual chance of exceeding the design flow, with a concomitant risk of damage or catastrophic failure.

The capacity of this proposed nature-like fishway is unknown, since there are neither standard capacity estimates for nature-like passage facilities, nor are there methods for estimating capacity in relation to discharge, slope, or other nature-like fishway design parameters. Furthermore, there are very few published studies that empirically describe the effectiveness or numbers of fish passed through nature-like fishways. We are aware of none for American shad.

The Service and the MDMR ran 81 representative permutations of the survivorship, fatigue, and work models to analyze the FOPR's nature-like design (Appendix 2). As shown in the survivorship summary table below, American shad survivorship was marginal at a flow of 300 cubic feet per second (cfs), with 60 percent to 77 percent of the shad passed. Survivorship was generally very poor at the higher flows, although large shad performed much better than small or medium sized shad. The work model (calories expended) showed that shad required about five times the energy to pass the nature-like fishway, as compared to the Denil fishway. The fatigue model results were very similar to the survivorship model; there were significant problems with smaller shad and higher flows. Poor results in the nature-like fishway are due, at least in part, to the fact that it is about five times the length of the Denil fishway (480 versus 98 feet.), requiring migrants to sustain high swimming speeds over long distance. It is worth noting that shorter sections of nature-like fishway that were examined with the models performed better, validating the conclusion that swimming through the long nature-like fishway required to pass the lower falls presents a significant challenge to upstream migrants.

Shad size	300 cfs	1500 cfs	3000 cfs
Small (15.2")	60%	32%	18%
Medium (19.1")	71%	49%	37%
Large (22.1")	77%	60%	50%

FISHWAY DESIGNS PROPOSED FOR THE UPPER FALLS

Initially, Sappi proposed modifying the ledges on the east spillway section to pass fish from the central pool over the upper falls. However, investigating passage alternatives at the east spillway was tabled in order to start negotiations with a broader set of stakeholders in the fall of 2013. With the involvement of the FOPR, the focus shifted to developing a nature-like fishway option for the upper falls on the west side of the island. Following the example set by the FOPR's design, Sappi also developed a west channel nature-like design, abandoning the east channel alternative originally discussed with the Service and the MDMR.

West Channel

Development of the west channel nature-like passage was the focus of the two year extension (i.e., stay in processing of the 2013 surrender application) and resulting the FERC license amendment. For two years, the stakeholders collaborated on modeling, analyses, and design efforts and to the point that the FOPR and Sappi have converged on generally similar nature-like concepts for the upper falls in the west channel. Both the FOPR and Sappi have developed

designs that emphasize uniform shallow gradient, within the constraints imposed by the extensive amount of ledge, and using roughness to dissipate energy. They differ in length (the FPOR design is about 20 percent longer) and in details of the hydraulic control at the fishway exit.

The similarity of the two nature-like designs is confirmed by the results of the survivorship, fatigue, and work models for American shad. At 300 cfs, the model calculates survivorship through the FOPR design at 44percent to 68 percent, depending on shad size, while survivorship through the Sappi design is estimated to be 69 percent to 83 percent (Appendix 2). The shorter length of the Sappi design may account for the greater survivorship, relative to the FOPR design. At 300 cfs, the work and fatigues model results for the two designs are similar, although the Sappi design again performs slightly better. At flows of 1500 cfs and higher, performance of both designs is likely to be poor. The performance of either design could be improved by reducing the elevation of the headpond, which reduced the height and therefore length fish must traverse.

East Channel

The FOPR provided some design elements for an east spillway nature-like design. Although the east channel design is not as fully developed as the west channel design, the hydraulic data are adequate to run the survivorship, fatigue, and work models for American shad. The MDMR has run the models for the east channel nature-like design and the results indicate that the east channel is likely a better location for a nature-like channel than the west channel. However, we are concerned about excavating ledge below the pre-project elevation, as proposed in the FOPR design. The lower may be better for passage at the falls, but it will transfer that head differential to the upstream reach. That could result in head cutting, sediment mobilization (and resultant downstream sedimentation impacts), and possibly creating a passage impediment in the former impoundment.

SERVICE RECOMMENDATIONS

1. To pass upstream migrants over the lower falls, the Service recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the auxiliary water supply system.

2. Retain the fish counting facility that was included in the Denil design. This facility is needed in order to determine when triggers are met for fish passage construction at upstream sites. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder. (Note: The Service is willing to discuss a date certain for construction of fish passage at the next upstream Projects in lieu of constructing counting facilities at the Denil fishway. This letter does not address the jurisdictional difficulties that may arise from the current structure, which triggers fish passage at upstream projects based on counts at Saccarappa, when Saccarappa is no longer a FERC-licensed Project.)

3. Construct a nature-like fishway in the west spillway channel to provide passage over the upper falls. As the design progresses, incorporate appurtenant in-stream structures (e.g., retain suitable ledge features, construct rock vanes, or place boulder clusters) to further improve passage effectiveness.

4. Modify ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding.

The Service appreciates the opportunity to work with Sappi, the FOPR, and the City of Westbrook for the last three years to address the fish passage issues associated with proposed project decommissioning. As the fish passage design work is complete during this process, the Service would like to review the drawings at 60 percent and 90 percent completion stages. The Service remains willing to engage with the stakeholders on the other issues that may need to be addressed in the context of the surrender, decommissioning, and future of this Project and its site. In particular, information that will be developed regarding impoundment habitat is very relevant to the effects of lowering the upper elevation of the falls. Should you have any questions regarding our comments, please contact Steve Shepard by email at *steven_shepard@fws.gov*, or by telephone at 207/866-3344 Extension 1116.

Sincerely,

Laury A. Zicari,
Field Supervisor
Maine Field Office

ec: Patrick Keliher, Gail Wippelhauser, MDMR – Augusta, Maine
Oliver Cox, MDMR – Bangor, Maine
Kathy Howatt, MDEP – Augusta, Maine
Andrew Tittler, USDOI – Newton, Massachusetts
Brett Towler, USFWS – Hadley, Massachusetts
Antonio Bentivoglio, USFWS – Orono, Maine
Jed Wright, USFWS – Falmouth, Maine
Alex Hoar, USFWS – Hadley, Massachusetts
Ron Kreisman, Aaron Frederick, FOPR – Portland, Maine
Sean Mahoney, CLF – Portland, Maine
John Perry, MDIFW – Augusta, Maine
Francis Brautigam, MDIFW – Gray, Maine
Bill Baker, City of Westbrook – Westbrook, Maine

REFERENCES

Behlke, C. E. 1991. Power and energy implications of passage structures for fish. American Fisheries Society Symposium 10:289-298.

Castro-Santos, T. 2005. Optimal swim speeds for traversing velocity barriers: an analysis of volitional high-speed swimming behavior of migratory fishes. Journal of Experimental Biology 208(3):421-432.

Haro, A., T. Castro Santos, J. Noreika, and M. Odeh. 2004. Swimming performance of upstream migrant fishes in open-channel flow: a new approach to predicting passage through velocity barriers. Canadian Journal of Fisheries and Aquatic Sciences 69(1):1590-1601.

Appendix 1. Results of survivorship model for SDW proposal. Total survivorship is obtained by multiplying survivorship through each section.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, lower Denil section	small	low stage	2.52	15.2	18	47.9	99%
	average		2.52	19.1	18	47.9	99%
	large		2.52	22.1	18	47.9	99%
	small	high stage	4.24	15.2	18	47.9	97%
	average		4.24	19.1	18	47.9	98%
	large		4.24	22.1	18	47.9	98%
Lower falls, upper Denil section	small	low stage	2.52	15.2	18	50.4	98%
	average		2.52	19.1	18	50.4	99%
	large		2.52	22.1	18	50.4	99%
	small	high stage	4.24	15.2	18	50.4	96%
	average		4.24	19.1	18	50.4	97%
	large		4.24	22.1	18	50.4	98%
Upper west channel, upper ramp	small	avg at 300 cfs	2.75	15.2	18	330	69%
	average		2.75	19.1	18	330	78%
	large		2.75	22.1	18	330	83%
	small	avg at 1500 cfs	5.03	15.2	18	330	17%
	average		5.03	19.1	18	330	37%
	large		5.03	22.1	18	330	51%
	small	avg at 2250 cfs	5.86	15.2	18	330	1%
	average		5.86	19.1	18	330	14%
	large		5.86	22.1	18	330	30%

Appendix 2. Results of survivorship model for FOPR proposal. Total survivorship is obtained by multiplying survivorship through each section.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, nature-like design, lower 2% ramp	small	avg at 300 cfs	2.6	15.2	18	380	64%
	average		2.6	19.1	18	380	74%
	large		2.6	22.1	18	380	80%
	small	avg at 1500 cfs	3.9	15.2	18	380	36%
	average		3.9	19.1	18	380	53%
	large		3.9	22.1	18	380	64%
	small	avg at 3000 cfs	4.4	15.2	18	380	22%
	average		4.4	19.1	18	380	41%
	large		4.4	22.1	18	380	54%
Lower falls, nature-like design, upper 2% ramp	small	avg at 300 cfs	3.0	15.2	18	100	94%
	average		3.0	19.1	18	100	96%
	large		3.0	22.1	18	100	97%
	small	avg at 1500 cfs	4.4	15.2	18	100	89%
	average		4.4	19.1	18	100	92%
	large		4.4	22.1	18	100	94%
	small	avg at 3000 cfs	5.1	15.2	18	100	85%
	average		5.1	19.1	18	100	89%
	large		5.1	22.1	18	100	92%
Upper west channel, upper 1.5% ramp	small	avg at 300 cfs	3.5	15.2	18	390	44%
	average		3.5	19.1	18	390	59%
	large		3.5	22.1	18	390	68%
	small	avg at 1500 cfs	5.0	15.2	18	390	5%
	average		5.0	19.1	18	390	23%
	large		5.0	22.1	18	390	38%
	small	avg at 3000 cfs	5.9	15.2	18	390	0%
	average		5.9	19.1	18	390	3%
	large		5.9	22.1	18	390	13.4%
Upper east channel, nature-like, lower 2.5% section	small	avg at 300 cfs	2.7	15.2	18	120	93.5%
	average		2.7	19.1	18	120	95.3%
	large		2.7	22.1	18	120	96.4%
	small	avg at 1500 cfs	4.5	15.2	18	120	85.1%
	average		4.5	19.1	18	120	89.3%
	large		4.5	22.1	18	120	91.7%
	small	avg at 3000 cfs	5.3	15.2	18	120	78.5%
	average		5.3	19.1	18	120	84.6%
	large		5.3	22.1	18	120	88.1%
Upper east channel, nature-like, middle 2.0% section	small	avg at 300 cfs	2.3	15.2	18	35	99.2%
	average		2.3	19.1	18	35	99.4%
	large		2.3	22.1	18	35	99.5%
	small	avg at 1500 cfs	3.8	15.2	18	35	98.4%
	average		3.8	19.1	18	35	98.8%
	large		3.8	22.1	18	35	99.1%
	small	avg at 3000 cfs	4.8	15.2	18	35	97.4%
	average		4.8	19.1	18	35	98.1%
	large		4.8	22.1	18	35	98.6%
Upper east channel, nature-like, 2% step pool	small	avg at 300 cfs	1.6	15.2	18	60	98.6%
	average		1.6	19.1	18	60	99.0%
	large		1.6	22.1	18	60	99.2%
	small	avg at 1500 cfs	3.3	15.2	18	60	97.0%
	average		3.3	19.1	18	60	97.9%
	large		3.3	22.1	18	60	98.3%
	small	avg at 3000 cfs	4.1	15.2	18	60	95.7%
	average		4.1	19.1	18	60	96.9%
	large		4.1	22.1	18	60	97.6%

November 12, 2013

Dr. Earle G. Shettleworth, Jr.
Director and State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, Maine, 04333-0065

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

Dear Dr. Shettleworth:

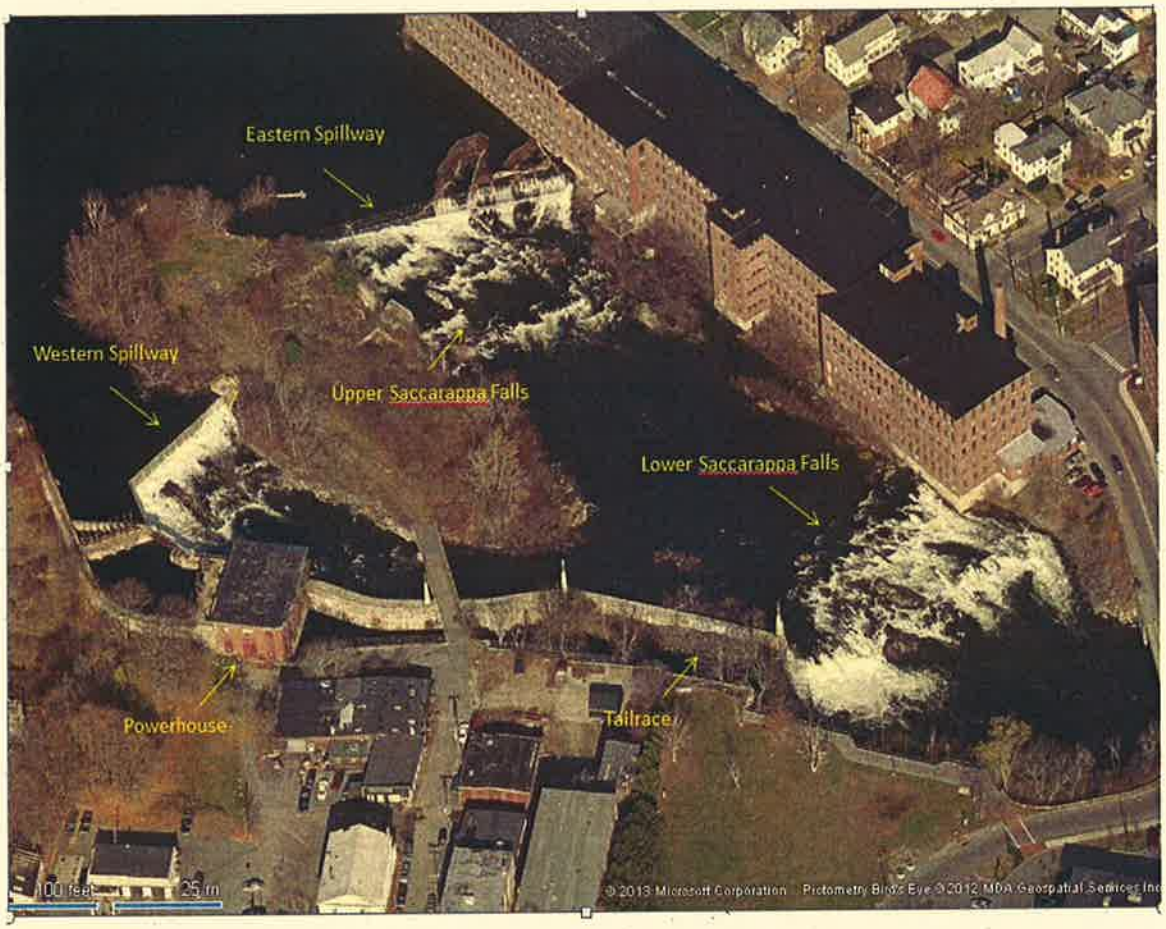
HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your agency's input into any resource issues associated with these proposed action.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.
970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346
Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT



The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.

- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.
- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the State Historic Preservation Office can provide concerning the potential effects of partial

removal of the spillway and other modifications to the structure and operation of the Project on historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

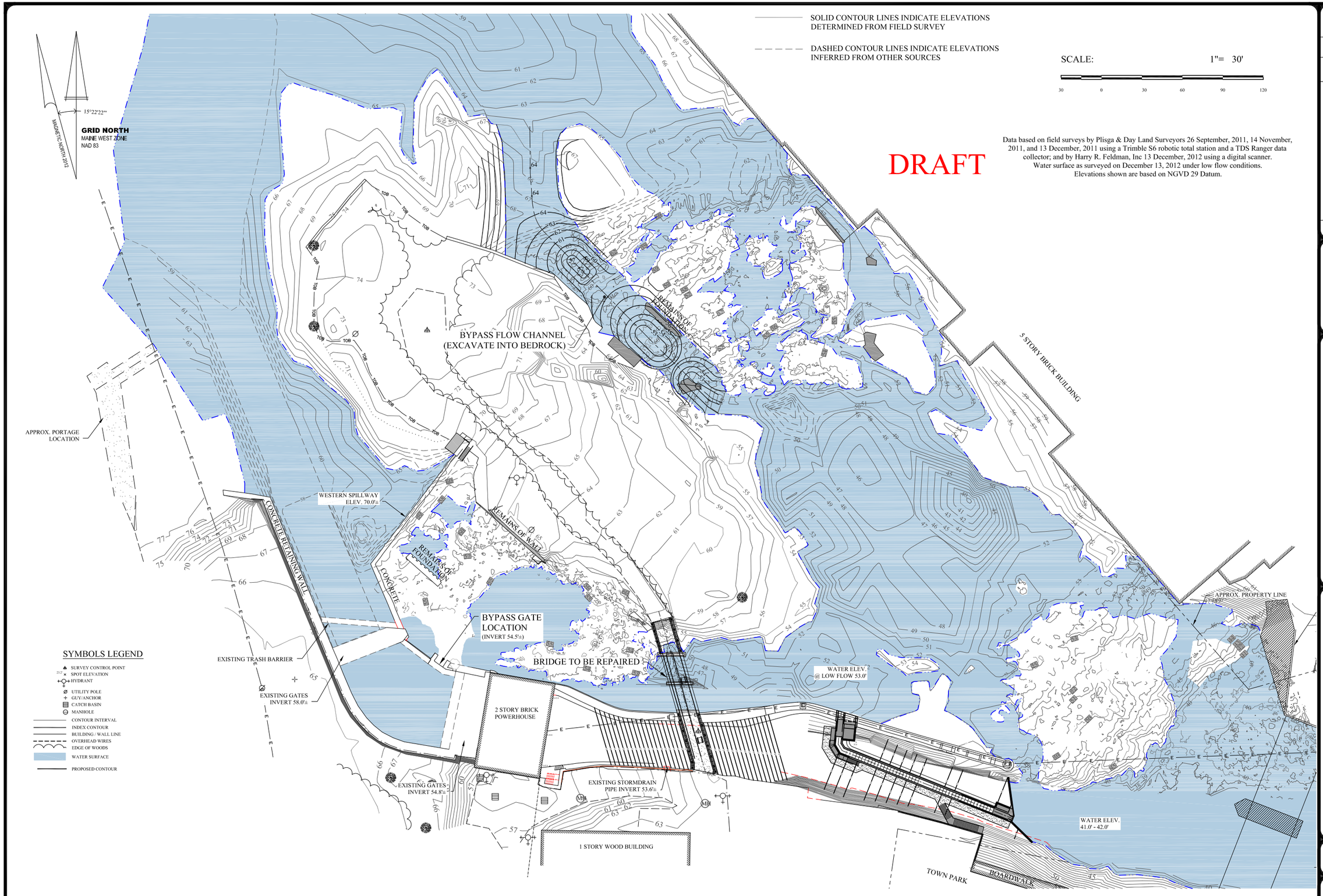
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dr. Earle G. Shettleworth, Jr.
Director and
State Historic Preservation Officer
55 Capitol St, 65 State House Station
Augusta, Maine 04333-0065

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery 11-14-13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

STATE POSTAL CENTER
88 STATE HOUSE STATION
AUGUSTA ME 04333-0088

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service l

7010 2780 0002 4870 6565

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

Mr. Kevin Mendik
NPS Hydro Program Manager
National Park Service
U.S. Department of the Interior
15 State Street, 10th Floor
Boston, MA 02109-3572

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

Dear Mr. Mendik:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your agency's input into any resource issues associated with these proposed action.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.

- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.
- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the National Park Service can provide concerning the potential effects of partial removal of the

spillway and other modifications to the structure and operation of the Project on historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

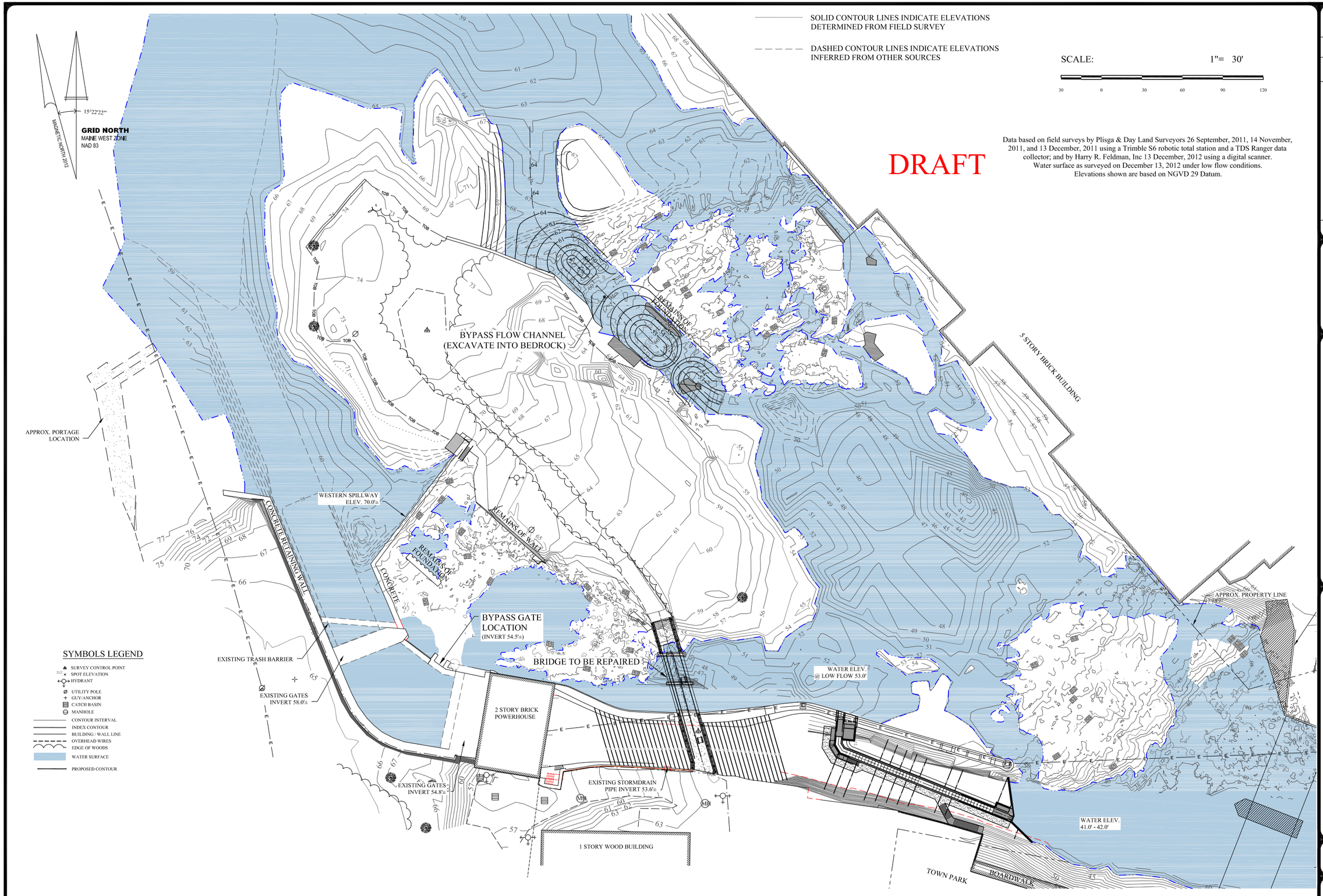
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Kevin Mendik
Nps Hydro Program Manager
National Park Service - US Dept Of The Interior
15 State St FL 10
Boston, MA 02109-3502

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Elizabeth Lylehart ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

FORT POINT POST OFFICE BOSTON MA 02210
NOV 15 2013
RED CASE

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7010 2780 0002 4870 6572

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 4, 2013

Ms. Lisa St. Hilaire
Maine Department of Conservation
Natural Areas Program
93 State House Station
Augusta, ME 04333

VIA U.S. MAIL

Subject: **Request for Information on Rare, Threatened, and Endangered Species– Saccarappa Hydroelectric Project, Maine**

Dear Ms. St. Hilaire:

S.D. Warren is the owner, operator, and licensee of the Saccarappa Hydroelectric Project (Project) located on the Presumpscot River within the City of Westbrook, in Cumberland County, Maine. HDR Engineering, Inc. (HDR) has been retained by S.D. Warren to provide permitting services for the Project.

HDR would like to request information from the Maine Department of Conservation's Natural Areas Program regarding state listed rare, threatened, and endangered species that may occur within or near the Project site. A map showing the Project area is provided with this letter.

For project documentation purposes, we request that a written response to this letter be provided within 30 days via the U.S. Postal Service or email. Please feel free to contact me by phone at 207-775-4495 or email at kelly.macvane@hdrinc.com if there are any questions regarding this request. Thank you in advance for your response.

Sincerely,

HDR Engineering, Inc.

Kelly MacVane

Kelly MacVane
Associate Regulatory Specialist

Enclosure

cc: B. Stemm (S.D. Warren)
S. Murphy (HDR)

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

November 8, 2013

Kelly MacVane
HDR Engineering, Inc.
970 Baxter Blvd. Suite 301
Portland, ME 04103

Re: Rare and exemplary botanical features in proximity to: Saccarappa Hydroelectric Project in Westbrook, Maine

Dear Ms. MacVane:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received November 7, 2013 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Westbrook, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MAINE NATURAL AREAS PROGRAM
MOLLY DOCHERTY, DIRECTOR

PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Don Cameron
Ecologist
Maine Natural Areas Program
207-287-8041
don.s.cameron@maine.gov

Rare & Exemplary Botanical Features within 4 miles of

Project: Saccarappa Hydroelectric Project, Westbrook, Maine

Scientific Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Adlumia fungosa	T	S1	G4	1860-10	9	Dry barrens (partly forested, upland)
Arabis missouriensis	T	S1	G5?Q	1905-06-11	5	Rocky summits and outcrops (non-forested, upland)
Asplenium platyneuron	SC	S2	G5	1910-06-06	10	Rocky summits and outcrops (non-forested, upland)
Calamagrostis cinnoides	SC	S3	G5	2011-08-28	18	Old field/roadside (non-forested, wetland or upland)
Carex polymorpha	E	S1	G3	1911-06-29	9	Dry barrens (partly forested, upland)
Carex polymorpha	E	S1	G3	1911	8	Hardwood to mixed forest (forest, upland)
Carex sterilis	SC	S3	G4	1936-07-14	7	Non-tidal rivershore (non-forested, seasonally wet)
Carex vestita	E	S1	G5	2000-06-06	5	Dry barrens (partly forested, upland)
Eriocaulon parkeri	SC	S3	G3	1924-08-20	8	Tidal wetland (non-forested, wetland)
Eupatorium fistulosum	SC	S2	G5?	2007-10-22	18	Open wetland, not coastal nor rivershore (non-forested, wetland)
Kalmia latifolia	SC	S2	G5	1970	23	Conifer forest (forest, upland)
Phegopteris hexagonoptera	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
Pitch pine woodland		S3	G2	2005-12-08	28	Rocky summits and outcrops (non-forested, upland)
Potamogeton vaseyi	SC	S2	G4	1901-08-04	7	Open water (non-forested, wetland)

Project: Saccarappa Hydroelectric Project, Westbrook, Maine

Scientific Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Prunus maritima	E	S1	G4	1933-05-19	10	Rocky coastal (non-forested, upland)
Ranunculus ambigens	PE	SH	G4	1862-08	3	Open water (non-forested, wetland)
Scirpus pendulus	T	S2	G5	2008-09-27	9	Open wetland, not coastal nor rivershore (non-forested, wetland)
Selaginella apoda	E	S2	G5	2008-09-25	12	Open wetland, not coastal nor rivershore (non-forested, wetland)
Selaginella apoda	E	S2	G5	1924-08-21	8	Open wetland, not coastal nor rivershore (non-forested, wetland)
Suaeda calceoliformis	T	S2	G5	2011-08-15	17	Tidal wetland (non-forested, wetland)
Suaeda calceoliformis	T	S2	G5	1932-09-12	5	Tidal wetland (non-forested, wetland)
Tidal marsh estuary ecosystem		S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Zannichellia palustris	SC	S2	G5	1972-06-13	3	Tidal wetland (non-forested, wetland)

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3 Rare in Maine (20-100 occurrences).
S4 Apparently secure in Maine.
S5 Demonstrably secure in Maine.
SU Under consideration for assigning rarity status; more information needed on threats or distribution.
SNR Not yet ranked.
SNA Rank not applicable.
S#? Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3 Globally rare (20-100 occurrences).
G4 Apparently secure globally.
G5 Demonstrably secure globally.
GNR Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
PE Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/doc/nrimc/mnap

November 4, 2013

Mr. Steve Walker
Maine Department of Inland Fisheries and Wildlife
41 State House Station
Augusta, ME 04333

VIA U.S. MAIL

Subject: **Request for Information on Rare, Threatened, and Endangered Species– Saccarappa Hydroelectric Project, Maine**

Dear Mr. Walker:

S.D. Warren is the owner, operator, and licensee of the Saccarappa Hydroelectric Project (Project) located on the Presumpscot River within the City of Westbrook, in Cumberland County, Maine. HDR Engineering, Inc. (HDR) has been retained by S.D. Warren to provide permitting services for the Project.

We would like to request information from the Maine Department of Inland Fisheries and Wildlife's Natural Heritage Program regarding state listed rare, threatened, and endangered species that may occur within or near the Project site. A map showing the Project area is provided with this letter.

For project documentation purposes, we request that a written response to this letter be provided within 30 days via the U.S. Postal Service or email. Please feel free to contact me by phone at 207-775-4495 or email at kelly.macvane@hdrinc.com if there are any questions regarding this request. Thank you in advance for your response.

Sincerely,

HDR Engineering, Inc.

Kelly MacVane

Kelly MacVane
Associate Regulatory Specialist

Enclosure

cc: B. Stemm (S.D. Warren)
S. Murphy (HDR)

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

December 4, 2013

Kelly MacVane
970 Baxter Blvd, Suite 301
Portland, ME 04103-5346

RE: Information Request - Saccarappa Hydroelectric Project

Dear Kelly:

Per your request received November 04, 2013, we have reviewed current MDIFW information for known locations of Endangered, Threatened, and Special Concern species; and designated Essential and Significant Wildlife Habitat concerns within the vicinity of *Saccarappa Hydroelectric Project - Westbrook Project* in Gorham/Westbrook/Windham.

Findings for each category of protected resource are specified below.

Endangered, Threatened, and Special Concern Species

New England cottontail

Multiple occurrences of New England cottontail, a State Endangered species, have been documented within and in the vicinity of the project search area. New England cottontails require large areas of shrubs and densely growing young trees. In the Northeast, much of the area supporting the species has been fragmented and no longer provides habitat patches suitable in quality or size. New England cottontails are protected under Maine's Endangered Species Act (MESA) and, as such, are afforded special protection against activities that may cause "take" (kill or cause death), "harassment" (create injury or significantly disrupt normal behavior patterns), and other adverse actions.

Upland sandpiper

Occurrences of upland sandpiper, a State Threatened species, have been mapped within and in the vicinity of the project search area. Upland sandpiper requires open grassland habitat with low to moderate grass, forb, and shrub cover; moderate to high litter cover, and little bare ground. This species nests only on the ground and uses both native and cultivated vegetation for nest sites. Depending on the timing, any construction activities within and adjacent to the sandpiper nesting habitat could be detrimental. Ground disturbance should not occur between May 1 and July 31 of each year. This time period is critical to protect grassland habitat during essential nesting and brood rearing periods. Potential impacts to upland sandpiper depend on factors such as construction timing, the location of

nests (if present), past patterns of habitat use, and current habitat suitability. Upland sandpiper are protected under Maine's Endangered Species Act (MESA) and, as such, are afforded special protection against activities that may cause "take" (kill or cause death), "harassment" (create injury or significantly disrupt normal behavior patterns), and other adverse actions.

Bald eagle

While there are no documented occurrences of nesting activity in the project search area, bald eagles are presumed to utilize the Presumpscot River for foraging. Eagles are federally protected by the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act under the U.S. Fish and Wildlife Service (USFWS) and are a state Species of Special Concern. The USFWS has management authority over eagles.

American eel

American eel, a state Species of Special Concern, is present in the Presumpscot River watershed. The Maine Department of Marine Resources has management authority over this catadromous species.

Essential Habitat

Currently, Essential Habitat is designated only for Piping Plovers, Least Terns, and Roseate Terns, all of which are coastal breeding species and which do not occur in this area.

Significant Wildlife Habitat

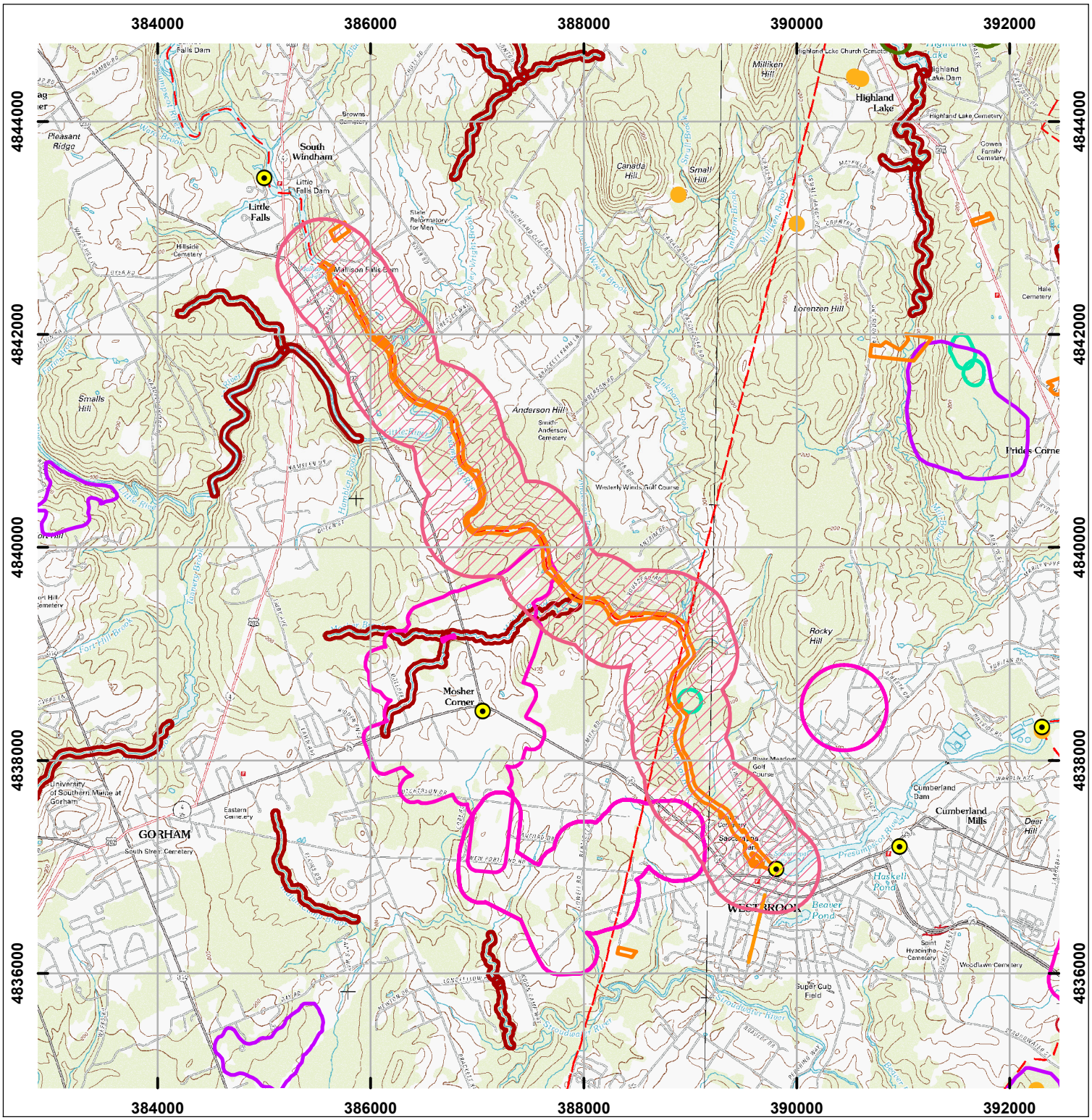
At this time, Significant Wildlife Habitat, which includes Wading Bird and Waterfowl Habitat, Deer Wintering Areas, Seabird Nesting Islands, Shorebird Areas, has not been mapped within the project area. However, a Significant Vernal Pool, a Significant Wildlife Habitat, has been mapped near the Presumpscot River in Westbrook. As a comprehensive statewide inventory for Significant Vernal Pools has not been completed, presumably other vernal pools are present but have not been mapped.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Saccarappa Hydroelectric Project - Westbrook (Version 1)

Maine Department of Inland Fisheries and Wildlife

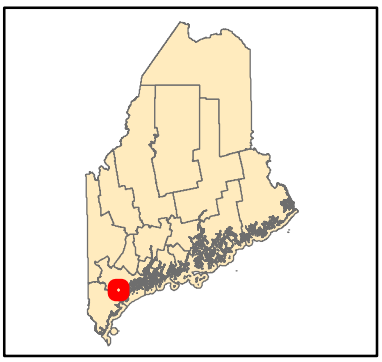
Miles

0 0.275 0.55 1.1 1.65 2.2

Projection: UTM, NAD83, Zone 19N

Date: 11/9/2013

- ProjectPoints
- ProjectLines
- ProjectPolys
- ProjectSearchAreas
- Deer Winter Area
- LURC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl/Wading Bird
- Shoreland Zoning_Iwwh
- Tidal Waterfowl/Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover/Least Tern
- Aquatic ETSc (2.5 mi review)
- Rare Mussels (5 mi review)
- A and B List Ponds
- Arctic Charr Habitat
- E. Brook Trout Joint Venture Subwatershed Classification
- Redfin Pickerel/Swamp Darter Habitats (buffer100ft)
- Special Concern-occupied habitats(100ft buffer)
- Wild Lake Trout Habitats



HDR ONE COMPANY | *Many Solutions*

November 4, 2013

Ms. Sandra Lary
Senior Fish and Wildlife Biologist
U.S. Fish and Wildlife Service- Ecological Services
Gulf of Maine Coastal Program
4R Fundy Road
Falmouth, ME 04105

VIA U.S. MAIL

Subject: **Request for Information on Species Listed Under the Endangered Species Act- Saccarappa Hydroelectric Project, Maine**

Dear Ms. Lary:

S.D. Warren is the owner, operator, and licensee of the Saccarappa Hydroelectric Project (Project) located on the Presumpscot River within the City of Westbrook, in Cumberland County, Maine. HDR Engineering, Inc. (HDR) has been retained by S.D. Warren to provide permitting services for the Project.

HDR would like to request information from the U.S. Fish and Wildlife Service regarding federally listed rare, threatened, and endangered species that may occur within or near the Project site. A map showing the Project area is provided with this letter.

For project documentation purposes, we request that a written response to this letter be provided within 30 days via the U.S. Postal Service or email. Please feel free to contact me by phone at 207-775-4495 or email at kelly.macvane@hdrinc.com if there are any questions regarding this request. Thank you in advance for your response.

Sincerely,

HDR Engineering, Inc.

Kelly MacVane
Associate Regulatory Specialist

Enclosure

cc: B. Stemm (S.D. Warren)
S. Murphy (HDR)

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

United States Department of the Interior

FISH AND WILDLIFE SERVICE
MAINE ECOLOGICAL SERVICES FIELD OFFICE
17 GODFREY DRIVE, SUITE 2
ORONO, ME 04473
PHONE: (207)866-3344 FAX: (207)866-3351
URL: www.fws.gov/mainefieldoffice/index.html

Consultation Tracking Number: 05E1ME00-2014-SLI-0015 November 13, 2013
Project Name: Saccarappa Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be
completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site:
http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines:
http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at:

http://www.towerkill.com; and at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Saccarappa Project

Official Species List

Provided by:

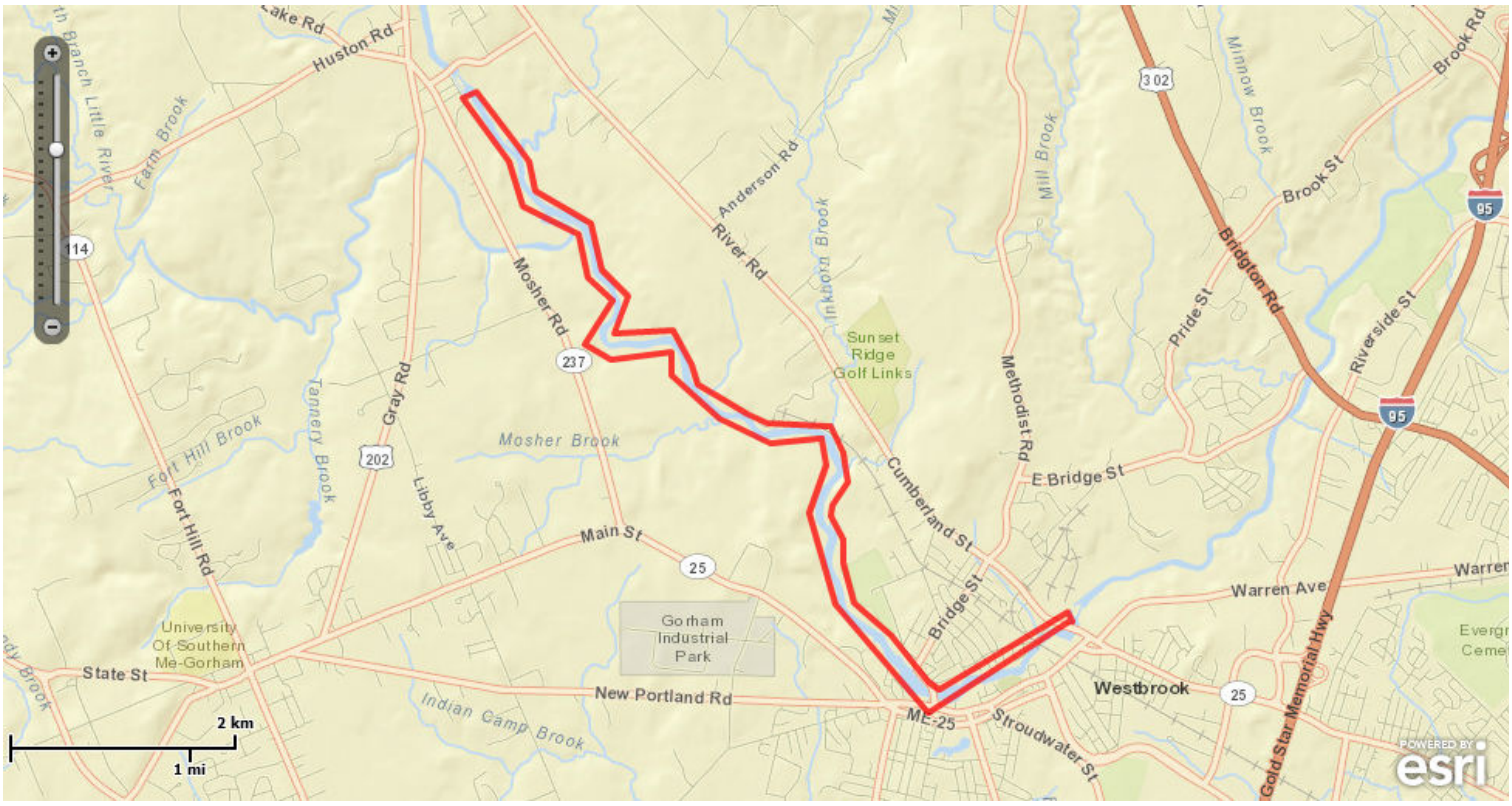
MAINE ECOLOGICAL SERVICES FIELD OFFICE
17 GODFREY DRIVE, SUITE 2
ORONO, ME 04473
(207) 866-3344
http://www.fws.gov/mainefieldoffice/index.html

Consultation Tracking Number: 05E1ME00-2014-SLI-0015
Project Type: Power Generation
Project Description: Project is located in Cumberland County Maine. The Project Boundary spans from the tailrace of the Mallison Falls Project to the Saccarappa Dam and includes a transmission line to the S.D. Warren paper mill in the City of Westbrook.

United States Department of Interior
Fish and Wildlife Service

Project name: Saccarappa Project

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-70.3675334 43.6762196, -70.3675407 43.6762177, -70.3675482 43.6762187, -70.3675548 43.6762224, -70.3778545 43.6849126, -70.3778602 43.6849205, -70.3807784 43.6922441, -70.3807798 43.6922523, -70.3807778 43.6922603, -70.3789012 43.6961014, -70.3794106 43.6981941, -70.3850501 43.6978167, -70.385058 43.6978178, -70.3907228 43.6998035, -70.3907271 43.6998057, -70.3960486 43.7032806, -70.3960535 43.703285, -70.3960566 43.7032908, -70.3960577 43.7032973, -70.3960577 43.7051368, -70.4027307 43.7045184, -70.4027403 43.7045199, -70.4056585 43.7057608, -70.4056648 43.705765, -70.405669 43.7057712, -70.4056707 43.7057786, -70.4056695 43.705786, -70.4056657 43.7057925, -70.4025909 43.7092561, -70.4053186 43.7110984, -70.4053235 43.7111032, -70.4053266 43.7111093, -70.4063537 43.7145676, -70.412524 43.7168037, -70.4125309 43.716808, -70.4125356 43.7168146, -70.4140789 43.720409, -70.4192261 43.7254926, -70.4192306 43.7254994, -70.419232 43.7255074, -70.4192301 43.7255153, -70.4192252 43.7255219, -70.419218 43.7255259, -70.417673 43.726016, -70.417666 43.7260169, -70.4176592 43.7260153, -70.4176533 43.7260114, -70.4131901 43.7217872, -70.4131897

43.7217869, -70.4118164 43.7204223, -70.4118113 43.7204137, -70.4111274 43.7180779, -70.4049563 43.7154637, -70.4049494 43.7154588, -70.4049451 43.7154515, -70.4037455 43.7117478, -70.4008324 43.7096298, -70.4008275 43.7096247, -70.4008247 43.7096182, -70.4008244 43.7096111, -70.4008265 43.7096044, -70.4023556 43.7066691, -70.3958667 43.7069036, -70.3958574 43.7069017, -70.39585 43.7068956, -70.3937901 43.7041656, -70.3937877 43.7041614, -70.3931041 43.7025555, -70.3876192 43.700201, -70.3853911 43.6994576, -70.3783559 43.6992219, -70.3783467 43.6992193, -70.3783398 43.6992128, -70.3769665 43.6970905, -70.3769638 43.6970839, -70.3764488 43.6947382, -70.376449 43.6947287, -70.3764536 43.6947203, -70.3781664 43.6928627, -70.3783353 43.6920079, -70.3769672 43.6901408, -70.3769643 43.6901352, -70.3769633 43.690129, -70.3769633 43.6882831, -70.3757652 43.6850529, -70.3716511 43.6824496, -70.3716484 43.6824475, -70.3675304 43.6787249, -70.3663396 43.6781096, -70.3521004 43.6843131, -70.3520937 43.6843148, -70.3520869 43.684314, -70.3520808 43.6843111, -70.3520759 43.6843062, -70.3516645 43.6837112, -70.3514142 43.6838287, -70.3514066 43.6838306, -70.3513989 43.6838294, -70.3513922 43.6838254, -70.3513876 43.6838191, -70.3513857 43.6838115, -70.3513869 43.6838038, -70.3513909 43.6837971, -70.3513972 43.6837925, -70.3516415 43.6836779, -70.3515609 43.6835613, -70.3515579 43.6835545, -70.3515576 43.683547, -70.35156 43.68354, -70.3515649 43.6835343, -70.3515715 43.6835308, -70.3515789 43.68353, -70.3517506 43.6835425, -70.3517581 43.6835445, -70.3517642 43.6835493, -70.3517681 43.6835561, -70.351769 43.6835639, -70.351767 43.6835714, -70.3517622 43.6835775, -70.3517554 43.6835814, -70.3517476 43.6835823, -70.3516176 43.6835729, -70.3516782 43.6836606, -70.3675334 43.6762196), (-70.3517013 43.683694, -70.3520995 43.6842699, -70.3663323 43.6780692, -70.366341 43.6780675, -70.3663495 43.6780697, -70.3675511 43.6786905, -70.3675553 43.6786935, -70.3716739 43.6824167, -70.3757923 43.6850227, -70.3757971 43.685027, -70.3758004 43.6850326, -70.3770021 43.6882725, -70.3770033 43.6882795, -70.3770033 43.6901225, -70.3783727 43.6919914, -70.3783761 43.6919989, -70.3783762 43.6920071, -70.3782045 43.692876, -70.3781996 43.6928857, -70.3764901 43.6947398, -70.3770021 43.6970718, -70.3783677 43.6991823, -70.3853954 43.6994177, -70.385401 43.6994187, -70.3876326 43.7001633, -70.3876342 43.7001639, -70.3931273 43.7025219, -70.3931336 43.7025262, -70.3931378 43.7025325, -70.3938235 43.7041435, -70.3958757 43.7068632, -70.4023885 43.7066279, -70.4023966 43.7066293, -70.4024035 43.7066339, -70.402408 43.706641, -70.4024092 43.7066492, -70.4024069 43.7066571, -70.4008699 43.7096076, -70.4037743 43.7117192, -70.4037787 43.7117237, -70.4037815 43.7117292, -70.4049803 43.7154304, -70.4111517 43.7180448, -70.4111588 43.7180499, -70.4111631 43.7180576, -70.4118482 43.7203975, -70.4132177 43.7217583, -70.4176722

43.7259743, -70.4191744 43.7254978, -70.414048 43.7204347, -70.4140437 43.7204284, -70.4125022 43.7168384, -70.4063306 43.7146018, -70.4063228 43.7145967, -70.4063182 43.7145887, -70.4052903 43.7111276, -70.4025496 43.7092765, -70.4025438 43.7092704, -70.402541 43.7092624, -70.4025417 43.709254, -70.4025458 43.7092466, -70.4056173 43.7057867, -70.4027293 43.7045587, -70.3960395 43.7051786, -70.3960313 43.7051777, -70.3960242 43.7051735, -70.3960194 43.7051668, -70.3960177 43.7051587, -70.3960177 43.7033081, -70.3907073 43.6998405, -70.3850486 43.6978569, -70.3793964 43.6982352, -70.3793895 43.6982344, -70.3793833 43.6982313, -70.3793785 43.6982263, -70.3793757 43.6982199, -70.3788607 43.6961038, -70.3788602 43.6960969, -70.3788621 43.6960903, -70.3807379 43.6922507, -70.3778249 43.68494, -70.3675388 43.6762612, -70.3517013 43.683694)))

Project Counties: Cumberland, ME

United States Department of Interior
Fish and Wildlife Service

Project name: Saccarappa Project

Endangered Species Act Species List

Species lists are not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Please contact the designated FWS office if you have questions.

New England Cottontail rabbit *(Sylvilagus transitionalis)*

Listing Status: Candidate

Small Whorled pogonia *(Isotria medeoloides)*

Listing Status: Threatened

Sarah King

From: Perry, John <John.Perry@maine.gov>
Sent: Wednesday, May 13, 2015 9:52 AM
To: 'Sarah King'
Cc: 'Kirk Ball'
Subject: RE: Saccarappa Project Request for Mussel Information

Hi Sarah,

There are no known rare mussels of concern in this reach of the Presumpscot River. Please let me know if you need additional information.

John

John Perry
Environmental Review Coordinator
Maine Department of Inland Fisheries and Wildlife
284 State Street, 41 SHS
Augusta, Maine 04333-0041
Tel (207) 287-5254; Cell (207) 446-5145
Fax (207) 287-6395
www.mefishwildlife.com

Correspondence to and from this office is considered a public record and may be subject to a request under the Maine Freedom of Access Act. Information that you wish to keep confidential should not be included in email correspondence.

From: Sarah King [mailto:sarahwjking@outlook.com]
Sent: Tuesday, May 12, 2015 9:55 AM
To: Perry, John
Cc: 'Kirk Ball'
Subject: Saccarappa Project Request for Mussel Information

John,

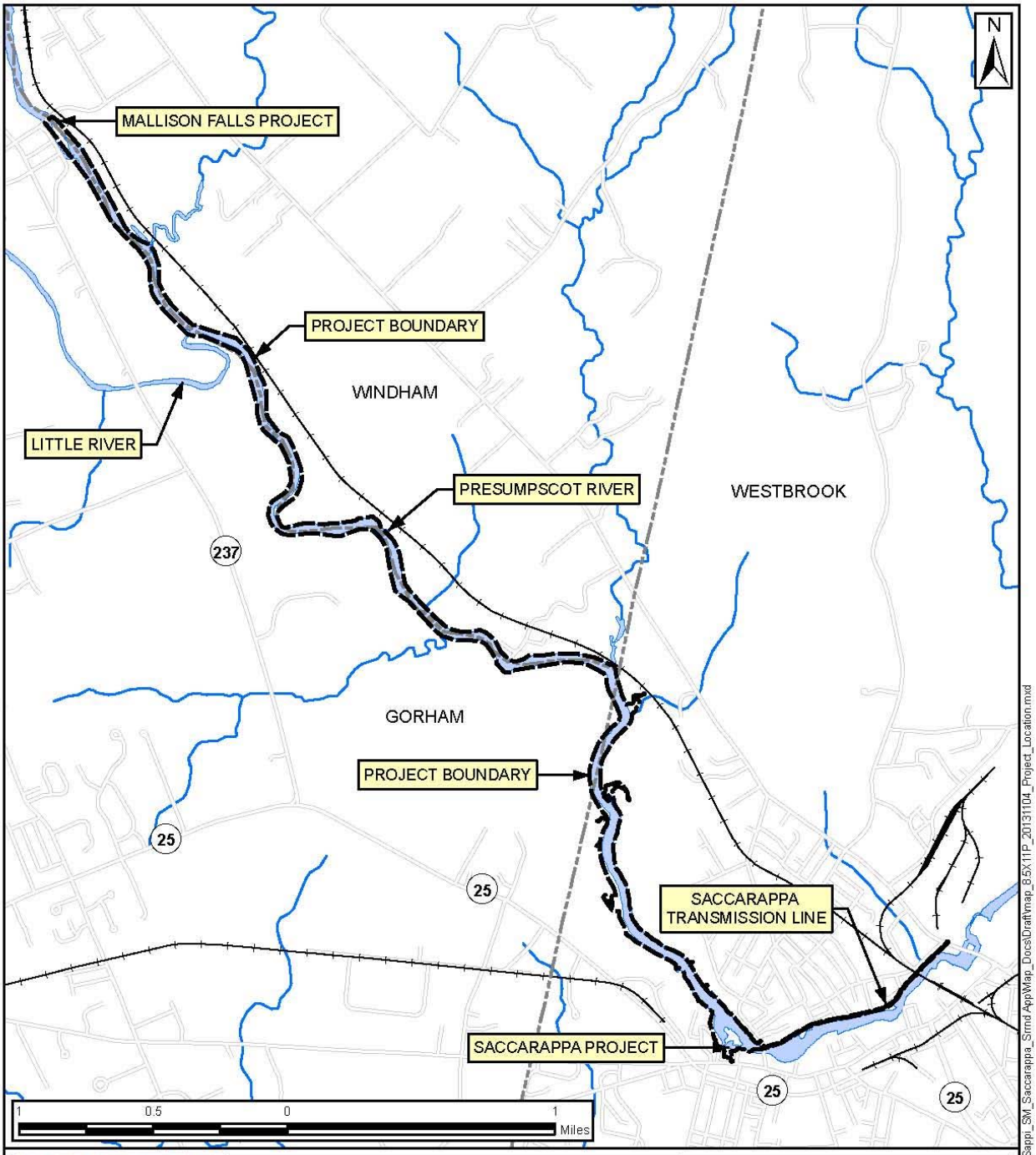
Thank you for your assistance on the phone yesterday.

As I had mentioned, Acheron is working on a project for S.D. Warren, who owns and operates the Saccarappa Hydroelectric Project which is located on the Presumpscot River in Westbrook, Cumberland County, Maine. We would like to request information from MDIFW to determine whether there are any threatened or endangered mussel species within the project area that may be impacted by the project. I have attached a map that depicts the project boundaries.

If you have any questions, or require additional information, please do not hesitate to contact me.

Thank you,

Sarah King, P.E.
Acheron Engineering
207-479-7956



Legend

- Project Boundary
- Municipal / Town Boundary
- Road
- Railroad
- River
- Stream

Map information was compiled from the best available free sources.
No warranty is made for its accuracy and completeness.
Sources: MEOGIS

Project Location

Saccarappa Project
FERC No. 2897
S.D. Warren
Westbrook, Maine

Prepared by: HDR Engineering, Inc. | November 2013

Path: N:\GIS2\Projects\Sappi\218846_Sappi_SM_Saccarappa_Strnd App\Map_Docs\Draft\map_8.5X11P_20131104_Project_Location.mxd

November 12, 2013

The Honorable Edward Peter-Paul, Chief
Aroostook Band of Micmac Indians
7 Northern Road
Presque Isle, ME 04769

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

To the Honorable Edward Peter-Paul:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed actions.

Project Description

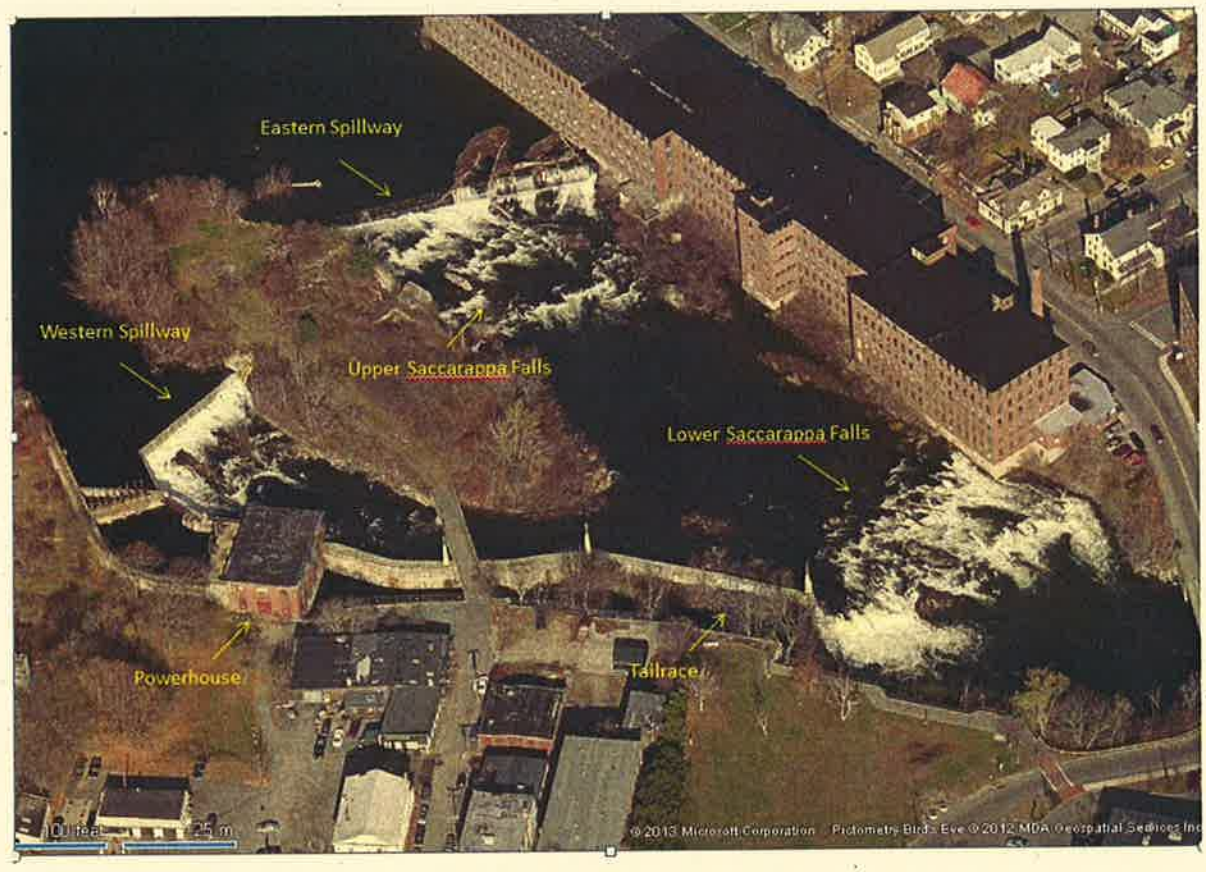
The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT



The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942),

Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Aroostook Band of Micmac Indians can provide concerning the potential effects of partial removal of the spillway and other modifications to the structure and operation of the Project on

historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

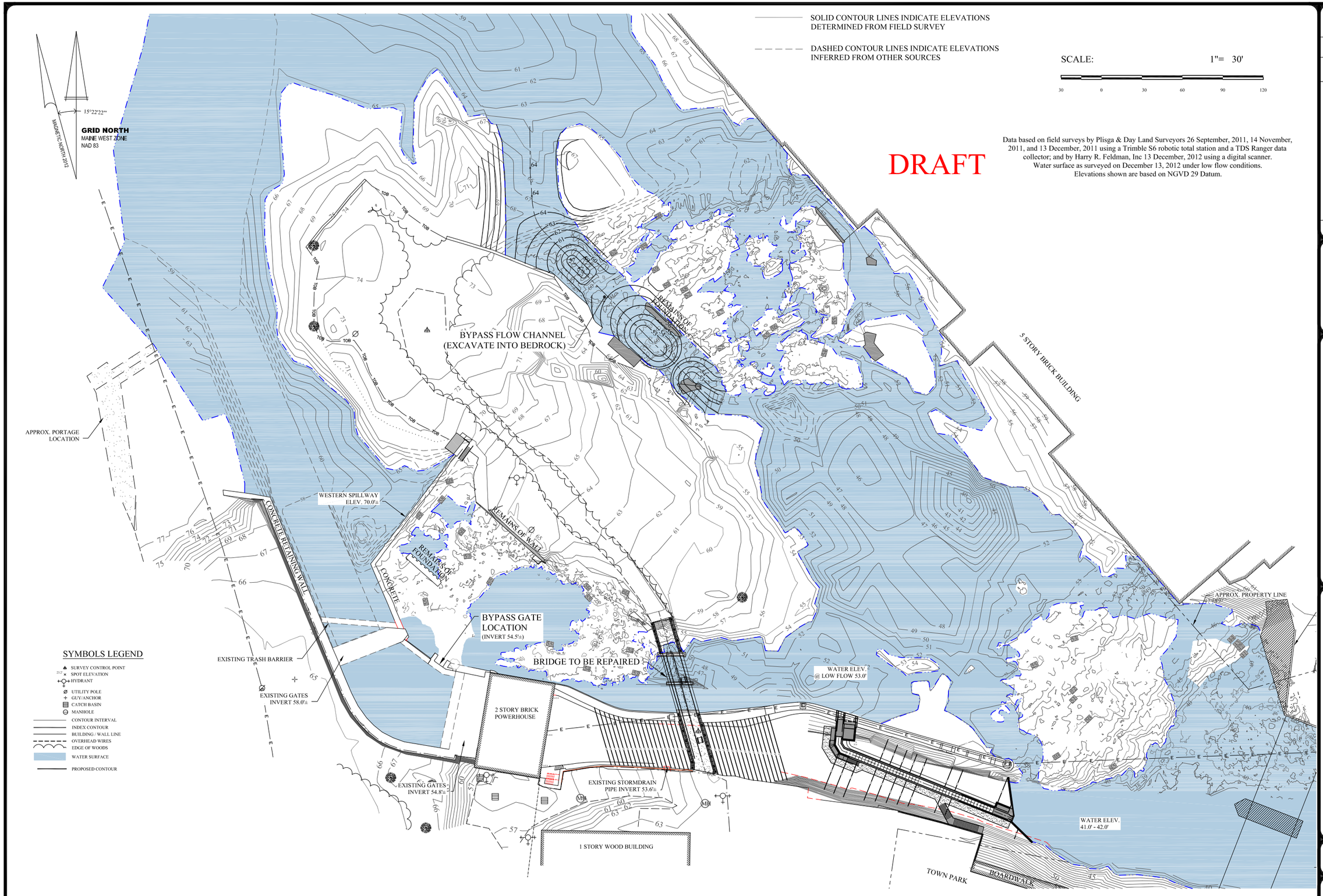
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

The Honorable Edward Peter-Paul, Chief
Aroostook Band of Micmac Indians
7 Northern Road
Presque Isle, ME 04769

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X M Pinette ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* M Pinette
C. Date of Delivery 11/15/13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7010 2780 0002 4870 5698

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

The Honorable Brenda Commander, Tribal Chief
Houlton Maliseet Band of Indians
88 Bell Road
Littleton, ME 04730

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

To the Honorable Brenda Commander:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed actions.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.
970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346
Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942),

Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Houlton Maliseet Band of Indians can provide concerning the potential effects of partial removal of the spillway and other modifications to the structure and operation of the Project on

historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

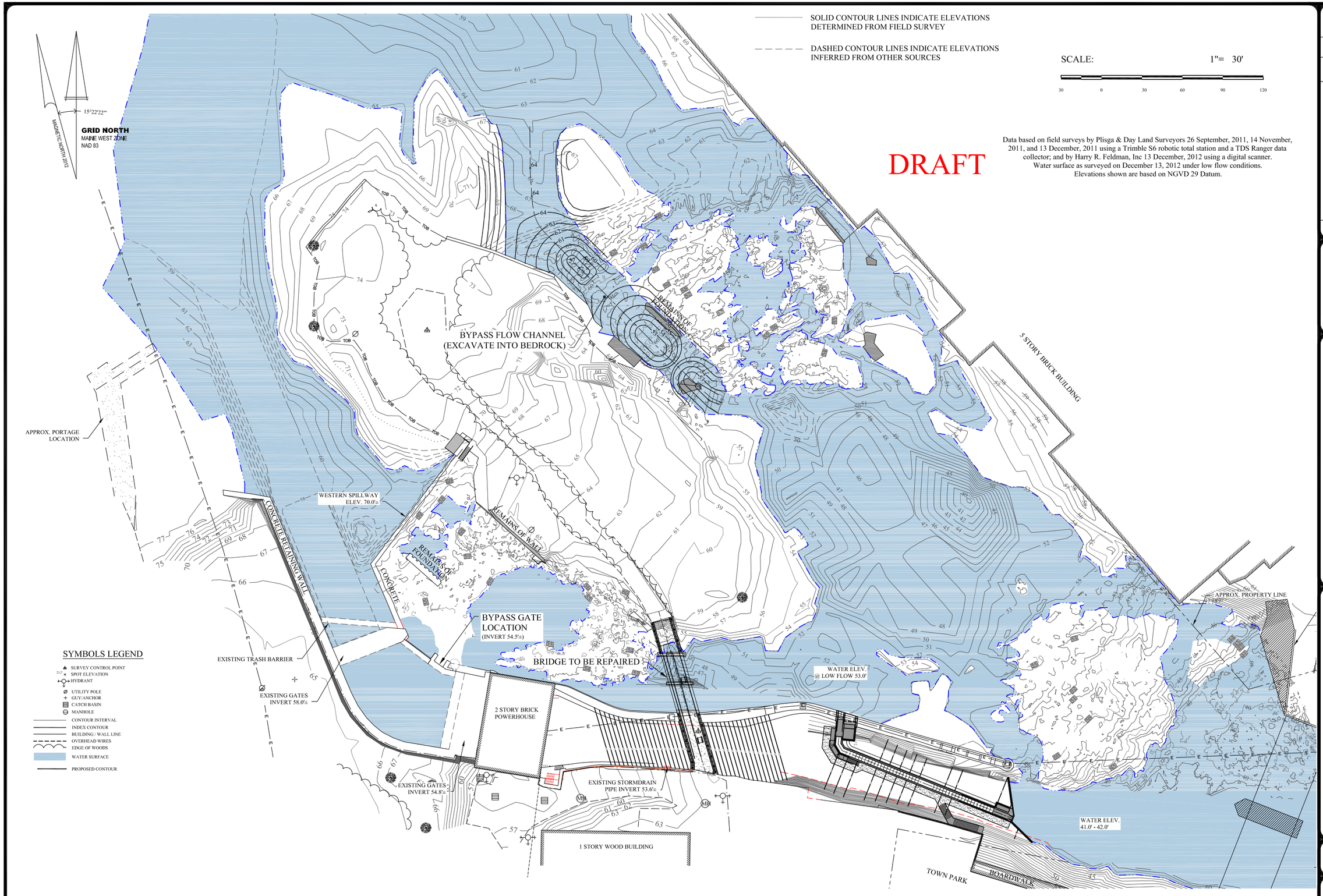
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

The Honorable Brenda Commander, Tribal Chief
Houlton Maliseet Band of Indians
88 Bell Road
Littleton, ME 04730

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Linda Raymond
☐ Agent
☐ Addressee

B. Received by (*Printed Name*) Linda Raymond
C. Date of Delivery 1/18

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number
(*Transfer from service label*) 7010 2780 0002 5681

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

The Honorable Joseph Socobasin, Chief
Passamaquoddy Tribe, Indian Township Reservation
P.O. Box 301
Princeton, ME 04668

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

To the Honorable Joseph Socobasin:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed actions.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942),

Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Passamaquoddy Tribe can provide concerning the potential effects of partial removal of the spillway and other modifications to the structure and operation of the Project on

historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

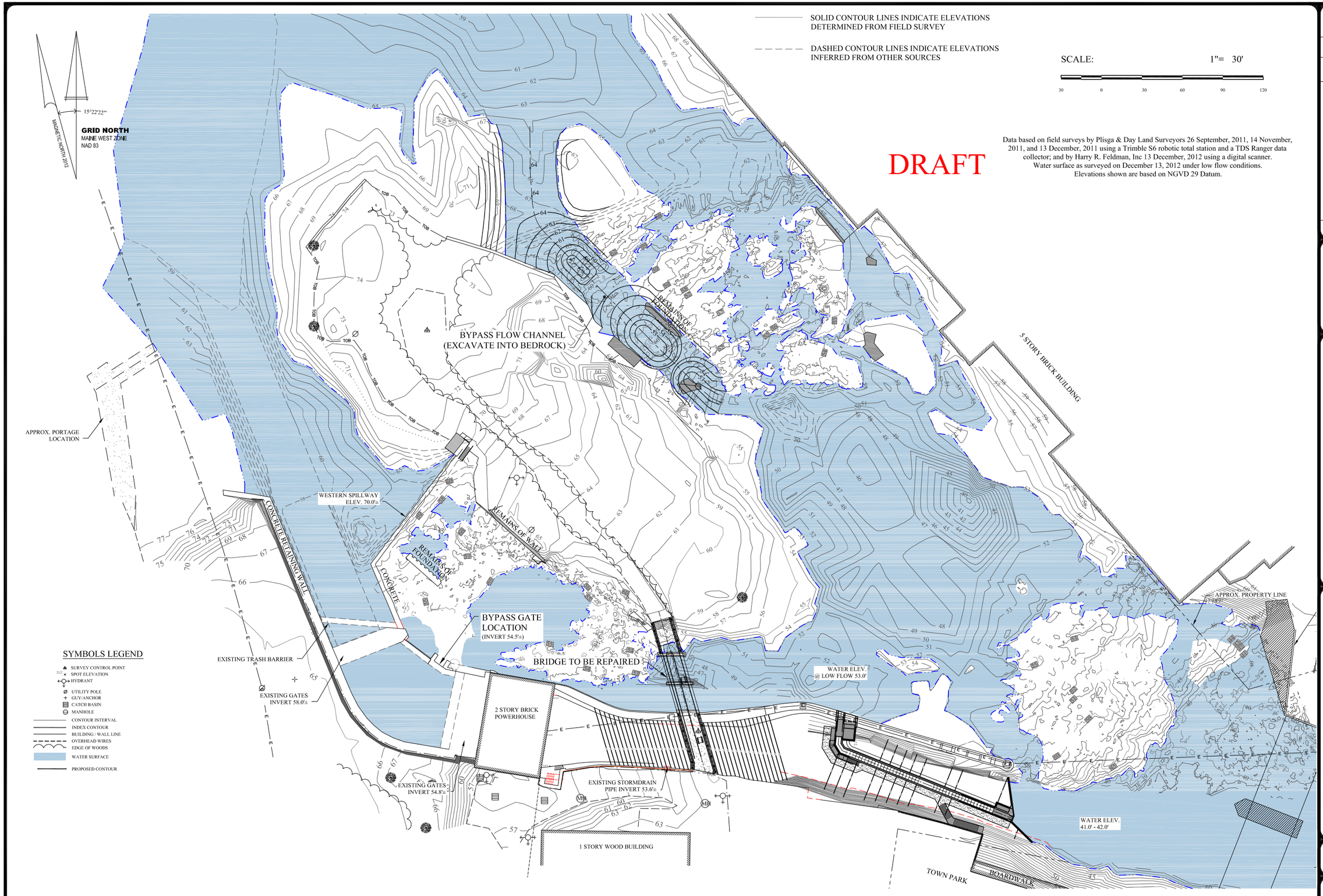
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

The Honorable Joseph Socobasin, Chief
Passamaquoddy Tribe, Indian Township Reservation
P.O. Box 301
Princeton, ME 04668

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Eddie Lozada ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) Eddie Lozada
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

PRINCETON, ME 04668-9998
NOV 18 2013
USPS

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number
(*Transfer from service label*) 7010 2780 0002 4870 6558

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

The Honorable Reubin Cleaves, Chief
Passamaquoddy Tribe, Pleasant Point Reservation
P.O. Box 343
Perry, ME 04667-0343

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

To the Honorable Reubin Cleaves:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed actions.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942),

Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Passamaquoddy Tribe can provide concerning the potential effects of partial removal of the spillway and other modifications to the structure and operation of the Project on

historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

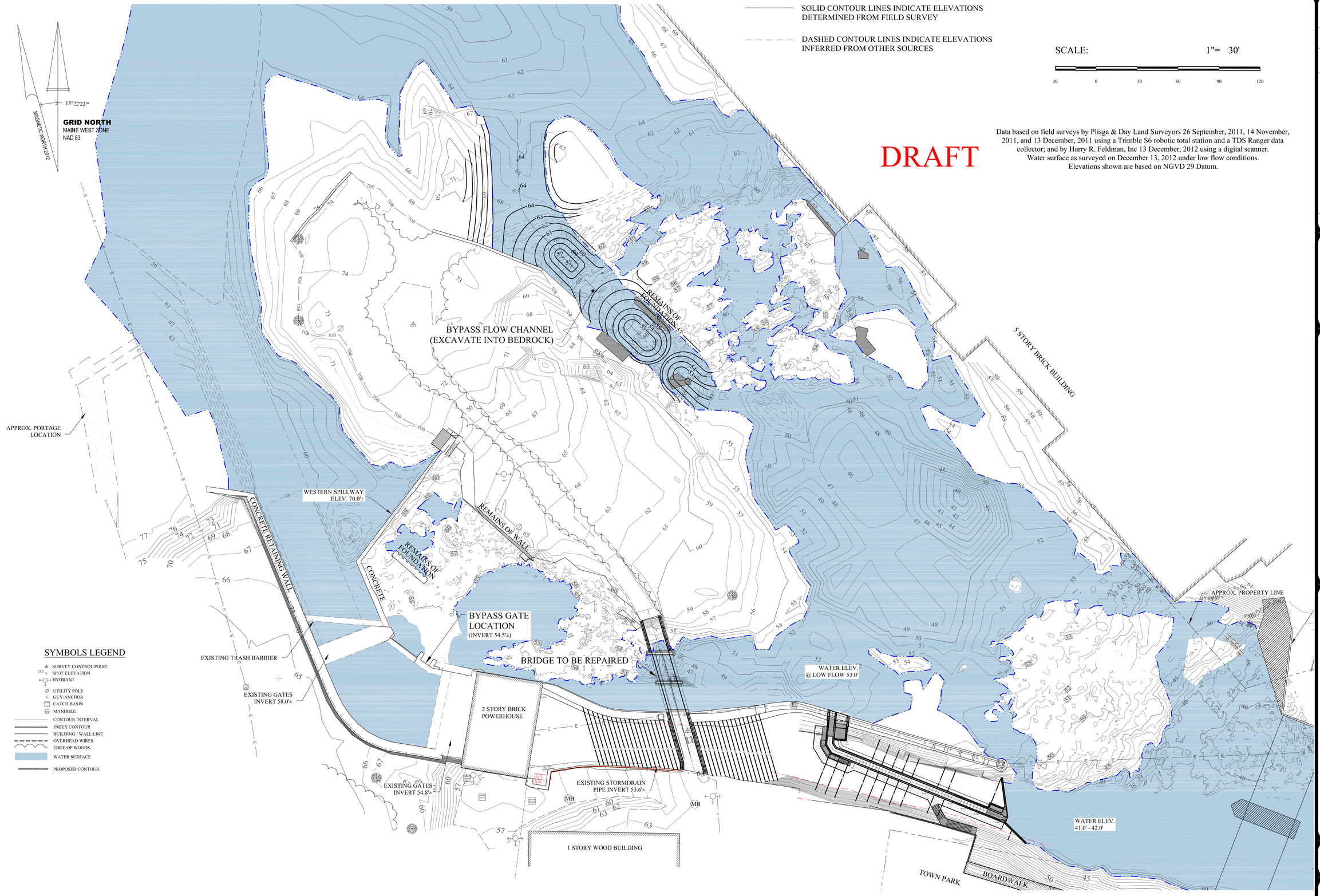
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

DRAFT



SYMBOLS LEGEND

- SURVEY CONTROL POINT
- SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- WATER SURFACE
- PROPOSED CONTOUR

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International Inc.

Saccarappa Fishway Project
Fishway Conceptual Design
Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-
C-
Sheet — of —

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

The Honorable Reubin Cleaves, Chief
Passamaquoddy Tribe, Pleasant Point Reservation
P.O. Box 343
Perry, ME 04667-0343

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Virginia Mitchell ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Virginia Mitchell
C. Date of Delivery 11/15/13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7010 2780 0002 4870 6541

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

John Banks, Director
Department of Natural Resources
Penobscot Indian Nation
6 River Road, Indian Island
Old Town, ME 04468

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

Dear Mr. Banks:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed action.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC), 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942),

Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Penobscot Nation can provide concerning the potential effects of partial removal of the spillway and

other modifications to the structure and operation of the Project on historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

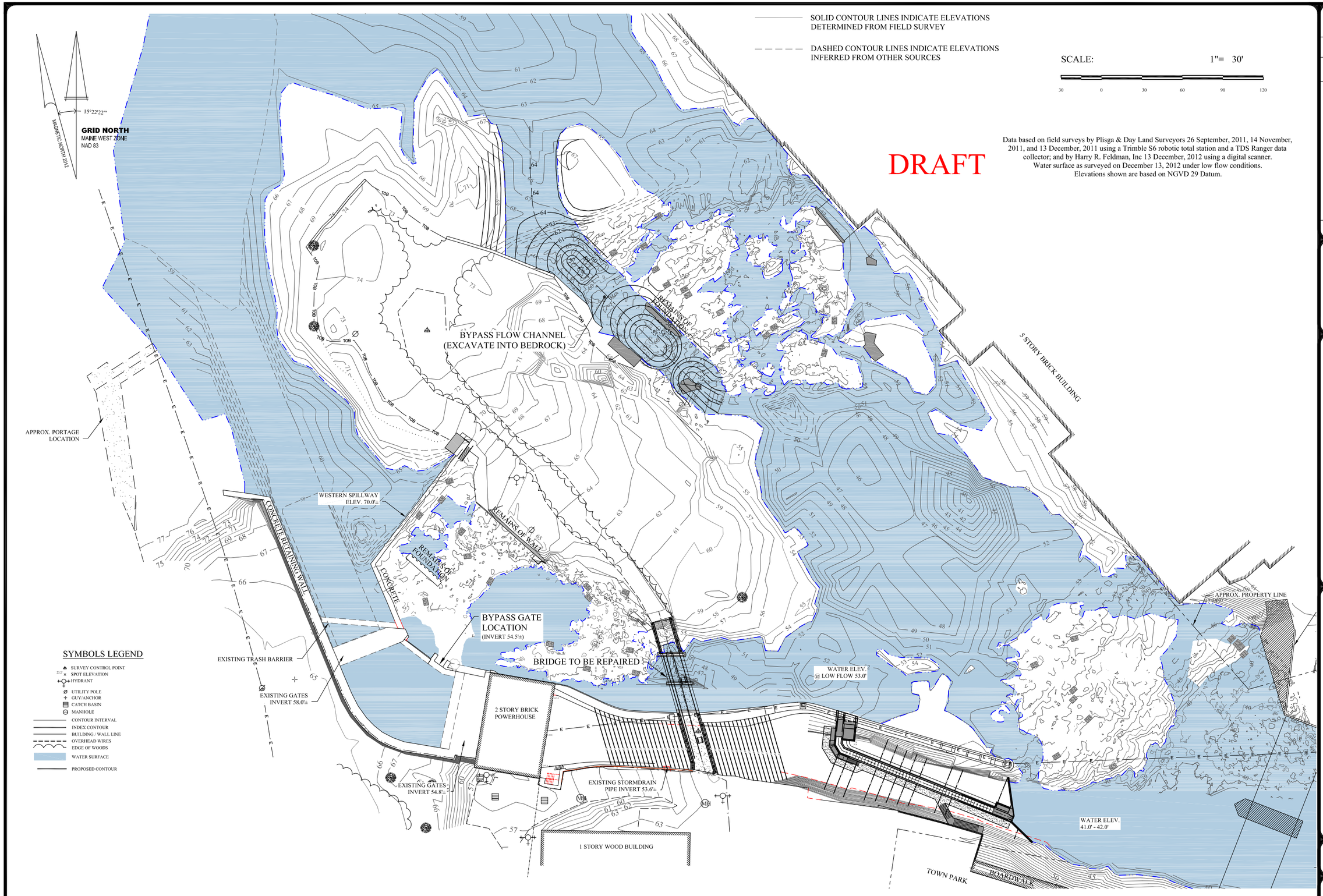
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

John Banks, Director
Dept of Natural Resources
Penobscot Indian Nation
6 River Road, Indian Island
Old Town, ME 04468

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Brenda Fields ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) Brenda Fields
C. Date of Delivery 11-15-13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number
(*Transfer from service label*) 7010 2780 0002 4870 6596

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

November 12, 2013

The Honorable Kirk Francis, Chief
Penobscot Nation
12 Wabanaki Way
Indian Island, ME 04468

Subject: Information Request Concerning Potential Modifications of Saccarappa Project

To the Honorable Kirk Francis:

HDR Engineering Inc. (HDR) is currently gathering the necessary information in association with the development of a Surrender Application for the Saccarappa Project Dam (FERC Project No. 2897) on behalf of S.D. Warren Company (S.D. Warren or Licensee). Upon approval by the Federal Energy Regulatory Commission (FERC), the Licensee proposes to decommission the Saccarappa Project (Project), install operational fish passage, and remove the Project's eastern spillway. HDR is seeking your input into any resource issues associated with these proposed action.

Project Description

The existing Saccarappa Dam is located on the Presumpscot River in Westbrook, Cumberland County, Maine (see Figure 1). The Project is operated in a run-of-river mode. The Project works consist of: (a) a 322-foot-long concrete dam, comprised of a 220-foot-long by 10-foot-high east overflow section and a 102-foot-long by 12-foot-high west overflow section; (b) a headgate structure of approximately 60 feet in length, with three 7.5-foot-wide by 9.5-foot-high intake gates; (c) a 380-foot-long by 36-foot-wide bedrock-lined intake canal; (c) an 80-foot-long forebay; (d) a 5.0-mile-long impoundment, with a normal pool elevation of 69.95 feet USGS datum, a surface area of about 87 acres and negligible storage; (e) a 49-foot-wide by 71-foot-long masonry powerhouse; (f) three horizontal Francis turbines direct-connected to generators, each with an installed capacity of 450 kilowatts (kW) for a total project installed capacity of 1,350 kW; (g) two bypassed reaches measuring 475 and 390 feet in length; (h) a 345-foot-long tailrace, formed by a 33-foot-high guard wall; (i) a 1-mile-long, 2.3 kilovolt (kV) transmission line/generator lead; and (j) other appurtenances. FERC issued a license (License) for the Project on October 2, 2003.

HDR Engineering, Inc.

970 Baxter Boulevard
Suite 301
Portland, ME 04103-5346

Phone: (207) 775-4495
Fax: (207) 775-1031
www.hdrinc.com

FIGURE 1 SACCARAPPA PROJECT

The Area of Potential Effect (APE) for the Saccarappa Project consists of the area immediately surrounding the Project structures and the impoundment to the normal pond elevation, as well as any recreation sites developed outside of this area. S.D. Warren has performed multiple surveys and evaluations of the historical properties within the APEs of the Company's hydroelectric projects. These surveys were in support of relicensing activities (for the License issued on October 2, 2003), and include:

- An Archaeological Phase 0 Study of the S.D. Warren Presumpscot River Hydroelectric Projects, Cumberland County, Maine. University of Maine Farmington Archaeological Research Center (UMFARC). 1997.
- Report on the supplemental Phase 0 survey of the five S.D. Warren hydroelectric projects on the Presumpscot River, Cumberland County, Maine (FERC No. 2942, FERC No. 2931, FERC No. 2941, FERC No. 2932, FERC No. 2897). Deborah B. Wilson, 1998.
- Report on the Phase I Archaeological Survey Report: S.D. Warren Company's five hydroelectric projects on the Presumpscot River, Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson, 1998.

- Phase II Archaeological Survey Report for five archaeological sites on the Presumpscot River Located within the Dundee (FERC No. 2942), Gambo (FERC No. 2931), Little Falls (FERC No. 2941), Mallison Falls (FERC No. 2932), Saccarappa (FERC No. 2897). Deborah B. Wilson and Dr. Bruce J. Borque, 2000.
- Report on the Phase I Historic Archaeological Survey of the Presumpscot River Hydroelectric Projects, Cumberland County, Maine. Timothy Dinsmore and Warren Riess, 1998.
- Eligibility of Project Structures for Nomination to the National Register of Historic Places. Roberts Janet E. Roberts and Ann G. Ball, 1997.

Because the Saccarappa station represents an important example of early 20th century hydroelectric engineering and its structures have retained a high degree of historic integrity, the SHPO determined that this Project meets National Register criteria.

As part of the 2003 relicensing of the Project, on July 15, 2002, the Maine State Historic Preservation Officer (SHPO) and the Commission executed a Programmatic Agreement (PA) for managing historic properties that may have been affected, to which S.D. Warren signed as a concurring party. The PA required, among things, that the Licensee develop a Historic Properties Management Plan (HPMA). The HPMP was submitted in October of 2004.

Proposed Action

As part of the conditions for the License issued by FERC, the Licensee is required to "construct denil fish ladders at the Saccarappa Dam no later than two years after fish passage is available at the Cumberland Mills Dam." On May 1, 2013, the fish passage facilities at the Cumberland Mill Dam were completed and put into operation. In accordance with the License for the Presumpscot River Projects, S.D. Warren is required to have operational fish passage at the Saccarappa Project in 2015.

As part of its surrender application, S.D. Warren is proposing to install the fish passage facilities in the tailrace of the Project (see Attachment 1 for a conceptual drawing). This work will also involve the potential removal of the eastern spillway to facilitate natural fish passage over the Upper Saccarappa Falls.

HDR, in cooperation with SD Warren, has reviewed the record of the relicensing of the Saccarappa Project, including the historic property surveys listed above. Based on this information, we do not believe the surrender proposal will have adverse impacts on historic or cultural properties that cannot be addressed by means of photographic recordation. We welcome any additional comments and information that the Penobscot Nation can provide concerning the potential effects of partial removal of the spillway and other modifications to the structure and operation of the Project on historic properties listed in or eligible for inclusion in the National Register of Historic Places.

If you have any questions or need additional information please contact me at (207) 775-4495. We appreciate your help on this matter.

Sincerely,
HDR ENGINEERING, INC.

Sean Murphy
Manager, Regulatory Services

ATTACHMENT 1
CONCEPTUAL FISH PASSAGE DESIGN

SOLID CONTOUR LINES INDICATE ELEVATIONS DETERMINED FROM FIELD SURVEY

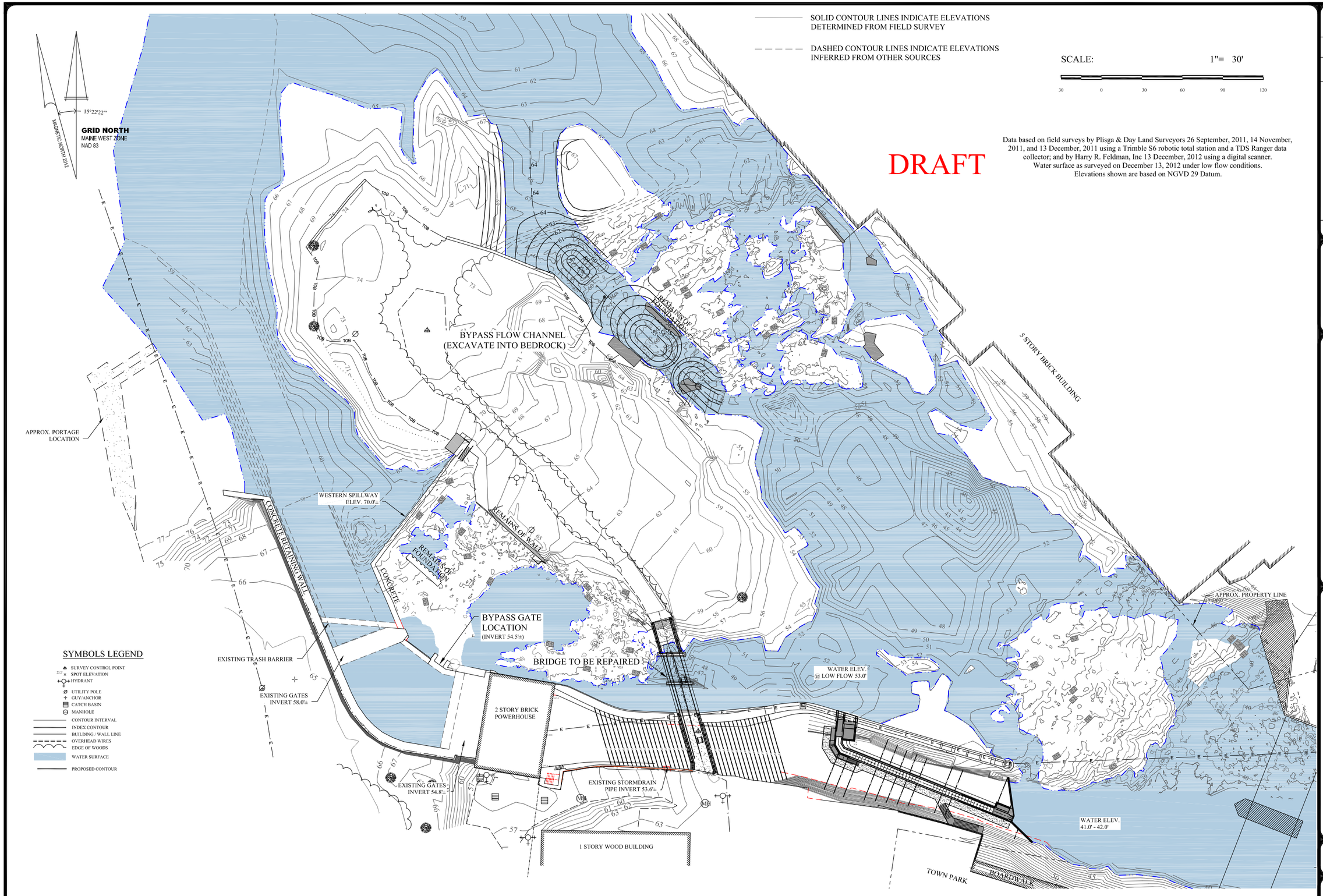
DASHED CONTOUR LINES INDICATE ELEVATIONS INFERRED FROM OTHER SOURCES

SCALE: 1"= 30'

30 0 30 60 90 120

DRAFT

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Water surface as surveyed on December 13, 2012 under low flow conditions. Elevations shown are based on NGVD 29 Datum.



DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: KJB
Chkd By: KJB
Aprvd By: WBB
Date: -

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Fishway Project

Fishway Conceptual Design

Overall Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
-

Drawing No: C-

C-

Sheet – of –

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

The Honorable Kirk Francis, Chief
Penobscot Nation
12 Wabanaki Way
Indian Island, ME 04468

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Brenda Fields
☐ Agent
☐ Addressee

B. Received by *(Printed Name)* Brenda Fields
C. Date of Delivery 1-15-13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7010 2780 0002 4870 6589

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION DEPARTMENT
12 WABANAKI WAY, INDIAN ISLAND, ME 04468
CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org FAX: 207-817-7450

NAME	Sean Murphy
ADDRESS	HDR Engineering, Inc. 970 Baxter Boulevard, Suite 301 Portland, ME 04103-5346
OWNER'S NAME	S.D. Warren Company
TELEPHONE	(207) 775-4495
FAX	(207) 775-1031
EMAIL	Sean.F.Murphy@hdrinc.com
PROJECT NAME	Saccarappa Project Dam (FERC No. 2897) – Decommission of dam, installation of fish passage, removal of eastern spillway
PROJECT SITE	Westbrook, ME
DATE OF REQUEST	November 12, 2013
DATE REVIEWED	November 20, 2013

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, and subsequent updates.

Also, if Native American cultural materials are encountered during the course of the project, please contact me at (207) 817-7471. Thank you.

CHRIS SOCKALEXIS, THPO
Penobscot Nation

Saccarappa Surrender Project
Responses To Comments Received
Consultation Draft of Surrender Application

Comment No.	Commenter	Comment	S.D. Warren Response
Comments from Francis Brautigam, Maine Department of Inland Fisheries and Wildlife, via e-mail dated November 20, 2015			
1	Francis Brautigam, MDIFW	Anadromous fish passage concerns under the management jurisdiction of the Maine Department of Marine Resources and United States Fish and Wildlife remain the focus of this consultation review. As such, the Maine Department of Inland Fisheries and Wildlife defers to these agencies to address anadromous fish passage needs associated with the proposed surrender of Saccarappa Dam.	N/A

Comment No.	Commenter	Comment	S.D. Warren Response
Comments from Laury Zicari, US Fish and Wildlife Service, via e-mail dated November 23, 2015			
1	Laury Zicari, USFWS	It is not clear how the triggers for fish passage construction at the upstream projects will be handled. The licenses for the Mallison and Little Falls projects call for upstream and downstream passage to be implemented after certain trigger numbers are documented passing the Saccarappa dam in any single season. With surrender and decommissioning of the Saccarappa Project, it is unlikely that the Federal Energy Regulatory Commission (FERC) will retain jurisdiction and oversight over the counting facility at Saccarappa dam. In addition, counting fish at the revised Saccarappa site will not be as simple as merely counting fish at the Denil – at least some initial testing will be necessary to determine the relationship between counts of fish passing through the Denil, versus overall passage at the site. Thereafter, a count at the Denil could be corrected to account for the percentage passing over the upper falls, or up the eastern side of the lower falls. These monitoring issues are not addressed in the surrender proposal. To ensure that the upstream facilities are constructed in a timely manner, and avoid the complexities and expense of calibrating and conducting a count outside the Commission's jurisdiction, the Service proposes to modify its Presumpscot River Prescription to require Mallison and Little Falls fish passage facilities to be constructed at a date certain, most likely two years after completion of Saccarappa fish passage facilities, or three years after the Saccarappa decommissioning order, whichever comes first.	Warren is not proposing to modify the Mallison Falls and Little Falls licenses. Those licenses require fish passage based on passage of certain numbers of American shad and blueback herring at Saccarappa. American shad and blueback herring will rarely, if ever, pass Saccarappa by means other than the proposed Denil fish ladder, so the counts of those species passing out of the Saccarappa fish ladder will be accurate and sufficient for purposes of the Mallison Falls and Little Falls fish passage conditions. There are no modifications to the Surrender Application needed based on this comment.
2	Laury Zicari, USFWS	The DLA addresses neither the schedule, nor the methods, for testing the effectiveness of the Saccarappa fish passage facilities. In particular, it is not clear at what point the surrender will be effective – i.e. whether, or to what degree, effectiveness testing (or any other activity) will be carried out under the FERC oversight. The need for effectiveness testing has been discussed with Sappi repeatedly during the fish passage negotiations of the last two years. Assessment is particularly important since the nature-like portion of the facility is unproven technology with many site-specific design elements. The Service is not certain that the West Channel Design will provide safe, timely and effective passage. One assumption of Sappi's proposed design is that fish exiting the Denil fishway will enter the west channel in a timely manner. During the design negotiations among the stakeholders, the need to study the relationship between passage through the Denil section, in relation to passage through the entire site, was discussed on several occasions. The parties agreed that monitoring studies needed to include behavior though each part of the passage facility to assess overall effectiveness. The Final License Application should reflect this agreement and include proposed monitoring methods.	Warren did not, and does not, agree that monitoring studies are needed to assess overall effectiveness. Warren is not proposing effectiveness testing because Warren is confident that the Western Channel Design will provide safe, timely, and effective passage, and it will be significantly better than the extremely limited passage that existed prior to development of the Saccarappa site. There are no modifications to the Surrender Application needed based on this comment.

Comment No.	Commenter	Comment	S.D. Warren Response
3	Laury Zicari, USFWS	By removing Saccarappa Dam, the parties intent is to restore the project site and provide passage for native (i.e., historically present) diadromous fish species…specifically, American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), river herring (*Alosa aestivalis*), and Atlantic salmon (*Salmo salar).* The Service is disappointed to find extensive discussion in the DLA of whether Project waters historically supported diadromous fishes (Section 5.7.4 and various). We believe the merits of this issue were adequately investigated in the Saccarappa Project relicensing, and also documented in the proceedings resulting in upstream passage at Cumberland Mills. The question has been litigated, in short, and a determination reached, and an attempt to revisit the issue at this point is unlikely to be productive. More importantly, our discussions and negotiations over the last three years have been predicated on accepting the fact that migratory fish passage is a necessary component of Presumpscot River restoration. To wit, we have agreed that American eel, river herring, American shad, and Atlantic salmon are part of the native fauna. As to the merits of the historic arguments, we offer the following. Sappi questions whether anadromous fishes were able to migrate past Saccarappa falls prior to the construction of man- made barriers on the Presumpscot River in the early 1700s. Sappi cites written records produced by Captain Levett who noted the great quantities of Atlantic salmon and other good fish in the Fore River, but does not mention the presence of fish in the Presumpscot River (P79). Sappi also notes (P. 80) that various unnamed fisheries experts "…have indicated that the lower falls at Saccarappa are, and therefore were, not passable by river herring and shad with the possible exception of some exceptional fish under certain flow conditions." Sappi previously raised questions about the presence of migratory fish when the Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee projects were undergoing relicensing. In response to these assertions, several conservation groups introduced into the administrative record of the relicensing, documents that decisively prove that anadromous species migrated past Saccarappa falls. Presumably, the FERC agreed since the agency ordered fish passage facilities at Saccarappa and the other projects. In summary, upstream waters currently support American eel. River herring are now present at the Saccarappa Dam. American shad are found in downstream waters. There is no question that Atlantic salmon migrated to the furthest reaches of the Presumpscot River headwaters. Safe, timely and effective passage for these fishes is integral to the restoration of the watershed and the Service is committed to this goal.	This entire section of the Surrender Application dealing with the issue of historic fish passage at Saccarappa is included in the Surrender Application to address the Additional Information Request (AIR) from FERC dated April 9, 2014. The AIR reads in part: "28. Provide further discussion of: (a) whether, and to what extent, the falls at the project dam were ever passable to anadromous fish; (b) what alterations to the site occurred prior to S.D. Warren's involvement and did those alterations affect fish passage at the site; and (c) in what ways did construction of the existing dam alter fish passage. Support your discussion and conclusions with documentation and data specific to the project area." The draft Surrender Application clearly indicates that the lower falls and eastern falls may have been passable for some anadromous fish under certain flow conditions. All the available evidence indicates that the falls on the western side of the island were probably not passable by some species due to the steepness of the falls in the western channel. Warren is not disputing previous conclusions that anadromous species, specifically American eels and Atlantic salmon, migrated above Saccarappa Falls. The available data support a conclusion that passage over the lower falls and the falls on the east side of the island for river herring and shad is rarely, if ever, possible. If the upper and lower falls at Saccarappa were or are passable by river herring and American shad under the full range of design flow conditions, there would be no need to construct fish passage facilities at the site. Warren's fish passage proposal will provide significantly better passage than the extremely limited passage that existed prior to development of the Saccarappa site. The appropriate sections of the Surrender Application have been modified to clarify Warren's response to the AIR from FERC.

Comment No.	Commenter	Comment	S.D. Warren Response
4	Laury Zicari, USFWS	The Presumpscot River has been highly modified. The regulation of flow from Sebago Lake and the presence of eight mainstream dams between Sebago Lake and the sea create an unnatural river system with artificial lakes, and a truncated flow regime. At Saccarappa Dam, the river channel and surrounding portion of the City of Westbrook have been significantly altered. However, Sappi states that, "The physical size and footprint of the river that exists today is similar to that which existed prior to the construction of dams at this site." (Page 66). Sappi then contradicts this statement (at page 80), stating that, "The western side of the river, westerly of the island, was, however, altered significantly during construction of the Saccarappa powerhouse, forebay canal, and tailrace channel." The Project site currently has an east channel, a west channel with excavated forebay, and an excavated tailrace. In contrast, an 1840 plan of Saccarappa Village clearly shows three channels at the Saccarappa site: 1) an east channel similar to existing east channel, 2) a narrow middle channel that has been modified to become the current west channel and tailrace, and 3) a west channel that came within an estimated 100 feet of Main Street. The original west channel no longer exists; it has been replaced by buildings, parking lots, and a lawn. Sappi asserts that that the surrender and dam removal will restore the river to the natural conditions before the construction of this hydro project, and that the Western Channel Design will cause the water level in the river to be the same as existed prior to the development of hydroelectric facilities at the site (pages 2, 12, 31, 38, 46 and 66). Sappi's assertions are incorrect. The proposed surrender and fishway construction will not restore the three channels that originally existed at the site. The western channel, which may have been at a lower elevation than the other channels, will not be restored. Furthermore, Sappi asserts that the east channel hydraulic control will be provided by ledge at EL 64 feet. Sappi relies, in part, on a 1900 drawing with bathymetry by W. Foster (described on P80). However, the original Saccarappa Dam and Hydroelectric Facility were constructed in 1887, and there is some uncertainty about the accuracy of these data and what datum was used. It the Service's opinion that the DLA does not provide sufficient information to determine the relative distribution of flow in the east and west channels. Determining the future flow regime at the Saccarappa Project site is critical to the fish passage design. Sappi rejected the extensive bedrock excavation in the eastern channel proposed in the Two Channel Design because, "it would lower the water levels upstream of the site lower than pre-development historic levels and more than is necessary in order to provide fish passage at the site. The potential impacts and unintended consequences of lowering water level below that, which has ever existed, could be substantial." Sappi should provide all available information (e.g., field data, impoundment bathymetry, and hydraulic modeling) on the division of flow between the East and West channels.	It was Warren's intent to indicate that the river segment between Saccarappa and Mallison Falls, including all tributaries to that segment of the river, will be restored to the natural conditions that existed before construction of hydropower at the site – not that the Saccarappa site will be restored to natural conditions. The draft Surrender Application stated that Warren will "restore the river to the natural conditions before the construction of this hydro project". The wording in the draft is not as clear as it could be, so the appropriate sections of the Surrender Application have been modified to make the meaning clear. It was not Warren's intent to imply that the Saccarappa site will be returned to pre-development conditions. The data that were used for historic surveys and construction of hydroelectric facilities at Saccarappa are accurate. Warren has included in the Surrender Application field data, impoundment bathymetry, and the results of hydraulic modeling (on the future flow split between the east and west channels).

Comment No.	Commenter	Comment	S.D. Warren Response
5	Laury Zicari, USFWS	As noted in the Service's September 21, 2015 letter, at the level of detail available, the Service views the two west channel designs as similar. The Service also noted MDMR's analysis indicating that the East channel option may provide a better option for fish passage, though that raised concerns about the effect of the lowering of the head on areas of the impoundment. The Service reserves the right to refine its analysis as further design goes forward and the record is further developed.	Warren is also concerned about the potential effects of lowering the water level in the river segment between Saccarappa and Mallison Falls (including tributaries to that section of the river). The public has expressed concerns about the potential impact of the changes in water levels proposed by the Surrender Project. The public has indicated that the water levels in the river should not be lowered any more than is necessary. Additional lowering of the impoundment would present issues with respect to impacts to wetlands and embankment stability, in addition to impacts to people who use the river for recreation, agriculture, and commercial uses. Warren has not made any changes to the Surrender Application in response to this comment.
6	Laury Zicari, USFWS	The Project schedule should include dates when the 60 percent and 90 percent drawings for the Western Channel Design for upstream fish passage will be available for review by the State and Federal resource agencies	Warren has no plans to submit intermediate and/or final design drawings for review by state and federal resource agencies because such review is not necessary and there is not enough time in the schedule to allow for such review. If time is allocated for review of intermediate or final design drawings, the planned May 1, 2017 operational date for fish passage will need to be modified. Warren has not made any changes to the Surrender Application in response to this comment.
7	Laury Zicari, USFWS	Page vii. Sappi's proposed schedule identifies May 1, 2017 as completion of construction and commencement of fish passage. Fishways require a shakedown period following completion of construction. While, a project like this is less complex than a fish lift, it is still prudent to allow a period of flow/velocity/water surface testing over a range of flows that sufficiently characterize future operations. It is not clear at what point in this period Sappi anticipates the surrender being effective. Response – The Service recommends that Sappi move the proposed construction completion date to April 15, 2017 and follow that with a two-week shakedown period to ensure proper operation prior to the start of the fish passage season on May 1. The Service (and MDMR) should have unfettered access to the site and input to modifications during that shakedown period.	Surrender Application Section 4.2.2.1 includes provisions for startup and testing. It is not called a "shakedown period," but it means the same thing. Warren has not made any changes to the Surrender Application in response to this comment.
8	Laury Zicari, USFWS	Page 4. Please provide the crest elevation for each spillway section described in the second paragraph.	The crest elevations of both spillways vary from 69.8 to 70.0. The information has been added to the Surrender Application.

Comment No.	Commenter	Comment	S.D. Warren Response
9	Laury Zicari, USFWS	Page 14. We are disappointed to read the comment that the Service Prescription will not provide safe, timely or effective fish passage, as this issue has been litigated and resolved to the contrary. Response – The Service recommends that Sappi remove this comment, as it is not productive to attempt to re-argue the issue.	Currently available information (not available at the time of the Service's Saccarappa prescription) demonstrates that a Denil fishway, as described in the Saccarappa prescription, with a rise of approximately 30 feet, would potentially have a very low passage efficiency and effectiveness for shad and river herring. In addition, a Denil ladder with multiple entrances at the powerhouse tailrace and the western channel would potentially have one or more switchbacks or multiple changes in direction that are known to be problematic for shad. The Denil at Cumberland Mills is at the upper end of the accepted length and head for an effective and efficient Denil fishway. Warren has not made any changes to the Application in response to this comment.
10	Laury Zicari, USFWS	Page 45. In 2015, the Eel Weir Project was re-licensed, and a new flow regime for this upstream project was created. As a result, future flows at the Saccarappa project will change and this change will affect the operating range of the fishways proposed for the Saccarappa project. Based on historical operations, the Service identified an operating range of 225 cubic feet per second (cfs) to 2350 cfs (the 95 percent and 5 percent flow exceedance probabilities, respectively). Sappi suggests that the changes at Eel Weir will change the 95 percent and 5 percent exceedances to 300 cfs and 1500 cfs, respectively. The Service cannot verify this "future" flow duration curve and no basis for it is provided in the DLA. This flow operating range directly correlates to the flow velocities at the site and to the future effectiveness of the fishways. It is critical that the Service verify this future flow duration curve. Response – The Service recommends that Sappi include the basis for this flow duration curve in the Final License Application. Typically, the flow duration curve (for a highly regulated reach) necessitates modeling or a river routing analyses (e.g., Muskingum technique) that incorporates upstream project operations. Analytical methods used to develop the revised flow duration curve should be included in the Final License Application.	The new flow duration curve (FDC) for the Saccarappa site was presented at the technical meeting in Hadley, Massachusetts on July 14, 2015, at which Service representatives were present. It is not possible to provide a calculated FDC because the new flow regime for release of water from the Eel Weir Project has not yet been fully implemented. Some of the details of the new lake level management plan, and minimum flow requirements, are described in the Surrender Application. The new FDC is predicated on the following facts: • The existing FDC is incorrect because it is based on data from a period of time when the regulation of flows out of Sebago Lake was substantially different than it will be when the new flow regime for Eel Weir is fully implemented. • In the future, the low flow releases will be higher and the high flow releases will be lower than they were during the period when the data were obtained for the old FDC. • The median flows in the river at Saccarappa will likely be similar to the median flows in the past. In other words, the new flow regime at Eel Weir will not cause more or less water to be retained or released over the long term. Approximately 77% of the drainage area for Saccarappa is above the Eel Weir Dam. That means that, on average, approximately 77% of the flow at Saccarappa is manually regulated by the releases at Eel Weir Dam. The remaining 23% is unregulated flow from overland runoff and the tributaries below Eel Weir Dam. The changes in flow releases based on the 2015 Eel Weir license will have a dramatic effect on flows at Saccarappa, and the new FDC is likely a conservative estimate of what the changes will mean to the recurrence interval of flows at the site. The design flows from the new FDC are well within the design flow boundaries of the old FDC. Based on the old FDC, the design flows for the site were 225 to 2,250 cfs. Based on the new FDC, the design flows are 500 to 1,500 cfs. The performance evaluations provided in the Surrender Application are based on the range of river flows from 500 to 1,500 cfs river flow during fish passage season, which flows are within the old FDC. Therefore, the new FDC will not have any effect on the design. Section 5.2.1.1 of the Surrender Application has been modified to further address this issue.

Comment No.	Commenter	Comment	S.D. Warren Response
11	Laury Zicari, USFWS	Pages 56-57. The DLA notes that required monitoring and evaluation of the Cumberland Mills Dam upstream fishway was conducted in 2013, 2014 and 2015. The DLA provides details of 2014 studies including an estimate of the number of river herring passed through the fishway. The DLA discussion of 2014 monitoring notes that no American shad were observed passing the site in 2014. The studies conducted to date have not demonstrated that the Cumberland Dam fishway is effectively passing the target species. Response – The Service requests that this section note that upstream passage requirements are not contingent on the effectiveness of the Cumberland Mills facility.	The upstream passage requirements contained in the FERC Saccarappa license will no longer apply once FERC has accepted the surrender of the Saccarappa license.
12	Laury Zicari, USFWS	Page 57. SAPPI describes *Proposed Conditions* for anadromous species (Section 5.3.3.2). Section 5.3.3.2 focuses on fish passage and available habitat for the restoration of diadromous species. However, the first three sentences discuss the history and removal of the Smelt Hill Dam in 2002. Response – The history of Smelt Hill dam is not relevant to the *Proposed Conditions* for anadromous fishes that will be realized by removing Saccarappa Dam and restoring aquatic habitats in the portion of the Presumpscot River upstream of Saccarappa Dam. The text should be deleted, or moved to the extensive background discussion of historic fish passage impediments on pages 78-81 (see Comment 13).	See response to 13 below. The text has been moved.
13	Laury Zicari, USFWS	Section 5.7.4 *History of Fish Passage at Saccarappa* (pages 78-81). The first paragraph of this extensive recitation of the history of Presumpscot River hydro-mechanical mills states that, "It is very unlikely that anadromous fish, with the possible exception of Atlantic salmon, were able to pass the Saccarappa site even before any man-made water diversion structures or dams were built at the site." Response – The statement is not supported by facts or analyses provided in the DLA. Rather, the previous relicensing proceeding for the Saccarappa project, as well as the State proceeding to provide fish passage at the Cumberland Mills Dam, are both replete with historical accounts and evidence that anadromous fishes were present in the Presumpscot River upstream of Saccarappa Falls (e.g., the 1785 law requiring opening gates to pass anadromous fishes). The Service requests that the entire section be deleted. The only relevant point is that the Saccarappa Falls have been extensively modified in the last 300 years.	The draft Surrender Application clearly indicates that the lower falls and eastern falls may have been passable for some anadromous fish under certain flow conditions. All the available evidence indicates that the falls on the western side of the island were probably not passable by some species due to the steepness of the falls in the western channel. Warren is not disputing previous conclusions that anadromous species, specifically American eels and Atlantic salmon, migrated above Saccarappa Falls. The available data support a conclusion that passage over the lower falls and the falls on the east side of the island for river herring and shad is rarely, if ever, possible. If the lower falls were or are passable by river herring and American shad under the full range of design flow conditions, there would be no need to construct fish passage facilities at the lower falls. Warren's fish passage proposal will provide significantly better passage than the extremely limited passage that existed prior to development of the Saccarappa site. The appropriate sections of the Surrender Application have been modified to clarify Warren's response to the AIR from FERC.

Comment No.	Commenter	Comment	S.D. Warren Response
14	Laury Zicari, USFWS	Page 83. The DLA description of *Proposed Conditions* states that, "No modifications are proposed in the eastern channel to promote or enhance fish passage, so the eastern channel is available for structural enhancements of recreational boating." Response – The Service finds this proposal unacceptable and in conflict with negotiations over the last three years. Sappi and the resource agencies agreed in 2013 that removing ledge in the eastern falls was needed to provide passage. The Service reiterated this point in our comment letter of September 26, 2015 on fish passage design, where we recommended that Sappi, "Modify ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding."	The Service is referring to discussions and negotiations related to a completely different design, and those discussions do not apply to the current Western Channel Design being proposed in this Surrender Application. Warren's new design makes the comment irrelevant and not applicable to the Surrender Project that is the subject of this Surrender Application. Warren's earlier proposal was for a project that included the removal of bedrock to create the diversion channel to enhance passage at the upper eastern falls under a wider range of river flow conditions. Warren has never agreed to include bedrock removal in the eastern channel in relation to the Western Channel Design, and such bedrock removal is unnecessary to ensure safe, timely, and effective passage at the site.
15	Laury Zicari, USFWS	Pages 83-84. The DLA description of *Proposed Conditions* states that, "The second structural modification being contemplated by the City is described as *minor sculpting* of the upper eastern falls above the middle pool (between the upper and lower falls) and well downstream of the existing spillway. Preliminary design drawings for the City's proposal are included in Appendix G. These modifications in the upper eastern falls will be permanent, non-moveable structures and consist primarily of concrete or rock features combine with bedrock removal to create the desired enhancement to the whitewater features that already exist at the upper falls." (emphasis added) Response – We do not find modifications to the ledges of the eastern falls ledges to be depicted in any drawings, nor described in any text, of Appendix G. Please modify Appendix G drawings to show the extent and location of ledge removal and modification. Please describe the specific ledge removals and modifications in the text of Appendix G. Please note the purpose of each ledge removal or modification, as to whether it is for recreation or fish passage. The Service is very concerned that ledge modifications for recreation proposes may interfere with fish passage, as noted in the previous comment.	The preliminary design drawings of the City's proposed recreational enhancements in the upper eastern channel were not available until after the DSA was distributed. The text of the Surrender Application and Appendix G have been modified to include the supplemental information from the City. The drawings and descriptions from the City, however, are being provided for information only. Warren is not seeking approval for the City's plans for recreational enhancements; the potential recreational enhancements being considered by the City are not part of Warren's application. The City may seek the appropriate state and federal permits for recreational enhancements and Warren may coordinate construction activities with the City to realize construction synergies.
16	Laury Zicari, USFWS	Appendix D, page 3. Throughout the 2013 surrender application, the intent was to allow the Parties (including the Service) an "opportunity to attempt to reach agreement on design, surrender, decommissioning, post-construction operations and maintenance, and effectiveness testing of such alternative to the fish passage proposed in the Surrender Application". To the Service's knowledge, no such agreement on post-construction O&M has been reached. While such agreements may be reached later, at a minimum, the Service should have input on the operations and maintenance plan for this site. Response – The Service recommends that Sappi acknowledge the need for Service (and MDMR) input on a future fishway operations manual.	Warren will submit a draft of the O&M plan for the Surrender Project to DMR and the Service for review and comment. The Surrender Application has been amended to include this statement.

Comment No.	Commenter	Comment	S.D. Warren Response
17	Laury Zicari, USFWS	Appendix G, Sheet 7 of 13. Turbidity and refraction typically limits the effectiveness of counting fish (visually or via video) in wide exit channels. The 3'-4" wide channel may be too large. Response – A removable static crowder is recommended on the wall opposite of the counting window. The static crowder should be built from stainless or aluminum 1"x 3" or 1"x 4" grating oriented horizontally to limit adult river herring from moving through the grating.	Warren has included provisions for a removable crowder at the exit end of the double Denil fishway (see sheet 7). The details of how the crowder will be constructed will be developed during final design.
18	Laury Zicari, USFWS	Appendix G, Sheet 7 of 13. Sappi proposes to separate the two Denil channels with an eight inch concrete wall. Though a one-foot thick wall is typical, an eight inch wall may be acceptable as an interior wall. However, Sappi also proposed to mount the Denil baffles using angle iron (note the 3'-11" baffle width). Angle iron brackets will require multiple penetrations into the eight inch thick wall. Given the limited concrete cover over the rebar in an eight inch water-retaining wall, the penetrations may, over time, expose the rebar and significantly reduce the design life of the fishway. Response – Recommend that Sappi modify the plans to include a one foot wide interior wall.	The details regarding the structural configuration of the dividing wall between the two fishways will be developed during final design. The comments by the Service will be considered then.
19	Laury Zicari, USFWS	Appendix G, Sheet 7 of 13. The double Denil will provide Sappi (and future owners/operators) the opportunity to shut down one side of the fishway while providing passage through the other side. This will benefit fish by minimizing in-season shut downs due to maintenance operations and repair work. Response – To provide for shut downs on one side of the double Denil, recommend that Sappi modify the plans to include four separate stop log slots (eight concrete bond-outs) at the intersections of the sloped channels to the exit channel and resting pool. Additionally, recommend that the dividing wall in the resting pool be replaced with a removable timber/aluminum section to facilitate cross-over.	Warren will consider this comment during the final design process. Warren intends to provide stop log slots to facilitate flexibility in the operation of the fishway, including provision to operate one side at a time. The recommendation regarding the cross-over at the resting pool will be considered.
20	Laury Zicari, USFWS	Appendix G, Sheet 7 of 13. Sappi shared an early draft of the Denil fishway design in August of 2015. In those drawings, the Denil resting pool was 37 feet long. These revised drawings have drastically shortened the resting pool to 12'-7". A longer resting pool ensures hydraulic conditions (e.g., air entertainment, turbulence) are suitable for fish to rest. While 12 feet is the minimum for a 4-foot-wide Denil, this unconventional double Denil may necessitate more pool volume to dissipate energy. Response – Recommend that Sappi revise the resting pool design to a minimum of 18 feet long (without altering the 1:8 slope).	Warren understands that 12 feet is the minimum length of the resting section for a 4-foot-wide Denil but fails to understand why having two parallel Denil fishways would have any effect on the length of the resting section. Warren will consider the comment related to the length of the intermediate resting section and may contact the Service to better understand the basis for this comment that a double (parallel) Denil will perform differently than a single Denil.

Comment No.	Commenter	Comment	S.D. Warren Response
Comments from Oliver Cox, Maine Department of Marine Resources, via e-mail dated November 23, 2015			
1	Patrick Keliher, MDMR	Were anadromous fish historically able to migrate past the Saccarappa Falls? In Section 5.7.4 *History of Fish Passage as Saccarappa,* Warren questions whether anadromous fishes were able to migrate past Saccarappa falls prior to the construction of man-made barriers on the Presumpscot River in the early 1700s. Warren cites written records produced by Captain Levett who noted the great quantities of salmon and other fish in the Fore River, but does not mention the presence of fish in the Presumpscot River (P79). Warren also notes (P. 80) that various unnamed fisheries experts "have indicated that the lower falls at Saccarappa are, and therefore were, not passable by river herring and shad with the possible exception of some exceptional fish under certain flow conditions." MDMR is surprised and perplexed that Sappi is raising this question now, since this question has been answered separately, consistently and decisively by three separate regulatory agencies-- FERC, the Maine Department of Environmental Protection and the Maine Department of Inland Fisheries and Wildlife (MDIFW) in three separate, contested regulatory proceedings over the last decade after Warren previously raised this issue, first when the Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee projects were undergoing relicensing, and then when MDIFW was adjudicating whether a fishway was required to be installed at Warren's downstream Cumberland Mills dam. At those times, and in response to Warren raising the question, several conservation groups [1 introduced] into the administrative record of these proceedings a document that decisively proved that anadromous species migrated above Saccarappa Falls. FERC and Maine DEP each separately agreed, and each ordered fish passage facilities at Saccarappa and Warren's upstream projects based on their separate conclusions that shad and river herring, as well as Atlantic salmon, each historically migrated beyond Saccarappa Falls. In its Order issued in June, 2009, MDIFW not only reached a similar finding, but recited and reaffirmed the findings from FERC and Maine DEP.[2] MDMR requests that the Licensee acknowledge the historic presence of anadromous fish in Project waters.	This entire section of the application dealing with the issue of historic fish passage at Saccarappa is included in the Surrender Application to address the Additional Information Request (AIR) from FERC dated April 9, 2014. The AIR reads in part: "28. Provide further discussion of: (a) whether, and to what extent, the falls at the project dam were ever passable to anadromous fish; (b) what alterations to the site occurred prior to S.D. Warren's involvement and did those alterations affect fish passage at the site; and (c) in what ways did construction of the existing dam alter fish passage. Support your discussion and conclusions with documentation and data specific to the project area." The draft Surrender Application clearly indicates that the lower falls and eastern falls may have been passable for some anadromous fish under certain flow conditions. All the available evidence indicates that the falls on the western side of the island were probably not passable by some species due to the steepness of the falls in the western channel. Warren is not disputing previous conclusions that anadromous species, specifically American eels and Atlantic salmon, migrated above Saccarappa Falls. The available data support a conclusion that passage over the lower falls and the falls on the east side of the island was challenging, especially for river herring and shad, under certain flow conditions. If the lower falls were or are passable by river herring and American shad under the full range of design flow conditions, there would be no need to construct fish passage facilities at the lower falls. Warren's fish passage proposal will provide significantly better passage than the extremely limited passage that existed prior to development of the Saccarappa site. The appropriate sections of the Surrender Application have been modified to clarify Warren's response to the AIR from FERC.

Comment No.	Commenter	Comment	S.D. Warren Response
2	Patrick Keliher, MDMR	In section 5.2.1.1 (P45), Warren introduced a new flow duration curve that would substantially change the design flows for fish passage at the Saccarappa Project from 300-3,000 cfs to 300- 1,500 cfs. Warren states that the new curve results from the new flow regime required for the recently licensed Eel Weir project at the outlet of Sebago Lake. This new flow duration curve was not available during the design process, has not been reviewed by the resource agencies, and could significantly alter MDMR's assessment of the upstream passage designs. What data were used to create this flow duration curve? Clearly a period of record was not available for analysis since the new Eel Weir flow regime has just been implemented. In addition, there can be substantial contribution from the unregulated drainage area downstream of Eel Weir Project (P42). We therefore request that Warren provide a detailed description of how the new flow duration curve was developed and provide calculations for review. If the flow duration curve is correct, MDMR will need time to reassess the fish passage designs.	The new flow duration curve (FDC) for the Saccarappa site was presented at the technical meeting in Hadley, Massachusetts on July 14, 2015, at which a DMR representative was present. DMR correctly points out that it is not possible to provide a calculated FDC because the new flow regime for release of water from the Eel Weir Project has not yet been fully implemented. The new FDC is predicated on the following facts: • The existing FDC is incorrect because it is based on data from a period of time when the regulation of flows out of Sebago Lake was substantially different than it will be when the new flow regime for Eel Weir is fully implemented. • In the future, the low flow releases will be higher and the high flow releases will be lower than they were during the period when the data were obtained for the old FDC. • The median flows in the river at Saccarappa will likely be similar to the median flows in the past. In other words, the new flow regime at Eel Weir will not cause more or less water to be retained or released over the long term. Approximately 77% of the drainage area for Saccarappa is above the Eel Weir Dam. That means that, on average, approximately 77% of the flow at Saccarappa is manually regulated by the releases at Eel Weir Dam. The remaining 23% is unregulated flow from overland runoff and the tributaries below Eel Weir Dam. The changes in flow releases based on the 2015 Eel Weir license will have a dramatic effect on flows at Saccarappa, and the new flow duration curve is likely a conservative estimate of what the changes will mean to the recurrence interval of flows at the site. The design flows from the new FDC are well within the design flow boundaries of the old FDC. Based on the old FDC, the design flow for the site is 300 to 2,250 cfs. Based on the new FDC, the design flows are 500 to 1,500 cfs. The performance evaluations provided in the Surrender Application are based on the range of river flows from 500 to 1,500 cfs, which flows are within the old FDC. Therefore, the new FDC will not have any effect on the design. Section 5.2.1.1 of the Surrender Application has been modified to further address this issue.

Comment No.	Commenter	Comment	S.D. Warren Response
3	Patrick Keliher, MDMR	Warren indicates (P2) that the surrender and dam removal will "restore the river to the natural conditions before the construction of this hydro project" and that the Western Channel Design will cause the water level in the river to be the same as existed prior to the development of hydroelectric facilities at the site (P12,P31, P38). Warren's assertions are incorrect. The Presumpscot River and surrounding land at the Saccarappa Project have been highly modified. The Saccarappa Project site currently has two channels (P8), termed the east channel and west channel. However, an 1840 plan of Saccarappa Village (provided to the agencies by Warren) clearly shows three channels at the Saccarappa site: 1) an east channel similar to existing east channel, 2) a narrow middle channel that approximates the location of the current west channel and tailrace, and 3) a west channel that came within an estimated 100ft. of Main Street. The original west channel no longer exists; it has been replaced by buildings, parking lots, and a lawn. The proposed surrender and fishway project will not restore this original western channel. Warren asserts that after removal of the two spillways, hydraulic control at Saccarappa will be provided by ledge in the eastern channel at EL 64 feet, which Warren contends is the natural, historic elevation of this portion of Saccarappa Falls. Warren's conclusion is based on a single 1900 drawing with bathymetry by W. Foster (described on P80). However, the original Saccarappa Dam and Hydroelectric Facility were constructed in 1887, and there is uncertainty about the accuracy of these data and what datum was used. Further, Warren has not produced information *predating* the period of substantial development and alternation of the Saccarappa site-beginning in approximately 1850 -- that reliably demonstrates natural conditions at the site. In addition, given the major alternations at the Saccarappa site undertaken over the last 150+ years to maximize mechanical power and then hydropower production at the expense of fish passage, basing a design solely on restoring the falls at the upper Eastern channel to their pre-1887 condition (even if they could be reliably known) strikes MDMR as an arbitrary and not useful goal. Warren needs to demonstrate that solely by removing the spillway in the Eastern channel, its design will create safe, timely and effective fish passage in that channel. Further, our understanding is that Warren rejected the bedrock excavation in the eastern channel proposed in the Two Channel Design because "it would lower the water levels upstream of the site lower than pre-development historic levels and more than is necessary in order to provide fish passage at the site. The potential impacts and unintended consequences of lowering water level below that which has ever existed, could be substantial. Warren has not demonstrated the accuracy of these statements and needs to do so if this is even a part of its rationale for rejecting the Two Channel Design.	Warren has amended applicable sections of the Surrender Application to clarify the intent and meaning of the sections dealing with this subject. First, there is no uncertainty about the accuracy of the data and what datum was used. The data are accurate, and Warren has a full understanding of how the different data affect the interpretation and results. Second, Warren knows that the bedrock topography depicted from the 1900's era survey and the 2014 survey in the eastern side of the river, 120 feet upstream of the dam, are almost exactly the same. There are no indications that any structures existed in the river that far upstream of the existing and historic dams. It was Warren's intent to indicate that the river segment between Saccarappa and Mallison Falls, including all tributaries to that segment of the river, will be restored to the natural conditions that existed before construction of hydropower at the site – not that the Saccarappa site will be restored to natural conditions. The draft Surrender Application stated that Warren will "restore the river to the natural conditions before the construction of this hydro project". The wording in the draft is not as clear as it could be, so the appropriate sections of the Surrender Application have been modified to make the meaning clear.

Comment No.	Commenter	Comment	S.D. Warren Response
4	Patrick Keliher, MDMR	The draft surrender application is silent on how and when the effectiveness of the fish passage that Warren proposes to install at the Saccarappa Project will be assessed, and what modifications Warren commits to making if the fish passage is not working prior to seeking final surrender approval from PERC, and no further responsibilities from Maine DEP. Assessment will be particularly important, because MDMR is not certain that the West Channel Design will provide safe, timely and effective passage, both for fish that enter the Western Channel and for fish that MDMR believes will enter the Eastern Channel. One assumption of Warren's proposed design is that fish exiting the Denil fishway will continue up the west channel, and all fish will use the Western Channel. During the design negotiations among the stakeholders, the need to study the relationship between passages through the Denil section, in relation to passage through the entire site, was discussed on several occasions. It is our position that such a study is needed as part of the effectiveness testing.	Warren is not proposing effectiveness testing because Warren is confident that the Western Channel Design will provide safe, timely, and effective passage, and it will be significantly better than the extremely limited passage that existed prior to development of the Saccarappa site. There are no modifications to the Surrender Application needed based on this comment.
5	Patrick Keliher, MDMR	The Project schedule should include dates when the 60% and 90% drawings for the Western Channel Design for upstream fish passage will be available for review by the state and federal resource agencies.	Warren has no plans to submit intermediate and/or final design drawings for review by state and federal resource agencies because such review is not necessary and there is not enough time in the schedule to allow for such agency review. If time is allocated for review of intermediate or final design drawings, the planned May 1, 2017 operational date for fish passage will need to be modified.
6	Patrick Keliher, MDMR	MDMR supports the U.S. Fish and Wildlife Service's request that Warren's Final Surrender Application reflect the Service's intent to require fish passage at Mallison and Little Falls to be constructed two years after completion of Saccarappa fish passage facilities, or three years after the Saccarappa decommissioning order, whichever comes first.	Warren is not proposing to modify the Mallison Falls and Little Falls licenses. Those licenses require fish passage based on fish counts at Saccarappa.
Specific Comment 1	Patrick Keliher, MDMR	Page 4: Please provide the crest elevation for each spillway section described in the second paragraph.	The crest elevations of both spillways vary from 69.8 to 70.0. The Surrender Application has been modified to include this information.
Specific Comment 2	Patrick Keliher, MDMR	Pages 56-57: The first five sentences of Section 5.3.3.2 (Proposed Conditions for Anadromous Species) do not describe proposed conditions, and should be moved to section 5.7.4 History of fish passage at Saccarappa.	The Surrender Application has been modified to address this request.

Comment No.	Commenter	Comment	S.D. Warren Response
Specific Comment 3	Patrick Keliher, MDMR	Page 83: The DSA states that, "No modifications are proposed in the eastern channel to promote or enhance fish passage, so the eastern channel is available for structural enhancements of recreational boating." MDMR disagrees, and clearly stated in our comment letter of 22 September 2015 that fish passage enhancements are needed at the upper eastern falls, through cutting and removal of bedrock of a sufficient magnitude, to provide safe, timely, and effective passage at the Saccarappa Project site.	Warren does not agree that fish passage enhancements in the eastern channel are needed to provide safe, timely, and effective passage at the Saccarappa site. It is not necessary to provide passage in the eastern channel under the full range of design flows for all species because safe, timely, and effective passage will be provided in the Western Channel for all target species under the full range of design flow conditions. Whatever opportunities for passage of the upper eastern falls existed prior to hydroelectric development of the site will exist in the future after the spillway is removed. Natural falls do not provide 100% passage for all species at all times under all flow conditions. The upper and lower falls at Saccarappa will revert to a natural set of falls following removal of the eastern spillway. Warren's Surrender Project includes extensive provisions for safe, timely, and effective passage on the western side of the island for all target species under the full range of design flow conditions, and it will be significantly better passage than the extremely limited passage that existed prior to development of the Saccarappa site. There are no modifications to the Surrender Application needed to address this comment. Warren's position is clearly stated in the Surrender Application
Specific Comment 4	Patrick Keliher, MDMR	Pages 83-84: The DSA described two modifications that may be installed by the City of Westbrook to provide recreation: an inflatable gate structure near the existing Bridge Street bridge and "minor sculpting of the upper eastern falls above the middle pool (between the upper and lower falls) and well downstream of the existing spillway. The modifications in the upper eastern falls "will be permanent, non-moveable structures and consist primarily of concrete or rock features combine with bedrock removal to create the desired enhancement to the whitewater features that already exist at the upper falls." We cannot find the proposed modifications to the eastern falls ledges anywhere in Appendix G.	The Surrender Application has been modified to address this comment. The preliminary design drawings of the City's proposed recreational enhancements in the upper eastern channel were not available until after the DSA was distributed. The text of the Surrender Application and Appendix G have been modified to include the supplemental information from the City. The drawings and descriptions from the City, however, are being provided for information only. Warren is not seeking approval for the City's plans for recreational enhancements; the potential recreational enhancements being considered by the City are not part of Warren's Surrender Application. The City may seek the appropriate state and federal permits for recreational enhancements, and Warren may coordinate construction activities with the City to realize construction synergies.

Comment No.	Commenter	Comment	S.D. Warren Response
Comments from Sean Mahoney, Conservation Law Foundation and Ronald Kreisman, Counsel to Friends of the Presumpscot River, via e-mail dated November 23, 2015			
1.A.	Sean Mahoney, CLF Ron Kreisman, FOPR	The final application should specify whether the design includes a core retaining wall spanning the channel and located within or adjacent to the fill Warren is proposing to place in the upper portion of the Western channel. Warren has repeatedly been asked this question and has refused to provide a clear and definitive answer. If the answer is "yes," this core wall should be shown on your design plans, described, and included in revised cost estimates. If "no," Warren should explain why it does not believe a core wall will be necessary.	As Warren has repeatedly stated whenever this question was asked, the restoration of excavated material in the western channel will be designed by registered professional engineers based on modern engineering standards. The final design detail of this item, and other similar items, will be determined during the final engineering design process.
1.B.	Sean Mahoney, CLF Ron Kreisman, FOPR	Mobilization and replacement of fill. The draft application contains no discussion of whether Warren believes that the large amounts of fill to be located in various portions of the Western channel called for in your design will, over time, be mobilized and move downstream in large storm events such as Hurricane Irene. If the answer is "no," Warren should explain the technical calculations used to reach this conclusion. If the answer is "maybe" or "yes," Warren should explain what the anticipated costs to replace and/or reposition the fill will be over the remaining 28-year term of the license, over the next 50 years and the next 100 years, and the amount of funding that it intends to set aside to meet these costs as well as the account/repository where the funds will be located	The restoration of excavated material in the Western channel will be designed based on accepted engineering standards. This detail will be determined during the final engineering design. That design will ensure that fill to be located in various portions of the western channel called for in the proposed design will not be mobilized and move downstream in large storm events.
1.C.	Sean Mahoney, CLF Ron Kreisman, FOPR	Warren's Western-channel-only fish passage design is predicated on the assumption that migrating river herring and American shad will (1) only pass up and over the lower falls by means of the double Denil, and (2) will then exit the Denil and only head up the Western channel, as opposed to some of those Denil-exiting fish "turning right" and migrating into the Eastern channel. In discussions regarding this issue, Warren to date has not offered expert fisheries opinion as to why some portion of the migrating population, at certain flows, will not divert, bypass or avoid the Denil and instead pass over the lower falls at the eastern portion of those falls and then migrate up the Eastern channel, never entering the double Denil. Warren should provide this expert opinion and the basis for it in its final application. In addition, besides its previously-stated generalized conclusion that "fish will be attracted to flow," Warren's final application should contain expert opinion and the scientific basis for its conclusion that *all* fish that exit the Denil will migrate only up the Western channel, and that no fish will migrate from the Denil into the Eastern channel. If Warren's expert conclusion is that some fish will indeed migrate into the Eastern channel, Warren should quantify this migration amount in its final application as well as the basis for this quantification.	The fish passage plan for the Saccarappa site that Warren is proposing goes far beyond what would be found in nature at this site. Because the Saccarappa site is a natural falls, the location has always been a significant barrier to fish passage. This is well documented in historical drawings and maps of the site that go back to the 18th century, long before Warren modified the site and long before there was any FERC jurisdiction over the site. The available data support a conclusion that passage over the lower falls and the falls on the east side of the island for river herring and shad is rarely, if ever, possible. If the lower falls were or are passable by river herring and American shad under the full range of design flow conditions, there would be no need to construct fish passage facilities at the lower falls. Warren's fish passage proposal will provide significantly better passage than the extremely limited passage that existed prior to development of the Saccarappa site. A detailed explanation of the technical reasoning used by Warren in its selection of the fish passage design can be found in Appendix E, titled "Decision Document" (Selection of Final Fish Passage Design document, dated October 12, 2015) of this Surrender Application.

Comment No.	Commenter	Comment	S.D. Warren Response
1.D.	Sean Mahoney, CLF Ron Kreisman, FOPR	The draft application contains no discussion of effectiveness testing for Warren's Western channel design. Warren's final application should specify the Western channel effectiveness testing it is prepared to undertake and pay for, and over what period of time. In this regard, the final application should address whether Warren is prepared to undertake effectiveness testing over an extended period of time and what that time period will be, in light of the fact that accurate effectiveness testing for decimated fish populations that may take a decade or more to rebound will need to take place over an extended period of time. Lastly, the final application should address the cost of short and long-term effectiveness testing, and the account/repository for placement of funds dedicated to effectiveness testing.	Warren is not proposing effectiveness testing because Warren is confident that the Western Channel Design will provide safe, timely, and effective passage, and it will be significantly better than the extremely limited passage that existed prior to development of the Saccarappa site.
1.E.	Sean Mahoney, CLF Ron Kreisman, FOPR	The draft application does not address what Warren will do if the effectiveness testing demonstrates that its Western channel design is not passing fish in a safe, timely and effective manner, including whether Warren is prepared to set aside funds to be held in a separate account/repository in the event that changes to the Western channel are required to have effective fish passage, and the amount of this set- aside. The final application should address these issues.	Warren is not proposing effectiveness testing because Warren is confident that the Western Channel Design will provide safe, timely, and effective passage, and it will be significantly better than the extremely limited passage that existed prior to development of the Saccarappa site.
2.A.	Sean Mahoney, CLF Ron Kreisman, FOPR	Modeling of the Eastern channel conducted during the technical process using Warren-agreed-upon methods and inputs demonstrated that removal of the Eastern channel spillway alone will not create safe, timely and effective passage of all target species at all target flow regimes. Warren's final application should state clearly (a) whether it is repudiating these modeling conclusions, (b) whether it is prepared to make any alterations in the Eastern channel (i.e., sculpting bedrock) to create safe, timely and effective passage in the Eastern channel, (c) if so, the extent of this sculpting, when it would be undertaken, the cost of ·doing so, and the effectiveness testing it is prepared to undertake subsequent to the alternations; and (d) the account/repository for funds to pay for this work if not part of the original design.	The extensive technical review process that was undertaken as provided for in the Extension Agreement determined that the Western Channel is the best location for fish passage over the upper falls. After removal of the two spillways the Eastern channel will revert to its natural condition before construction of the existing hydroelectric project facilities. Modifying the Eastern channel for fish passage is not required to insure safe, timely, and effective fish passage. Whatever passage opportunities existed in the Eastern channel prior to the construction of the first hydroelectric development of the site will exist after the dam is removed. Please refer to Appendix E, titled “Decision Document” (Selection of Final Fish Passage Design document, dated October 12, 2015) for the technical information related to this comment.

Comment No.	Commenter	Comment	S.D. Warren Response
2.B.	Sean Mahoney, CLF Ron Kreisman, FOPR	Warren has stated in its draft application that it is concerned about adverse impacts from undertaking the sculpting in the upper Eastern channel called for by Princeton Hydro's alternative design. Warren further states in its draft that it has done no analytical field work to scientifically evaluate its concerns. However, CLF and FOPR are aware that Warren has recently surveyed and analyzed numerous cross-sections upstream of the Eastern spillway and throughout the length of the impoundment and has otherwise collected all necessary data to evaluate the merits of its concerns. CLF and FOPR also believe that Warren has inputted this data into a model to evaluate impacts and has derived and reviewed the results of this work. In its final application Warren should provide all survey and other field data collected, all model results run, and all conclusions reached, so that the regulatory agencies and the public can evaluate the impacts of the Princeton Hydro alternative.	Modifying the Eastern channel for fish passage is not required to insure safe, timely, and effective fish passage at the Saccarappa site. Beyond that, the sculpting in the upper Eastern channel as described in the Princeton Hydro alternative (the Two Channel Design), combined with the proposed Western channel modifications depicted in the Two Channel Design, would cause the water levels in the river upstream of Saccarappa, post dam removal, to be approximately 1.7 feet lower at average flow rates (900 cfs), and up to 3 feet lower at low flow rates, than the Western Channel Design. This unnatural impoundment water elevation would be lower than any historical water elevation and would have significant negative impacts to the environment and to abutting landowners. In addition, USFWS also has concerns about sculpting the upper Eastern channel as proposed in the Two Channel Design, and stated the following in its September 21, 2015 letter titled *U.S. Fish and Wildlife Service Fish Passage Recommendations Saccarappa Hydroelectric Project, FERC No. 2897* - "However, we are concerned about excavating ledge below the pre-project elevation, as proposed in the FOPR design (Two Channel Design). The lower [sic] may be better for passage at the falls, but it will transfer that head differential to the upstream reach. That could result in head cutting, sediment mobilization (and resultant downstream sedimentation impacts), and possibly creating a passage impediment in the former impoundment." Please refer to the following sections of this Surrender Application for additional technical information related to why Warren is not proposing to modify the upper Eastern falls. Section 4.1.1 - Environmental Impacts Section 4.2.5.2 – Lowering the Hydraulic Control Elevation and Water Levels Upstream of Saccarappa Appendix E – Decision Document Appendix F – Evaluation of Potential Soil Erosion and Sedimentation

Comment No.	Commenter	Comment	S.D. Warren Response
3.A.	Sean Mahoney, CLF Ron Kreisman, FOPR	Fish counting is required by federal and state licenses at Saccarappa, and is part of Warren's Denil fishway. Fish counting at Saccarappa is an essential component of the four upstream FERC licenses and Maine water quality certifications, all issued at the same time as Saccarappa license and linked to it. Warren's draft application does not state what entity will operate the Saccarappa fish counting facility and report to FERC and Maine DEP in the event that Warren by choice or economic necessity is no longer the owner of the Saccarappa site. Nor does the draft application explain, for the period of time that Warren does operate the fish counting facility, what reliable compliance/oversight/enforcement mechanism Warren proposes to provide to the public to ensure that its fish counting facility at Saccarappa is being operated in a high-quality and reliable way. All these issues should be addressed in Warren's final application. In addition, the final application should address whether Warren intends to pre-fund an account/repository of sufficient funds to ensure that the fish counting will continue regardless of the ownership, commercial interruptions due to bankruptcy or other property issues, and otherwise. The final application should also state what qualified entity will conduct these fish counts in a reliable manner.	Facilities for counting fish are included in the design of the double Denil fishway being proposed in this Surrender Application. Warren will continue to maintain and operate the fishway for as long as it owns the site, and Warren will submit a draft of the O&M plan for the Surrender Project to DMR and the Service for review and comment. Warren is not proposing to pre-fund any accounts to pay for future operation and maintenance of the fishway.
3.B.	Sean Mahoney, CLF Ron Kreisman, FOPR	Operations of the fishway: Warren has stated that it will operate the Denil fishway for as long as it owns the Saccarappa site. The same questions raised in §3.A. above apply to operations of the fishway and should be addressed in the final application.	As stated, Warren will maintain and operate the Denil fishway for as long as it owns the Saccarappa site. Warren will submit a draft of the O&M plan for the Surrender Project to DMR and the Service for review and comment. Warren is not proposing to pre-fund any accounts to pay for future operation and maintenance of the fishway.
3.C.	Sean Mahoney, CLF Ron Kreisman, FOPR	Supporting structures: The Denil proposed by Warren will only have even a chance of being effective if the retaining walls of the tailrace and other structures (labelled "legacy structures" by Warren) are maintained and repaired. These "legacy structures" indeed have quite a legacy and will require significant maintenance in the coming decades. Recently, FERC ordered repairs to a portion of these structures. In its draft application, Warren has allocated, on paper only, a modest amount of funding to these repairs. The draft application does not reveal the assumptions used to derive this allocation. The final application should state these assumptions, including the period of time covered, the nature of the expected repairs, and the per unit repair cost used to derive this number. The application additionally does not state whether these funds will be set aside and held in a separate account/repository. The application also does not state who and how required repairs will be funded if Warren is no longer the owner of the site. The final application should address all of these issues	Warren will maintain the fishway for as long as it owns the site. Warren is not proposing to pre-fund any accounts to pay for future operation and maintenance of the fishway.

Comment No.	Commenter	Comment	S.D. Warren Response
3.D.	Sean Mahoney, CLF Ron Kreisman, FOPR	Effectiveness testing. As with the Western channel, Warren's draft application does not address the effectiveness testing that will be done for the Denil fishway, including but not limited to the period of years over which this effectiveness testing will be conducted, as fish populations may take years to rebound before accurate effectiveness testing can be done on representative population sizes. Nor does the draft application address what Warren will do if the effectiveness testing demonstrates that its design is not passing fish through the Denil in a safe, timely and effective manner, including whether Warren is prepared to set aside funds to be held in a separate account/repository in the event that changes to the Denil are required to have effective fish passage at the lower falls, and the amount of this set-aside. The final application should address these issues.	Warren is not proposing effectiveness testing at the Denil fishway because Warren is confident that the Western Channel Design will provide safe, timely, and effective passage, and it will be significantly better than the extremely limited passage that existed prior to development of the Saccarappa site.

Comment No.	Commenter	Comment	S.D. Warren Response
Comments from William Baker, City of Westbrook, via e-mail dated November 23, 2015			
1	Bill Baker, City of Westbrook	Page vi, regarding local approvals. Based on our review of the current proposal, the City has determined that the work associated with the decommissioning of the facility will require permits from the City of Westbrook under the City's shore land zoning and floodplain ordinances.	Warren will apply for any necessary City approvals, after a determination that such approvals are required, but Warren reserves its right to argue that the Federal Power Act preempts the City's authority to issue permits for this activity, because the Project and Project land are subject only to FERC jurisdiction until all dam removal work has been completed and FERC has performed a final site inspection and issued a letter to that effect. *See California v. FERC*, 495 U.S. 490 (1990); *First Iowa Hydro-Electric Cooperative v. FPC*, 328 U.S. 152, 168, 175-76, 182 (1946).
2	Bill Baker, City of Westbrook	Page 3, recreational opportunities. As noted above, the City contends that public use of the site following decommissioning, including any mitigation or improvements for expanded public recreation, must be determined as part of the FERC proceeding.	Warren is supportive of improving public access to the Saccarappa site, but such access decisions are not part of the Commission's review of this Surrender Application.
3	Bill Baker, City of Westbrook	Page 12, recreation and the eastern channel. The City appreciates Sappi's consideration of the need to accommodate recreational enhancements as part of the decommissioning of the site. As noted herein, final decisions regarding any recreational impacts or resources should be addressed as part of the FERC and Maine DEP proceedings. In the event that FERC and the Maine DEP do not address recreational enhancements as part of Sappi's proceeding, the City will continue to evaluate its options.	Warren is supportive of improving public access for recreation at the Saccarappa site, but such access decisions are not part of the Commission's review of this Surrender Application.
4	Bill Baker, City of Westbrook	Page 20, regarding "multiple factors" in fish passage design. The City agrees that future use of the site, including for recreation, is a factor in developing a final fish passage design. As these issues are interrelated, the City contends that fish passage and any recreational improvements must be designed simultaneously to ensure compatibility.	The Western Channel Design proposed in this Surrender Application allows for the potential installation of unlimited recreational features in the upper Eastern channel that would be compatible with fish passage because the Eastern channel is not needed to insure safe, timely, and effective fish passage at the Saccarappa site. Recreational improvements are not part of this Surrender Application. The City may seek the appropriate state and federal permits for recreational enhancements, however, and Warren may coordinate construction activities with the City to realize construction synergies.

Comment No.	Commenter	Comment	S.D. Warren Response
5	Bill Baker, City of Westbrook	Page 20, incompatibility of "two-channel" design with recreation. Although the City does not profess to be an expert on fish passage we are unaware of any inherent incompatibility between recreation and the "two-channel" option in the upper east channel.	Warren is surprised at this comment, and notes that the City has previously stated that it prefers the Western Channel Design because it better accommodates the City's proposed recreational modifications. As Warren stated in its October 12 decision document, Warren is very concerned about the safety risks of combining recreation in the Eastern Channel with the Two Channel Design, and any structural modifications in the eastern channel for the purpose of enhancing recreational boating could negatively impact the modifications proposed for fish passage under the Two Channel Design. Therefore, the Western Channel Design is preferred because it does not limit in any way potential future opportunities for recreational enhancements in the eastern channel, and the Western Channel Design allows boats to use both the eastern and western channels for recreational boating. Warren's selected Western Channel fish passage plan does not require fish passage in the upper eastern channel and therefore would allow for modification of the upper eastern channel exclusively for recreational opportunities, which would not be possible with the Two Channel Design.
6	Bill Baker, City of Westbrook	Page 28, costs of competing decommissioning plans. The City is not able to comment on the specific cost estimates, but understands that the NGOs have altered their proposal for their proposed passage at the lower falls. The City is hopeful that all parties will revisit any cost estimates as proposals for fish passage may evolve during the proceeding.	Warren is not aware of an altered NGO proposal for fish passage at the lower falls, other than comments made at the September 22, 2015 meeting in which the NGO attorney indicated the NGOs' willingness to accept Warren's Western Channel Design. In any case, Warren has determined that the preferred design is the Western Channel Design, and has no plans to revisit any cost estimates or to consider additional proposals for fish passage at the site.
7	Bill Baker, City of Westbrook	Page 32-33, Recreational Considerations. As noted above, the City appreciates the effort by Sappi to incorporate recreational goals in its proposed decommissioning plan. We will continue to work with all parties on fish-passage compatible recreation to serve a variety of public goals and interests. These issues should be addressed as part of the FERC proceeding.	Warren is supportive of improving public access for recreation at the Saccarappa site, but such access decisions are not part of the Commission's review of this Surrender Application.
8	Bill Baker, City of Westbrook	Page 38, impacts of further lowering of impoundment. Sappi notes that it has not studied the impact of lowering the Saccarappa impoundment below elevation 64 feet. The City would be interested in understanding how this change would impact public access and recreation throughout this section of the river.	Warren is not proposing to study this issue. Warren is concerned about the potential effects of lowering the water level in the river segment between Saccarappa and Mallison Falls (including tributaries to that section of the river). The public has expressed concerns about the potential impact of the changes in water levels proposed by the Surrender Project. The public has indicated that the water levels in the river should not be lowered any more than is necessary. Additional lowering of the impoundment would present issues with respect to impacts to wetlands and embankment stability, in addition to impacts to people who use the river for recreation, agriculture, and commercial uses.

Comment No.	Commenter	Comment	S.D. Warren Response
9	Bill Baker, City of Westbrook	Page 83, timing of consideration of recreational features. Sappi has noted that recreational elements are not currently part of the design of the decommissioning plan or Sappi's Surrender Application. The City has provided funding for the stakeholder process and will continue to contribute time and resources to identify appropriate recreational amenities and to resolve post-decommissioning use of the site, including for enhanced public access. Such considerations should be an explicit part of the Surrender Application and FERC (and Maine DEP) proceedings.	Warren is very supportive of improving public access for recreation at the Saccarappa site, but such access decisions are not part of the Commission's review of this Surrender Application.

From: Brautigam, Francis [mailto:Francis.Brautigam@maine.gov]
Sent: Friday, November 20, 2015 8:45 AM
To: William Ball; chilton@westbrook.me.us; wbaker@westbrook.me.us; steven_shepard@fws.gov; brett_towler@fws.gov; andrew.tittler@sol.doi.gov; sean.mcdermott@noaa.gov; eric.hutchins@noaa.gov; jay.l.clement@usace.army.mil; Kevin_Mendik@nps.gov; andrew_raddant@ios.doi.gov; Howatt, Kathy; Wippelhauser, Gail; Shettleworth, Earle; tribal.chief@maliseets.com; jbanks@penobscotnation.org; kreisman@gwi.net; smahoney@clf.org; michael@presumpscotriver.org; Cox, Oliver N; dusti@presumpscotriver.org; rgetchell@micmac-nsn.gov; Info@Dougwatts.com; chair@presumpscotcoalition.org
Cc: 'Stemm, Barry'; O'Regan, Briana; Brad Goulet; MManahan@PierceAtwood.com; Perry, John
Subject: RE: S.D. Warren Company, dba Sappi North America, Saccarappa, Surrender Application, Draft for Consultation Review

Bill,

Anadromous fish passage concerns under the management jurisdiction of the Maine Department of Marine Resources and United States Fish and Wildlife remain the focus of this consultation review. As such, the Maine Department of Inland Fisheries and Wildlife defers to these agencies to address anadromous fish passage needs associated with the proposed surrender of Saccarappa Dam. Francis

Francis Brautigam
Regional Fishery Biologist
Sebago Lake Region, MDIFW
358 Shaker Road
Gray, Maine 04039
657-2345, ext 112

From: William Ball [mailto:WBall@AcheronEngineering.com]
Sent: Thursday, October 22, 2015 3:07 PM
To: chilton@westbrook.me.us; wbaker@westbrook.me.us; steven_shepard@fws.gov; brett_towler@fws.gov; andrew.tittler@sol.doi.gov; sean.mcdermott@noaa.gov; eric.hutchins@noaa.gov; jay.l.clement@usace.army.mil; Kevin_Mendik@nps.gov; andrew_raddant@ios.doi.gov; Howatt, Kathy; Brautigam, Francis; Wippelhauser, Gail; Shettleworth, Earle; tribal.chief@maliseets.com; jbanks@penobscotnation.org; kreisman@gwi.net; smahoney@clf.org; michael@presumpscotriver.org; Cox, Oliver N; dusti@presumpscotriver.org; rgetchell@micmac-nsn.gov; Info@Dougwatts.com; chair@presumpscotcoalition.org
Cc: 'Stemm, Barry'; O'Regan, Briana; Brad Goulet; MManahan@PierceAtwood.com
Subject: S.D. Warren Company, dba Sappi North America, Saccarappa, Surrender Application, Draft for Consultation Review

October 22, 2015

Dear Stakeholders:

On behalf of S.D. Warren Company dba Sappi North America (Warren), I am pleased to provide for your review a draft Surrender Application for the Saccarappa Hydroelectric Project (FERC Project Number 2897) located on the Presumpscot River in Westbrook, Maine. Attached is a letter of transmittal. The draft Surrender Application can be downloaded by clicking on the following DropBox link or posting the link into your web browser. You do not need to a DropBox account to access and download the draft Application. The file is very large so be patient with the download process.

https://www.dropbox.com/s/87g74rpnxwd5eug/Saccarappa%2C%20Application%20for%20FERC%20License%20Surrender%2C%20Consultation%20Review%2C%20102215.pdf?dl=0

Warren is hereby requesting comments on this draft Application within 30 days (by Monday November 23, 2015) so that comments can be incorporated into the final application. Warren intends to file the application with FERC on or before December 2, 2015. Please address your comments in writing to Barry Stemm (Barry.Stemm@Sappi.com) with a copy to me (WBall@AcheronEngineering.com). You can also submit comments in writing to Barry Stemm, Sappi/Warren Release Papers, 89 Cumberland Street, Westbrook, Maine 04092.

Bill

William B. Ball, PE
President
Maine Office: 207.368.5700
Florida Office: 352.796.6236
Cell: 207.745.8224
WBall@AcheronEngineering.com

Acheron
Engineering, Environmental and Geologic Consultants

This electronic message is intended to be viewed only by the individual or entity to which it is addressed and may contain privileged and/or confidential information intended for the exclusive use of the addressee(s). If you are not the intended recipient, please be aware that any disclosure, printing, copying, distribution or use of this information is prohibited. If you have received this message in error, please notify the sender immediately and destroy this message and its attachments from your system.

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

PAUL R. LEPAGE
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

November 20, 2015

Submitted Electronically

Barry Stemm
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000
Westbrook, Me 04092

Re: Draft Surrender Application Saccarappa Hydroelectric Project (FERC No. 2897)

Dear Barry:

The Maine Department of Marine Resources (MDMR) has reviewed the Draft Surrender Application for the Saccarappa Hydroelectric Project (FERC No. 2897) that was distributed by S.D. Warren (Warren) by email on October 22, 2015. We have consulted with Warren on fish passage at this project since December 2013, when Warren filed its first draft Surrender Application.

For our comments, MDMR is first restating and incorporating by reference the comments we provided to Warren in September 2015 (copy attached hereto). We remain very concerned about the post-surrender responsibility. MDMR cannot support any actions related to the surrender of the Saccarappa Hydroelectric Project that will result in a fiscal burden to the State of Maine. Our additional comments on this new draft Surrender Application (DSA) focus on five issues:

1. **Were anadromous fishes historically able to migrate past the Saccarappa falls?**

In Section 5.7.4 *History of Fish Passage as Saccarappa,* Warren questions whether anadromous fishes were able to migrate past Saccarappa falls prior to the construction of man-made barriers on the Presumpscot River in the early 1700s. Warren cites written records produced by Captain Levett who noted the great quantities of salmon and other fish in the Fore River, but does not mention the presence of fish in the Presumpscot River (P79). Warren also notes (P. 80) that various unnamed fisheries experts "have indicated that the lower falls at Saccarappa are, and therefore were, not passable by river herring and shad with the possible exception of some exceptional fish under certain flow conditions."

MDMR is surprised and perplexed that Sappi is raising this question now, since this question has been answered separately, consistently and decisively by three separate regulatory agencies -- FERC, the Maine Department of Environmental Protection and the Maine Department of Inland Fisheries and Wildlife (MDIFW) in three separate, contested regulatory proceedings over the last decade after Warren previously raised this issue, first when the Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee projects were undergoing relicensing, and then when MDIFW

was adjudicating whether a fishway was required to be installed at Warren's downstream Cumberland Mills dam. At those times, and in response to Warren raising the question, several conservation groups[1] introduced into the administrative record of these proceedings a document that decisively proved that anadromous species migrated above Saccarappa Falls. FERC and Maine DEP each separately agreed, and each ordered fish passage facilities at Saccarappa and Warren's upstream projects based on their separate conclusions that shad and river herring, as well as Atlantic salmon, each historically migrated beyond Saccarappa Falls. In its Order issued in June, 2009, MDIFW not only reached a similar finding, but recited and reaffirmed the findings from FERC and Maine DEP.[2] MDMR requests that the Licensee acknowledge the historic presence of anadromous fish in Project waters.

2. Warren's new flow duration curve and design flows for passage.

In section 5.2.1.1 (P45), Warren introduced a new flow duration curve that would substantially change the design flows for fish passage at the Saccarappa Project from 300–3,000 cfs to 300–1,500 cfs. Warren states that the new curve results from the new flow regime required for the recently licensed Eel Weir project at the outlet of Sebago Lake.

This new flow duration curve was not available during the design process, has not been reviewed by the resource agencies, and could significantly alter MDMR's assessment of the upstream passage designs. What data were used to create this flow duration curve? Clearly a period of record was not available for analysis since the new Eel Weir flow regime has just been implemented. In addition, there can be substantial contribution from the unregulated drainage area downstream of Eel Weir Project (P42). We therefore request that Warren provide a detailed description of how the new flow duration curve was developed and provide calculations for review. If the flow duration curve is correct, MDMR will need time to reassess the fish passage designs.

3. Warren's proposal will not return the site to natural conditions

Warren indicates (P2) that the surrender and dam removal will "restore the river to the natural conditions before the construction of this hydro project" and that the Western Channel Design will cause the water level in the river to be the same as existed prior to the development of hydroelectric facilities at the site (P12,P31, P38). Warren's assertions are incorrect.

The Presumpscot River and surrounding land at the Saccarappa Project have been highly modified. The Saccarappa Project site currently has two channels (P8), termed the east channel and west channel. However, an 1840 plan of Saccarappa Village (provided to the agencies by Warren) clearly shows three channels at the Saccarappa site: 1) an east channel similar to existing east channel, 2) a narrow middle channel that approximates the location of the current west channel and tailrace, and 3) a west channel that came within an estimated 100 ft. of Main Street. The original west channel no longer exists; it has been replaced by buildings, parking

---

[1] American River, Friends of the Presumpscot River, Friends of Sebago lake. 2002. Supplemental historic records related to the anadromous fisheries of the Presumpscot River and Sebago Lake, Maine.
[2] *See* Cumberland Mills Dam Fishway Proceeding, Findings of Fact, June 2009, p.4.

lots, and a lawn. The proposed surrender and fishway project will not restore this original western channel.

Warren asserts that after removal of the two spillways, hydraulic control at Saccarappa will be provided by ledge in the eastern channel at EL 64 feet, which Warren contends is the natural, historic elevation of this portion of Saccarappa Falls. Warren's conclusion is based on a single 1900 drawing with bathymetry by W. Foster (described on P80). However, the original Saccarappa Dam and Hydroelectric Facility were constructed in 1887, and there is uncertainty about the accuracy of these data and what datum was used. Further, Warren has not produced information *predating* the period of substantial development and alternation of the Saccarappa site – beginning in approximately 1850 -- that reliably demonstrates natural conditions at the site.

In addition, given the major alternations at the Saccarappa site undertaken over the last 150+ years to maximize mechanical power and then hydropower production at the expense of fish passage, basing a design solely on restoring the falls at the upper Eastern channel to their pre-1887 condition (even if they could be reliably known) strikes MDMR as an arbitrary and not useful goal. Warren needs to demonstrate that solely by removing the spillway in the Eastern channel, its design will create safe, timely and effective fish passage in that channel.

Further, our understanding is that Warren rejected the bedrock excavation in the eastern channel proposed in the Two Channel Design because "it would lower the water levels upstream of the site lower than pre-development historic levels and more than is necessary in order to provide fish passage at the site. The potential impacts and unintended consequences of lowering water level below that which has ever existed, could be substantial." Warren has not demonstrated the accuracy of these statements and needs to do so if this is even a part of its rationale for rejecting the Two Channel Design.

4. The Surrender Application needs to address effectiveness testing

The draft surrender application is silent on how and when the effectiveness of the fish passage that Warren proposes to install at the Saccarappa Project will be assessed, and what modifications Warren commits to making if the fish passage is not working prior to seeking final surrender approval from FERC, and no further responsibilities from Maine DEP. Assessment will be particularly important, because MDMR is not certain that the West Channel Design will provide safe, timely and effective passage, both for fish that enter the Western Channel and for fish that MDMR believes will enter the Eastern Channel. One assumption of Warren's proposed design is that fish exiting the Denil fishway will continue up the west channel, and all fish will use the Western Channel. During the design negotiations among the stakeholders, the need to study the relationship between passage through the Denil section, in relation to passage through the entire site, was discussed on several occasions. It is our position that such a study is needed as part of the effectiveness testing.

5. The construction schedule is incomplete

The Project schedule should include dates when the 60% and 90% drawings for the Western Channel Design for upstream fish passage will be available for review by the state and federal resource agencies.

6. Fish counting requirement

MDMR supports the U.S. Fish and Wildlife Service's request that Warren's Final Surrender Application reflect the Service's intent to require fish passage at Mallison and Little Falls to be constructed two years after completion of Saccarappa fish passage facilities, or three years after the Saccarappa decommissioning order, whichever comes first.

Specific comments

1. Page 4: Please provide the crest elevation for each spillway section described in the second paragraph.
2. Pages 56-57: The first five sentences of Section 5.3.3.2 (Proposed Conditions for Anadromous Species) do not describe proposed conditions, and should be moved to section 5.7.4 History of fish passage at Saccarappa.
3. Page 83: The DSA states that, "No modifications are proposed in the eastern channel to promote or enhance fish passage, so the eastern channel is available for structural enhancements of recreational boating." MDMR disagrees, and clearly stated in our comment letter of 22 September 2015 that fish passage enhancements are needed at the upper eastern falls, through cutting and removal of bedrockof a sufficient magnitude, to provide safe, timely, and effective passage at the Saccarappa Project site.
4. Pages 83-84: The DSA described two modifications that may be installed by the City of Westbrook to provide recreation: an inflatable gate structure near the existing Bridge Street bridge and "minor sculpting of the upper eastern falls above the middle pool (between the upper and lower falls) and well downstream of the existing spillway. The modifications in the upper eastern falls "will be permanent, non-moveable structures and consist primarily of concrete or rock features combine with bedrock removal to create the desired enhancement to the whitewater features that already exist at the upper falls." We cannot find the proposed modifications to the eastern falls ledges anywhere in Appendix G.

Sincerely,

Patrick C. Keliher
Commissioner

cc: Gail Wippelhauser, Oliver Cox, Paul Christman, MDMR
John Perry, Francis Brautigam, Maine DIFW
Kathy Howatt, Maine DEP
Andrew Tittler, Steven Shepard, Brett Towler, USFWS
Ron Kreisman, FOPR
Sean Mahoney, CLF
Bill Baker, City of Westbrook

OFFICES AT 32 BLOSSOM LANE, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550 FAX: (207) 624-6024

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

PAUL R. LEPAGE
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

September 21, 2015

Barry Stemm
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000
Westbrook, Me 04092

RE: Comments on Saccarappa Project fish passage designs

Dear Barry:

The Maine Department of Marine Resources (MDMR) is writing to provide comments on the alternative fish passage designs for the Saccarappa Project. In our comments, we consider fish passage at the lower falls on the western channel (lower falls), at the upper falls on the western channel (upper west channel), and at the upper falls on the eastern channel (upper east channel). In preparing these comments we have reviewed results of the HEC-RAS modeling provided by Acheron Engineering and Princeton Hydro, results of the energetics modeling (fatigue, work, survivorship; all models run with 15.2, 19.1, and 22.1-inch American shad) provided by U.S. Fish and Wildlife Service (USFWS) and MDMR, and design populations contained in both the FERC Prescription and the Maine Water Quality Certificate.

Lower Falls

Denil design

Sappi has proposed a four-foot wide, approximately 100-ft long Denil fishway (with a single resting pool) for passage at the lower falls. The Denil entrance would be located at the west end of the lower falls near a natural low point in the ledge that concentrates flow. The entrance location was designed in consultation with the agencies, and was based on evaluations made during site visits and after review of aerial and surface photography capturing a wide range of flows. The Denil exit would be located in the west channel near the southern end of the island that separates the east and west channels. Results of the survivorship, fatigue and work models indicate that the Denil has a high probability of success. The survivorship model indicates 93-98% of American shad are expected to pass through the Denil fishway over the range of operating flows (Appendix A). The fatigue model indicates that even small American shad would be able to swim up the entire length of the Denil fishway, and the work model indicates American shad would expend 100-417 calories to swim up the Denil fishway.

OFFICES AT 32 BLOSSOM LANE, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550
FAX: (207) 624-6024

MDMR recommends that Sappi alter its current design by adding a second Denil fishway (i.e., install two, side-by-side, four-foot wide Denil fishways) in lieu of the dedicated auxiliary water system. The current Saccarappa Project license requires that upstream fish passage be provided in two phases, and the phase 2 facilities must be capable of annually passing 58,000 American shad and 353,000 river herring. Because a single four-foot Denil fishway has the capacity of passing 200,000 river herring or 25,000 American shad annually, a second Denil will be needed to meet the phase 2 capacity.

Nature-like design

Friends of the Presumpscot River (FOPR) has proposed a nature-like (roughened) channel that would be located in the powerhouse tailrace and consists of a lower 380-ft section, a 180° turning pool, and an upper 100-foot section that exits in the west channel. MDMR is not aware of any nature-like fishways that include a 180° degree turn. The fishway is designed to withstand a 50-year flood event, which presents a 2% annual chance of exceeding the design flow and the risk of damage or catastrophic failure. The capacity of this proposed nature-like fishway is not known, since there are neither standard capacity estimates for nature-like passage facilities, nor are there methods for estimating capacity in relation to discharge, slope, or other nature-like fishway design parameters. Furthermore, there are very few published studies that empirically describe the effectiveness or numbers of fish passed through nature-like fishways. Results of the survivorship, fatigue and work models indicate that the nature-like design has a low probability of success, primarily because of the length of the lower ramp of the fishway (380 feet). The survivorship model indicates that 60-77% of American shad are expected to pass both the upper and lower ramps at low flows, 30-60% at mediums flows, and 18-50% at high flows (Appendix B). The work model indicates that American shad would expend 475-2033 calories to pass through the nature-like fishway.

Upper West Channel

Both Sappi and FOPR have developed nature-like designs for passage in the upper west channel. Sappi proposes to remove ledge from the lower part of the western channel (approximately from transect 370' to transect 500') and add fill to the excavated part of the upper western channel (approximately from transect 500' to transect 700'). The fill would create a hydraulic control on the western channel at EL 64', thus matching the hydraulic control on the eastern channel. FOPR's design proposes to sculpt the western channel bedrock from approximately transect 100' to transect 547' (i.e., from the exit of the lower falls fishway - either design - to a narrow portion of the excavated western channel), then utilizes the natural grade with existing hydraulic control at EL 61.0 ft. The FOPR proposal has the advantage of long-term stability and reduced maintenance (because native bedrock is sculpted).

The results of the survivorship, fatigue, and work models for American shad indicate they both proposals likely will not provide safe, timely, and effective passage (Appendix A, Appendix B). The survivorship model indicates that the upper ramp of Sappi's design is expected to pass 69-83%, 17-51%, and 1-30% of American shad at low, medium, and high flows respectively, while the upper ramp of FOPR's design is expected to pass 44-68%, 5-38%, and 0-13.4% at low, medium, and high flows, respectively. The shorter length of the Sappi design (330 feet) likely accounts for the greater survivorship, relative to the FOPR design (390 feet). The work model

indicates that American shad would use 333-1,706 calories passing through Sappi's fishway design and 464-2,019 calories through FOPR's design.

Upper East Channel

Based on the bathymetry survey from the fall of 2014, and the HEC-RAS modeling done by Princeton Hydro, the results show that the eastern channel is highly likely to be impassable if the only action taken is the removal of the spillway coupled with minor channel modifications. FOPR proposed a nature-like design for the upper east channel that would entail removing ledge in order to reduce the hydraulic control from EL 64' to EL 62.38' and sculpting the bedrock downstream to create a passage route. Results of the survivorship model run for the worst-case scenario (a 15.2-in shad swimming against velocities at 3000 cfs) indicate that 73% of the shad would be expected to swim up the entire upper east channel, nature-like fishway (Appendix B).

MDMR RECOMMENDATIONS

- To pass upstream migrants over the lower falls, MDMR recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the attraction water supply system.

- Retain the fish counting facility that was included in the Denil design. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder.

- Provide passage on both the east and west channel using the nature-like fishways proposed by FOPR. MDMR believes that for this project to be successful both channels must be passable.

The Adaptive Management and O&M Plan Denil Fish Passage Alternative, dated December 2014, Sappi stated that it would be responsible for operation and maintenance of the fishway and would maintain the legacy structures for as long as Sappi owns the site and the structures, yet in the cost estimates provided by Sappi were silent on any associated costs. Effectiveness and ownership of the legacy structures post decommissioning are also not known. Because of the lack of clarity on these issues, MDMR recommend that all parties begin discussions on a final settlement and any final agreement would need to include the establishment of a fund to cover associated costs of studies, operation and maintenance of the legacy structures and fishways.

Sincerely,

Patrick C. Keliher
Commissioner

OFFICES AT 32 BLOSSOM LANE, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550
FAX: (207) 624-6024

Appendix A. Results of surivorship model for SDW proposal. Total survivorship for a small American shad (15.2 inches) at high stage velocity (4.24 ft/s) can be obtained by multiplying the corresponding survivorship in the lower (0.97) and upper sections (0.96), resulting in 0.93.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, lower Denil section	small	low stage	2.52	15.2	18	47.9	99%
	average		2.52	19.1	18	47.9	99%
	large		2.52	22.1	18	47.9	99%
	small	high stage	4.24	15.2	18	47.9	97%
	average		4.24	19.1	18	47.9	98%
	large		4.24	22.1	18	47.9	98%
Lower falls, upper Denil section	small	low stage	2.52	15.2	18	50.4	98%
	average		2.52	19.1	18	50.4	99%
	large		2.52	22.1	18	50.4	99%
	small	high stage	4.24	15.2	18	50.4	96%
	average		4.24	19.1	18	50.4	97%
	large		4.24	22.1	18	50.4	98%
Upper west channel, upper ramp	small	avg at 300 cfs	2.75	15.2	18	330	69%
	average		2.75	19.1	18	330	78%
	large		2.75	22.1	18	330	83%
	small	avg at 1500 cfs	5.03	15.2	18	330	17%
	average		5.03	19.1	18	330	37%
	large		5.03	22.1	18	330	51%
	small	avg at 2250 cfs	5.86	15.2	18	330	1%
	average		5.86	19.1	18	330	14%
	large		5.86	22.1	18	330	30%

Appendix B. Results of surivorship model for FOPR proposal. Total survivorship for a small American shad (15.2 inches) through the lower falls at high flow (4.4.ft/s) can be obtained by multiplying the corresponding survivorship in the lower (0.22) and upper sections (0.85), resulting in 0.18.

Section	Fish size	River flow condition	Model inputs Vw (ft/s)	TL (in)	T (C)	D (ft)	Model output Survivorship (%)
Lower falls, nature-like design, lower 2% ramp	small	avg at 300 cfs	2.6	15.2	18	380	64%
	average		2.6	19.1	18	380	74%
	large		2.6	22.1	18	380	80%
	small	avg at 1500 cfs	3.9	15.2	18	380	36%
	average		3.9	19.1	18	380	53%
	large		3.9	22.1	18	380	64%
	small	avg at 3000 cfs	4.4	15.2	18	380	22%
	average		4.4	19.1	18	380	41%
	large		4.4	22.1	18	380	54%
Lower falls, nature-like design, upper 2% ramp	small	avg at 300 cfs	3.0	15.2	18	100	94%
	average		3.0	19.1	18	100	96%
	large		3.0	22.1	18	100	97%
	small	avg at 1500 cfs	4.4	15.2	18	100	89%
	average		4.4	19.1	18	100	92%
	large		4.4	22.1	18	100	94%
	small	avg at 3000 cfs	5.1	15.2	18	100	85%
	average		5.1	19.1	18	100	89%
	large		5.1	22.1	18	100	92%
Upper west channel, upper 1.5% ramp	small	avg at 300 cfs	3.5	15.2	18	390	44%
	average		3.5	19.1	18	390	59%
	large		3.5	22.1	18	390	68%
	small	avg at 1500 cfs	5.0	15.2	18	390	5%
	average		5.0	19.1	18	390	23%
	large		5.0	22.1	18	390	38%
	small	avg at 3000 cfs	5.9	15.2	18	390	0%
	average		5.9	19.1	18	390	3%
	large		5.9	22.1	18	390	13.4%
Upper east channel, nature-like, lower 2.5% section	small	avg at 300 cfs	2.7	15.2	18	120	93.5%
	average		2.7	19.1	18	120	95.3%
	large		2.7	22.1	18	120	96.4%
	small	avg at 1500 cfs	4.5	15.2	18	120	85.1%
	average		4.5	19.1	18	120	89.3%
	large		4.5	22.1	18	120	91.7%
	small	avg at 3000 cfs	5.3	15.2	18	120	78.5%
	average		5.3	19.1	18	120	84.6%
	large		5.3	22.1	18	120	88.1%
Upper east channel, nature-like, middle 2.0% section	small	avg at 300 cfs	2.3	15.2	18	35	99.2%
	average		2.3	19.1	18	35	99.4%
	large		2.3	22.1	18	35	99.5%
	small	avg at 1500 cfs	3.8	15.2	18	35	98.4%
	average		3.8	19.1	18	35	98.8%
	large		3.8	22.1	18	35	99.1%
	small	avg at 3000 cfs	4.8	15.2	18	35	97.4%
	average		4.8	19.1	18	35	98.1%
	large		4.8	22.1	18	35	98.6%
Upper east channel, nature-like, 2% step pool	small	avg at 300 cfs	1.6	15.2	18	60	98.6%
	average		1.6	19.1	18	60	99.0%
	large		1.6	22.1	18	60	99.2%
	small	avg at 1500 cfs	3.3	15.2	18	60	97.0%
	average		3.3	19.1	18	60	97.9%
	large		3.3	22.1	18	60	98.3%
	small	avg at 3000 cfs	4.1	15.2	18	60	95.7%
	average		4.1	19.1	18	60	96.9%
	large		4.1	22.1	18	60	97.6%

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Maine Field Office
17 Godfrey Drive, Suite 2
Orono, Maine 04473
207/866-3344 Fax: 207/866-3351

November 23, 2015

SUBMITTED ELECTRONICALLY

Mr. Barry Stemm
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000
Westbrook, Maine 04098

RE: U.S. FISH AND WILDLIFE SERVICE COMMENTS
Draft Surrender Application, Saccarappa Hydroelectric Project, FERC No. 2897

Dear Mr. Stemm:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Surrender Application (DLA) for the Saccarappa Hydroelectric Project (FERC No. 2897) that was distributed by S.D. Sappi Company (hereafter Sappi) by email on October 22, 2015. The Service has been engaged in discussions of Saccarappa Dam removal with Sappi, the Maine Department of Marine Resources (MDMR), Friends of the Presumpscot River (FOPR) and the Conservation Law Foundation (CLF) for more than three years. Throughout these discussions, the Service has been committed to restoring the impoundment to a natural river channel, ensuring that migratory fish can move upstream, and eliminating turbine-related fish passage mortality. The following comments are offered in support of these goals and our mission to conserve, protect and restore fish and wildlife and their habitats.

The Service previously provided technical comments on proposals for fish passage at this site, via its September 21, 2105 letter. The proposal for surrender raises further questions, alluded to in the September 21, 2015 letter, relating to conducting effectiveness testing and future operations and maintenance of the fish passage solution(s) selected, ownership of and jurisdiction over site post-licensing, counting of fish, and recreational issues, among others. We address some of these herein.

GENERAL COMMENTS

1) It is not clear how the triggers for fish passage construction at the upstream projects will be handled.

The licenses for the Mallison and Little Falls projects call for upstream and downstream passage to be implemented after certain trigger numbers are documented passing the Saccarappa dam in any single season. With surrender and decommissioning of the Saccarappa Project, it is unlikely that the Federal Energy Regulatory Commission (FERC) will retain jurisdiction and oversight over the counting facility at Saccarappa dam. In addition, counting fish at the revised Saccarappa site will not be as simple as merely counting fish at the Denil – at least some initial testing will be necessary to determine the relationship between counts of fish passing through the Denil, versus overall passage at the site. Thereafter, a count at the Denil could be corrected to account for the percentage passing over the upper falls, or up the eastern side of the lower falls. These monitoring issues are not addressed in the surrender proposal.

To ensure that the upstream facilities are constructed in a timely manner, and avoid the complexities and expense of calibrating and conducting a count outside the Commission's jurisdiction, the Service proposes to modify its Presumpscot River Prescription to require Mallison and Little Falls fish passage facilities to be constructed at a date certain, most likely two years after completion of Saccarappa fish passage facilities, or three years after the Saccarappa decommissioning order, whichever comes first.

2) Effectiveness testing

The DLA addresses neither the schedule, nor the methods, for testing the effectiveness of the Saccarappa fish passage facilities. In particular, it is not clear at what point the surrender will be effective – i.e. whether, or to what degree, effectiveness testing (or any other activity) will be carried out under the FERC oversight. The need for effectiveness testing has been discussed with Sappi repeatedly during the fish passage negotiations of the last two years. Assessment is particularly important since the nature-like portion of the facility is unproven technology with many site-specific design elements. The Service is not certain that the West Channel Design will provide safe, timely and effective passage. One assumption of Sappi's proposed design is that fish exiting the Denil fishway will enter the west channel in a timely manner. During the design negotiations among the stakeholders, the need to study the relationship between passage through the Denil section, in relation to passage through the entire site, was discussed on several occasions. The parties agreed that monitoring studies needed to include behavior though each part of the passage facility to assess overall effectiveness. The Final License Application should reflect this agreement and include proposed monitoring methods.

3) Historic presence of migratory fish in Project waters

By removing Saccarappa Dam, the parties intent is to restore the project site and provide passage for native (i.e., historically present) diadromous fish species…specifically, American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), river herring (*Alosa aestivalis*), and Atlantic salmon (*Salmo salar).* The Service is disappointed to find extensive discussion in the DLA of whether Project waters historically supported diadromous fishes (Section 5.7.4 and various). We believe the merits of this issue were adequately investigated in the Saccarappa Project relicensing, and also documented in the proceedings resulting in upstream passage at Cumberland Mills. The question has been litigated, in short, and a determination reached, and an attempt to revisit the issue at this point is unlikely to be productive. More importantly, our discussions and negotiations over the last three years have been predicated on accepting the fact

that migratory fish passage is a necessary component of Presumpscot River restoration. To wit, we have agreed that American eel, river herring, American shad, and Atlantic salmon are part of the native fauna.

As to the merits of the historic arguments, we offer the following. Sappi questions whether anadromous fishes were able to migrate past Saccarappa falls prior to the construction of man-made barriers on the Presumpscot River in the early 1700s. Sappi cites written records produced by Captain Levett who noted the great quantities of Atlantic salmon and other good fish in the Fore River, but does not mention the presence of fish in the Presumpscot River (P79). Sappi also notes (P. 80) that various unnamed fisheries experts "…have indicated that the lower falls at Saccarappa are, and therefore were, not passable by river herring and shad with the possible exception of some exceptional fish under certain flow conditions." Sappi previously raised questions about the presence of migratory fish when the Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee projects were undergoing relicensing. In response to these assertions, several conservation groups introduced into the administrative record of the relicensing, documents that decisively prove that anadromous species migrated past Saccarappa falls. Presumably, the FERC agreed since the agency ordered fish passage facilities at Saccarappa and the other projects.

In summary, upstream waters currently support American eel. River herring are now present at the Saccarappa Dam. American shad are found in downstream waters. There is no question that Atlantic salmon migrated to the furthest reaches of the Presumpscot River headwaters. Safe, timely and effective passage for these fishes is integral to the restoration of the watershed and the Service is committed to this goal.

4) Pre-project condition of the Saccarappa Falls

The Presumpscot River has been highly modified. The regulation of flow from Sebago Lake and the presence of eight mainstem dams between Sebago Lake and the sea create an unnatural river system with artificial lakes, and a truncated flow regime. At Saccarappa Dam, the river channel and surrounding portion of the City of Westbrook have been significantly altered. However, Sappi states that, "The physical size and footprint of the river that exists today is similar to that which existed prior to the construction of dams at this site." (Page 66). Sappi then contradicts this statement (at page 80), stating that, "The western side of the river, westerly of the island, was, however, altered significantly during construction of the Saccarappa powerhouse, forebay canal, and tailrace channel."

The Project site currently has an east channel, a west channel with excavated forebay, and an excavated tailrace. In contrast, an 1840 plan of Saccarappa Village clearly shows three channels at the Saccarappa site: 1) an east channel similar to existing east channel, 2) a narrow middle channel that has been modified to become the current west channel and tailrace, and 3) a west channel that came within an estimated 100 feet of Main Street. The original west channel no longer exists; it has been replaced by buildings, parking lots, and a lawn.

Sappi asserts that that the surrender and dam removal will restore the river to the natural conditions before the construction of this hydro project, and that the Western Channel Design will cause the water level in the river to be the same as existed prior to the development of

hydroelectric facilities at the site (pages 2, 12, 31, 38, 46 and 66). Sappi's assertions are incorrect. The proposed surrender and fishway construction will not restore the three channels that originally existed at the site. The western channel, which may have been at a lower elevation than the other channels, will not be restored. Furthermore, Sappi asserts that the east channel hydraulic control will be provided by ledge at EL 64 feet. Sappi relies, in part, on a 1900 drawing with bathymetry by W. Foster (described on P80). However, the original Saccarappa Dam and Hydroelectric Facility were constructed in 1887, and there is some uncertainty about the accuracy of these data and what datum was used. It the Service's opinion that the DLA does not provide sufficient information to determine the relative distribution of flow in the east and west channels.

Determining the future flow regime at the Saccarappa Project site is critical to the fish passage design. Sappi rejected the extensive bedrock excavation in the eastern channel proposed in the Two Channel Design because, "it would lower the water levels upstream of the site lower than pre-development historic levels and more than is necessary in order to provide fish passage at the site. The potential impacts and unintended consequences of lowering water level below that, which has ever existed, could be substantial." Sappi should provide all available information (e.g., field data, impoundment bathymetry, and hydraulic modeling) on the division of flow between the East and West channels.

5) Upper channel design choices

As noted in the Service's September 21, 2015 letter, at the level of detail available, the Service views the two west channel designs as similar. The Service also noted MDMR's analysis indicating that the East channel option may provide a better option for fish passage, though that raised concerns about the effect of the lowering of the head on areas of the impoundment. The Service reserves the right to refine its analysis as further design goes forward and the record is further developed

6) Construction schedule

The Project schedule should include dates when the 60 percent and 90 percent drawings for the Western Channel Design for upstream fish passage will be available for review by the State and Federal resource agencies.

SPECIFIC COMMENTS

7) Page vii. Sappi's proposed schedule identifies May 1, 2017 as completion of construction and commencement of fish passage. Fishways require a shakedown period following completion of construction. While, a project like this is less complex than a fish lift, it is still prudent to allow a period of flow/velocity/water surface testing over a range of flows that sufficiently characterize future operations. It is not clear at what point in this period Sappi anticipates the surrender being effective.

   Response – The Service recommends that Sappi move the proposed construction completion date to April 15, 2017 and follow that with a two-week shakedown period to ensure proper operation prior to the start of the fish passage season on May 1. The Service (and MDMR)

should have unfettered access to the site and input to modifications during that shakedown period.

8) Page 4. Please provide the crest elevation for each spillway section described in the second paragraph.

9) Page 14. We are disappointed to read the comment that the Service Prescription will not provide safe, timely or effective fish passage, as this issue has been litigated and resolved to the contrary.

   Response – The Service recommends that Sappi remove this comment, as it is not productive to attempt to re-argue the issue.

10) Page 45. In 2015, the Eel Weir Project was re-licensed, and a new flow regime for this upstream project was created. As a result, future flows at the Saccarappa project will change and this change will affect the operating range of the fishways proposed for the Saccarappa project. Based on historical operations, the Service identified an operating range of 225 cubic feet per second (cfs) to 2350 cfs (the 95 percent and 5 percent flow exceedance probabilities, respectively). Sappi suggests that the changes at Eel Weir will change the 95 percent and 5 percent exceedances to 300 cfs and 1500 cfs, respectively. The Service cannot verify this "future" flow duration curve and no basis for it is provided in the DLA. This flow operating range directly correlates to the flow velocities at the site and to the future effectiveness of the fishways. It is critical that the Service verify this future flow duration curve.

    Response – The Service recommends that Sappi include the basis for this flow duration curve in the Final License Application. Typically, the flow duration curve (for a highly regulated reach) necessitates modeling or a river routing analyses (e.g., Muskingum technique) that incorporates upstream project operations. Analytical methods used to develop the revised flow duration curve should be included in the Final License Application.

11) Pages 56-57. The DLA notes that required monitoring and evaluation of the Cumberland Mills Dam upstream fishway was conducted in 2013, 2014 and 2015. The DLA provides details of 2014 studies including an estimate of the number of river herring passed through the fishway. The DLA discussion of 2014 monitoring notes that no American shad were observed passing the site in 2014. The studies conducted to date have not demonstrated that the Cumberland Dam fishway is effectively passing the target species.

    Response – The Service requests that this section note that upstream passage requirements are not contingent on the effectiveness of the Cumberland Mills facility.

12) Page 57. SAPPI describes *Proposed Conditions* for anadromous species (Section 5.3.3.2). Section 5.3.3.2 focuses on fish passage and available habitat for the restoration of diadromous species. However, the first three sentences discuss the history and removal of the Smelt Hill Dam in 2002.

    Response – The history of Smelt Hill dam is not relevant to the *Proposed Conditions* for anadromous fishes that will be realized by removing Saccarappa Dam and restoring aquatic

habitats in the portion of the Presumpscot River upstream of Saccarappa Dam. The text should be deleted, or moved to the extensive background discussion of historic fish passage impediments on pages 78-81 (see Comment 13).

13) Section 5.7.4 *History of Fish Passage at Saccarappa* (pages 78-81). The first paragraph of this extensive recitation of the history of Presumpscot River hydro-mechanical mills states that, "It is very unlikely that anadromous fish, with the possible exception of Atlantic salmon, were able to pass the Saccarappa site even before any man-made water diversion structures or dams were built at the site."

    Response – The statement is not supported by facts or analyses provided in the DLA. Rather, the previous relicensing proceeding for the Saccarappa project, as well as the State proceeding to provide fish passage at the Cumberland Mills Dam, are both replete with historical accounts and evidence that anadromous fishes were present in the Presumpscot River upstream of Saccarappa Falls (e.g., the 1785 law requiring opening gates to pass anadromous fishes). The Service requests that the entire section be deleted. The only relevant point is that the Saccarappa Falls have been extensively modified in the last 300 years.

14) Page 83. The DLA description of *Proposed Conditions* states that, "No modifications are proposed in the eastern channel to promote or enhance fish passage, so the eastern channel is available for structural enhancements of recreational boating."

    Response – The Service finds this proposal unacceptable and in conflict with negotiations over the last three years. Sappi and the resource agencies agreed in 2013 that removing ledge in the eastern falls was needed to provide passage. The Service reiterated this point in our comment letter of September 26, 2015 on fish passage design, where we recommended that Sappi, "Modify ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding."

15) Pages 83-84. The DLA description of *Proposed Conditions* states that, "The second structural modification being contemplated by the City is described as *minor sculpting* of the upper eastern falls above the middle pool (between the upper and lower falls) and well downstream of the existing spillway. Preliminary design drawings for the City's proposal are included in Appendix G. These modifications in the upper eastern falls will be permanent, non-moveable structures and consist primarily of concrete or rock features combine with bedrock removal to create the desired enhancement to the whitewater features that already exist at the upper falls." (emphasis added)

    Response – We do not find modifications to the ledges of the eastern falls ledges to be depicted in any drawings, nor described in any text, of Appendix G. Please modify Appendix G drawings to show the extent and location of ledge removal and modification. Please describe the specific ledge removals and modifications in the text of Appendix G. Please note the purpose of each ledge removal or modification, as to whether it is for recreation or fish passage. The Service is very concerned that ledge modifications for recreation proposes may interfere with fish passage, as noted in the previous comment.

16) Appendix D, page 3. Throughout the 2013 surrender application, the intent was to allow the Parties (including the Service) an "opportunity to attempt to reach agreement on design, surrender, decommissioning, post-construction operations and maintenance, and effectiveness testing of such alternative to the fish passage proposed in the Surrender Application". To the Service's knowledge, no such agreement on post-construction O&M has been reached. While such agreements may be reached later, at a minimum, the Service should have input on the operations and maintenance plan for this site.

    Response – The Service recommends that Sappi acknowledge the need for Service (and MDMR) input on a future fishway operations manual.

17) Appendix G, Sheet 7 of 13. Turbidity and refraction typically limits the effectiveness of counting fish (visually or via video) in wide exit channels. The 3'-4" wide channel may be too large.

    Response – A removable static crowder is recommended on the wall opposite of the counting window. The static crowder should be built from stainless or aluminum 1"x 3" or 1"x 4" grating oriented horizontally to limit adult river herring from moving through the grating.

18) Appendix G, Sheet 7 of 13. Sappi proposes to separate the two Denil channels with an eight inch concrete wall. Though a one-foot thick wall is typical, an eight inch wall may be acceptable as an interior wall. However, Sappi also proposed to mount the Denil baffles using angle iron (note the 3'-11" baffle width). Angle iron brackets will require multiple penetrations into the eight inch thick wall. Given the limited concrete cover over the rebar in an eight inch water-retaining wall, the penetrations may, over time, expose the rebar and significantly reduce the design life of the fishway.

    Response – Recommend that Sappi modify the plans to include a one foot wide interior wall.

19) Appendix G, Sheet 7 of 13. The double Denil will provide Sappi (and future owners/operators) the opportunity to shut down one side of the fishway while providing passage through the other side. This will benefit fish by minimizing in-season shut downs due to maintenance operations and repair work.

    Response – To provide for shut downs on one side of the double Denil, recommend that Sappi modify the plans to include four separate stop log slots (eight concrete bond-outs) at the intersections of the sloped channels to the exit channel and resting pool. Additionally, recommend that the dividing wall in the resting pool be replaced with a removable timber/aluminum section to facilitate cross-over.

20) Appendix G, Sheet 7 of 13. Sappi shared an early draft of the Denil fishway design in August of 2015. In those drawings, the Denil resting pool was 37 feet long. These revised drawings have drastically shortened the resting pool to 12'-7". A longer resting pool ensures hydraulic conditions (e.g., air entertainment, turbulence) are suitable for fish to rest. While 12 feet is the minimum for a 4-foot-wide Denil, this unconventional double Denil may necessitate more pool volume to dissipate energy.

Response – Recommend that Sappi revise the resting pool design to a minimum of 18 feet long (without altering the 1:8 slope).

The Service appreciates the opportunity to work with Sappi on the surrender and decommissioning of the Saccarappa Project. The Service thanks Sappi and the stakeholders who have brought the project to this point. Should you have any questions regarding our comments, please contact Steve Shepard by email at *steven_shepard@fws.gov*, or by telephone at 207/866-3344 Extension 1116.

Sincerely,

Laury A. Zicari,
Field Supervisor
Maine Field Office

ec: Patrick Keliher, Gail Wippelhauser, MDMR – Augusta, Maine
Oliver Cox, MDMR – Bangor, Maine
Kathy Howatt, MDEP – Augusta, Maine
Andrew Tittler, USDOI – Newton, Massachusetts
Brett Towler, USFWS – Hadley, Massachusetts
Antonio Bentivoglio, USFWS – Orono, Maine
Jed Wright, USFWS – Falmouth, Maine
Alex Hoar, USFWS – Hadley, Massachusetts
John Perry, MDIFW – Augusta, Maine
Francis Brautigam, MDIFW – Gray, Maine
Ron Kreisman, Aaron Frederick, FOPR – Portland, Maine
Sean Mahoney, CLF – Portland, Maine
Bill Baker, City of Westbrook – Westbrook, Maine

RONALD A. KREISMAN
ATTORNEY AT LAW
77 MACKWORTH STREET
PORTLAND, MAINE 04103 - 4531
(207) 699-4558
email: ron@kreisman.net

November 23, 2015

BY ELECTRONIC DELIVERY

Mr. Barry Stemm
Sappi/Warren Release Papers
89 Cumberland Street
Westbrook, ME 04092

Dear Barry,

On behalf of the Conservation Law Foundation (CLF) and the Friends of the Presumpscot River (FOPR), we write to provide comments on Warren Company's draft Surrender Application for the Saccarappa Hydroelectric Project. At the final technical meeting on September 22, 2015, CLF/FOPR explained in some detail our positions on key elements of your design vs. the design proposed by Princeton Hydro, drawing together comments made at that meeting and earlier ones. Those positions need not be reiterated here, but they included a critique of the SMath analysis that was based on an incorrect length for Warren's Western channel design when comparing results with the Princeton Hydro design, the failure of numerous denil fishways built in New England to pass American shad which should have caused a much greater willingness to explore additional data collection on the rock ramp alternative, and meaningful disagreements with the way Warren prepared its cost comparisons.

The comments below supplement those made on September 22, 2015, and raise significant additional issues that CLF/FOPR believe Warren must address in your final applications to Maine DEP and FERC.

1. Western channel:

A. The final application[1] should specify whether the design includes a core retaining wall spanning the channel and located within or adjacent to the fill Warren is

[1] As used herein, the word "application" should be understood to include and apply to both the surrender application that Warren states it intends to file with FERC and the MWDCA application that Warren states it intends to file with the Maine DEP.

proposing to place in the upper portion of the Western channel. Warren has repeatedly been asked this question and has refused to provide a clear and definitive answer. If the answer is "yes," this core wall should be shown on your design plans, described, and included in revised cost estimates. If "no," Warren should explain why it does not believe a core wall will be necessary.

B. Mobilization and replacement of fill. The draft application contains no discussion of whether Warren believes that the large amounts of fill to be located in various portions of the Western channel called for in your design will, over time, be mobilized and move downstream in large storm events such as Hurricane Irene. If the answer is "no," Warren should explain the technical calculations used to reach this conclusion. If the answer is "maybe" or "yes," Warren should explain what the anticipated costs to replace and/or reposition the fill will be over the remaining 28-year term of the license, over the next 50 years and the next 100 years, and the amount of funding that it intends to set aside to meet these costs as well as the account/repository where the funds will be located.

C. Warren's Western-channel-only fish passage design is predicated on the assumption that migrating river herring and American shad will (1) only pass up and over the lower falls by means of the double denil, and (2) will then exit the denil and only head up the Western channel, as opposed to some of those denil-exiting fish "turning right" and migrating into the Eastern channel. In discussions regarding this issue, Warren to date has not offered expert fisheries opinion as to why some portion of the migrating population, at certain flows, will not divert, bypass or avoid the denil and instead pass over the lower falls at the eastern portion of those falls and then migrate up the Eastern channel, never entering the double denil. Warren should provide this expert opinion and the basis for it in its final application. In addition, besides its previously-stated generalized conclusion that "fish will be attracted to flow," Warren's final application should contain expert opinion and the scientific basis for its conclusion that *all* fish that exit the denil will migrate only up the Western channel, and that no fish will migrate from the denil into the Eastern channel. If Warren's expert conclusion is that some fish will indeed migrate into the Eastern channel, Warren should quantify this migration amount in its final application as well as the basis for this quantification.

D. The draft application contains no discussion of effectiveness testing for Warren's Western channel design. Warren's final application should specify the Western channel effectiveness testing it is prepared to undertake and pay for, and over what period of time. In this regard, the final application should address whether

Warren is prepared to undertake effectiveness testing over an extended period of time and what that time period will be, in light of the fact that accurate effectiveness testing for decimated fish populations that may take a decade or more to rebound will need to take place over an extended period of time. Lastly, the final application should address the cost of short and long-term effectiveness testing, and the account/repository for placement of funds dedicated to effectiveness testing.

E. The draft application does not address what Warren will do if the effectiveness testing demonstrates that its Western channel design is not passing fish in a safe, timely and effective manner, including whether Warren is prepared to set aside funds to be held in a separate account/repository in the event that changes to the Western channel are required to have effective fish passage, and the amount of this set-aside. The final application should address these issues.

2. Eastern channel:

A. Modeling of the Eastern channel conducted during the technical process using Warren-agreed-upon methods and inputs demonstrated that removal of the Eastern channel spillway alone will not create safe, timely and effective passage of all target species at all target flow regimes. Warren's final application should state clearly (a) whether it is repudiating these modeling conclusions, (b) whether it is prepared to make any alterations in the Eastern channel (i.e., sculpting bedrock) to create safe, timely and effective passage in the Eastern channel, (c) if so, the extent of this sculpting, when it would be undertaken, the cost of doing so, and the effectiveness testing it is prepared to undertake subsequent to the alternations; and (d) the account/repository for funds to pay for this work if not part of the original design.

B. Warren has stated in its draft application that it is concerned about adverse impacts from undertaking the sculpting in the upper Eastern channel called for by Princeton Hydro's alternative design. Warren further states in its draft that it has done no analytical field work to scientifically evaluate its concerns. However, CLF and FOPR are aware that Warren has recently surveyed and analyzed numerous cross-sections upstream of the Eastern spillway and throughout the length of the impoundment and has otherwise collected all necessary data to evaluate the merits of its concerns. CLF and FOPR also believe that Warren has inputted this data into a model to evaluate impacts and has derived and reviewed the results of this work. In its final application Warren should provide all survey and other field data collected, all model results run, and all conclusions reached, so that the regulatory agencies and the public can evaluate

the impacts of the Princeton Hydro alternative.

3. Denil fishway:

A. Fish counting is required by federal and state licenses at Saccarappa, and is part of Warren's denil fishway. Fish counting at Saccarappa is an essential component of the four upstream FERC licenses and Maine water quality certifications, all issued at the same time as Saccarappa license and linked to it. Warren's draft application does not state what entity will operate the Saccarappa fish counting facility and report to FERC and Maine DEP in the event that Warren by choice or economic necessity is no longer the owner of the Saccarappa site. Nor does the draft application explain, for the period of time that Warren does operate the fish counting facility, what reliable compliance/oversight/enforcement mechanism Warren proposes to provide to the public to ensure that its fish counting facility at Saccarappa is being operated in a high-quality and reliable way. All these issues should be addressed in Warren's final application. In addition, the final application should address whether Warren intends to pre-fund an account/repository of sufficient funds to ensure that the fish counting will continue regardless of the ownership, commercial interruptions due to bankruptcy or other property issues, and otherwise. The final application should also state what qualified entity will conduct these fish counts in a reliable manner.

B. Operations of the fishway: Warren has stated that it will operate the denil fishway for as long as it owns the Saccarappa site. The same questions raised in § 3.A. above apply to operations of the fishway and should be addressed in the final application.

C. Supporting structures: The denil proposed by Warren will only have even a chance of being effective if the retaining walls of the tailrace and other structures (labelled "legacy structures" by Warren) are maintained and repaired. These "legacy structures" indeed have quite a legacy and will require significant maintenance in the coming decades. Recently, FERC ordered repairs to a portion of these structures. In its draft application, Warren has allocated, on paper only, a modest amount of funding to these repairs. The draft application does not reveal the assumptions used to derive this allocation. The final application should state these assumptions, including the period of time covered, the nature of the expected repairs, and the per unit repair cost used to derive this number. The application additionally does not state whether these funds will be set aside and held in a separate account/repository. The application also does not state who and how required repairs will be funded if Warren is no longer the owner

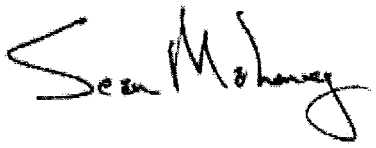
of the site. The final application should address all of these issues.

D. Effectiveness testing. As with the Western channel, Warren's draft application does not address the effectiveness testing that will be done for the denil fishway, including but not limited to the period of years over which this effectiveness testing will be conducted, as fish populations may take years to rebound before accurate effectiveness testing can be done on representative population sizes. Nor does the draft application address what Warren will do if the effectiveness testing demonstrates that its design is not passing fish through the denil in a safe, timely and effective manner, including whether Warren is prepared to set aside funds to be held in a separate account/repository in the event that changes to the denil are required to have effective fish passage at the lower falls, and the amount of this set-aside. The final application should address these issues.

* * *

Thank you for your attention to these CLF/FOPR comments.

Sincerely,



Sean Mahoney, Esq.
Executive Vice President &
Maine Director
Conservation Law Foundation

Ronald A. Kreisman, Esq.
Counsel to Friends of the
Presumpscot River

City of Westbrook, Maine

Colleen Hilton
Mayor
chilton@westbrook.me.us

Jerre R. Bryant
City Administrator
jbryant@westbrook.me.us

William D. Baker
Asst. City Administrator
Business & Community Relations
wbaker@westbrook.me.us

2 York Street
Westbrook, Maine 04092
Phone: (207)591-8110
Fax: (866)405-0776

November 23, 2015

Via Electronic Mail
Barry Stemm
Sappi/Warren Release Papers
89 Cumberland Street
Westbrook, ME 04092

Re: Comments on Draft FERC Application for License Surrender
Saccarappa Hydroelectric Project (FERC Project No. 2897)

Dear Barry:

The following are comments on behalf of the City of Westbrook on Sappi's DRAFT Application for License Surrender for the Saccarappa Project.

City of Westbrook Participation in Stakeholder Process

As you know the City has contributed time and financial resources to ensure that final decisions regarding the future of the Saccarappa site may be based on the best available science. At a time in which the possibility for collaboration seemed uncertain due to funding challenges, the City provided the necessary support to continue the discussion among the stakeholders. We have committed such time and resources because as the "host community" for the Saccarappa dam, we have significant interests in the future use of this important site.

The City has appreciated the opportunity to participate in the stakeholder process to develop a surrender and decommissioning plan that will address several important goals, including (1) support for the continued operation of Sappi's facilities in Westbrook; (2) remediation of environmental impacts due to the existing facility, including improvements to permit effective fish passage; and (3) simultaneous consideration of steps necessary to ensure that the Saccarappa site may become a public resource to satisfy a broad range of recreational goals and uses.

As you know, since the beginning of the City's participation in this stakeholder process we have sought to participate in a manner that would assist the parties in reaching all three of these goals, and the City will continue to work collaboratively in the FERC process on a final decommissioning plan.

General Comments on Draft Application

In general, the proposed decommissioning plan should address all three of the goals articulated above simultaneously, and the parties to this proceeding should continue to work together to address any competing demands. As the City of Westbrook is responsible for meeting the needs of its citizens and the community, we continue to believe that a final decommissioning plan must contain specific provisions regarding design and

construction of possible recreational improvements, as well as disposition of real property. Although this is a surrender proceeding not a license proceeding, the same standard regarding "equal consideration" of the public interest, including current and future recreational opportunities, remains.

The City also appreciates that Sappi has proposed a decommissioning plan that may accommodate the addition of recreational amenities important to residents of the City and surrounding communities. The City also appreciates the ongoing efforts by Friends of the Presumpscot River and the Conservation Law Foundation to work with the City to identify recreational resources compatible with the fish passage goals of these organizations. As the parties are aware, the City does not purport to be an expert on fish passage. We will continue to work with the parties, including federal and state agencies with expertise in these areas, to ensure that both expanded public use and fish passage remain compatible, regardless of which final plan is approved by FERC.

At this point we understand that there remains work to be done to resolve disputes between some of the parties regarding the adequacy of differing decommissioning plans. The City intends to continue to work with all the parties to help find consensus.

Specific Comments on Draft Application

1. Page vi, regarding local approvals. Based on our review of the current proposal, the City has determined that the work associated with the decommissioning of the facility will require permits from the City of Westbrook under the City's shore land zoning and floodplain ordinances.

2. Page 3, recreational opportunities. As noted above, the City contends that public use of the site following decommissioning, including any mitigation or improvements for expanded public recreation, must be determined as part of the FERC proceeding.

3. Page 12, recreation and the eastern channel. The City appreciates Sappi's consideration of the need to accommodate recreational enhancements as part of the decommissioning of the site. As noted herein, final decisions regarding any recreational impacts or resources should be addressed as part of the FERC and Maine DEP proceedings. In the event that FERC and the Maine DEP do not address recreational enhancements as part of Sappi's proceeding, the City will continue to evaluate its options.

4. Page 20, regarding "multiple factors" in fish passage design. The City agrees that future use of the site, including for recreation, is a factor in developing a final fish passage design. As these issues are interrelated, the City contends that fish passage and any recreational improvements must be designed simultaneously to ensure compatibility.

5. Page 20, incompatibility of "two-channel" design with recreation. Although the City does not profess to be an expert on fish passage we are unaware of any inherent incompatibility between recreation and the "two-channel" option in the upper east channel.

6. Page 28, costs of competing decommissioning plans. The City is not able to comment on the specific cost estimates, but understands that the NGOs have altered their proposal for their proposed passage at the lower falls. The City is hopeful that all parties will revisit any cost estimates as proposals for fish passage may evolve during the proceeding.

7. Page 32-33, Recreational Considerations. As noted above, the City appreciates the effort by Sappi to incorporate recreational goals in its proposed decommissioning plan. We will continue to work with all parties on fish-passage compatible recreation to serve a variety of public goals and interests. These issues should be addressed as part of the FERC proceeding.

8. Page 38, impacts of further lowering of impoundment. Sappi notes that it has not studied the impact of lowering the Saccarappa impoundment below elevation 64 feet. The City would be interested in understanding how this change would impact public access and recreation throughout this section of the river.

9. Page 83, timing of consideration of recreational features. Sappi has noted that recreational elements are not currently part of the design of the decommissioning plan or Sappi's Surrender Application. The City has provided funding for the stakeholder process and will continue to contribute time and resources to identify appropriate recreational amenities and to resolve post-decommissioning use of the site, including for enhanced

public access. Such considerations should be an explicit part of the Surrender Application and FERC (and Maine DEP) proceedings.

Thank you for your consideration of these comments. The City of Westbrook remains committed to act as an important partner in this stakeholder process.

Sincerely,

William Baker

cc: Service List

- *Agency Comments on Surrender Application*
  - Comment Matrix, Responses to Comments Received
  - Draft Surrender Application, William Ball, Acheron, dated 10/22/2015
  - Comments from Francis Brautigam, IFW, 11/20/2015
  - Comments from Laury Zicari, USFWS, dated 11/23/2015
  - Comments from Patrick Keliher, MDMR, dated 11/23/2015
  - Comments from Sean Mahoney, CLF & Ron Kreisman, FOPR, dated 11/23/2015
  - Comments from William Baker, City of Westbrook, dated 11/23/2015

APPENDIX E: DECISION DOCUMENT

Saccarappa Fish Passage
Selection of Final Fish Passage Design
October 12, 2015

1.0 Background

On March 14, 2014, S.D. Warren Company (Warren), dba as Sappi North America, entered into an agreement (Agreement) with the U.S. Department of the Interior and U.S. Fish and Wildlife Service (USFWS), the Maine Department of Inland Fisheries and Wildlife (DIFW), the Maine Department of Marine Resources (MDMR), the City of Westbrook, the Friends of the Presumpscot River (FOPR), and the Conservation Law Foundation (CLF) (collectively, the "Parties") to request from the Federal Energy Regulatory Commission (FERC) an extension of the fish passage deadline for the Saccarappa Project and a stay of the license surrender application filed by Warren on December 31, 2015. The purpose of the Agreement was to allow the Parties time to engage in a collaborative, open, and joint process to evaluate two fish passage design alternatives at the Saccarappa Dam site.

The Agreement was approved by FERC on July 30, 2014 and became final on September 2, 2014.

The Agreement includes the following provision:

> ***"2.2.2.1*** *Unless the Parties agree that it is not necessary, Warren will prepare a written summary of its evaluation of both design alternatives, based on the Information. In its evaluation, Warren will provide its determination, made in its sole discretion but in consultation with the other Parties, of whether it will proceed with the Denil Alternative, the Two-Channel Alternative, or some combination of those designs."*

This document is the written summary of Warren's evaluation of the design alternatives, and provides Warren's determination of the design it will propose in its revised FERC surrender application and related regulatory approval applications. Warren's determination was made following an extensive and careful evaluation of all the factors related to the two designs that were developed and considered during the extension period. Both designs that were considered are different from the original design submitted with the December 2013 FERC Surrender Application, and, as a result of this collaborative effort, the final recommended design is an improvement over the original submission.

During the extension period a series of technical meetings were held. These meetings were attended by the Parties and their respective technical consultants for the purpose of carefully exploring several alternatives for fish passage at the Saccarappa Dam site, post surrender. Warren's consultants, as well as the consultant selected by FOPR and CLF, developed alternative designs that came to be referred to as the Western Channel Design and the Two Channel Design. On September 21, 2015 and September 22, 2015 respectively, the USFWS and MDMR provided written feedback based on the two designs. In addition to the numerous technical meetings held by the Parties to develop and discuss these two designs, Warren also held two public meetings in Westbrook during the extension period to solicit comments on the designs, and received voluminous written comments. In making its decision, Warren carefully considered the features of the two designs, the agency feedback, the comments and suggestions of those who attended the public meetings, the submitted written comments, and the likelihood of a successful and predictable outcome.

Warren would like to thank all of the Parties to the Agreement for their hard work and involvement in this process.

1.1 Summary of the Two Designs

The Saccarappa site consists of two falls, the upper falls and the lower falls. Both final designs propose solutions for fish passage over both falls, but the two proposals differ in their approach to elevation changes, as follows:

Proposal Designation	Upper Falls Design	Lower Falls Design
Western Channel Design	Provide fish passage in the western channel only, while retaining the original bedrock and elevations of the upper impoundment to what existed prior to original hydro construction.	Provide a 180' double Denil fish ladder within the existing hydro tailrace, with a counting station at the outlet.
Two Channel Design	Provide fish passage in both the western and eastern channels by reshaping the original bedrock of the eastern channel and lowering the impoundment above the falls to below the pre-hydro elevation level.	Provide a 500' riffle/pool fishway within the existing hydro tailrace. In order to obtain the required length and slope, this design includes a 180° "switchback" within the tailrace. Fish counting is not included.

2.0 Lowering the Hydraulic Control Elevation and Water Levels Upstream of Saccarappa

The Two Channel Design calls for lowering the water level in the river upstream of Saccarappa by removal of bedrock in the upper eastern channel to elevation 62 in the eastern channel and relying on the existing hydraulic control in the western channel at elevation 60. The Western Channel Design leaves the existing bedrock in the eastern channel at elevation 64 and the fill in the western channel at elevation 64, and leaves the river impoundment above the site closer to pre-dam conditions.

The Two Channel Design would cause the water levels in the river upstream of Saccarappa, post dam removal, to be approximately 1.7 feet lower at average flow rates (900 cfs) and up to 3 feet lower at low flow rates than the Western Channel Design. Any potential impacts to environmental, cultural, fisheries, soils, embankments, wetlands, and man-made resources related to lowering of water levels in the river will be exacerbated by the Two Channel Design. With the Western Channel Design, the water level in the river upstream of Saccarappa will be returned to the levels that existed prior to construction of the first Warren hydroelectric facility at the site. All of the impact studies that have been done based on a control elevation of 64 would need to be re-done to reflect the lower control elevation in the proposed Two Channel Design, causing delays and potential complications in the permitting process. Examples of studies that would have to be redone include the following: (1) wetlands assessment, (2) erosion and sedimentation, (3) water quality (mostly related to potential erosion), (4) archeological resources, (5) historic structures, (6) irrigation system intakes, and (7) docks and retaining walls.

In addition to the potential impacts upstream, excavation of bedrock in the eastern channel will alter the aesthetics of water flow over the upper eastern falls. The appearance of the water flow over the falls will be altered by flattening the falls. Additionally, several landowners on the river commented during the public meetings that they preferred that Warren try to minimize the drop in impoundment water levels.

Warren's conclusion is that the impacts associated with lowering water levels in the river upstream of the Saccarappa site required by the Two Channel Design would be significantly greater than the impacts associated with the Western Channel Design, and not necessary to accomplish the objectives of timely and effective fish passage.

3.0 Recreational Considerations

The final two designs considered by Warren differ substantially in their consideration of recreation, specifically water craft recreation. Over the past several years, the City of Westbrook has expressed an interest in enhancing recreational opportunities for boaters. The potential enhancements could include substantive structural modifications at the site, as long as those enhancements do not impede or interfere with fish passage at the site. The City's recreational consultant has indicated that the opportunities for enhancements in the eastern channel are only

limited by one's imagination. Warren believes that the expressed interests of the City are better served by allocating the western channel for fish passage and leaving the eastern channel available for other non-conflicting interests.

The Two Channel Design includes substantive modification to both the eastern and western channels for fish passage. In addition, with the Two Channel Design, Warren would need to install barriers to watercraft upstream of the western channel to exclude boats from entering the western channel because watercraft could be drawn into the riffle / pool fishway in the tailrace. The riffle / pool fishway area is not appropriate or safe for recreational boating activities, especially in the area of the 180° switchback and during times of heavy river flow. The 20-foot wide opening to the riffle / pool fishway area could encourage boaters to try to navigate the fishway. An option might be to install a boating barrier at the entrance to the tailrace area, but such a barrier at that location poses complications and challenges. Therefore, Warren is very concerned about the safety risks of this design.

The Western Channel Design concentrates the modifications to enhance fish passage in the western channel. The Western Channel Design does not necessitate any restrictions to boating activities in either channel. Both channels are available for recreational boaters (predominantly kayaks). It will not be practical, however, to implement structural modifications in the western channel because any structural enhancements could adversely impact the success of fish passage in the western channel. Warren's modeling in the western channel shows that it will provide safe and effective fish passage, so modifications in the eastern channel to promote or enhance fish passage are not necessary and are not being proposed; hence the eastern channel is available for structural enhancements for recreational boating without adversely impacting fish passage.

On the other hand, the Two Channel Design does include substantive modification to both the eastern and western channels. Therefore, any structural modifications in either channel solely for the purpose of enhancing recreational boating could negatively impact the modifications proposed for fish passage.

Warren's conclusion is that the Western Channel Design is preferred because it does not limit in any way potential future opportunities for recreational enhancements in the eastern channel, and the Western Channel Design allows boats to use both the eastern and western channels for recreational boating.

4.0 Cost Comparison

An opinion of potential construction and post-construction costs was prepared for both options. The summary of the cost opinions is presented below.

Item Description	***Western Channel Design***	***Two Channel Design***
Construction Cost	$4,500,000	$5,300,000
Post Construction Capital Cost	$70,000	$225,000
Post Construction Annual O&M Cost	$85,000	$150,000

Warren's conclusion from the cost comparison of the two options is that it will cost substantially more to build and operate the Two Channel Design than the Western Channel Design.

5.0 Provisions to Count Fish

The ability to count fish at the Saccarappa site is important because the licenses for Mallison Falls and Little Falls, the next two stations upstream from Saccarappa, include triggers for fish passage that are tied to fish counts at Saccarappa. The Western Channel Design includes provisions to view and count fish at the exit of the Denil fishway. Viewing and counting are important because the triggers are species specific. Warren has not been able to devise a reliable and proven method of counting and identifying fish species with the Two Channel Design.

Warren's conclusion is that the Western Channel Design is preferable to the Two Channel Design because the Western Channel Design includes provisions for counting fish at Saccarappa as required by the FERC licenses for Mallison Falls and Little Falls.

6.0 Performance Evaluation

6.1 Performance Evaluation by Alden Labs

<u>Tailrace Switchback Channel (Two Channel Design) versus Denil Fishway (Western Channel Design)</u>

The lower roughened channel in the Two Channel Design is approximately 580 feet long, at a 2% slope. The lower 280 feet of the channel occupies the full tailrace width at approximately 30 feet and then transitions to a variable 10 to 20 foot wide switchback section for the remainder 300 feet to the middle pool. The channel includes 13 boulder sills, creating a step pool channel. The normal tailwater elevation ranges between 41 to 42 feet and the middle pool elevation ranges between 53.5 to 56.5 feet. The total head from the tailwater to the middle pool ranges between 12 to 15 feet. The lower two boulder sills are submerged, thereby providing a total of

11 boulder sills for the full head, creating 14 to 18 inch drops between pools. The flow through the channel ranges from 152 cfs to 557 cfs for corresponding river flow of 300 cfs and 3,000 cfs, respectively. HEC-RAS model results of the proposed design provided by FOPR predict velocities of 2 to 6.7 ft/sec, as shown below.

Switchback Channel Velocities

Total River Flow (cfs)	Switchback Channel Flow (cfs)	Max Channel Velocity (ft/sec)
300	152	4.9
1500	379	6.0
2250	476	6.4
3000	557	6.7

The Two Channel Design switchback channel fishway proposed for the lower falls is a one-of-a-kind design without known precedent. The expected hydraulic conditions within the irregular channel are complex and not easily predicted without sophisticated analysis, and there is insufficient information to predict the ability of fish to pass up this channel. One dimensional modeling has been completed, which is appropriate and useful to predict water levels through the channel and can provide an approximation of average velocity, but it does not provide adequate information to assess fish passage.

The following considerations are important relative to fish passage success for the lower falls:

- The switchback channel is over 500 feet long, at a 2% slope with velocities ranging from 2 to 7 ft/sec. Shad passage effectiveness decreases as the length of fishways increase. The Denil ladder is about 1/3 the length of the switchback channel and can provide more timely passage than the switchback channel due to its shorter length.

- There are significant uncertainties and risks with the hydraulic design of the switchback channel. The average velocities predicted by HEC-RAS approach and exceed fish passage design threshold recommendations of 6 ft/sec. The one-dimensional modeling is not adequate to understand the three dimensional irregularity of the proposed channel. In particular, the proposed 180 degree switchback pool has potential to create adverse flow conditions such as eddies, which are known to delay fish and hinder passage. By contrast, the hydraulics of the Denil ladder are well understood and effective. The Denil ladder configuration has been carefully designed to optimize internal hydraulics (no 180 degree turning pools) to eliminate the potential for adverse conditions (such as eddies) that may delay or hinder passage.

- The switchback channel includes 10 pools with a hydraulic drop of 14 to 18 inches between pools. Typically, step pool fishways for shad and herring are designed with drops of less than 6 inches (a drop that produces a plunging flow of about 6 ft/sec). The Two Channel Design will create plunging flow velocity of up to 10 ft/sec.

- Average velocity predicted by HEC-RAS modeling is greater than 6 ft/sec for river flows greater than 1,500 cfs. Maximum channel velocity will be considerably higher than 6 ft/sec and fish passage will be challenging for river flows greater than 1,500 cfs.

- The switchback channel lacks a means to limit flow into the channel. As the river flow increases, the switchback channel flow also increases. Flood flows are of particular concern, which could damage and move grade control features such as the boulder sills and also deposit large debris within the channel (especially in the switchback area, where the flow changes 180°). Debris and trees have potential to become trapped within the tight turns of the channel, and there are no means of accessing the channel with heavy equipment to remove large debris. The channel is constructed of fill material that will require periodic inspection and adjustment to maintain proper sill elevations and hydraulic conditions.

- The as-built conditions of the switchback channel are very important to the ultimate success of the design. Considerable uncertainties exist with the design, which are compounded by the challenges associated with constructing irregular rock structures at the design elevations and widths. Great care will be needed to document as-built conditions and final hydraulics. Adaptive management and additional channel modifications will likely be required after initial construction.

- Hydraulic conditions at the entrance of the switch-back fishway will be substantially altered by the cascade of water over the lower falls. Currently, a 10 foot deep plunge pool exists where the water flows over the lower falls. The plans call for the depth of water to be approximately 1 to 1.5 feet deep. This cascade of water into this shallow area may cause confusing hydraulic conditions which may delay or hinder the ability of fish to find the entrance to the switch-back channel.

Upper Western Channel

The upper western channel in the Two Channel Design is approximately 520 feet long, at a 2.5% slope with velocities ranging from 3 to 8 ft/sec.

- The upper western channel in the Two Channel Design is similar to the Western Channel Design, but the Two Channel Design includes pools and riffles to assist in dissipating energy. The Western Channel Design includes sculpted bedrock features to dissipate energy. Relative to fish passage, the two designs in this location are expected to be similarly effective.

6.2 Performance Evaluation by MDMR and USFWS

On August 26, 2015, Brett Towler from the USFWS provided all parties to the Agreement a copy of a model intended to evaluate and compare three performance parameters for the Western Channel Design and the Two Channel Design. The three parameters are:

- *Survivorship Analysis*: The proportion of fish successfully passing a velocity barrier.
- *Fatigue Analysis*: Fatigue and distance relationships.
- *Work-Energy Analysis:* Estimate of the energy that it takes a fish to move through a fishway.

Warren compared the results of the model outputs for both of the designs. The results of the comparison clearly indicate that the Western Channel Design fared better than the Two Channel Design. Warren also concluded that if some resting pools could be added into the western channel upstream of the Denil exit, then the model results for the Western Channel Design would be even better, so Warren asked its consultants to modify the Western Channel Design to add some resting pools. The site plan for the modified design is attached to this document along with the results of the performance passage model developed to reflect the modified design of the western channel.

Warren's assessment of this information is that with relatively minor modifications to the design submitted to the agencies at the July 14, 2015 technical meeting in Hadley, Massachusetts and the August 26, 2015 public meeting in Westbrook, Maine, the predicted effectiveness and efficiency of the Western Channel Design's nature like passage in the upper western channel can be improved. The passage model results for the revised Western Channel Design are dramatically better than the passage model results for the Two Channel Design.

Therefore, based on the independent evaluation of potential fish passage performance by the agencies and the modifications proposed by Warren to the Western Channel Design, Warren believes the Western Channel Design will provide safe, timely, and effective passage over the lower and upper falls at Saccarappa.

7.0 Formal Comments by MDMR and USFWS

On September 22, 2015, Warren received written comments from both MDMR and USFWS on the Western Channel and Two Channel designs. Both of the letters from the resource agencies included an extensive summary as well as recommendations. The following are the recommendations copied from each letter. Each of the letters and the recommendations were discussed and reviewed extensively during the September 22, 2015 technical meeting in Westbrook.

*"**MDMR RECOMMENDATIONS***

1. *To pass upstream migrants over the lower falls, MDMR recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the attraction water supply system.*

2. *Retain the fish counting facility that was included in the Denil design. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder.*

3. *Provide passage on both the east and west channel using the nature-like fishways proposed by FOPR. MDMR believes that for this project to be successful both channels must be passable."*

"SERVICE RECOMMENDATIONS

1. *To pass upstream migrants over the lower falls, the Service recommends that Sappi change the Denil fishway design to a double Denil. This design consists of two side-by-side Denil fishways. The additional flow of the second fishway will allow Sappi to eliminate the auxiliary water supply system.*

2. *Retain the fish counting facility that was included in the Denil design. This facility is needed in order to determine when triggers are met for fish passage construction at upstream sites. With the double Denil, the two fishways should be designed to exit into a common pool with a counting window and a removable crowder. (Note: The Service is willing to discuss a date certain for construction of fish passage at the next upstream Projects in lieu of constructing counting facilities at the Denil fishway. This letter does not address the jurisdictional difficulties that may arise from the current structure, which triggers fish passage at upstream projects based on counts at Saccarappa, when Saccarappa is no longer a FERC-licensed Project.)*

3. *Construct a nature-like fishway in the west spillway channel to provide passage over the upper falls. As the design progresses, incorporate appurtenant in-stream structures (e.g., retain suitable ledge features, construct rock vanes, or place boulder clusters) to further improve passage effectiveness.*

4. *Modify ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding."*

Warren has carefully considered the input received during the meeting and the written material provided by the agencies. Representatives from both agencies are very familiar with the site, and their comments and recommendations were based on a careful and thorough evaluation of all the information provided by Warren and others.

Following a detailed review of the comments and recommendations from the agencies, Warren decided to modify the Western Channel Design to include a double Denil fishway in the tailrace, as recommended by the agencies. Both of the letters include the same recommendation for a double Denil fishway instead of the single 4-foot wide fishway. Warren understands the agencies' rationale for the double Denil fishway and believes that the second fishway can be added without adding significantly to the cost of the project.

The letter from MDMR includes a recommendation that Warren provide passage on both the east and west channels using the nature-like fishways proposed by FOPR. The USFWS letter included a recommendation that Warren modify the ledges in the east channel spillway section to improve passage over the upper falls and reduce the potential for false attraction and stranding. It is unclear precisely what the USFWS recommendation would involve, but the recommendation by MDMR is clear because 30% design drawings of the proposed modifications in the eastern channel were provided by Princeton Hydro.

8.0 Conclusion

The Two Channel Design for the modifications in the eastern channel call for removing bedrock to reduce the elevation of the hydraulic control from elevation 64 to elevation 62 +/-. The elevation of the hydraulic control in both the eastern and western channels was at or near elevation 64 prior to hydroelectric development at the site. Water levels in the river segment upstream of the falls were controlled by the bedrock at the falls at elevation 64. The Western Channel Design calls for removal of the spillways and replacement of excavated material in the upper western channel, allowing the river above Saccarappa to return to conditions that existed prior to hydroelectric development at the site. The available evidence indicates that the wooden crib and masonry dams that preceded Warren's activities did not involve structural modifications to the bedrock that created the hydraulic control of river water levels upstream.

Warren has studied the potential environmental, recreational, and social impacts related to removing the spillway but leaving the hydraulic control at elevation 64 feet and has determined that the impacts associated with returning river water levels to pre-hydro development levels are minimal. Warren has not studied the potential impact of lowering water levels below the pre-development levels, but Warren is concerned that potential impacts related to wetlands, soil erosion, embankment stability, and cultural and historic resources could be greater – and potentially significantly greater than with the Western Channel Design.

Additionally, Warren estimates that the cost associated with modifying the eastern falls as proposed by in the Two Channel Design will add a minimum of $600,000, or 25%, to the cost of fish passage at Saccarappa.

Warren's conclusion from its evaluation of all the available data, facts, and opinions is that the potential negative impacts to environmental, recreational, cultural, and social resources upstream of and at the site, as well as the cost of construction, associated with the Two Channel Design are not worth the potential negligible or *de minimis* benefits to fish passage at the Saccarappa site. Warren concluded that its efforts and resources should be directed toward making safe, timely, and effective fish passage in the western channel as successful as possible.

Warren agrees with the No. 3 recommendation from the USFWS related to modifications to the passage in the upper western channel and has incorporated changes into the design, as attached to this document and described in Section 5.

Based on Warren's careful consideration of all of the facts, data, and opinions described above, Warren has determined that the Western Channel Design, as modified following the September 22, 2015 technical meeting, is its preferred design, and Warren will therefore proceed with the process of implementing the surrender of its FERC license based on that design. The Surrender Application will include Warren's proposal to implement fish passage at the Saccarappa site based on the Western Channel Design depicted in the attached site plan.

Attachments:

Passage Model for American Shad - Fatigue Analysis
Double Denil Site Plan

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, 13 December, 2011 and 18 August, 2014 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner. Elevations shown are based on NGVD 29 Datum.

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

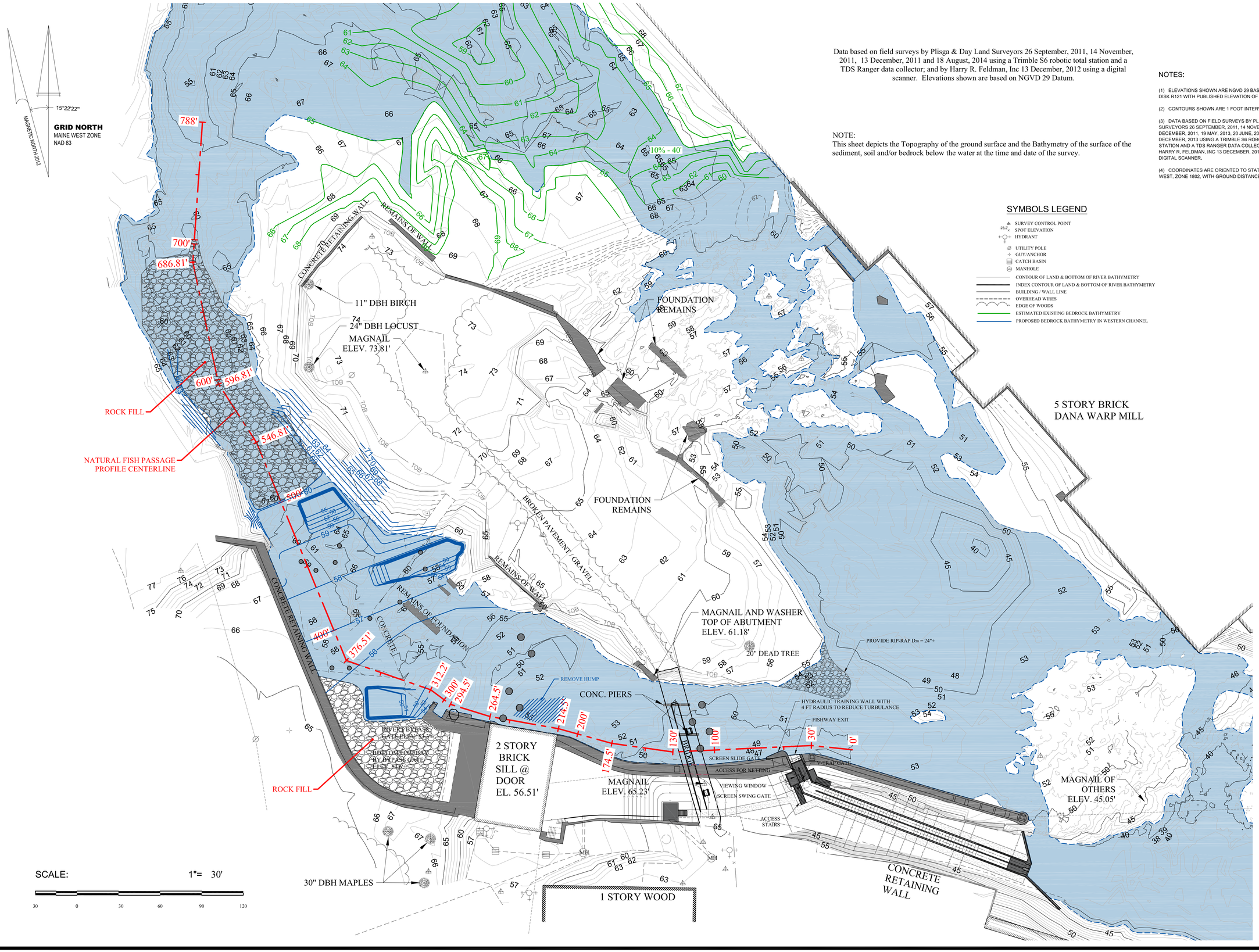
(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR: AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- 23.2 SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL



No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG / P&D
Desg By:
Chkd By:
Aprvd By: WBB
Date:

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (332)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Denil Option B-1 Eastern Falls
Existing Bedrock Control at 64.0'
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49268

Drawing No: C-

Sheet 1 of 5

Passage Model for American shad
Sappi (Acheron) Design
Fatigue Analysis 8/27/2015

K. Ball (Acheron)

Alternative	ZOP/Path	Section	Fish swim mode	Fish size	River flow condition	Passage model	Model Inputs Vf (ft/s)	Vw (ft/s)	TL (in)	S0 (ft/ft)	T (C)	D (ft)	Model Outputs t (s)	D (ft)	E (cal)	S (%)	Evaluation D to pass	Pass ?	Comments
Sappi (Acheron)	Western channel	Upper Ramp Segment A (Station 300 - 376)	Prolonged	small	Avg @ 300 cfs	Work - Energy	9.1	3.16	15.2	0.0500		76			86				
				average			11.5	3.16	19.1	0.0500		76			168				
				large			13.3	3.16	22.1	0.0500		76			261				
				small	Avg @ 600 cfs		9.1	3.53	15.2	0.0500		76			93				
				average			11.5	3.53	19.1	0.0500		76			180				
				large			13.3	3.53	22.1	0.0500		76			278				
				small	Avg @ 900 cfs		9.1	3.69	15.2	0.0500		76			96				
				average			11.5	3.69	19.1	0.0500		76			185				
				large			13.3	3.69	22.1	0.0500		76			285				
				small	Avg @ 1200 cfs		9.1	3.84	15.2	0.0500		76			99				
				average			11.5	3.84	19.1	0.0500		76			191				
				large			13.3	3.84	22.1	0.0500		76			292				
				small	Avg @1500 cfs		9.1	3.98	15.2	0.0500		76			102				
				average			11.5	3.98	19.1	0.0500		76			195				
				large			13.3	3.98	22.1	0.0500		76			299				
		Upper Ramp Segment B (Station 376 - 490)		small	Avg @ 300 cfs		9.1	2.83	15.2	0.0317		114			118				
				average			11.5	2.83	19.1	0.0317		114			234				
				large			13.3	2.83	22.1	0.0317		114			367				
				small	Avg @ 600 cfs		9.1	3.52	15.2	0.0317		114			137				
				average			11.5	3.52	19.1	0.0317		114			267				
				large			13.3	3.52	22.1	0.0317		114			412				
				small	Avg @ 900 cfs		9.1	4.03	15.2	0.0317		114			153				
				average			11.5	4.03	19.1	0.0317		114			293				
				large			13.3	4.03	22.1	0.0317		114			447				
				small	Avg @ 1200 cfs		9.1	4.42	15.2	0.0317		114			166				
				average			11.5	4.42	19.1	0.0317		114			314				
				large			13.3	4.42	22.1	0.0317		114			476				
				small	Avg @1500 cfs		9.1	4.86	15.2	0.0317		114			182				
				average			11.5	4.86	19.1	0.0317		114			338				
				large			13.3	4.86	22.1	0.0317		114			509				
		Upper Ramp Segment C (Station 490 - 650)		small	Avg @ 300 cfs		9.1	3.00	15.2	0.0269		160			171				
				average			11.5	3.00	19.1	0.0269		160			339				
				large			13.3	3.00	22.1	0.0269		160			528				
				small	Avg @ 600 cfs		9.1	3.91	15.2	0.0269		160			209				
				average			11.5	3.91	19.1	0.0269		160			401				
				large			13.3	3.91	22.1	0.0269		160			614				
				small	Avg @ 900 cfs		9.1	4.51	15.2	0.0269		160			237				
				average			11.5	4.51	19.1	0.0269		160			446				
				large			13.3	4.51	22.1	0.0269		160			676				
				small	Avg @ 1200 cfs		9.1	4.97	15.2	0.0269		160			260				
				average			11.5	4.97	19.1	0.0269		160			483				
				large			13.3	4.97	22.1	0.0269		160			725				
				small	Avg @1500 cfs		9.1	5.39	15.2	0.0269		160			282				
				average			11.5	5.39	19.1	0.0269		160			518				
				large			13.3	5.39	22.1	0.0269		160			773				

Passage Model for American shad
Sappi (Acheron) Design
Fatigue Analysis 8/27/2015

K. Ball (Acheron)

Alternative	ZOP/Path	Section	Fish swim mode	Fish size	River flow condition	Passage model	Model Inputs: Vf (ft/s)	Vw (ft/s)	TL (in)	S0 (ft/ft)	T (C)	D (ft)	Model Outputs: t (s)	D (ft)	E (cal)	S (%)	Evaluation: D to pass	Pass ?	Comments
Sappi (Acheron)	Western channel	Upper Ramp Segment A (Station 300 - 376)	Prolonged	small	Avg @ 300 cfs	Survivorship		3.16	15.2		18	76				96%			
				average				3.16	19.1		18	76				97%			
				large				3.16	22.1		18	76				98%			
				small	Avg @ 600 cfs			3.53	15.2		18	76				95%			
				average				3.53	19.1		18	76				97%			
				large				3.53	22.1		18	76				97%			
				small	Avg @ 900 cfs			3.69	15.2		18	76				95%			
				average				3.69	19.1		18	76				96%			
				large				3.69	22.1		18	76				97%			
				small	Avg @ 1200 cfs			3.84	15.2		18	76				95%			
				average				3.84	19.1		18	76				96%			
				large				3.84	22.1		18	76				97%			
				small	Avg @1500 cfs			3.98	15.2		18	76				94%			
				average				3.98	19.1		18	76				96%			
				large				3.98	22.1		18	76				97%			
		Upper Ramp Segment B (Station 376 - 490)		small	Avg @ 300 cfs			2.83	15.2		18	114				94%			
				average				2.83	19.1		18	114				95%			
				large				2.83	22.1		18	114				96%			
				small	Avg @ 600 cfs			3.52	15.2		18	114				91%			
				average				3.52	19.1		18	114				94%			
				large				3.52	22.1		18	114				95%			
				small	Avg @ 900 cfs			4.03	15.2		18	114				89%			
				average				4.03	19.1		18	114				92%			
				large				4.03	22.1		18	114				94%			
				small	Avg @ 1200 cfs			4.42	15.2		18	114				87%			
				average				4.42	19.1		18	114				90%			
				large				4.42	22.1		18	114				93%			
				small	Avg @1500 cfs			4.86	15.2		18	114				84%			
				average				4.86	19.1		18	114				88%			
				large				4.86	22.1		18	114				91%			
		Upper Ramp Segment C (Station 490 - 650)		small	Avg @ 300 cfs			3.00	15.2		18	160				88%			
				average				3.00	19.1		18	160				92%			
				large				3.00	22.1		18	160				94%			
				small	Avg @ 600 cfs			3.91	15.2		18	160				82%			
				average				3.91	19.1		18	160				87%			
				large				3.91	22.1		18	160				90%			
				small	Avg @ 900 cfs			4.51	15.2		18	160				77%			
				average				4.51	19.1		18	160				83%			
				large				4.51	22.1		18	160				87%			
				small	Avg @ 1200 cfs			4.97	15.2		18	160				71%			
				average				4.97	19.1		18	160				79%			
				large				4.97	22.1		18	160				84%			
				small	Avg @1500 cfs			5.39	15.2		18	160				65%			
				average				5.39	19.1		18	160				75%			
				large				5.39	22.1		18	160				81%			

Passage Model for American shad
Sappi (Acheron) Design
Fatigue Analysis 8/27/2015

K. Ball (Acheron)

Alternative	ZOP/Path	Section	Fish swim mode	Fish size	River flow condition	Passage model	Model Inputs Vf (ft/s)	Vw (ft/s)	TL (in)	S0 (ft/ft)	T (C)	D (ft)	Model Outputs t (s)	D (ft)	E (cal)	S (%)	Evaluation D to pass	Pass ?	Comments
Sappi (Acheron)	Western channel	Upper Ramp Segment A (Station 300 - 376)	Prolonged	small	Avg @ 300 cfs	Fatigue	9.1	3.16	15.2				33.6	200			76.0	Y	
				average			11.5	3.16	19.1				43.6	364			76.0	Y	
				large			13.3	3.16	22.1				43.7	443			76.0	Y	
				small	Avg @ 600 cfs		9.1	3.53	15.2				33.6	187			76.0	Y	
				average			11.5	3.53	19.1				43.6	348			76.0	Y	
				large			13.3	3.53	22.1				43.7	427			76.0	Y	
				small	Avg @ 900 cfs		9.1	3.69	15.2				33.6	182			76.0	Y	
				average			11.5	3.69	19.1				43.6	341			76.0	Y	
				large			13.3	3.69	22.1				43.7	420			76.0	Y	
				small	Avg @ 1200 cfs		9.1	3.84	15.2				33.6	177			76.0	Y	
				average			11.5	3.84	19.1				43.6	334			76.0	Y	
				large			13.3	3.84	22.1				43.7	413			76.0	Y	
				small	Avg @1500 cfs		9.1	3.98	15.2				33.6	172			76.0	Y	
				average			11.5	3.98	19.1				43.6	328			76.0	Y	
				large			13.3	3.98	22.1				43.7	407			76.0	Y	
		Upper Ramp Segment B (Station 376 - 490)		small	Avg @ 300 cfs		9.1	2.83	15.2				33.6	211			114	Y	
				average			11.5	2.83	19.1				43.6	378			114	Y	
				large			13.3	2.83	22.1				43.7	457			114	Y	
				small	Avg @ 600 cfs		9.1	3.52	15.2				33.6	188			114	Y	
				average			11.5	3.52	19.1				43.6	348			114	Y	
				large			13.3	3.52	22.1				43.7	427			114	Y	
				small	Avg @ 900 cfs		9.1	4.03	15.2				33.6	171			114	Y	
				average			11.5	4.03	19.1				43.6	326			114	Y	
				large			13.3	4.03	22.1				43.7	405			114	Y	
				small	Avg @ 1200 cfs		9.1	4.42	15.2				33.6	157			114	Y	
				average			11.5	4.42	19.1				43.6	309			114	Y	
				large			13.3	4.42	22.1				43.7	388			114	Y	
				small	Avg @1500 cfs		9.1	4.86	15.2				33.6	143			114	Y	
				average			11.5	4.86	19.1				43.6	290			114	Y	
				large			13.3	4.86	22.1				43.7	369			114	Y	
		Upper Ramp Segment C (Station 490 - 650)		small	Avg @ 300 cfs		9.1	3.00	15.2				33.6	205			160	Y	
				average			11.5	3.00	19.1				43.6	371			160	Y	
				large			13.3	3.00	22.1				43.7	450			160	Y	
				small	Avg @ 600 cfs		9.1	3.91	15.2				33.6	175			160	Y	
				average			11.5	3.91	19.1				43.6	331			160	Y	
				large			13.3	3.91	22.1				43.7	410			160	Y	
				small	Avg @ 900 cfs		9.1	4.51	15.2				33.6	154			160	N	
				average			11.5	4.51	19.1				43.6	305			160	Y	
				large			13.3	4.51	22.1				43.7	384			160	Y	
				small	Avg @ 1200 cfs		9.1	4.97	15.2				33.6	139			160	N	
				average			11.5	4.97	19.1				43.6	285			160	Y	
				large			13.3	4.97	22.1				43.7	364			160	Y	
				small	Avg @1500 cfs		9.1	5.39	15.2				33.6	125			160	N	
				average			11.5	5.39	19.1				43.6	267			160	Y	
				large			13.3	5.39	22.1				43.7	345			160	Y	

APPENDIX F: EVALUATION OF POTENTIAL SOIL EROSION AND SEDIMENTATION

S. D. WARREN COMPANY
SACCARAPPA FERC PROJECT NO. 2932
WESTBROOK, MAINE

ENGINEERING EVALUATION OF POTENTIAL SOIL EROSION AND SEDIMENTATION SACCARAPPA IMPOUNDMENT

SUBMITTED BY:
S.D. WARREN COMPANY
89 CUMBERLAND STREET
WESTBROOK, ME 04092

WITH ASSISTANCE BY:
Acheron Engineering Services
Engineering, Environmental & Geologic Consultants

www.AcheronEngineering.com

DATE:
JUNE 2015

Table of Contents

1.0 Background 1
2.0 Physical Description of the Existing and Future Saccarappa Impoundment 1
2.1 Presumpscot River Section 1
2.2 Little River Section 1
4.0 Surveys and Drawings of Saccarappa Impoundment 2
5.0 Engineering Evaluation of Potential Soil Erosion 2
6.0 Findings and Conclusions 3
6.1 Presumpscot River from Section 1 through Section 24 3
6.2 Presumpscot River from Section 25 to 30 5
6.3 Little River Upstream from Confluence with the Presumpscot 6
6.4 Sedimentation 8

1.0 Background

On or about December 31, 2013, S. D. Warren (Warren) submitted to the Federal Energy Regulatory Commission an application to surrender the operating license for the Saccarappa Hydroelectric Project (FERC Project No. 2932) in Westbrook, Maine. The application includes a provision to provide safe, timely and effective fish passage at the site following the approval of the surrender application. Warren's surrender application includes provisions to remove all or a portion of the two spillways (dams) that exist at the site. Removal of the spillways will result in a decrease in the water surface elevation upstream of the spillways of approximately four feet under mean river flow of 900 cfs.

On April 9, 2014, FERC issued an Additional Information Request (AIR) regarding the Surrender Application. The AIR includes a request/requirement that Warren "identify and analyze potential impacts of the surrender". Lowering the water level in the impoundment area upstream of the spillways will increase the velocity of the flow through the impoundment under all flow conditions. The increase in velocity has the potential to cause scouring and soil erosion within the river channel. This report deals with the issue of potential increased scouring and soil erosion caused by the lowering of water levels and the corresponding increase in velocities.

2.0 Physical Description of the Existing and Future Saccarappa Impoundment

2.1 Presumpscot River Section

The existing Saccarappa impoundment extends 26,150 feet (4.95 miles) upstream from the Saccarappa spillways. Following removal of the spillways, a major portion of the riverine area upstream of the spillway will continue to have the appearance and physical characteristics of an impoundment because the bottom of the river is lower that the elevation of the bedrock just upstream of the Saccarappa site. The impoundment in some places is almost 30 feet deep. The dam is only 6 feet high. Following removal of the spillways, a "flat water" area will exist upstream for a distance of approximately 25,175 feet (4.78 miles). The remainder of the river, approximately 1,570 feet (0.2 miles) will have the visual appearance and physical characteristics of a shallow, free flowing river with a riffle and pool type habitat.

The impoundment has an average depth of 15 feet with a range from a maximum depth of 29 feet at Section 11 to a minimum of 4.3 feet at Section 30 at the upper end of the impoundment. The depth of the riverine area above the spillway will be approximately 4 feet less than exists today under average flow conditions up to the free flowing section below Mallison Falls.

2.2 Little River Section

The existing Saccarappa impoundment extends approximately 7,450 feet (1.41 miles) upstream from the confluence with the Presumpscot River. Following removal of the spillways, the riverine area upstream of the confluence will have the visual appearance and physical characteristics of a shallow, free flowing river with a riffle and pool type habitat.

The existing Little River portion of the impoundment has an average depth of 3.7 feet with a range from 6.7 feet at the junction with the Presumpscot to 1.3 feet at the upstream end near the Route 202 Bridge. The depth of water in the Little River in this segment will vary depending on the configuration of riffle and pool habitat caused by undulations in the bottom of the river.

The river segment that is now impoundment created by the spillways (dams) at Saccarappa will revert back to the conditions that existed prior to construction of the first dam at Saccarappa sometime in the mid-1800s.

3.0 Description of Soils within the Saccarappa Impoundment

The detailed soils report in the Surrender Application provides a soils map and detailed soils descriptions for most of the Saccarappa impoundment. The dominant soils classifications within the Saccarappa impoundment area are Rumney, Hartland, Buxton and Limerick series of very fine sandy loam and silt loam. There are some small areas, near the upper end of the impoundment that are the Windsor and Hermon series of loamy sand and very stony sandy loam. There are also a few small areas where there is exposed bedrock along the shoreline.

Overburden soils define the character of the Presumpscot River valley above Saccarappa and directly impact the potential for latent and potential future erosion and sedimentation. The soils are all primarily pelagic sedimentary soils that were deposited in this area of Maine during periods of inundation by the Atlantic Ocean. These very fine grained soils are very dense, very compact and generally not susceptible to erosion.

4.0 Surveys and Drawings of Saccarappa Impoundment

During the week of May 11, 2015, a detailed engineering survey was done of the Saccarappa impoundment. A profile and sections (at approximately 800 foot intervals) were obtained using GPS sonar survey equipment. Detailed drawings depicting the plan view, profile and sections were prepared from the survey data. A copy of the survey drawings is attached to this report. The drawings include a plan view aerial photograph with the location of each of the 45 cross sections indicated on the plan. The cross sections depict the shape and configuration of each section with an indication of the existing and future water surface elevations.

5.0 Engineering Evaluation of Potential Soil Erosion

On June 5, 2015, Acheron conducted a detailed visual inspection of the Saccarappa impoundment for the purpose of evaluating the potential for future embankment instability and/or soil erosion within the river channel following removal of the spillways at Saccarappa. The inspection and evaluation was conducted by William Ball, PE of Acheron Engineering with assistance from Mark Hampton of Mark Hampton Associates, Inc. and Meaghan Taylor of Acheron Engineering. Mr. Hampton is a certified soils scientist and wetlands specialist and Ms. Taylor is an environmental scientist and fisheries biologist.

The evaluation included a detailed inspection of embankments on both sides of the rivers at each of the 45 sections identified on the attached drawings. The inspections were done from a boat. At each section, the team conducted a detailed inspection of the physical characteristics of the

embankments and the littoral zone on each side of the river. At each section, notes were made on the condition of the existing embankment, the exposed surface of each embankment (soil or bedrock), vegetation, evidence of existing erosion and an evaluation of the potential for future erosion.

6.0 Findings and Conclusions

Based on the engineering survey and the site inspections conducted on June 5, 2015, the following is a summary of the finding and conclusions.

6.1 Presumpscot River from Section 1 through Section 24

In general the underlying soils in this area from the Little River downstream to the Saccarappa site are very fine grained silts and clays that are very compact, very stable and are generally not susceptible to erosion now or in the future. In very limited areas, bedrock is exposed along the shoreline. Existing vegetation along the embankments varies from emergent wetland varieties to small brush and large oak and maple. The combination of the underlying soils and the root structure associated with the existing vegetation has minimized any erosion of the shoreline and embankments.

In the general vicinity of the Little River, the underlying soils of the Presumpscot transition to slightly more sandy soils. The lower section of the Little River also has underlying soils in this same class. The upper reaches of the Saccarappa Impoundment in the vicinity of Mallison Falls and the upper reaches of the impoundment in the Little River have underlying soils with more rock and coarse gravels.

Once the water level is lowered by about 4 feet, the existing vegetation will quickly migrate downslope toward the new water surface and become established. That new vegetation will help stabilize the new embankment in exactly the same manner that the existing vegetation does now. Eventually, in some areas, large bushes and trees will become established along the sloping embankment to further enhance embankment stability.

In addition, there is no evidence of any sediment deposits within the river channel caused by deposition of eroded soils from upstream. There is no evidence that lowering of the water level by 4 feet in this reach will cause re-suspension of accumulated sediments because there are none there to re-suspend. The two photos below are typical of the shoreline conditions that exist today in this stretch of the impoundment and are expected to develop within a short period of time after the water level declines.

Photograph 1: Typical Shoreline Conditions, Sections 1 through 24

Photograph 2: Typical Shoreline Conditions, Sections 1 through 24

6.2 Presumpscot River from Section 25 to 30

In general, existing water depth in this section is less and a portion of this section of the river will revert from impoundment to free flowing river. The underlying soils in this area are sandier and therefore more susceptible to erosion. The embankments are stable but the stability is derived more from the root structure of the embankment vegetation than from the character of the underlying soils. There is some evidence of erosion within the root structure of large trees in some limited areas. The erosion is high up on the embankment obviously occurs during high flow and flood events.

Once the water level is lowered by about 4 feet, the existing vegetation will quickly migrate downslope toward the new water surface and become established. The rate of down-slope migration may be slowed in this section of the river due to the fact that the sandy soils offer less fertility for developing plants. It may take more than one growing season until stable vegetation to become established. That new vegetation will help stabilize the new embankment in exactly the same manner that the existing vegetation does now. Eventually, in some areas, large bushes and trees will become established along the sloping embankment to further enhance embankment stability.

In addition, there is some evidence of deposits of fine, unconsolidated fine sands within the river channel caused by deposition of eroded soils from upstream. The deposits were very spotty and were less that 6 inches deep. Once the water levels are lowered, these fine grained deposits may become re-suspended during high flow events and will be re-deposited in the river channel further downstream where velocities will be less due to greater depth. The deposits will not be carried downstream to Saccarappa. This will occur more quickly in the section that will be transformed from impoundment to a free flow river. The upper part of this section also has large rocks and boulders in the river bottom. Some of these will be exposed during low flow periods.

The two photos below are typical of the shoreline conditions that exist today in this stretch of the impoundment and are expected to develop within a short period of time after the water level declines.

Photograph 3: Typical Shoreline Conditions, Sections 25 through 30

Photograph 4: Typical Shoreline Conditions, Sections 25 through 30

6.3 Little River Upstream from Confluence with the Presumpscot

The entire length of the Little River that is currently riverine impoundment will revert back to being a free flowing river segment. Visual observations indicate that downstream, half of the 1.4 mile segment of the Little River will have a substrate that consists of fine grains sands, silts and clays because that is the type of soils that currently exist on the bottom and side of the river. As one moves upstream, the soils consist of more course grained material with a large proportion of rocks and cobble that is likely derived from glacial till. The bottom of the river has a large proportion of boulders and large cobble with fine grain sand deposits interspersed with the cobble. Some of these finer grained deposits will be scoured away during high flow events once the depth of the water decreases. The amount of fine grained material that is susceptible to future scouring is very small. In most areas it is only a few inches thick. More than half of the impounded section of the Little River will look

very similar to the segment below the Route 202 Bridge. The segment closest to the Presumpscot River will have a predominantly sandy bottom with steep embankments on both sides.

The two photos below are typical of the shoreline conditions that exist today in the Little River segment of the impoundment. The first photo depicts typical embankment conditions in the lower section of the Little River impoundment. The embankments are susceptible to erosion during major flood events. Undercutting of the embankment is quite typical.

Photograph 5: Typical Shoreline Conditions, Lower Section of Little River Impoundment

The second photo below shows the upstream limit of the impounded area and the Route 202 Bridge in the background. The large boulders and cobble are clearly visible in this photo.

Photograph 6: Upstream Limit of Little River Impoundment

6.4 Sedimentation

During this survey and previous studies of the river upstream of the spillways, small, isolated pockets of soft muck were found to exist immediately upstream of the spillways. These deposits of muck are generally small and tend to be located in pockets between exposed bedrock. Once the spillways are removed, the velocity of water flow over the exposed bedrock will increase significantly over what exists today. That increase in velocity has the potential to scour the soft muck deposits and re-suspend this material into the water column. That zone of high velocity flow will not extend very far upstream because the depth of the river increases quickly just upstream of the spillways. The amount of material susceptible to re-suspension under high flow conditions is very small and will not have any noticeable impact downstream of the project site. There is also an area of gravel that was placed in the river as a wet road when the dam was built and/or repaired. This existing wet road will be used during demolition of the eastern spillway and will be removed along with the dam. Therefore, this material will not be subject to erosion and downstream sedimentation after the dam is removed. Some of the gravel deposit is visible in the photo below. The eastern spillway of the Saccarappa dam is on the right side of the photo.

Photograph 7: Gravel Deposit Upstream of Eastern Spillway

By:

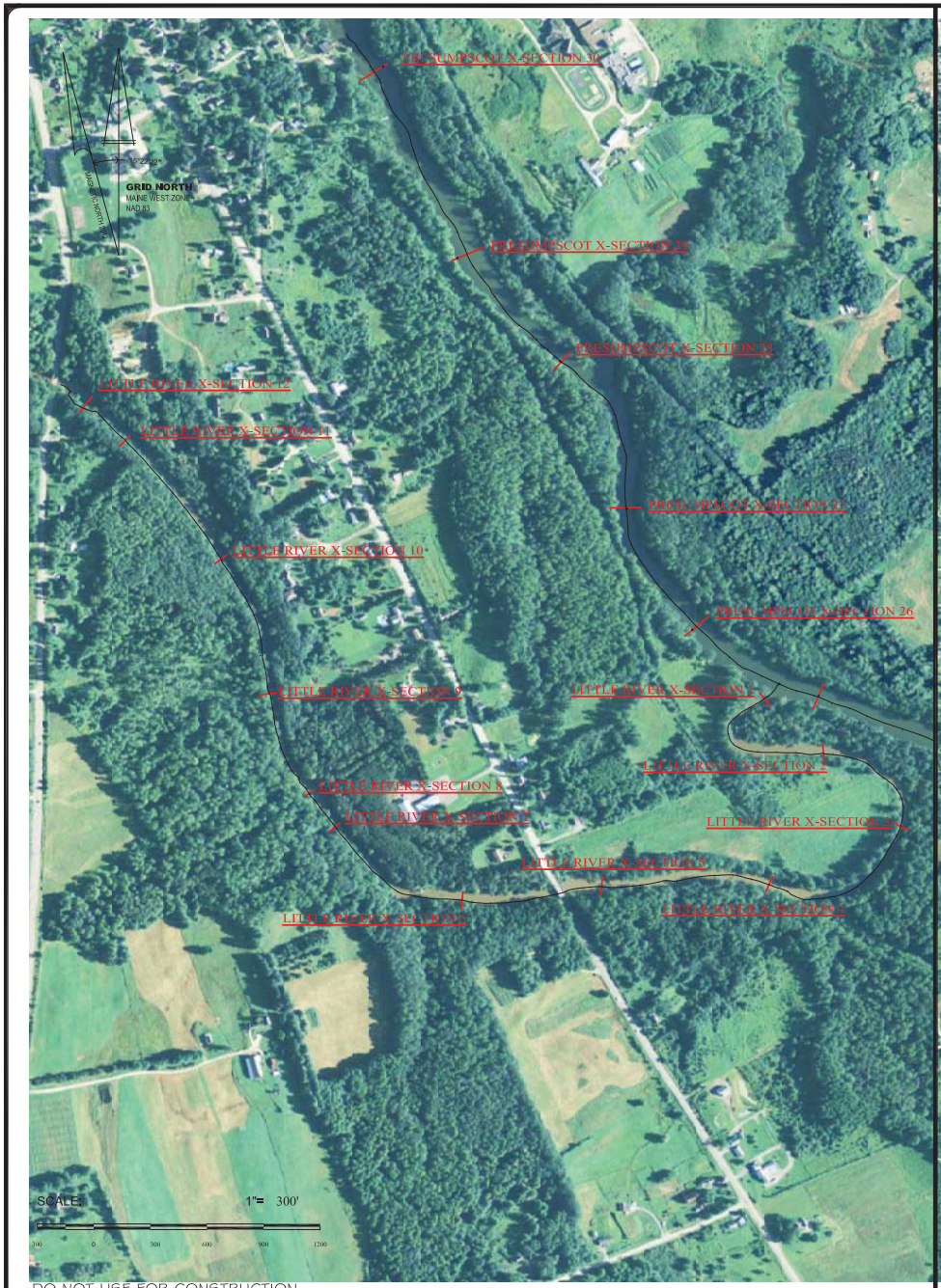
Acheron Engineering Services

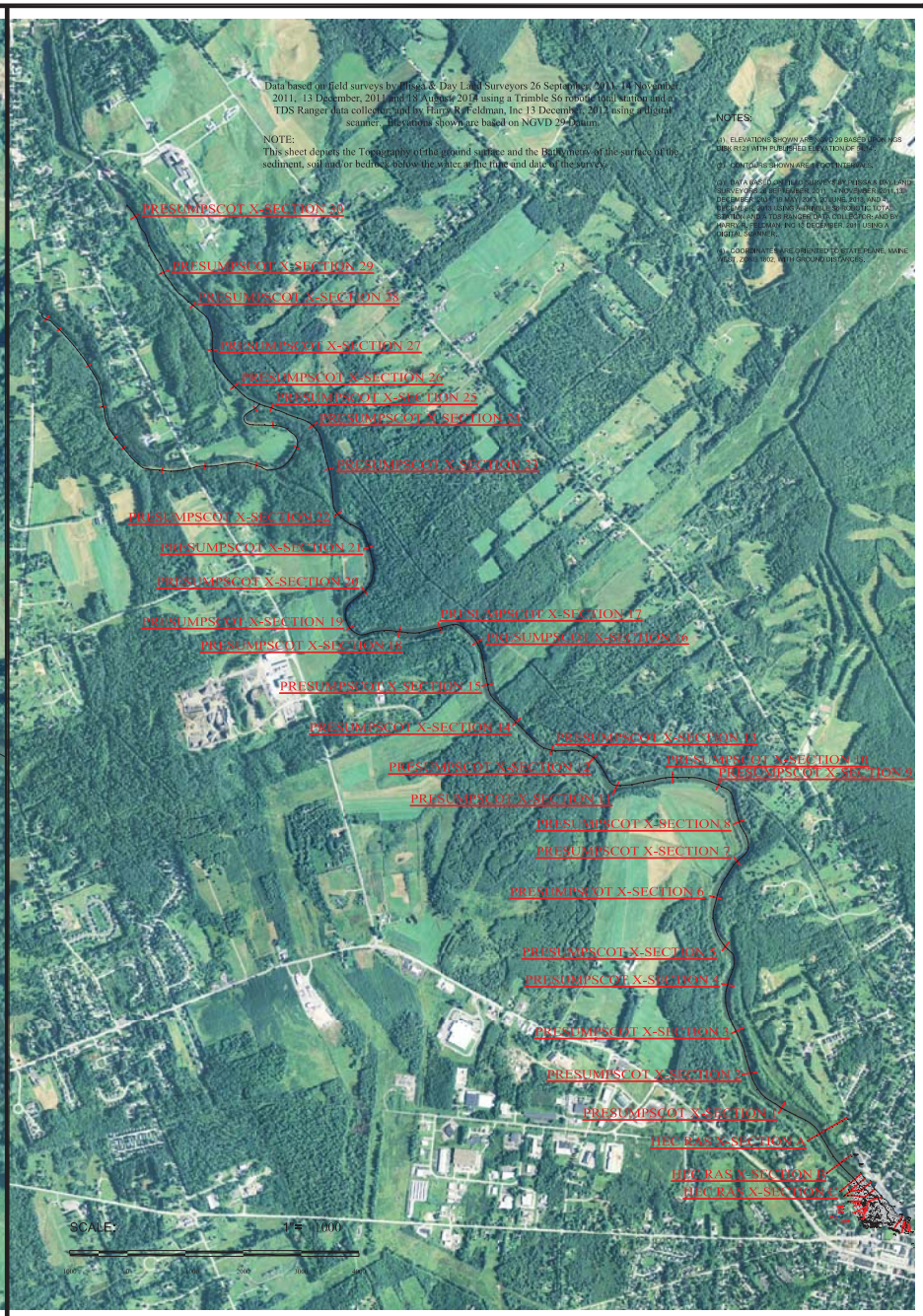
William B. Ball (Signature)

William B. Ball, PE

STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER

June 17, 2015





DO NOT USE FOR CONSTRUCTION

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: ___
Chkd By: ___
Aprvd By: WDB
Date: 10-6-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24406 Powell Rd. Brooksville, FL. 34602 (352)-796-6226
Acheron Environmental, Inc.

Saccarappa Fish Passage

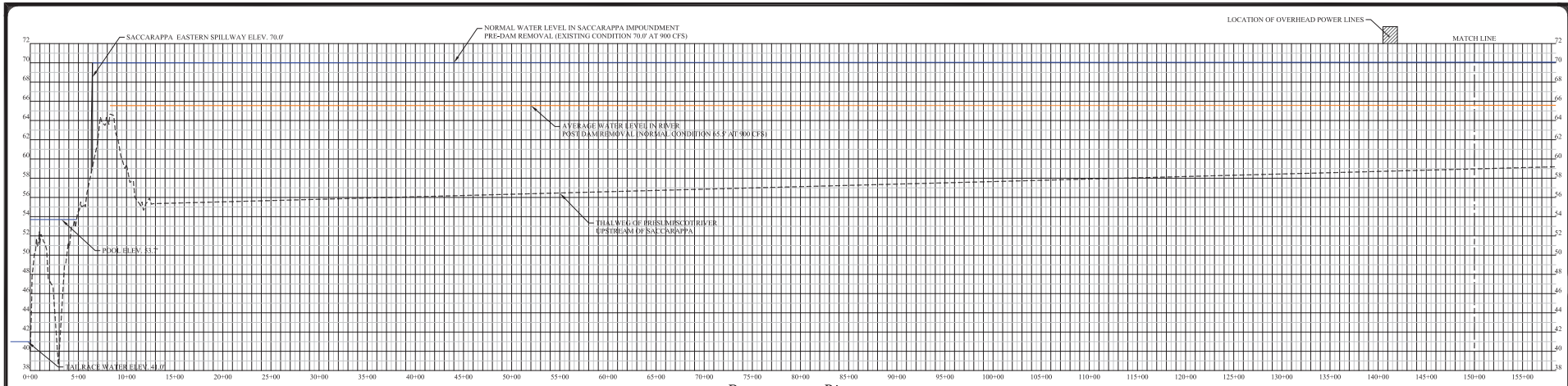
Site Plan - Presumpscot and Little Rivers

Sappi / Warren Release Papers
Westbrook, Maine

Job Number: 49293

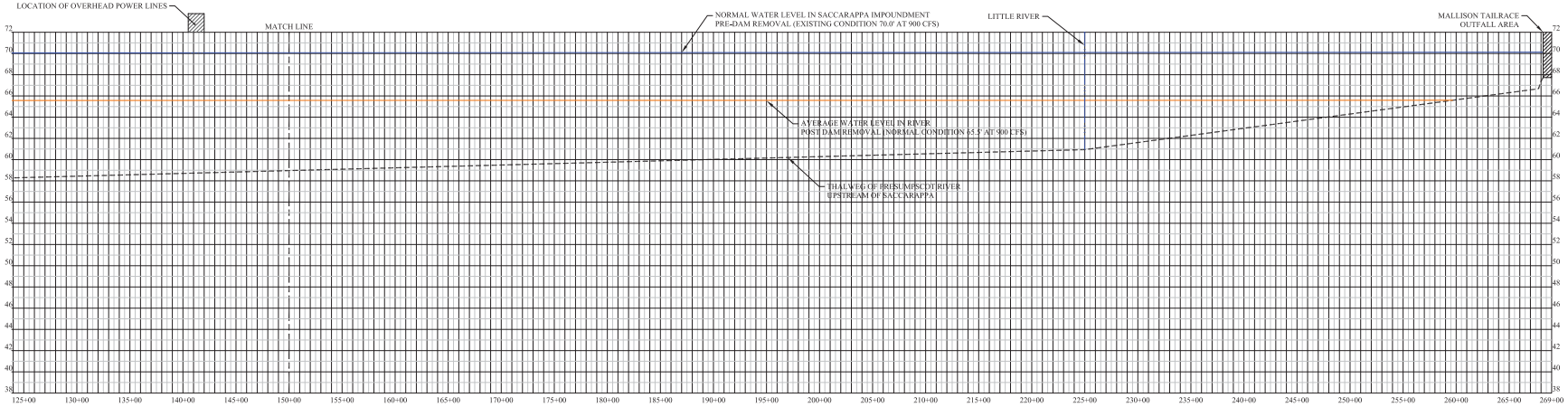
Drawing No: C-2242

Sheet 1 of 6



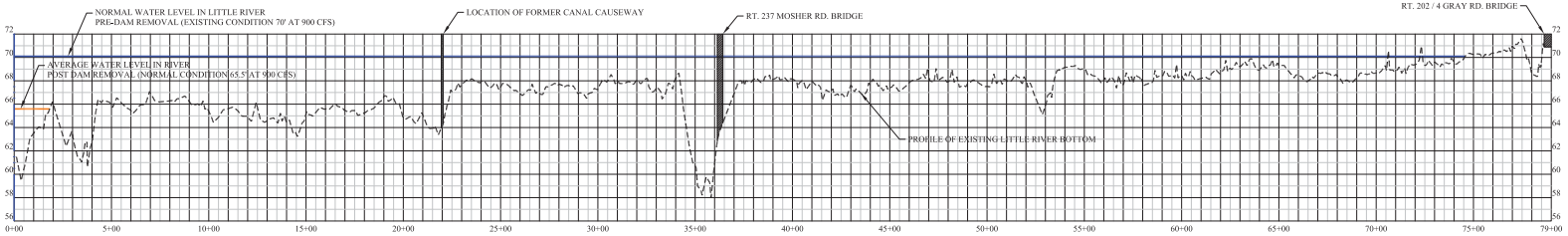
Presumpscot River

Scale: Vert: 1" = 5'
Horz.: 1" = 500'



Presumpscot River

Scale: Vert: 1" = 5'
Horz.: 1" = 500'



Little River

Scale: Vert: 1" = 5'
Horz.: 1" = 300'

DO NOT USE FOR CONSTRUCTION

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPC
Dsng By: -
Chkd By: WBB
Aprvd By: WBB
Date: 10-6-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
147 Main St. 104953
Newport, ME 04953
(207)-368-5700
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, FL 34602
(352)-796-6236
Acheron International, Inc.

Saccarappa Fish Passage

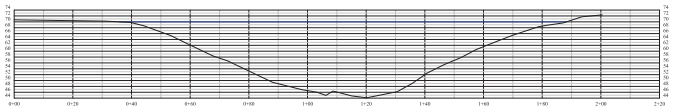
Profiles - Presumpscot and Little Rivers

Sappi / Warren Release Papers
Westbrook, Maine

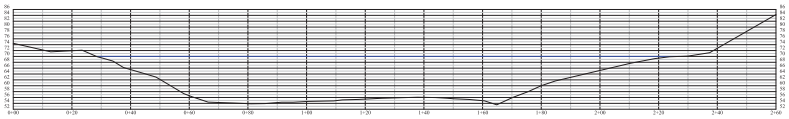
Job Number: 49293

Drawing No: C-2248

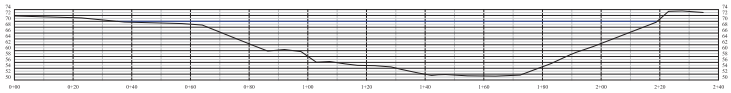
Sheet 2 of 6



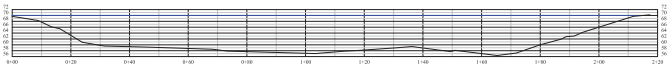
PRESUMPSCOT X-SECTION 1



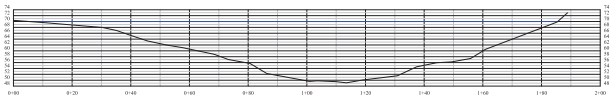
PRESUMPSCOT X-SECTION 2



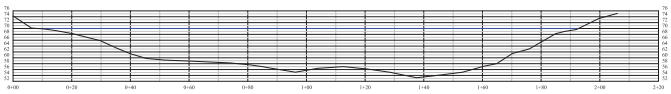
PRESUMPSCOT X-SECTION 3



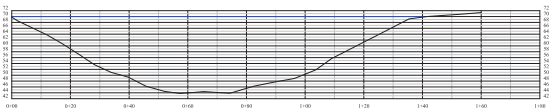
PRESUMPSCOT X-SECTION 4



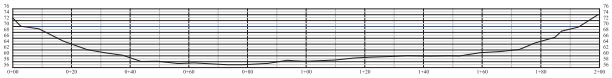
PRESUMPSCOT X-SECTION 5



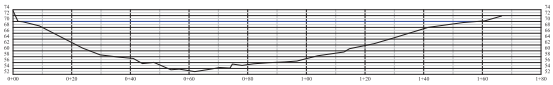
PRESUMPSCOT X-SECTION 6



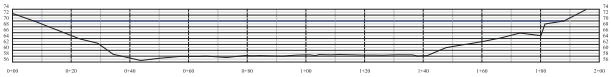
PRESUMPSCOT X-SECTION 7



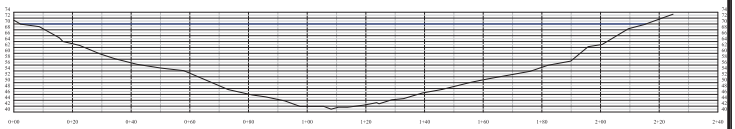
PRESUMPSCOT X-SECTION 8



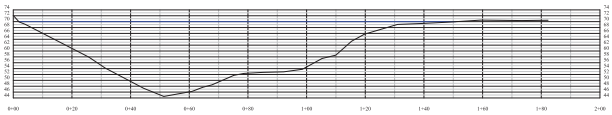
PRESUMPSCOT X-SECTION 9



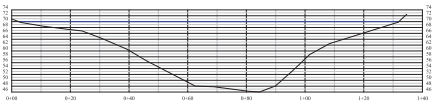
PRESUMPSCOT X-SECTION 10



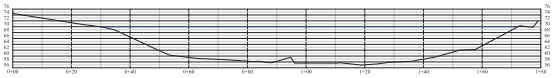
PRESUMPSCOT X-SECTION 11



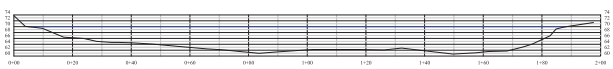
PRESUMPSCOT X-SECTION 12



PRESUMPSCOT X-SECTION 13



PRESUMPSCOT X-SECTION 14



PRESUMPSCOT X-SECTION 15

DO NOT USE FOR CONSTRUCTION

SCALE: 1" : 20'

Sheet 3 of 6

Drawing No. C-2243

Job Number: 49293

Saccarappa Fish Passage

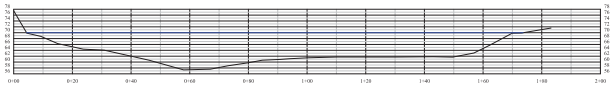
Presumpscot River Sections 1 Thru 15

Sappi / Warren Release Papers
Westbrook, Maine

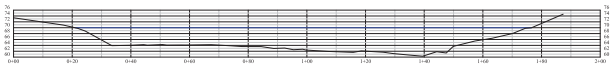
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International, Inc.

Drwn By: BPG
Desg By: -
Chkd By: -
Aprvd By: WBB
Date: 6-1-15

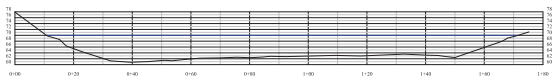
No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-



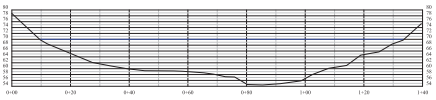
PRESUMPSCOT X-SECTION 16



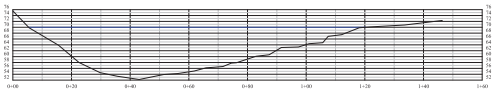
PRESUMPSCOT X-SECTION 17



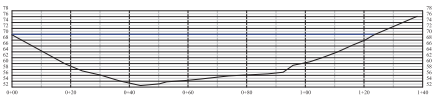
PRESUMPSCOT X-SECTION 18



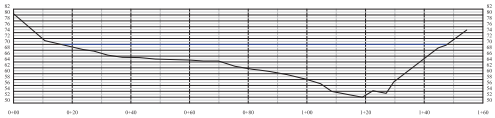
PRESUMPSCOT X-SECTION 19



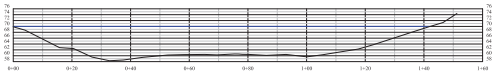
PRESUMPSCOT X-SECTION 20



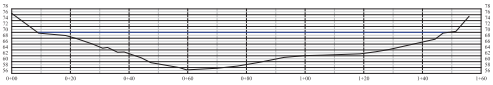
PRESUMPSCOT X-SECTION 21



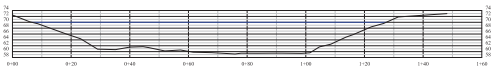
PRESUMPSCOT X-SECTION 22



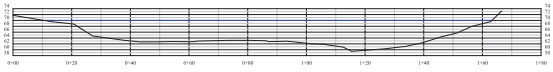
PRESUMPSCOT X-SECTION 23



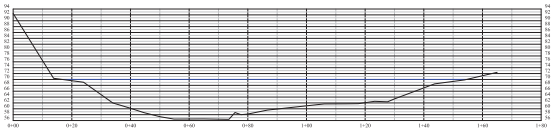
PRESUMPSCOT X-SECTION 24



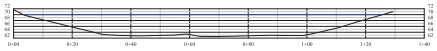
PRESUMPSCOT X-SECTION 25



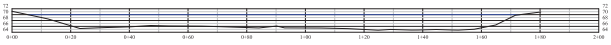
PRESUMPSCOT X-SECTION 26



PRESUMPSCOT X-SECTION 27



PRESUMPSCOT X-SECTION 28



PRESUMPSCOT X-SECTION 29

PRESUMPSCOT X-SECTION 30

DO NOT USE FOR CONSTRUCTION

SCALE: 1" : 20'

Sheet 4 of 6

Drawing No. C-2244

Job Number: 49293

Saccarappa Fish Passage

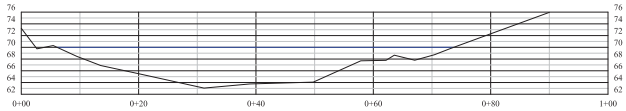
Presumpscot River Sections 16 Thru 30

Sappi / Warren Release Papers
Westbrook, Maine

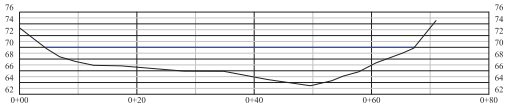
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International, Inc.

Drwn By: BPG
Desg By: -
Chkd By: -
Aprvd By: WBB
Date: 6-1-15

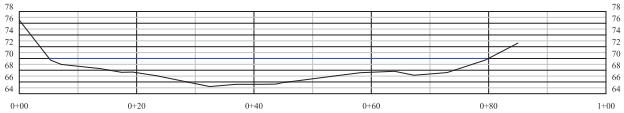
No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-



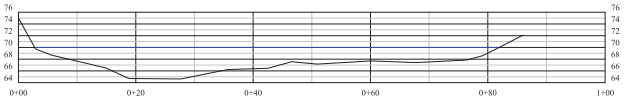
LITTLE RIVER X-SECTION 1



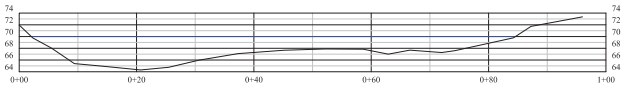
LITTLE RIVER X-SECTION 2



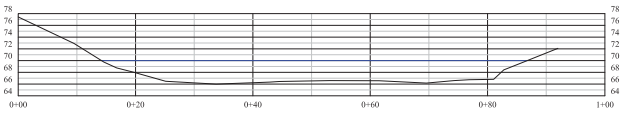
LITTLE RIVER X-SECTION 3



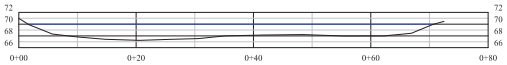
LITTLE RIVER X-SECTION 4



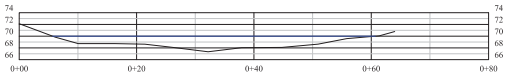
LITTLE RIVER X-SECTION 5



LITTLE RIVER X-SECTION 6

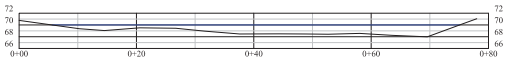


LITTLE RIVER X-SECTION 7

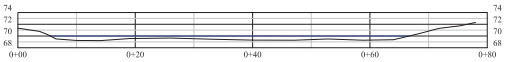


LITTLE RIVER X-SECTION 8

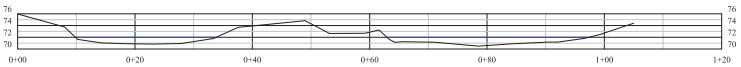
LITTLE RIVER X-SECTION 9



LITTLE RIVER X-SECTION 10



LITTLE RIVER X-SECTION 11



LITTLE RIVER X-SECTION 12

DO NOT USE FOR CONSTRUCTION

SCALE: 1" : 10'

Drawing No. C-2245 Sheet 5 of 6

Job Number: 49293

Saccarappa Fish Passage

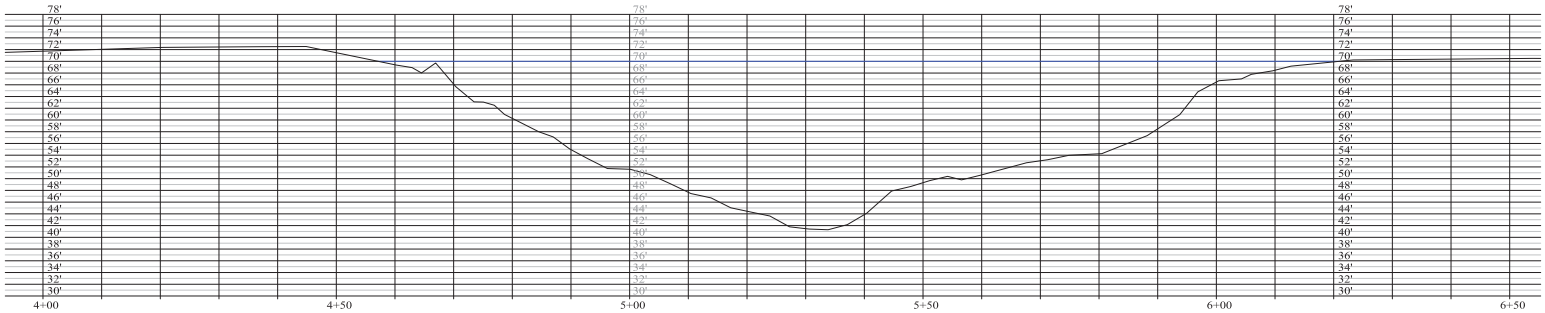
Little River Section 1 Thru 12

Sappi / Warren Release Papers
Westbrook, Maine

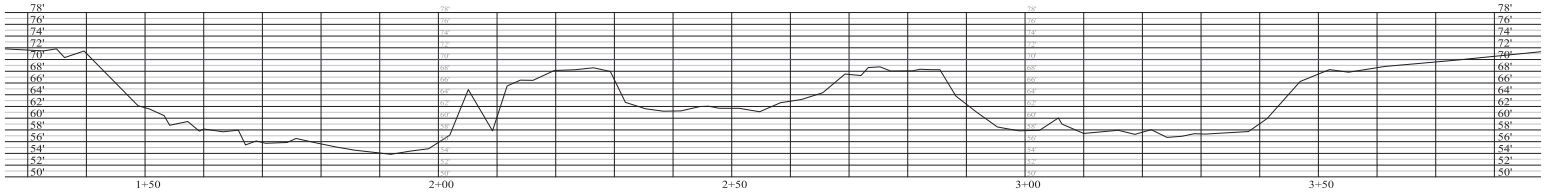
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Drwn By: BPG
Desg By: -
Chkd By: -
Aprvd By: WBB
Date: 6-1-15

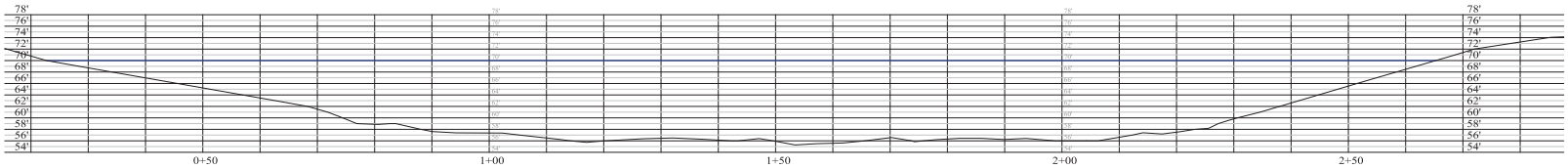
No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-



PRESUMPSCOT RIVER SECTION A



PRESUMPSCOT RIVER SECTION B



PRESUMPSCOT RIVER SECTION C

DO NOT USE FOR CONSTRUCTION

SCALE: 1" : 10'

No.	Revision Description	Drwn	Ck'd	Date
-		-	-	-

Drwn By: BPG
Dsng By: ——
Ckd By: ——
Aprvd By: MPB
Date: 6-1-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
147 Main St.
Newport, ME. 04953
(207)-368-5700
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, FL 34602
(352)-796-6236
info@acheronengineering.com

Saccarappa Fish Passage
Presumpscot River Sections A, B & C
Sappi / Warren Release Papers
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2246
Sheet 6 of 6

APPENDIX G: CONCEPTUAL DESIGN DRAWINGS

sappi | warren release papers

Saccarappa Falls Fish Passage Project
Preliminary Design
October 2015

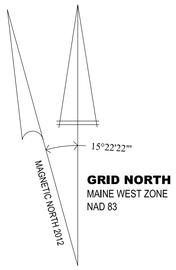
Acheron Engineering Services
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com

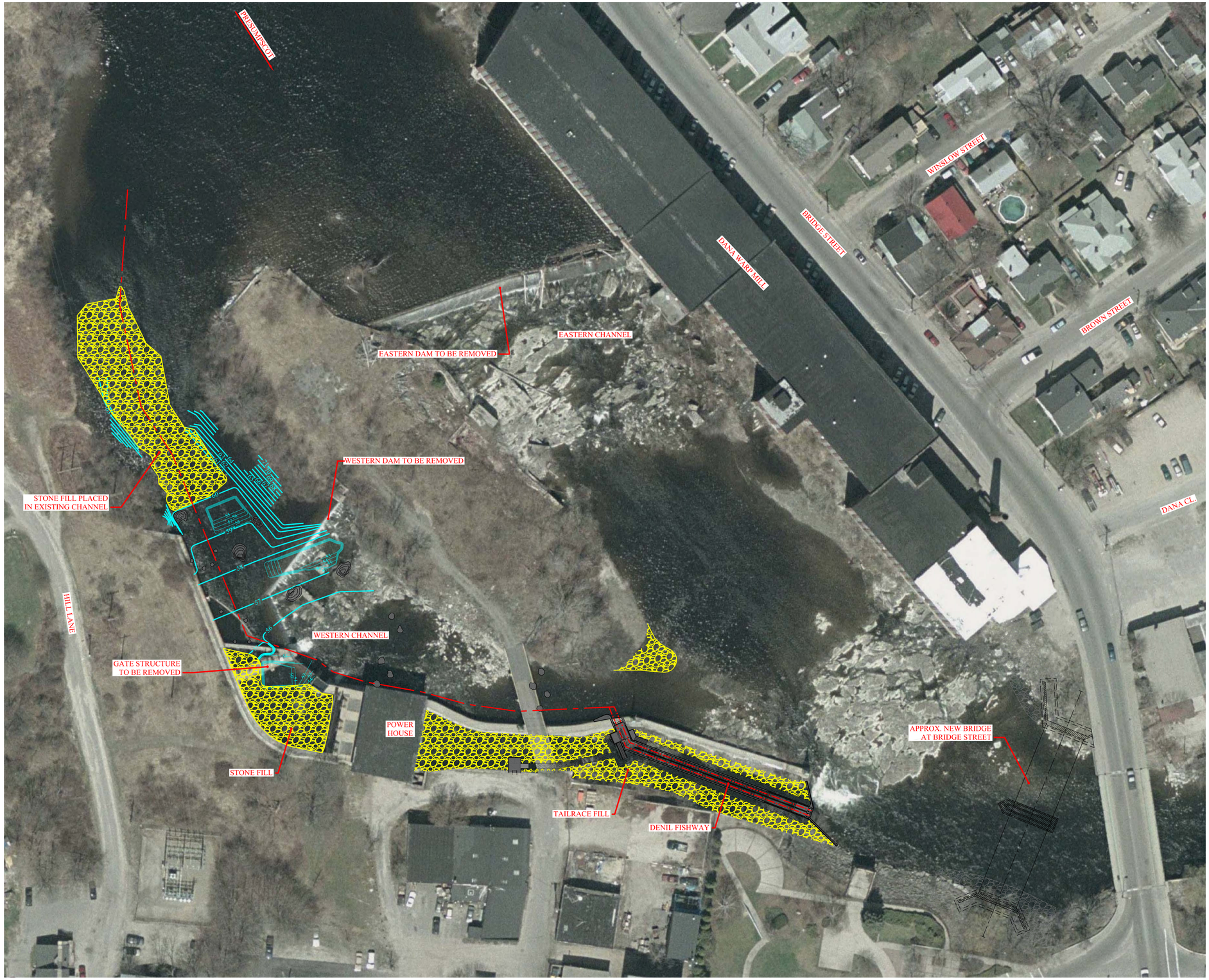
147 Main St.
Newport, ME. 04953
(207)-368-5700

24466 Powell Rd.
Brooksville, FL. 34602
(352)-796-6236

ALDEN
Alden Research Laboratory, Inc.
30 Shrewsbury St., Holden, MA. 01520-1843
www.Aldenlab.com

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW





SYMBOLS LEGEND

- PROPOSED CONTOUR
- ROCK FILL
- BEDROCK TO REMAIN
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

SCALE: 1"= 40'

40 0 40 80 120 160

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Aerial

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2249

Sheet 1 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

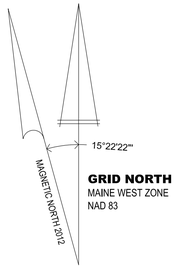
NOTES:

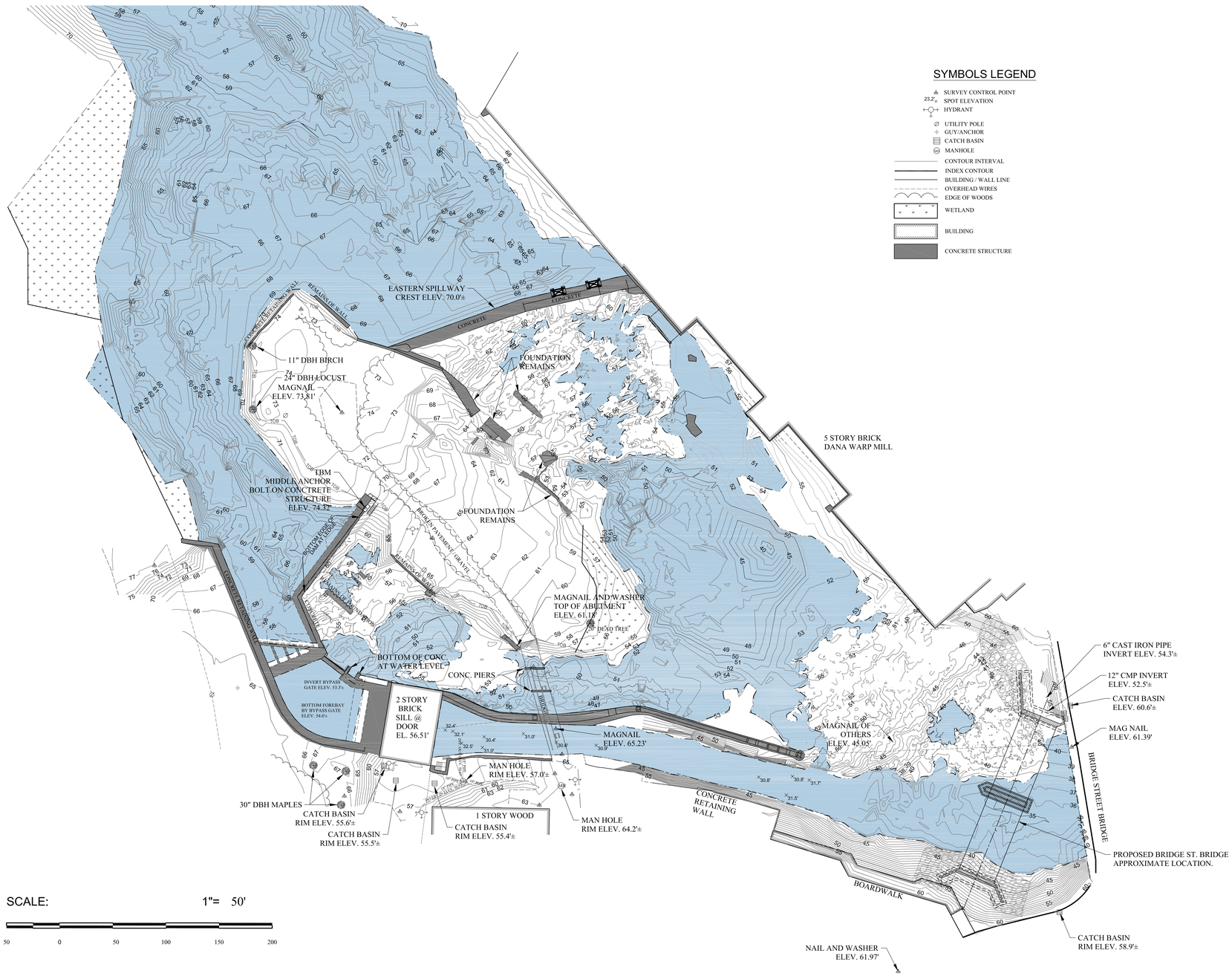
(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.





SYMBOLS LEGEND

- SURVEY CONTROL POINT
- 23.2 SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- WETLAND
- BUILDING
- CONCRETE STRUCTURE

SCALE: 1"= 50'

50 0 50 100 150 200

STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Pre-Development Project Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2250

Sheet 2 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

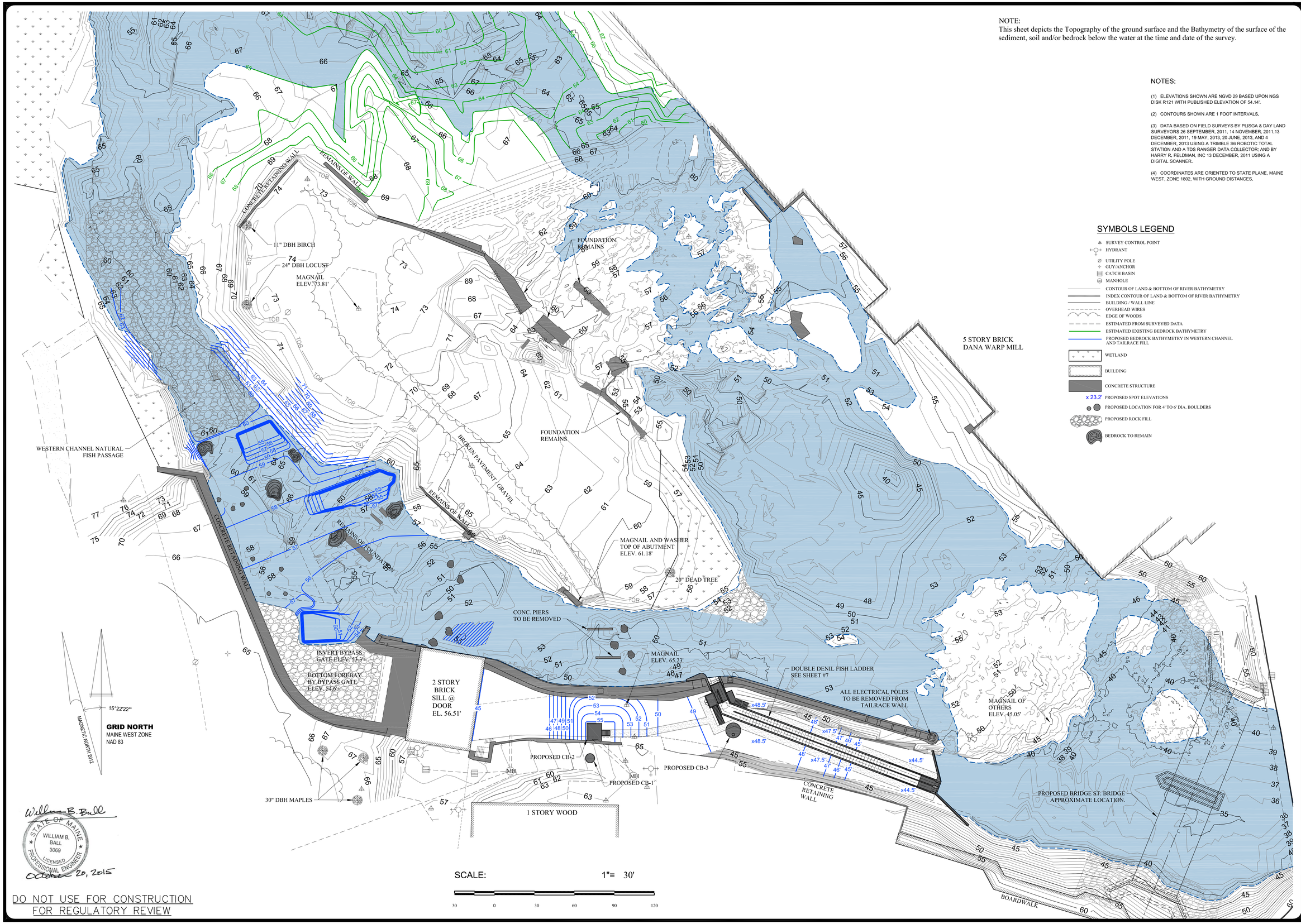
(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- BEDROCK TO REMAIN



SCALE: 1"= 30'

30 0 30 60 90 120

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
147 Main St.
Newport, ME. 04953
(207)-368-5700
Acheron International Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Post-Development Project Site Plan

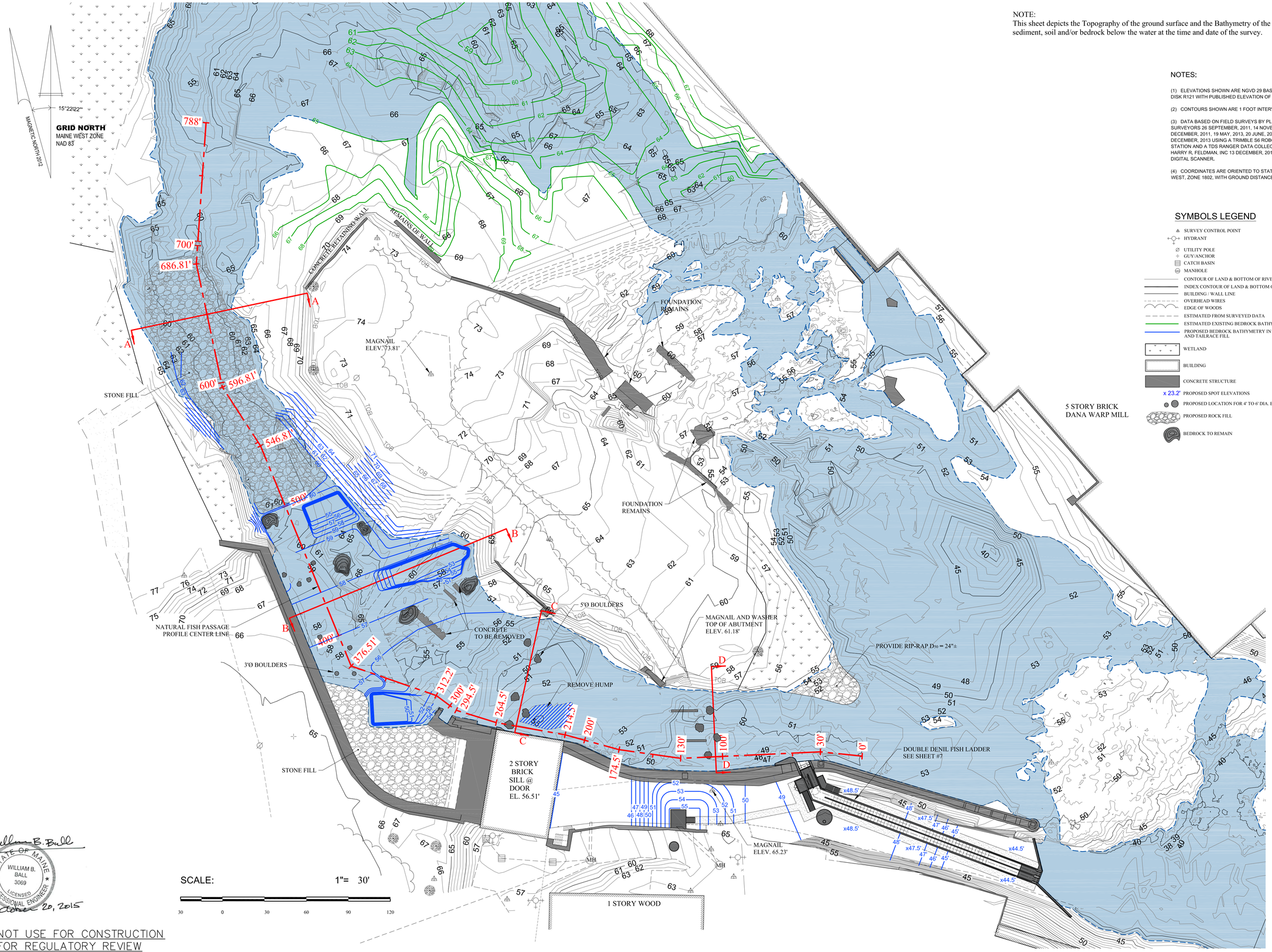
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2251

Sheet 3 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.



NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- BEDROCK TO REMAIN

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG / P&D
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

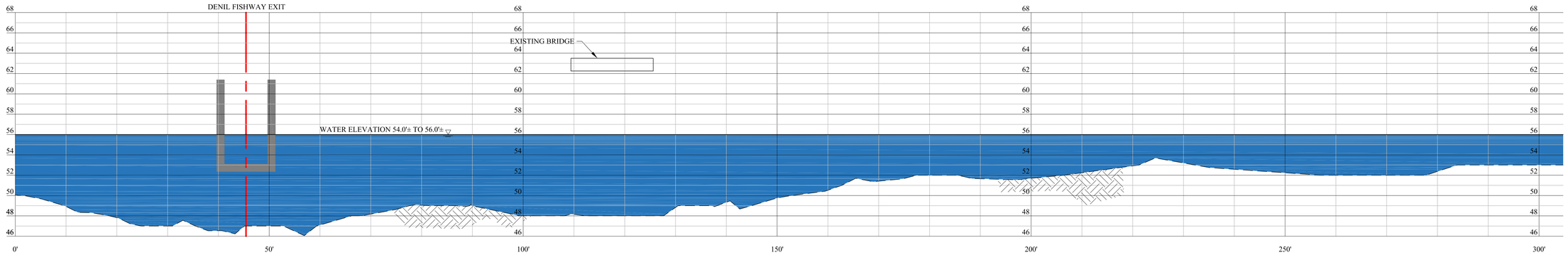
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
147 Main St.
Newport, ME. 04953
(207)-368-5700
Acheron International Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Overall Western Channel Site Plan
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

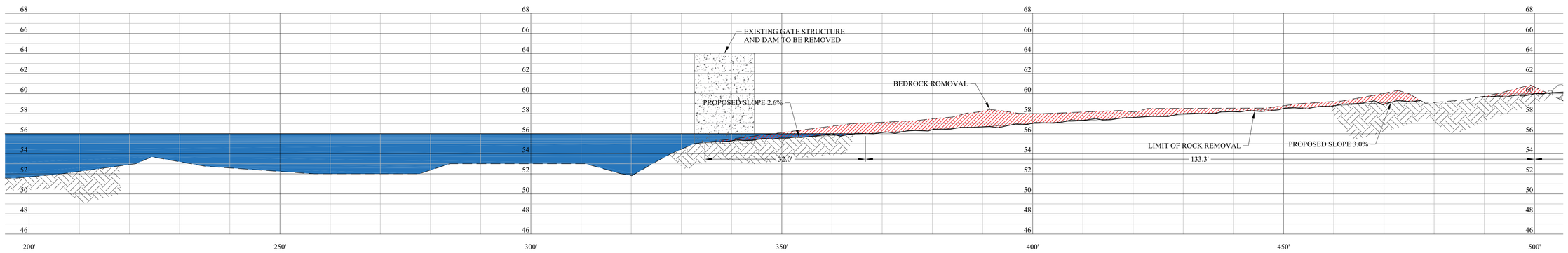
Drawing No: C-2252

Sheet 4 of 13



WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

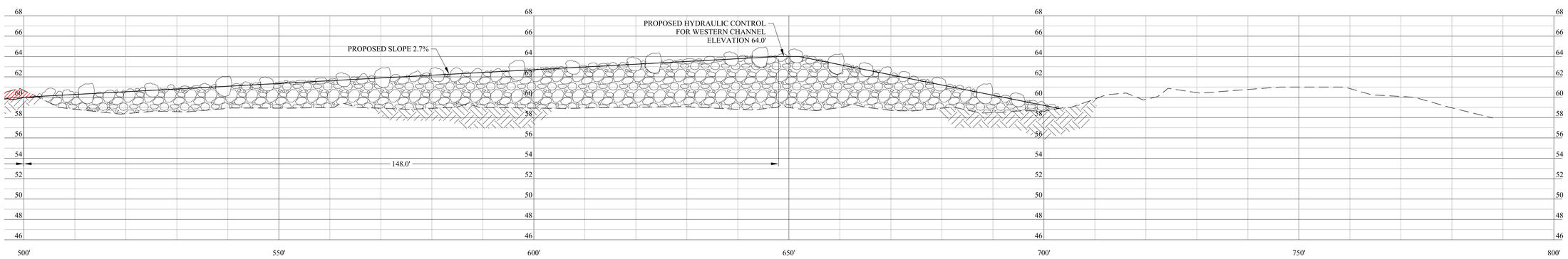


WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

LOWER SECTION

STA. 3+44 TO 3+66 = 32'
ELEV. 56'-55.15'=0.85' SLOPE: 0.85'/32'=2.6%
STA. 3+66 TO 5+00 = 133.3'
ELEV. 60.0'-56.0'=4.0' SLOPE: 4.0'/133.3'=3.0%



WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

UPPER SECTION

SILL AT ELEV. 64.0'
STA. 5+00 TO 6+50 = 150'
ELEV. 64.0'-60.0'=4.0' SLOPE: 4.0'/150'=2.7%

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, FL 34602
(352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project

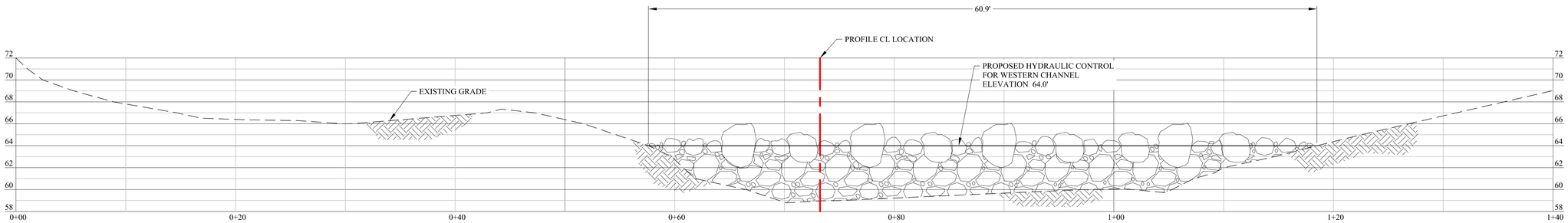
Western Channel Design
Western Channel River Profile

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

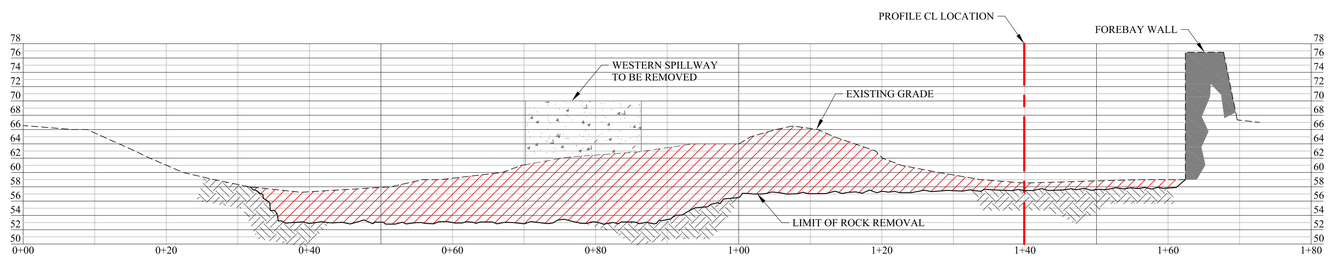
Drawing No: C-2253

Sheet 5 of 13



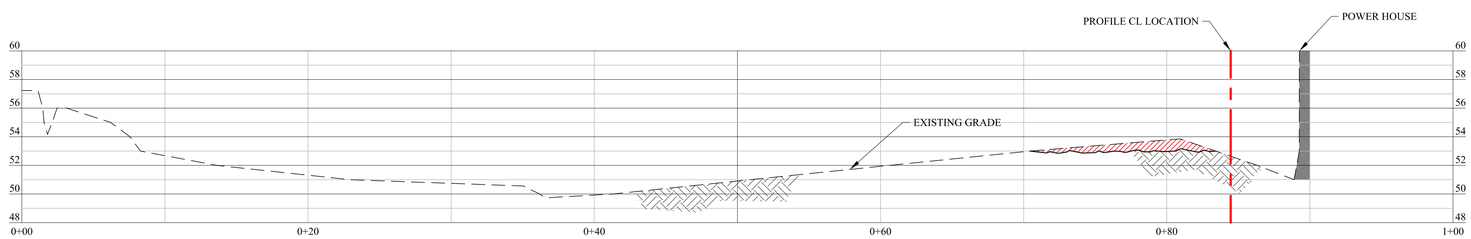
SECTION A-A

Scale: 1" = 5'



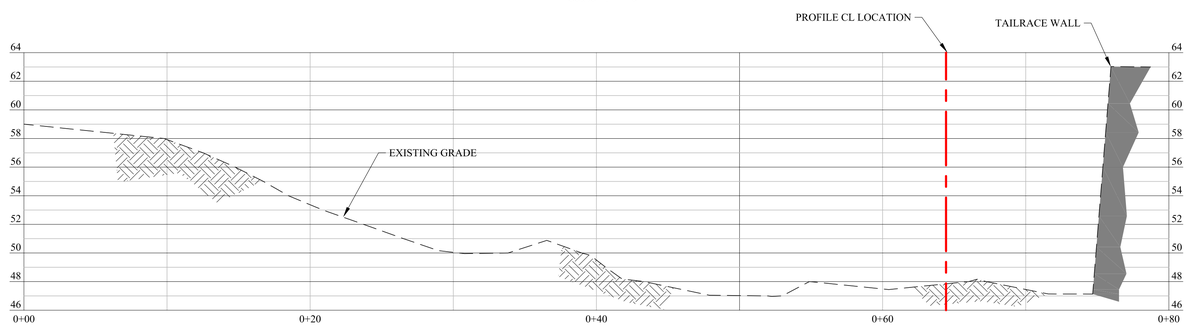
SECTION B-B

Scale: 1" = 10'



SECTION C-C

Scale: 1" = 5'



SECTION D-D

Scale: 1" = 5'

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-		-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, FL 34602
(352)-796-6236
Acheron International, Inc.

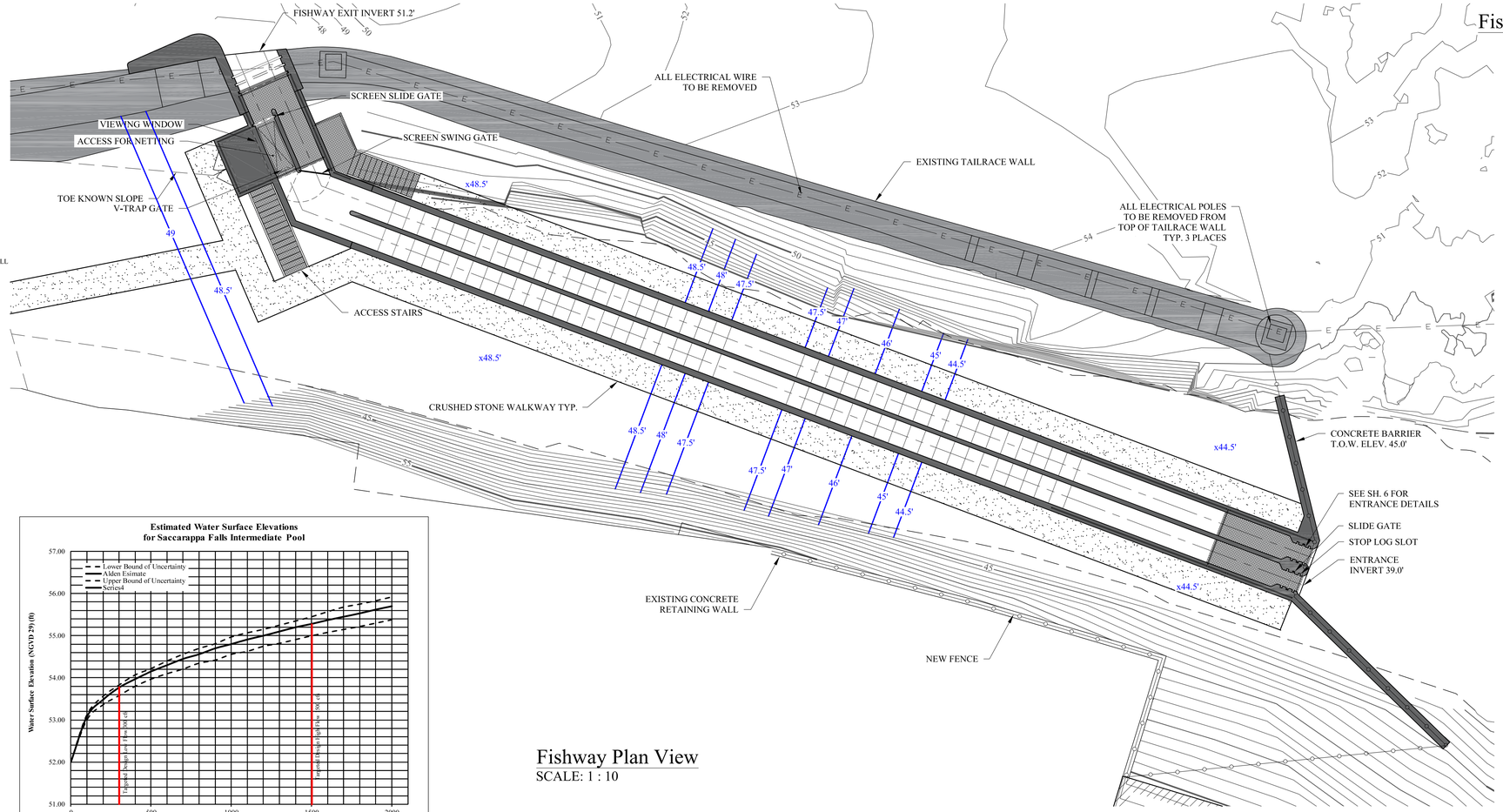
Saccarappa Falls Fish Passage Project

Western Channel Design
Western Channel Section A, B, C and D

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2254



Fishway Plan View

SCALE: 1 : 10

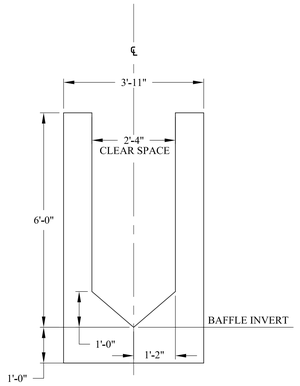
15°22'22"

MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83

SYMBOLS LEGEND

- x 23.2' SPOT ELEVATION
- SURVEY CONTROL POINT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS



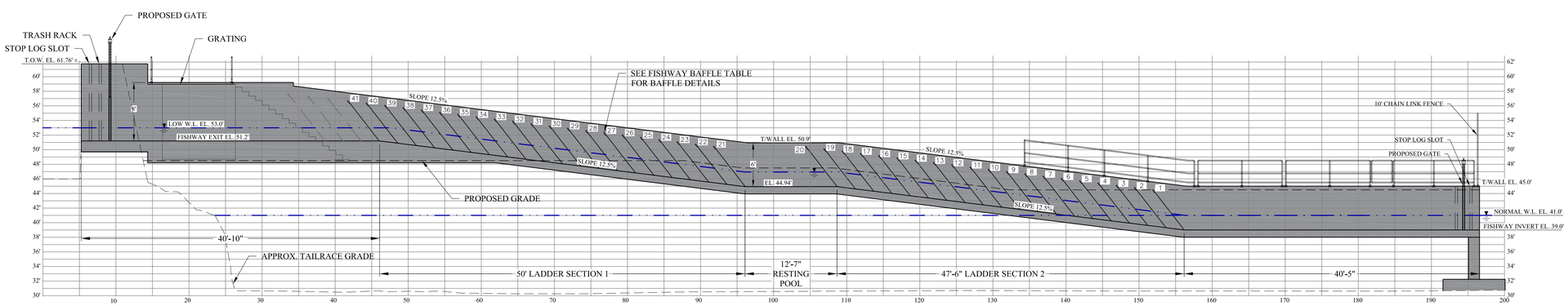
Typical Baffle

SCALE: NTS

Fishway Baffle Table

BAFFLE NO.	BAFFLE INV.	FLOOR INV.
1	39.79	39.00
2	40.10	39.31
3	40.41	39.63
4	40.73	39.94
5	41.04	40.25
6	41.35	40.56
7	41.66	40.88
8	41.98	41.19
9	42.29	41.50
10	42.60	41.81
11	42.91	42.13
12	43.23	42.44
13	43.54	42.75
14	43.85	43.06
15	44.16	43.38
16	44.48	43.69
17	44.79	44.00
18	45.10	44.31
19	45.41	44.63
20	45.73	44.94

BAFFLE NO.	BAFFLE INV.	FLOOR INV.
21	45.73	44.94
22	46.04	45.25
23	46.35	45.56
24	46.66	45.88
25	46.98	46.19
26	47.29	46.50
27	47.60	46.81
28	47.91	47.13
29	48.23	47.44
30	48.54	47.75
31	48.85	48.06
32	49.16	48.38
33	49.48	48.69
34	49.79	49.00
35	50.10	49.31
36	50.41	49.63
37	50.73	49.94
38	51.04	50.25
39	51.35	50.56
40	51.66	50.88
41	51.98	51.19
42	52.29	51.50



Fishway Profile

SCALE: Horz = 1 : 8
Vert = 1 : 8

William B. Ball

STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER

October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR CLIENT REVIEW

NOTE:
CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

No.	Revision Description	Drwn	Chk'd	Date
-		-	-	-
-		-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
147 Main St.
Newport, ME. 04953
(207)-368-5700
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International Inc.

Saccarappa Falls Fish Passage Project

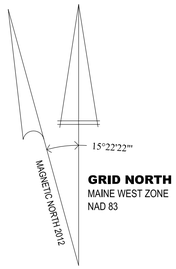
Western Channel Design
Double Denil Plan and Profile

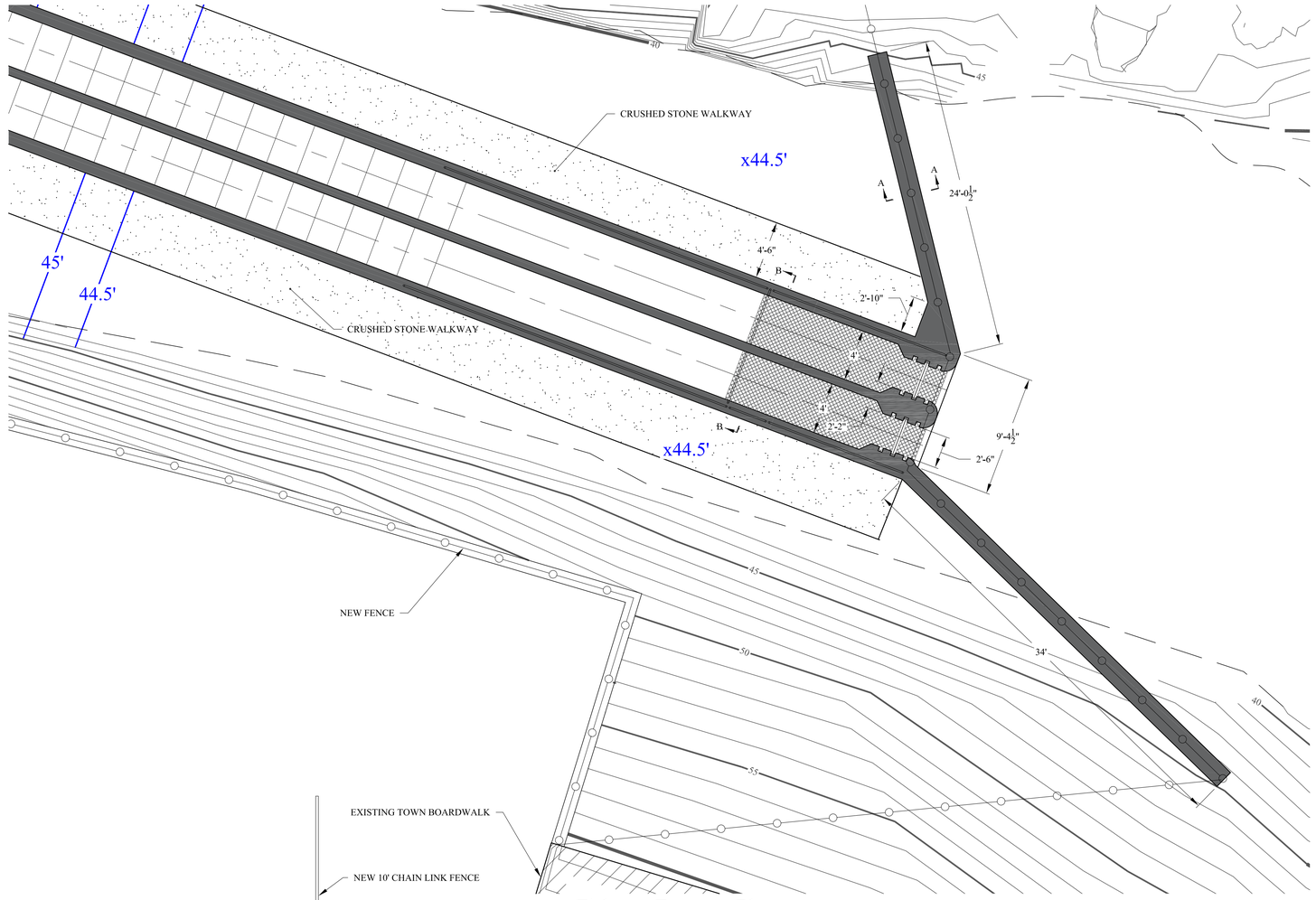
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2255

Sheet 7 of 13

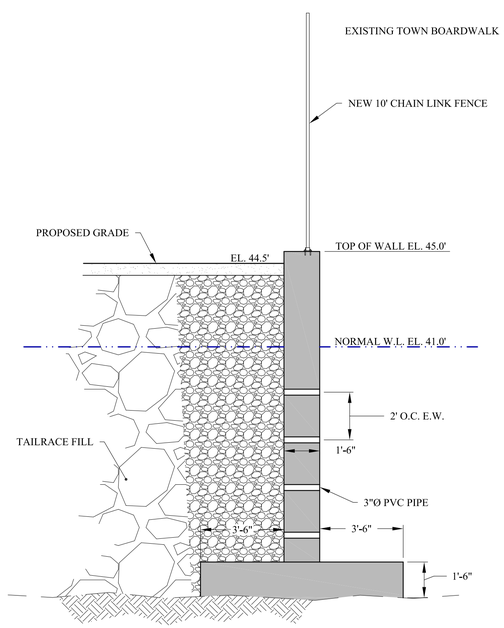




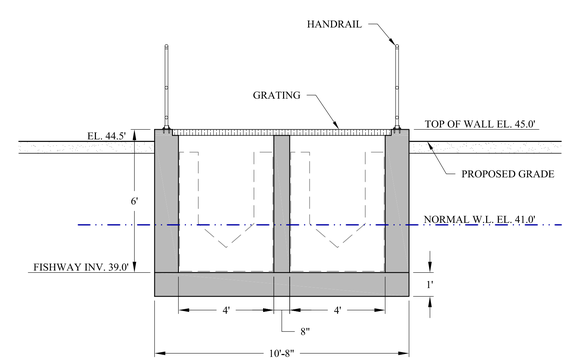
Fishway Entrance Plan
SCALE: 1 : 5

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- x 23.2' SPOT ELEVATION
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- E — OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS



Section A-A
SCALE: 1 : 3



Section B-B
SCALE: 1 : 3

NOTE:
CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR CLIENT REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

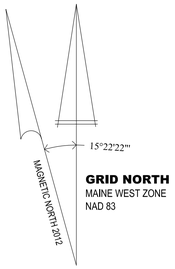
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
147 Main St.
Newport, ME. 04953
(207)-368-5700
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Fishway Entrance Plan and Details

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

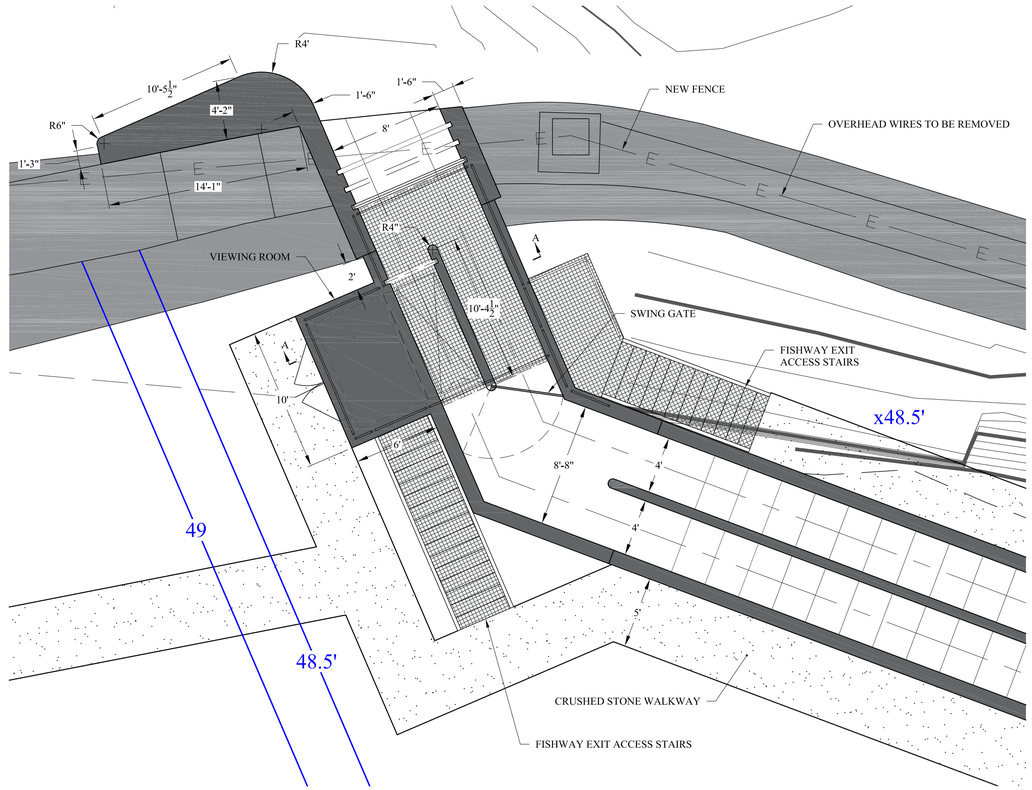
Drawing No: C-2256



GRID NORTH
MAINE WEST ZONE
NAD 83

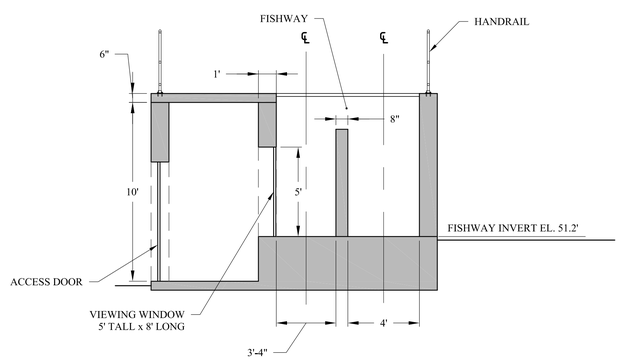
SYMBOLS LEGEND

- SURVEY CONTROL POINT
- x 23.2' SPOT ELEVATION
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS



Fishway Exit Plan View

SCALE: 1 : 5



Fishway Exit Section A-A

SCALE: 1 : 4

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR CLIENT REVIEW

NOTE:
CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

No.	Revision Description	Drwn	Chk'd	Date
-		-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, FL. 34602
(352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Fishway Exit Plan and Sections

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

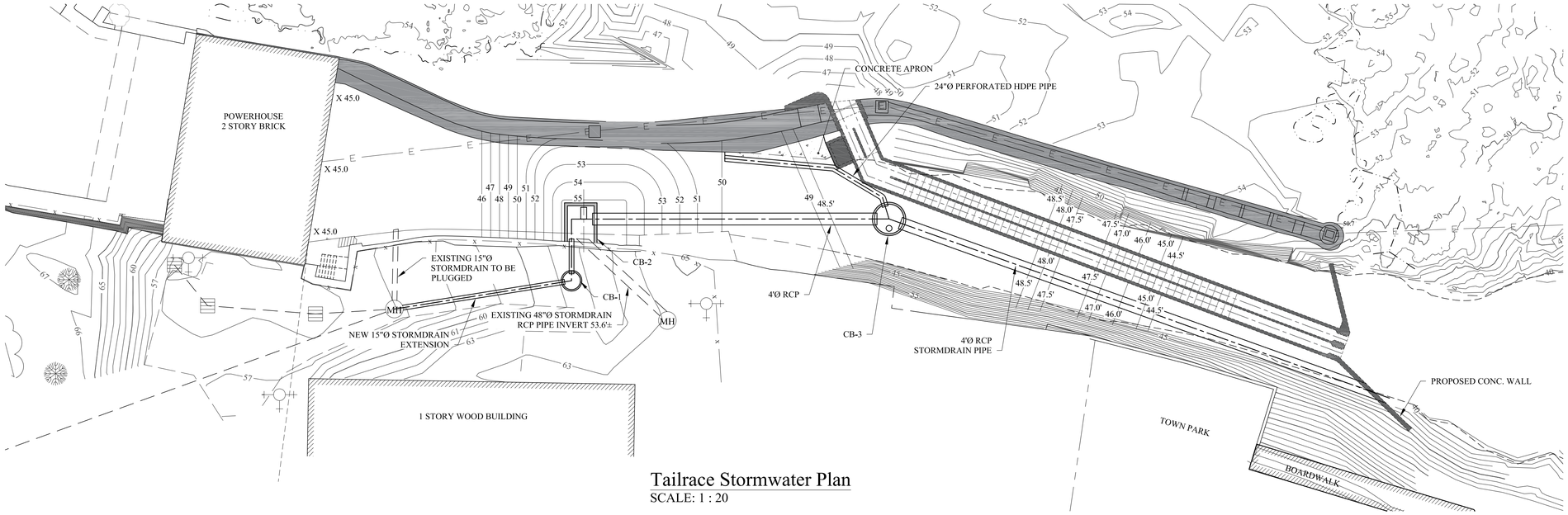
Job Number: 49293

Drawing No: C-2257

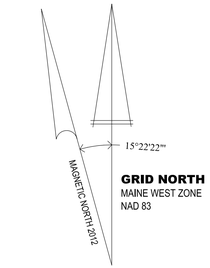
Sheet 9 of 13

NOTE:
1. LOCATION OF EXISTING 4'Ø AND 15"Ø STORM DRAINS, BASED ON INFORMATION PROVIDED BY CITY OF WESTBROOK AND SAPPI. COMFIRMATION OF LOCATION REQUIRED.

2. CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

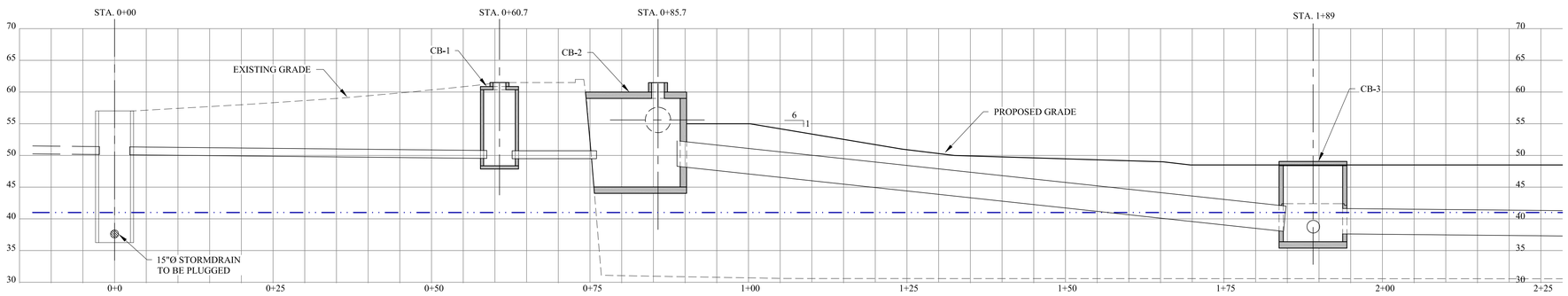


Tailrace Stormwater Plan
SCALE: 1 : 20

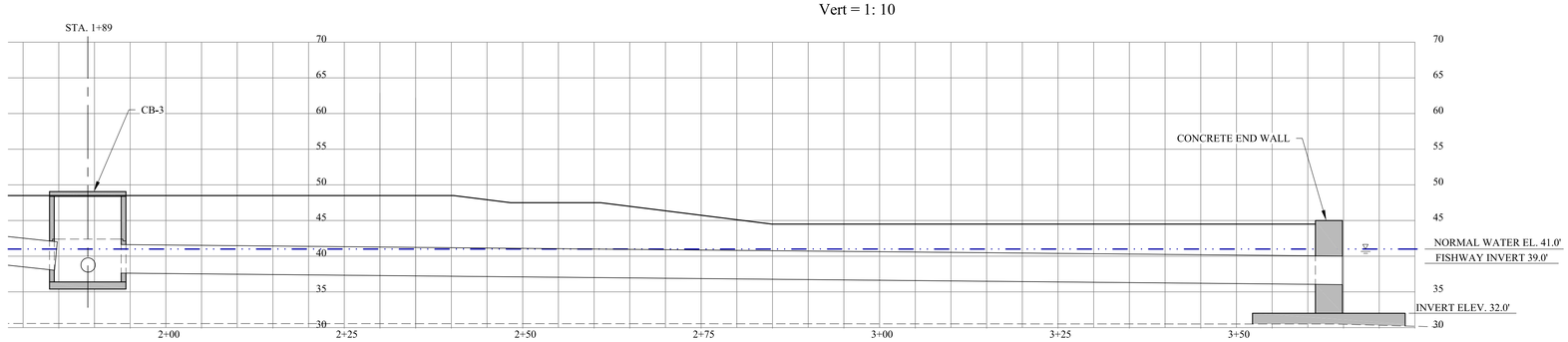


SYMBOLS LEGEND

- SURVEY CONTROL POINT
- SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- PROPOSED CONTOURS
- PROPOSED CONCRETE
- INTERPOLATED LINE
- PROPOSED STORMWATER



Stormdrain Profile
SCALE: Horz = 1 : 10
Vert = 1: 10



Stormdrain Profile
SCALE: Horz = 1 : 10
Vert = 1: 10

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR CLIENT REVIEW

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

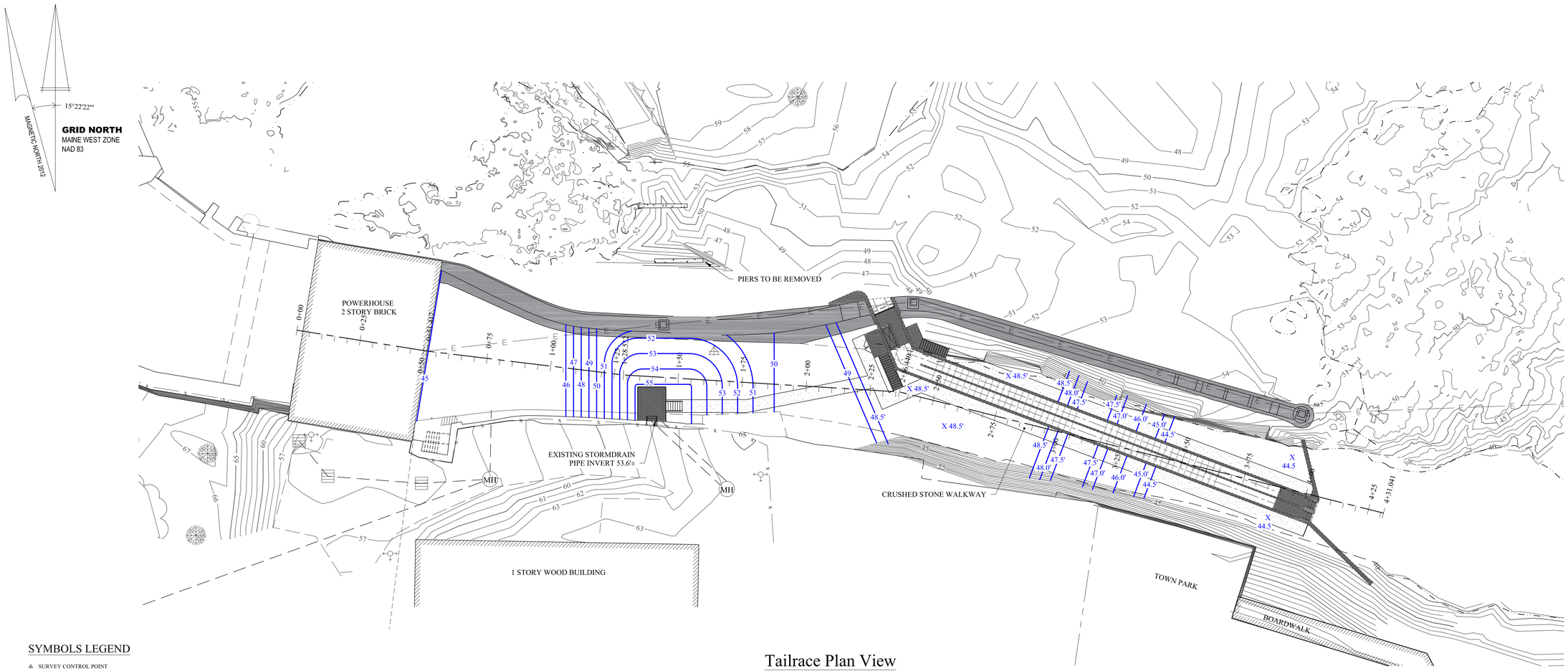
ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Proposed Tailrace Stormdrain Plan and Profile
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2258

Sheet 10 of 13

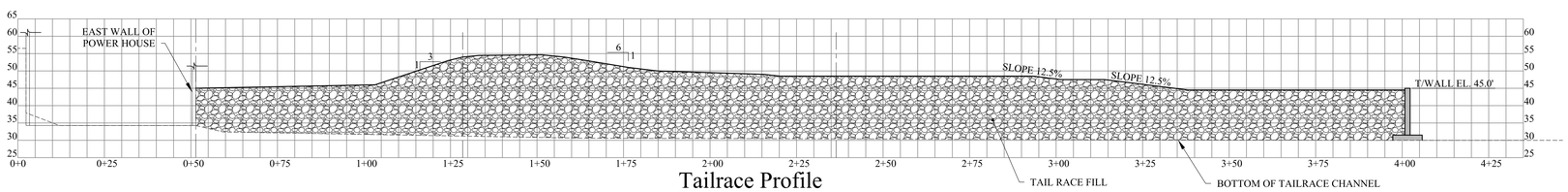


Tailrace Plan View

SCALE: 1 : 20

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- X 23.2' SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- E — OVERHEAD WIRES
- EDGE OF WOODS
- x — FENCE
- CONTOURS INFERRED FROM OTHER SOURCES
- 65 — PROPOSED CONTOURS
- MAN MADE STRUCTURE REMAINS
- INTERPOLATED LINE



Tailrace Profile

SCALE: Horz = 1 : 20
Vert = 1:20

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR CLIENT REVIEW

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St.
Newport, ME. 04953
(207)-368-5700
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International Inc.

Saccarappa Falls Fish Passage Project

Fishway Preliminary Design

Proposed Tailrace Grading Plan and Profile

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2259

Sheet 11 of 13

LOCATION	PURPOSE	CUT VOLUME	IMPACT AREA BELOW O.H.W.	TEMPORARY FILL BELOW O.H.W.	TEMPORARY FILL TOTAL	PERMANENT FILL BELOW O.H.W.	PERMANENT FILL TOTAL	MATERIAL SPECIFICATION AND DESCRIPTION
1	FILL FOR TAILRACE CHANNEL & FISH LADDER	60 C.Y.	14,000 S.F.			4,300 C.Y.	7,620 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS AND REINFORCED CONCRETE
2	FILL FOR FLOW CONTROL AT SOUTH END ISLAND		900 S.F.			34 C.Y.	68 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT
3	EASTERN CONCRETE SPILLWAY TO BE REMOVED	410 C.Y.	-2,900 S.F.					DEMO CONCRETE
4	WESTERN CONCRETE SPILLWAY TO BE REMOVED	1,080 C.Y.	-2,800 S.F.					DEMO CONCRETE
5	ACCESS ROAD FOR EASTERN DAM REMOVAL		4,400 S.F.	470 C.Y.	1080 C.Y.			EXISTING GRAVEL WET ROAD. CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS
6	ACCESS ROAD FOR WESTERN DAM REMOVAL		2,600 S.F.	160 C.Y.	230 C.Y.			EXISTING GRAVEL WET ROAD. CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS
7	WESTERN CHANNEL EXCAVATION	1,770 C.Y.	-17,000 S.F.					BEDROCK EXCAVATION WITH BLASTING
8	WESTERN CHANNEL AND FOREBAY FILL		13,400 S.F.			1,370 C.Y.	1,940 C.Y.	CLEAN WASHED STONE FILL. EXCAVATED BEDROCK FILL.
9	WET ROAD FOR TAILRACE ACCESS		5,600 S.F.	400 C.Y.	640 C.Y.			CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS
10	TRANSITION FROM BRIDGE TO ISLAND	30 C.Y.	400 S.F.			2 C.Y.	140 C.Y.	CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS OR SUITABLE DEMO DEBRIS W/ GRAVEL TOP
11	TAILRACE COFFER DAM		1,500 S.F.	500 C.Y.	550 C.Y.			CELLULAR STYLE COFFER DAM
12	WEST FALLS COFFER DAM		1,100 S.F.	80 C.Y.	160 C.Y.			SANDBAGS
13	EASTERN DAM REMOVAL COFFER DAM		600 S.F.	70 C.Y.	90 C.Y.			SANDBAGS
14	FISHWAY EXIT COFFER DAM		400 S.F.	50 C.Y.	60 C.Y.			SANDBAGS
15	WESTERN CHANNEL COFFER DAM		1,000 S.F.	110 C.Y.	150 C.Y.			SANDBAGS
16	HAND CARRY BOAT LAUNCH EXTENSION		150 S.F.				6 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS
17	ISLAND ACCESS ROAD		1,800 S.F.	120 C.Y.	350 C.Y.			CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- SILT FENCE
- TURBIDITY CURTIAN
- BEDROCK TO REMAIN

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

15°22'22"
MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SCALE: 1"= 30'

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
147 Main St. Newport, ME. 04953 (207)-368-5700
24466 Powell Rd. Brooksville, Fl. 34602 (352)-796-6236
Acheron International, Inc.

Saccarappa Falls Fish Passage Project
Western Channel Design
Coffer Dam / Dewatering Construction Plan

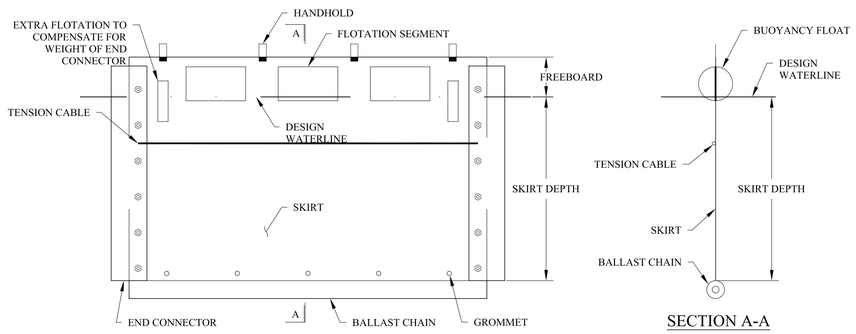
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2260

Sheet 12 of 13

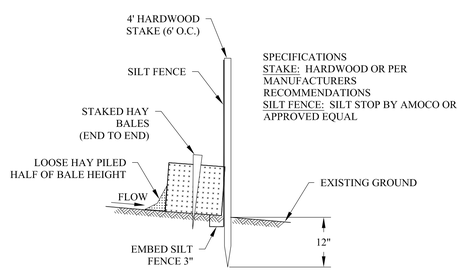
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER
October 20, 2015



SECTION A-A

TYPE II SILT CURTAIN DETAIL

NOT TO SCALE



STANDARD SILT FENCE DETAIL

NOT TO SCALE

GENERAL NOTES:

1. *LOCATE AND MARK ALL PROJECT BOUNDARIES PRIOR TO CONSTRUCTION.*
2. *LIMIT THE AMOUNT OF SOIL DISTURBANCE AT ANY ONE TIME.*
3. *INSTALL SEDIMENT BARRIERS PRIOR TO DISTURBING SOILS.*
4. *MARK SOIL DISTURBANCE LIMITS.*
5. *MULCH EXPOSED SOIL AS SOON AS POSSIBLE, AND REVEGETATE AS SOON AS FINAL GRADE IS ATTAINED.*
6. *INSPECT AND REPAIR EROSION CONTROL AND SEDIMENT TRAPPING MEASURES WEEKLY AND BEFORE AND AFTER EVERY STORM EVENT.*
7. *REMOVE TEMPORARY EROSION CONTROLS WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.*
8. *STABILIZE DITCHES WITHIN 24 HOURS OF FINAL GRADE.*
9. *INSTALL SEDIMENT BARRIER DOWN SLOPE OF SOIL STOCK PILES.*
10. *DO NOT SITE SOIL STOCK PILES IN AREA OF CONCENTRATED FLOW OR POTENTIAL FLOODING.*
11. *MULCHING:*

    A: APPLY TEMPORARY MULCH ON DISTURBED AREAS WITHIN 14 DAYS OF INITIAL DISTURBANCE OR PRIOR TO ANY STORM.
    B: DO NOT APPLY EROSION CONTROL MIX, OR HAY MULCH, IN AREAS OF CONCENTRATED WATER FLOWS.
    C: DO NOT USE EROSION CONTROL MIX, OR HAY MULCH FOR SLOPES STEEPER THAN 2:1.
    D: APPLY EROSION CONTROL MIX IN A LAYER AT LEAST 3" THICK.
    E: USE HAY MULCH AS A TEMPORARY MEASURE TO PROTECT BARE SOILS OR TO COVER NEWLY SEEDED AREAS.
    F: APPLY AT A RATE OF TWO SQUARE BALES (70-90 POUNDS) PER 1,000 SQ. FT.
    G: ANCHOR HAY MULCH USING ONE OF THE FOLLOWING METHODS:
    - *STAPLE JUTE OR PLASTIC NETTING OVER MULCH IN ACCORDANCE WITH MFG. INSTRUCTIONS.*
    - *STRETCH TWINE BETWEEN PEGS IN A CRISS-CROSS PATTERN OVER MULCH (4-6 PEGS PER SQ. YD.).*
    - *TRACK EQUIPMENT OVER MULCH, SUCH THAT TRACKS ARE PARALLEL TO CONTOURS. TRACKING IS SUITABLE FOR SLOPES LESS THAN 3:1.*

12. *SEEDING:*

    A: COMPLETE SEEDING WITHIN 7 DAYS OF FINAL GRADING.
    B: BROADCAST SEED OVER ENTIRE DITCH AND SURFACE AND RAKE INTO SOIL.
    C: APPLY HAY MULCH TO ALL SEEDED AREAS.
    D: SUMMER SEEDED DATES ARE FROM APRIL 1 TO SEPTEMBER 15
    E: PERMANENT SEEDING SHOULD BE DONE 45 DAYS BEFORE FIRST KILLING FROST.

13. *STABILIZATION BEFORE WINTER:*
    SEPTEMBER 15:
    ALL DISTURBED AREA MUST BE SEEDED AND MULCHED.
    ALL SLOPES MUST BE SEEDED AND MULCHED.
    ALL GRASS LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET.
    OCTOBER 1:
    SLOPE STABILIZED WITH EROSION CONTROL BLANKET AND SEEDED.
    NOVEMBER 15:
    ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED.
    ALL RIP-RAP SLOPES MUST BE CONSTRUCTED AND STABILIZED.
14. *PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS, SILT CURTAIN SHALL BE INSTALLED IN AREAS INDICATED ON DRAWINGS.*
15. *SILT CURTAIN, TYPE II MEDIUM DUTY WITH FILTER FABRIC SKIRT.*
16. *FOLLOW GUIDELINES SET FORTH IN ERDC TN-DOER-21 PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS FOR SELECTION OF SILT CURTAIN.*
17. *MODIFY DEWATERING OPERATIONS AND EROSION CONTROL MEASURE AS NECESSARY SO THAT THE DISCHARGE TO THE RIVER DOES NOT EXCEED THE FOLLOWING LIMITS:*

    1. TOTAL SUSPENDED SOLIDS - 30 MG/L.
    2. TOTAL SETTLEABLE SOLIDS - 5 MG/L.
    3. TURBIDITY - 50 NTU ABOVE RECEIVING WATER.

18. *ACHERON HAS USED A REASONABLE STANDARD OF CARE TO TRY TO LOCATE UNDERGROUND FACILITIES IN THE VICINITY OF THIS PROJECT. THE LOCATIONS OF UNDERGROUND FACILITIES DEPICTED ON THIS DRAWING ARE APPROXIMATE. EXCAVATORS MUST COMPLY WITH ALL REQUIREMENTS OF TITLE 23 SECTION 3360, PROTECTION OF UNDERGROUND FACILITIES BEFORE COMMENCING OPERATIONS.*
19. *DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S., INCLUDING WETLANDS, SHALL BE AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE THROUGH CONSIDERATION OF ALTERNATIVES.*
20. *TEMPORARY FILL. FILL PLACED INTO WATERS OF THE U.S. (INCLUDING WETLANDS) TOTALING GREATER THAN OR EQUAL TO 4,300 SF (15,000 SF IF A DEP TIER ONE PERMIT IS ISSUED) IN TOTAL AREA (I.E., THE SUM OF PERMANENT AND TEMPORARY FILL AREAS) EXCEEDS THE CATEGORY 1 THRESHOLD AND MAY NOT BE DISCHARGED WITHOUT WRITTEN AUTHORIZATION FROM THE U.S. ARMY CORPS. WHEN TEMPORARY FILL IS USED (E.G., ACCESS ROADS, SWAMP MATS, COFFERDAMS), IT SHALL BE STABILIZED AND MAINTAINED DURING CONSTRUCTION IN SUCH A WAY AS TO PREVENT SOIL ERODING INTO PORTIONS OF WATERS OF THE U.S. WHERE IT IS NOT AUTHORIZED. SWAMP OR TIMBER MATS ARE CONSIDERED TEMPORARY FILL WHEN THEY ARE REMOVED IMMEDIATELY UPON WORK COMPLETION. THE AREA MUST BE RESTORED.*

    - *UNCONFINED TEMPORARY FILL AUTHORIZED FOR DISCHARGE INTO FLOWING WATER (RIVERS AND STREAMS) SHALL CONSIST ONLY OF CLEAN WASHED STONE.*
    - *TEMPORARY FILL AUTHORIZED FOR DISCHARGE INTO WETLANDS SHALL BE PLACED ON GEOTEXTILE FABRIC LAID ON THE PRE-CONSTRUCTION WETLAND GRADE. (SWAMP AND TIMBER MATS ARE EXCLUDED FROM THIS REQUIREMENT.)*
    - *TEMPORARY FILL SHALL BE REMOVED AS SOON AS IT IS NO LONGER NEEDED, AND IT SHALL BE DISPOSED OF AT AN UPLAND SITE AND SUITABLY CONTAINED TO PREVENT SUBSEQUENT EROSION INTO WATERS OF THE U.S.*
    - *WATERS OF THE U.S. WHERE TEMPORARY FILL WAS DISCHARGED SHALL BE RESTORED.*
    - *NO TEMPORARY WORK SHALL DRAIN A WATER OF THE U.S. BY PROVIDING A CONDUIT FOR WATER ON OR BELOW THE SURFACE.*

21. *RESTORATION.*

    - *UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS (THE DISTURBANCE OF THESE AREAS MUST BE AUTHORIZED) SHALL BE STABILIZED WITH A WETLAND SEED MIX CONTAINING ONLY PLANT SPECIES NATIVE TO NEW ENGLAND.*
    - *THE INTRODUCTION OR SPREAD OF INVASIVE PLANT SPECIES IN DISTURBED AREAS SHALL BE CONTROLLED.*
    - *IN AREAS OF AUTHORIZED TEMPORARY DISTURBANCE, IF TREES ARE CUT THEY SHALL BE CUT AT GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA, UNLESS OTHERWISE AUTHORIZED.*
    - *WETLAND AREAS WHERE PERMANENT DISTURBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCES SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITION MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATION SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME, UNLESS OTHERWISE AUTHORIZED.*

22. *SEE SPECIFICATIONS FOR RIVER FLOW AND WATER LEVEL MANAGEMENT PLAN.*

23. *COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS. ALL WORK DONE SHALL COMPLY WITH THE REQUIREMENTS SET FORTH BY BEST MANAGEMENT PRACTICES OF MAINE AS PREPARED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE U.S. ARMY CORPS OF ENGINEERS.*

William B. Ball

STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER

October 20, 2015

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
147 Main St.
Newport, ME. 04953
(207)-368-5700
Acheron International Inc.

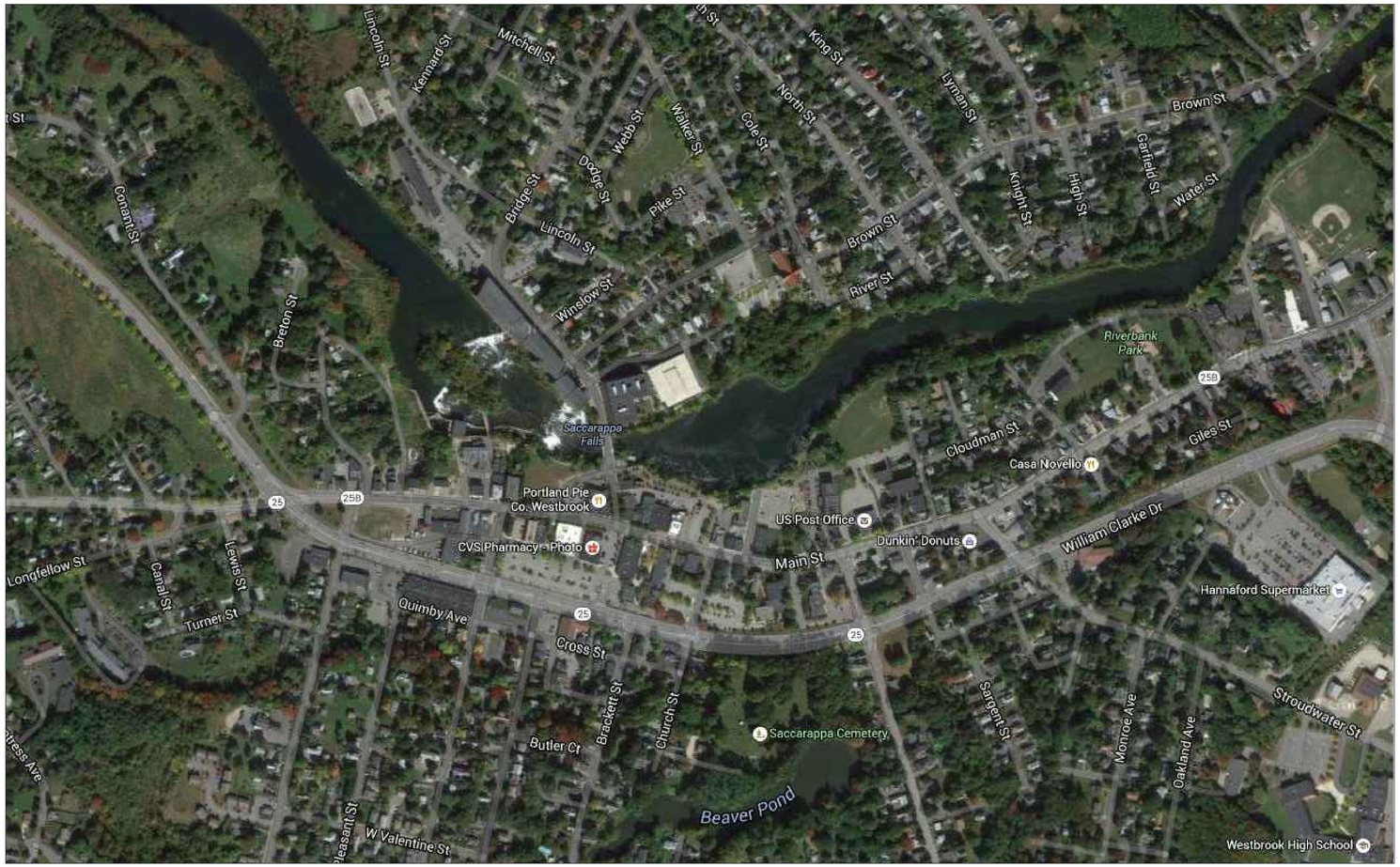
Saccarappa Falls Fish Passage Project
Western Channel Design
Erosion Control General Notes

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2261

Sheet 13 of 13



PROJECT LOCATION MAP

PROJECT OWNER: CITY OF WESTBROOK
2 YORK STREET,
WESTBROOK, MAINE
04092

ENGINEER: GARY M. LACY, P.E.
RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER, CO 80302
303-545-5883
INFO@BOATERPARKS.COM

TABLE OF CONTENTS

1. PROJECT LOCATION MAP AND TABLE OF CONTENTS
2. PROJECT OVERVIEW PLAN
3. STRUCTURE PLAN SHEET
4. STRUCTURE PLAN AND PROFILE SHEET

PROJECT LOCATION
LATITUDE 43° 40' 43" N LONGITUDE 70° 22' 07" W

Recreation Engineering & Planning

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

Saccarappa Falls Recreational Enhancements

WESTBROOK, MAINE PRESUMPSCOT RIVER

PROJECT LOCATION MAP AND TABLE OF CONTENTS

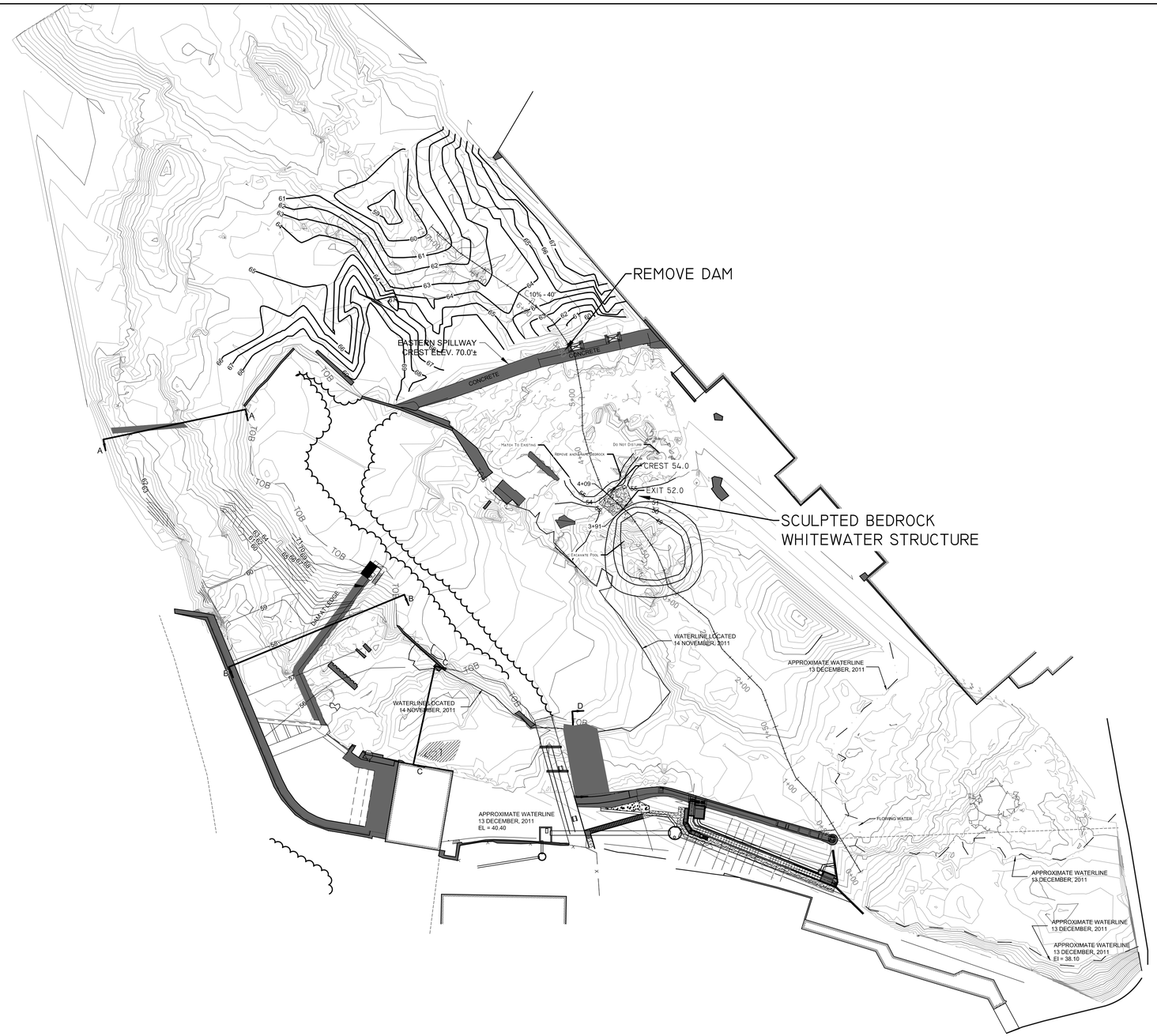
PRELIMINARY

DRAFT

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK STREET,
WESTBROOK, MAINE
04092

DESIGNED: GL
DRAFTED:
CHECKED:
PLOT DATE: OCT 28, 2015
REVISIONS:

PAGE NUMBER:
1
SHEET 1 OF 4



N

SCALE: 1" = 100'

0 50 100 Feet

CONTOUR INTERVAL TWO FEET

Recreation Engineering & Planning

Recreation Engineering and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com

Saccarappa Falls Recreational Enhancements

Westbrook, Maine Presumpscot River

PROJECT OVERVIEW PLAN

Preliminary

DRAFT

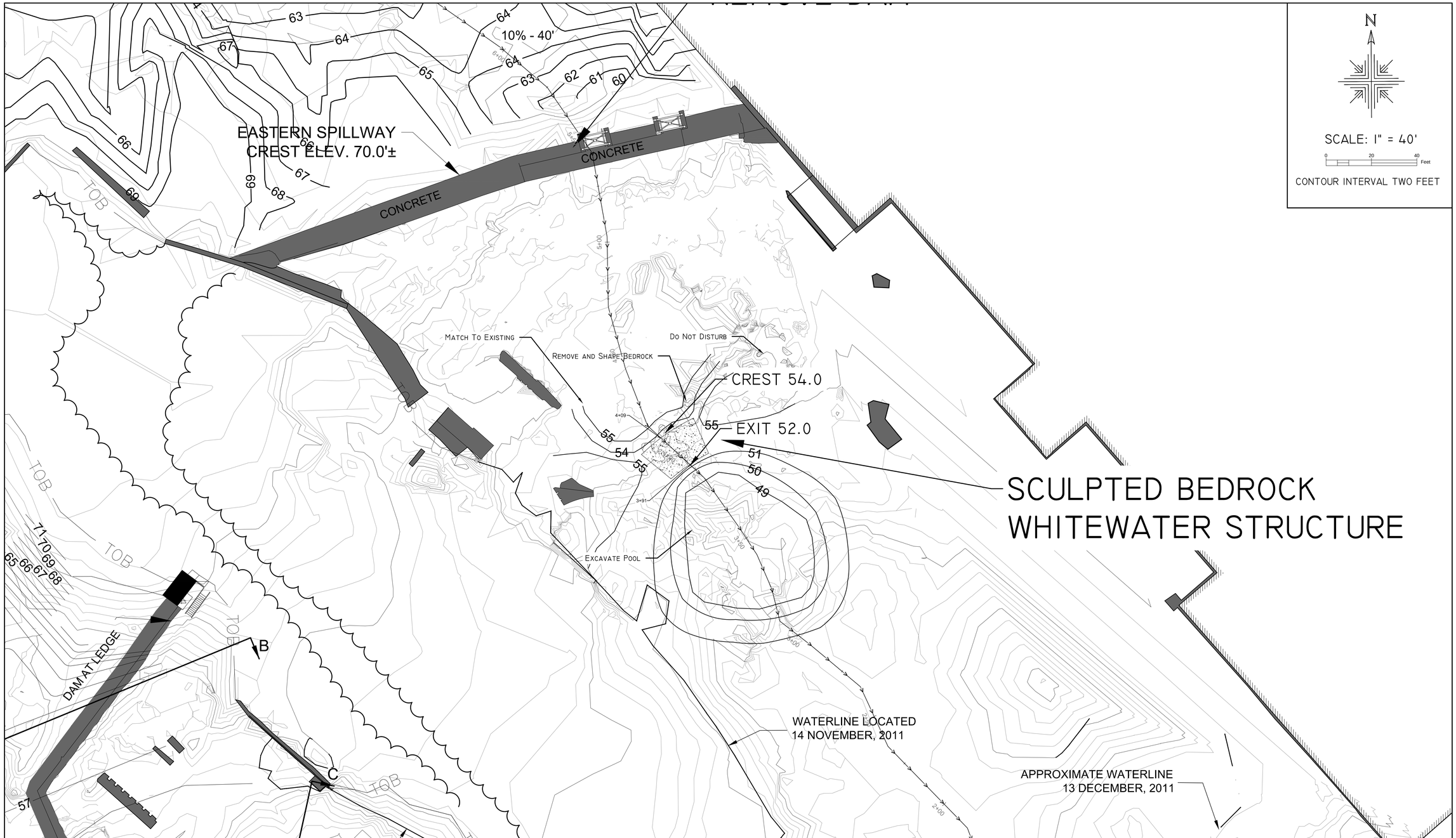
Project owner:
City of Westbrook
2 York Street,
Westbrook, Maine
04092

Designed: GL
Drafted: RG
Checked:
Plot Date: Oct 28, 2015
Revisions:

Page Number:

2

Sheet 2 of 4



Recreation Engineering & Planning

Recreation Engineering and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com

Saccarappa Falls Recreational Enhancements

Westbrook, Maine Presumpscot River

EAST CHANNEL PLAN

Preliminary

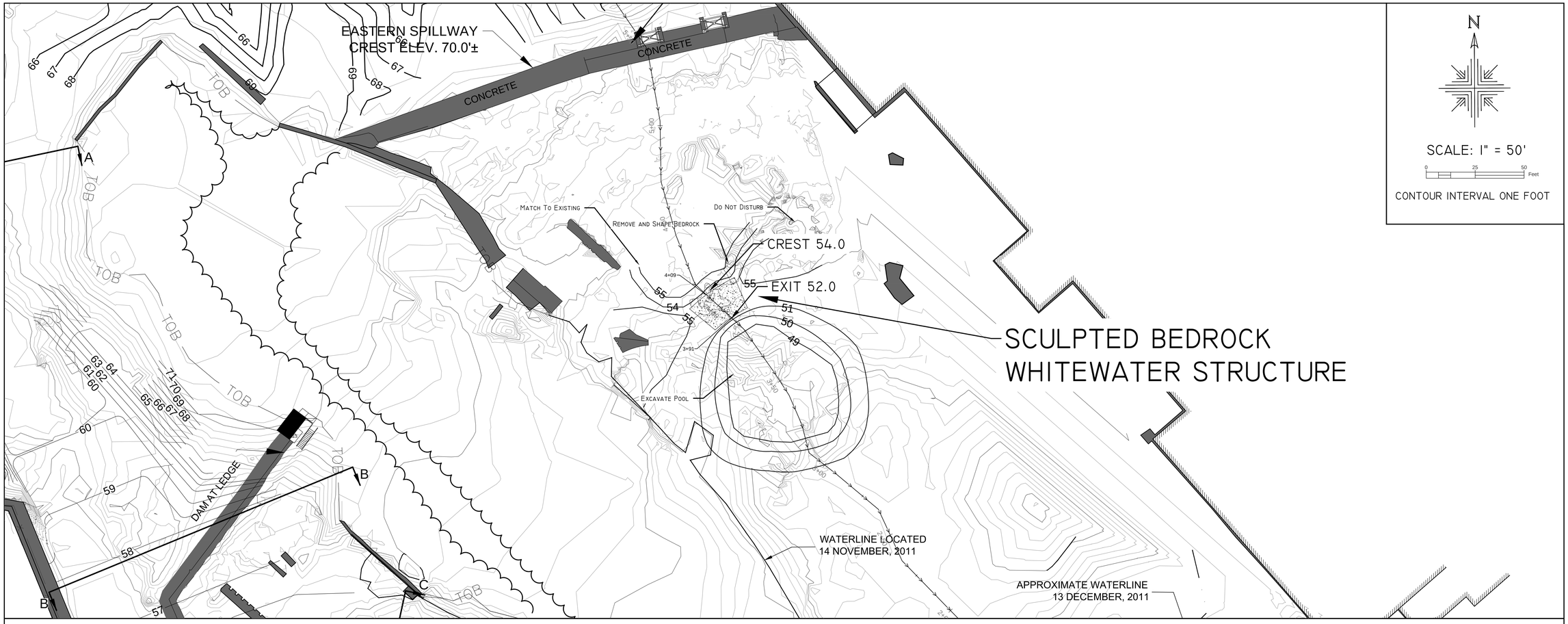
DRAFT

Project owner:
City of Westbrook
2 York Street,
Westbrook, Maine
04092

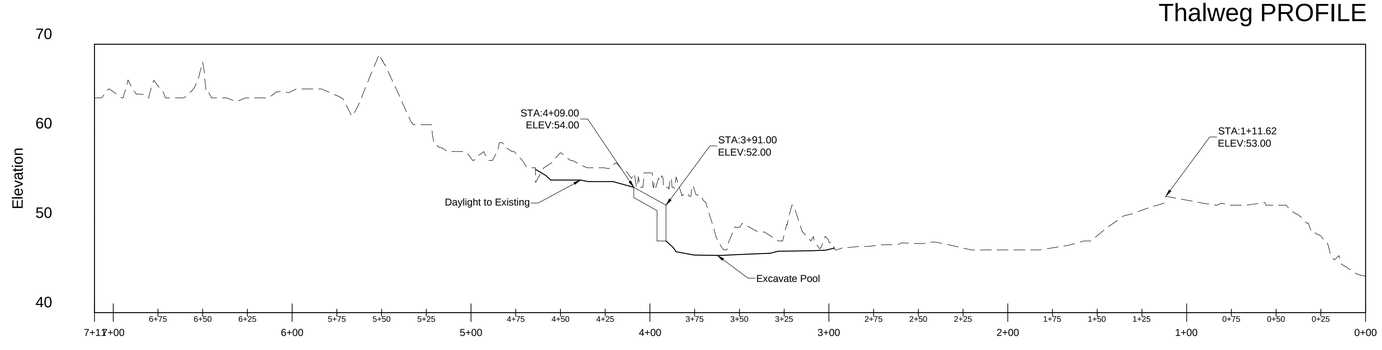
Designed: GL
Drafted: RG
Checked:
Plot Date: Oct 28, 2015
Revisions:

Page Number:
3

Sheet 3 of 4



Thalweg PROFILE



VERTICAL EXAGGERATION = 5X

Recreation Engineering & Planning

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

Saccarappa Falls Recreational Enhancements

WESTBROOK, MAINE PRESUMPSCOT RIVER

Structure Plan and Profile

Preliminary

DRAFT

PROJECT OWNER:
CITY OF WESTBROOK
2 YORK STREET,
WESTBROOK, MAINE
04092

DESIGNED: GL
DRAFTED:
CHECKED:
PLOT DATE: OCT 28, 2015
REVISIONS:

SHEET NUMBER:
4

SHEET 4 OF 4

PROJECT LOCATION MAP

PROJECT OWNER: CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

ENGINEER: GARY M. LACY, P.E.
RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER, CO 80302
303-545-5883
INFO@BOATERPARKS.COM

TABLE OF CONTENTS

1. PROJECT LOCATION MAP AND TABLE OF CONTENTS
2. PROJECT OVERVIEW PLAN
3. STRUCTURE SECTIONS
4. STRUCTURE LONGITUDINAL PROFILES

PROJECT LOCATION
LATITUDE 43°40'41.16"N LONGITUDE 70°22'11.57"W

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

WHITEWATER AND HABITAT IMPROVEMENTS

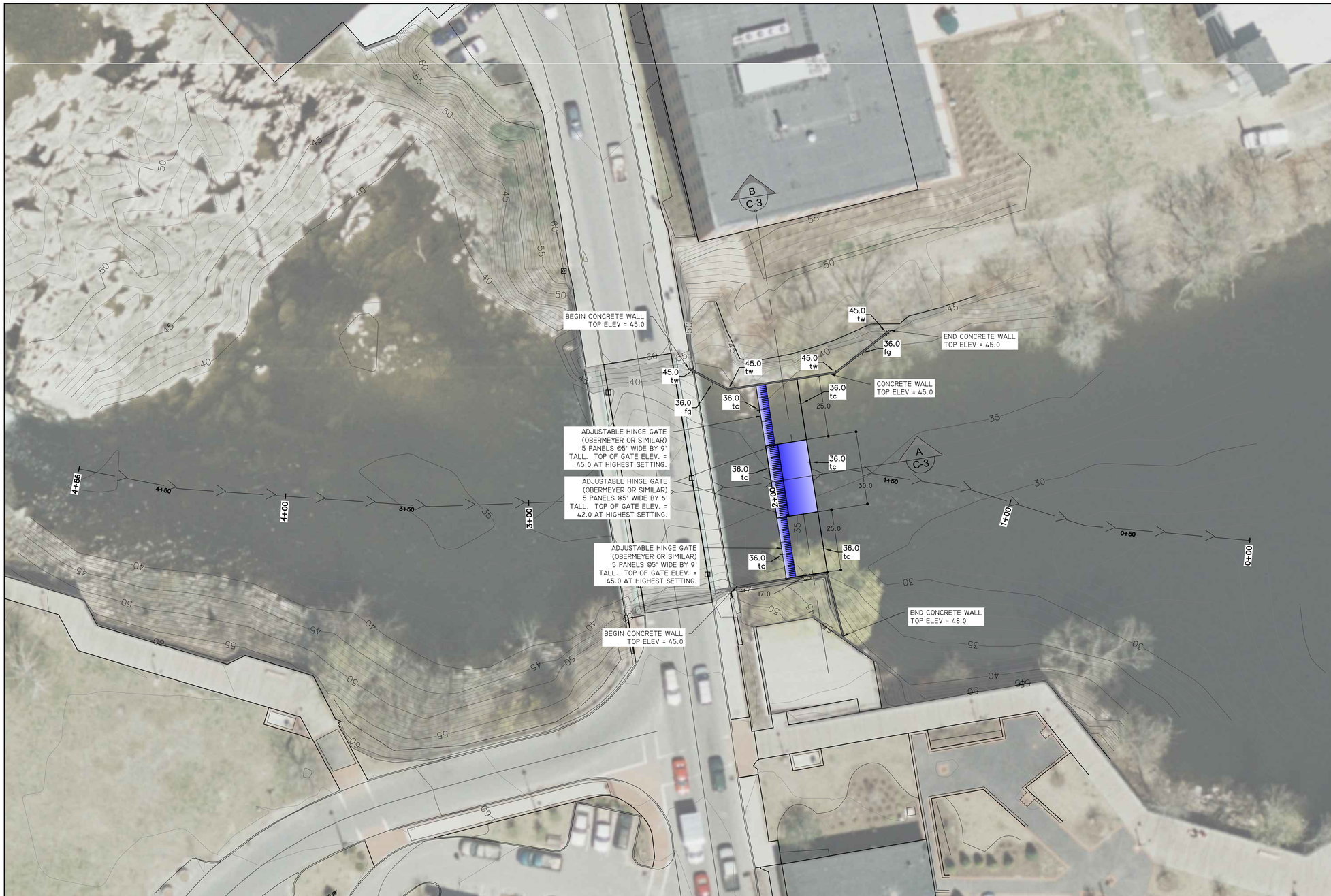
PRESUMPSCOT RIVER, WESTBROOK, MAINE

PROJECT LOCATION MAP AND TABLE OF CONTENTS

PRELIMINARY - NOT FOR CONSTRUCTION

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

DESIGNED: GL
DRAFTED: AR
CHECKED: GL
PLOT DATE: AUG 5, 2015
REVISIONS:



N

SCALE: 1" = 20'

20 0 20

GENERAL NOTES:

1. ALL ELEVATIONS GIVEN IN FEET ABOVE SEA LEVEL.
2. ROCK FILL/HATCH AND VEGETATIVE IMAGES SHOWN FOR ILLUSTRATIVE PURPOSES. NOT TO SCALE.
3. AN REP REPRESENTATIVE SHALL BE PRESENT DURING CONSTRUCTION OF ALL STRUCTURES AND TERRACING.
4. ALL STRUCTURE CREST AND EXIT ELEVATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY AN REP REPRESENTATIVE PRIOR TO CONSTRUCTION.

LEGEND

INSTREAM STRUCTURE

ADJUSTABLE HINGE GATES/PLATES

THALWEG AND DIRECTION OF FLOW

WATER SURFACE DAY OF SURVEY

EXISTING CONTOUR LINES

BANK STABILIZATION/ RETAINING WALL

Recreation Engineering & Planning

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

PROJECT OVERVIEW PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

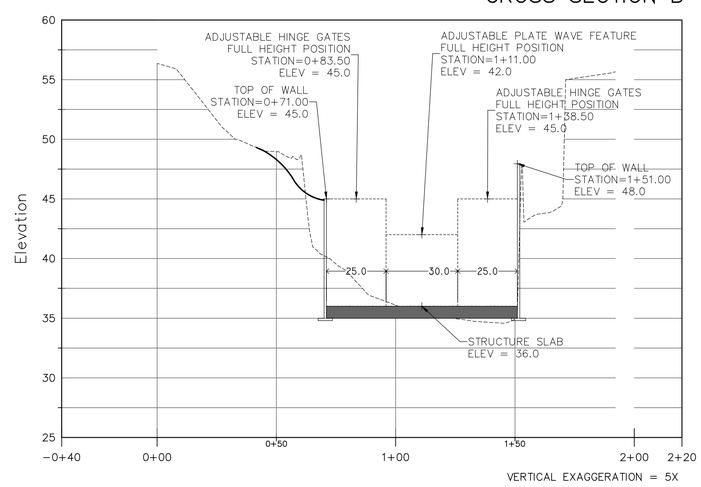
DESIGNED: GL
DRAFTED: AR
CHECKED: GL
PLOT DATE: AUG 5, 2015
REVISIONS:

PAGE NUMBER:

2

SHEET 2 OF 4

CROSS SECTION B



SCALE: 1" = 30'

30 0 30

GENERAL NOTES:

1. ALL ELEVATIONS GIVEN IN FEET ABOVE SEA LEVEL.
2. ROCK FILL/HATCH AND VEGETATIVE IMAGES SHOWN FOR ILLUSTRATIVE PURPOSES. NOT TO SCALE.
3. AN REP REPRESENTATIVE SHALL BE PRESENT DURING CONSTRUCTION OF ALL STRUCTURES AND TERRACING.
4. ALL STRUCTURE CREST AND EXIT ELEVATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY AN REP REPRESENTATIVE PRIOR TO CONSTRUCTION.

Recreation Engineering & Planning

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

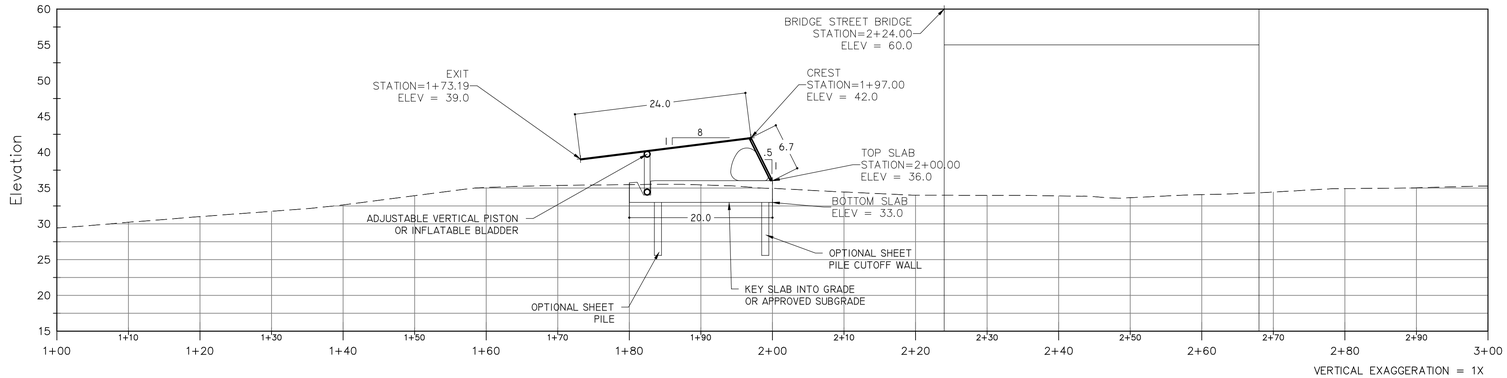
STRUCTURE SECTIONS

PRELIMINARY - NOT FOR CONSTRUCTION

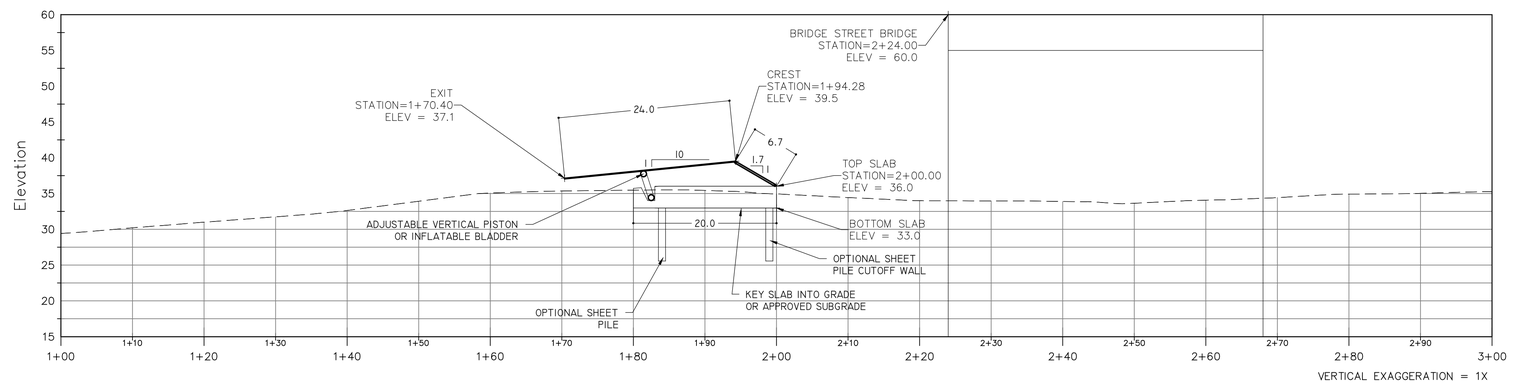
CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

DESIGNED: GL
DRAFTED: AR
CHECKED: GL
PLOT DATE: AUG 5, 2015
REVISIONS:

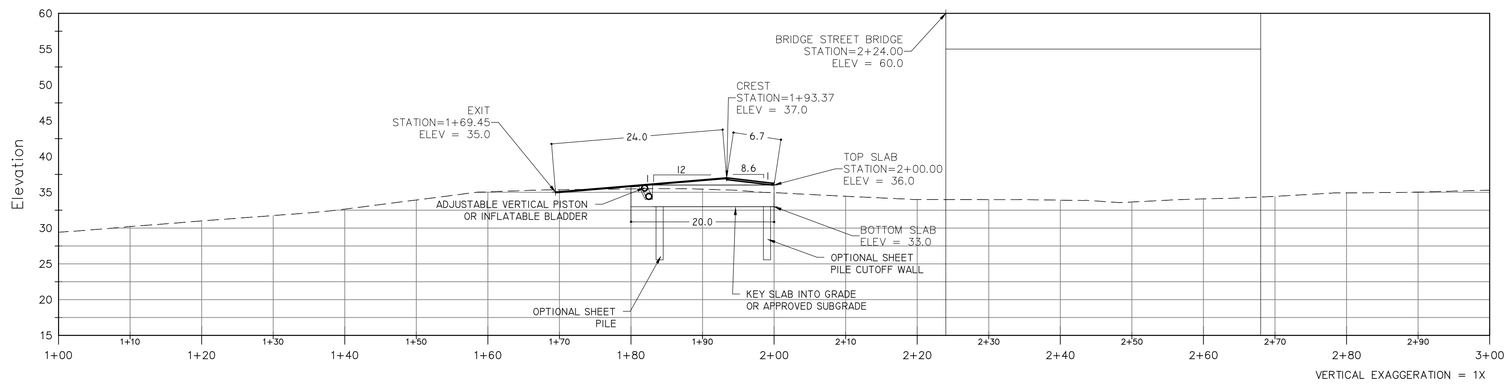
PROFILE A



PROFILE A



PROFILE A



GENERAL NOTES:

1. ALL ELEVATIONS GIVEN IN FEET ABOVE SEA LEVEL.
2. ROCK FILL/HATCH AND VEGETATIVE IMAGES SHOWN FOR ILLUSTRATIVE PURPOSES. NOT TO SCALE.
3. AN REP REPRESENTATIVE SHALL BE PRESENT DURING CONSTRUCTION OF ALL STRUCTURES AND TERRACING.
4. ALL STRUCTURE CREST AND EXIT ELEVATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY AN REP REPRESENTATIVE PRIOR TO CONSTRUCTION.

SCALE: 1" = 10'

10 0 10

Recreation Engineering & Planning

RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER | CO | 80302
WWW.BOATERPARKS.COM

WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

STRUCTURE LONGITUDINAL PROFILES

PRELIMINARY - NOT FOR CONSTRUCTION

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

DESIGNED: GL
DRAFTED: AR
CHECKED: GL
PLOT DATE: AUG 5, 2015
REVISIONS:

APPENDIX H: WESTERN CHANNEL DESIGN, HEC-RAS MODEL

HEC-RAS Plan: Existing Con

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Upper Presumpt	3740	300cfs	300.00	41.42	65.09	44.43	65.09	0.000002	0.18	1703.13	128.17	0.01
Upper Presumpt	3740	1000cfs	1000.00	41.42	66.31	46.73	66.32	0.000014	0.54	1862.35	132.24	0.03
Upper Presumpt	3740	1500cfs	1500.00	41.42	66.97	47.83	66.98	0.000027	0.77	1949.58	134.59	0.04
Upper Presumpt	3740	500cfs	500.00	41.42	65.49	45.25	65.49	0.000004	0.28	1754.90	129.42	0.01
Upper Presumpt	2164.14	300cfs	300.00	54.24	65.09		65.09	0.000021	0.34	870.05	162.98	0.03
Upper Presumpt	2164.14	1000cfs	1000.00	54.24	66.29		66.30	0.000129	0.93	1071.62	174.17	0.07
Upper Presumpt	2164.14	1500cfs	1500.00	54.24	66.91		66.94	0.000223	1.27	1183.64	183.07	0.09
Upper Presumpt	2164.14	500cfs	500.00	54.24	65.48		65.49	0.000047	0.53	935.34	166.47	0.04
Upper Presumpt	1748	300cfs	300.00	55.35	65.08		65.09	0.000006	0.21	1407.87	199.37	0.01
Upper Presumpt	1748	1000cfs	1000.00	55.35	66.27		66.27	0.000039	0.61	1648.93	209.40	0.04
Upper Presumpt	1748	1500cfs	1500.00	55.35	66.88		66.89	0.000070	0.84	1779.01	214.08	0.05
Upper Presumpt	1748	500cfs	500.00	55.35	65.48		65.48	0.000013	0.34	1486.68	202.15	0.02
Upper Presumpt	1747	300cfs	300.00	55.00	65.08		65.08	0.000010	0.26	1153.11	190.01	0.02
Upper Presumpt	1747	1000cfs	1000.00	55.00	66.26		66.27	0.000067	0.72	1385.82	202.65	0.05
Upper Presumpt	1747	1500cfs	1500.00	55.00	66.87		66.88	0.000116	0.99	1510.37	206.88	0.06
Upper Presumpt	1747	500cfs	500.00	55.00	65.47		65.48	0.000024	0.41	1229.17	197.24	0.03
Upper Presumpt	1746	300cfs	300.00	56.51	65.08		65.08	0.000030	0.31	953.16	263.29	0.03
Upper Presumpt	1746	1000cfs	1000.00	56.51	66.24		66.25	0.000137	0.79	1266.17	273.01	0.06
Upper Presumpt	1746	1500cfs	1500.00	56.51	66.84		66.86	0.000208	1.05	1431.16	276.77	0.08
Upper Presumpt	1746	500cfs	500.00	56.51	65.47		65.47	0.000061	0.47	1056.34	268.04	0.04
Saccarappa West	745	300cfs	150.00	60.74	65.06		65.07	0.000222	0.81	185.79	64.40	0.08
Saccarappa West	745	1000cfs	481.97	60.74	66.19		66.24	0.000894	1.82	267.53	92.86	0.17
Saccarappa West	745	1500cfs	711.32	60.74	66.75		66.83	0.001165	2.27	323.95	105.66	0.20
Saccarappa West	745	500cfs	248.64	60.74	65.45		65.48	0.000407	1.18	211.47	65.48	0.12
Saccarappa West	701	300cfs	150.00	59.04	65.06		65.06	0.000094	0.53	281.77	94.02	0.05
Saccarappa West	701	1000cfs	481.97	59.04	66.18		66.21	0.000368	1.22	394.60	105.71	0.11
Saccarappa West	701	1500cfs	711.32	59.04	66.75		66.79	0.000527	1.56	455.90	110.66	0.14
Saccarappa West	701	500cfs	248.64	59.04	65.45		65.46	0.000179	0.78	319.70	98.24	0.08
Saccarappa West	668	300cfs	150.00	62.34	65.04		65.05	0.000547	0.81	185.94	79.61	0.09
Saccarappa West	668	1000cfs	481.97	62.34	66.13		66.18	0.001699	1.73	278.02	88.12	0.17
Saccarappa West	668	1500cfs	711.32	62.34	66.68		66.75	0.002302	2.17	327.58	99.33	0.20
Saccarappa West	668	500cfs	248.64	62.34	65.43		65.45	0.000957	1.14	217.46	83.89	0.13
Saccarappa West	650	300cfs	150.00	64.00	64.91		65.01	0.020874	2.59	57.97	67.20	0.49
Saccarappa West	650	1000cfs	481.97	64.00	65.84		66.07	0.019548	3.89	123.94	73.99	0.53
Saccarappa West	650	1500cfs	711.32	64.00	66.31		66.62	0.018737	4.45	161.26	87.87	0.54
Saccarappa West	650	500cfs	248.64	64.00	65.23		65.38	0.020508	3.11	80.05	69.53	0.51
Saccarappa West	600	300cfs	150.00	62.70	63.66		63.79	0.025522	2.94	50.93	56.46	0.55
Saccarappa West	600	1000cfs	481.97	62.70	64.65		64.95	0.023592	4.35	110.80	64.29	0.58
Saccarappa West	600	1500cfs	711.32	62.70	65.16		65.54	0.022423	4.92	144.78	68.79	0.59
Saccarappa West	600	500cfs	248.64	62.70	64.00		64.19	0.024847	3.51	70.76	58.90	0.56
Saccarappa West	550	300cfs	150.00	61.35	62.32		62.47	0.028088	3.13	47.85	51.61	0.57
Saccarappa West	550	1000cfs	481.97	61.35	63.24		63.62	0.030341	4.95	97.28	55.49	0.66
Saccarappa West	550	1500cfs	711.32	61.35	63.70		64.21	0.031737	5.78	123.09	57.44	0.70
Saccarappa West	550	500cfs	248.64	61.35	62.65		62.87	0.028747	3.82	65.11	52.99	0.61
Saccarappa West	503	300cfs	150.00	60.08	60.96		61.10	0.030703	3.00	49.93	61.82	0.59
Saccarappa West	503	1000cfs	481.97	60.08	61.73		62.10	0.035706	4.88	98.78	65.82	0.70
Saccarappa West	503	1500cfs	711.32	60.08	62.11		62.62	0.037434	5.71	124.54	67.71	0.74
Saccarappa West	503	500cfs	248.64	60.08	61.23		61.45	0.032858	3.71	66.98	63.41	0.64
Saccarappa West	490	300cfs	150.00	59.70	60.42		60.60	0.033361	3.46	43.32	64.40	0.74
Saccarappa West	490	1000cfs	481.97	59.70	61.14		61.58	0.030918	5.29	91.06	67.42	0.80
Saccarappa West	490	1500cfs	711.32	59.70	61.52		62.10	0.030077	6.08	117.12	69.32	0.82
Saccarappa West	490	500cfs	248.64	59.70	60.67		60.94	0.032445	4.17	59.57	65.40	0.77
Saccarappa West	455	300cfs	150.00	58.65	59.49		59.63	0.023230	3.01	49.88	66.44	0.61
Saccarappa West	455	1000cfs	481.97	58.65	60.30		60.62	0.022662	4.51	106.85	72.45	0.65
Saccarappa West	455	1500cfs	711.32	58.65	60.73		61.14	0.022474	5.14	138.33	74.84	0.67
Saccarappa West	455	500cfs	248.64	58.65	59.78		59.98	0.022462	3.56	69.75	68.90	0.62
Saccarappa West	450	300cfs	150.00	58.50	59.43		59.53	0.013886	2.55	58.89	71.93	0.50
Saccarappa West	450	1000cfs	481.97	58.50	60.27		60.51	0.014262	3.94	122.26	78.24	0.56
Saccarappa West	450	1500cfs	711.32	58.50	60.71		61.03	0.014064	4.52	157.35	80.71	0.57
Saccarappa West	450	500cfs	248.64	58.50	59.73		59.88	0.013849	3.07	81.08	74.48	0.52
Saccarappa West	445	300cfs	150.00	58.35	59.33		59.45	0.018002	2.80	53.56	65.08	0.54
Saccarappa West	445	1000cfs	481.97	58.35	60.09		60.41	0.022816	4.54	106.09	71.27	0.66
Saccarappa West	445	1500cfs	711.32	58.35	60.49		60.93	0.023827	5.27	135.09	73.51	0.68
Saccarappa West	445	500cfs	248.64	58.35	59.60		59.79	0.019785	3.45	72.00	67.41	0.59
Saccarappa West	398	300cfs	150.00	56.62	57.80		57.94	0.027355	2.99	50.25	79.59	0.66

HEC-RAS Plan: Existing Con (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Saccarappa West	398	1000cfs	481.97	56.62	58.49		58.77	0.024532	4.26	113.09	96.33	0.69
Saccarappa West	398	1500cfs	711.32	56.62	58.77		59.17	0.027145	5.07	140.21	98.96	0.75
Saccarappa West	398	500cfs	248.64	56.62	58.07		58.25	0.025688	3.38	73.62	92.36	0.67
Saccarappa West	381	300cfs	150.00	56.15	57.36		57.49	0.025006	2.86	52.45	78.03	0.61
Saccarappa West	381	1000cfs	481.97	56.15	58.13		58.34	0.023585	3.72	129.58	122.22	0.64
Saccarappa West	381	1500cfs	711.32	56.15	58.40		58.70	0.024740	4.36	163.23	123.46	0.67
Saccarappa West	381	500cfs	248.64	56.15	57.66		57.82	0.023994	3.17	78.52	96.60	0.62
Saccarappa West	376	300cfs	150.00	56.00	57.32		57.39	0.011694	2.17	69.13	93.45	0.44
Saccarappa West	376	1000cfs	481.97	56.00	58.10		58.24	0.012033	3.00	160.55	136.11	0.49
Saccarappa West	376	1500cfs	711.32	56.00	58.38		58.58	0.013015	3.57	199.26	137.89	0.52
Saccarappa West	376	500cfs	248.64	56.00	57.62		57.72	0.011838	2.48	100.45	112.47	0.46
Saccarappa West	371	300cfs	150.00	55.85	57.26		57.33	0.011556	2.14	70.03	90.27	0.43
Saccarappa West	371	1000cfs	481.97	55.85	58.02		58.17	0.013773	3.13	153.95	124.56	0.50
Saccarappa West	371	1500cfs	711.32	55.85	58.28		58.50	0.016650	3.83	185.86	126.35	0.56
Saccarappa West	371	500cfs	248.64	55.85	57.56		57.66	0.012277	2.49	99.66	105.94	0.45
Saccarappa West	334	300cfs	150.00	54.64	55.60	55.58	55.84	0.064001	4.00	37.51	73.03	0.98
Saccarappa West	334	1000cfs	481.97	54.64	56.28	56.19	56.69	0.042919	5.18	93.06	90.60	0.90
Saccarappa West	334	1500cfs	711.32	54.64	56.80		57.18	0.025450	4.95	143.65	100.74	0.73
Saccarappa West	334	500cfs	248.64	54.64	55.81	55.80	56.14	0.058268	4.62	53.81	78.47	0.98
Saccarappa West	300	300cfs	150.00	52.32	54.04		54.33	0.033864	4.33	34.61	36.33	0.78
Saccarappa West	300	1000cfs	481.97	52.32	55.74		55.94	0.012137	3.64	132.29	82.99	0.51
Saccarappa West	300	1500cfs	711.32	52.32	56.50		56.70	0.007829	3.58	198.96	91.93	0.43
Saccarappa West	300	500cfs	248.64	52.32	54.65		54.92	0.024524	4.20	59.17	50.84	0.69
Saccarappa West	255	300cfs	150.00	49.74	54.15		54.17	0.000474	0.87	172.52	66.68	0.10
Saccarappa West	255	1000cfs	481.97	49.74	55.70		55.74	0.001239	1.74	278.24	70.89	0.15
Saccarappa West	255	1500cfs	711.32	49.74	56.42		56.49	0.001730	2.15	331.71	77.77	0.18
Saccarappa West	255	500cfs	248.64	49.74	54.71		54.73	0.000729	1.18	210.10	67.83	0.12
Saccarappa West	250	300cfs	150.00	49.74	54.15		54.16	0.000274	0.73	205.13	81.68	0.08
Saccarappa West	250	1000cfs	481.97	49.74	55.70		55.73	0.000604	1.44	334.45	85.91	0.13
Saccarappa West	250	1500cfs	711.32	49.74	56.43		56.48	0.000762	1.80	397.65	87.78	0.15
Saccarappa West	250	500cfs	248.64	49.74	54.71		54.73	0.000393	0.99	251.20	82.83	0.10
Saccarappa West	245	300cfs	150.00	49.75	54.15		54.16	0.000419	0.83	180.54	71.67	0.09
Saccarappa West	245	1000cfs	481.97	49.75	55.69		55.73	0.001087	1.64	293.63	80.86	0.15
Saccarappa West	245	1500cfs	711.32	49.75	56.41		56.47	0.001347	2.02	352.73	82.77	0.17
Saccarappa West	245	500cfs	248.64	49.75	54.71		54.73	0.000624	1.13	220.78	72.82	0.11
Saccarappa West	200	300cfs	150.00	50.83	53.88		54.05	0.028668	3.31	45.30	61.32	0.68
Saccarappa West	200	1000cfs	481.97	50.83	55.40		55.57	0.007171	3.25	148.13	71.84	0.40
Saccarappa West	200	1500cfs	711.32	50.83	56.09		56.29	0.006242	3.58	198.56	74.57	0.39
Saccarappa West	200	500cfs	248.64	50.83	54.46		54.60	0.011862	3.00	82.85	66.77	0.47
Saccarappa West	151	300cfs	150.00	49.00	53.80		53.83	0.001281	1.27	118.03	63.75	0.16
Saccarappa West	151	1000cfs	481.97	49.00	55.29		55.36	0.001943	2.16	223.49	73.83	0.22
Saccarappa West	151	1500cfs	711.32	49.00	55.97		56.08	0.002255	2.59	274.87	76.84	0.24
Saccarappa West	151	500cfs	248.64	49.00	54.36		54.40	0.001595	1.59	156.02	70.67	0.19
Saccarappa West	135	300cfs	150.00	47.41	53.80	49.99	53.81	0.000486	0.97	154.32	58.70	0.11
Saccarappa West	135	1000cfs	481.97	47.41	55.28	51.56	55.34	0.001235	1.91	252.83	70.21	0.18
Saccarappa West	135	1500cfs	711.32	47.41	55.96	52.24	56.04	0.001562	2.36	300.84	71.51	0.20
Saccarappa West	135	500cfs	248.64	47.41	54.35	50.56	54.37	0.000785	1.31	189.16	65.79	0.14
Saccarappa West	110		Bridge									
Saccarappa West	109	300cfs	150.00	46.00	53.79		53.80	0.000196	0.68	221.58	54.00	0.06
Saccarappa West	109	1000cfs	481.97	46.00	55.24		55.28	0.000862	1.59	304.00	62.84	0.13
Saccarappa West	109	1500cfs	711.32	46.00	55.91		55.97	0.001260	2.05	346.15	64.54	0.16
Saccarappa West	109	500cfs	248.64	46.00	54.33		54.35	0.000375	0.99	251.41	55.83	0.08
Saccarappa West	104	300cfs	150.00	46.00	53.79		53.80	0.000080	0.56	269.84	59.00	0.05
Saccarappa West	104	1000cfs	481.97	46.00	55.25		55.27	0.000352	1.34	358.91	62.85	0.10
Saccarappa West	104	1500cfs	711.32	46.00	55.91		55.96	0.000553	1.77	401.15	64.55	0.13
Saccarappa West	104	500cfs	248.64	46.00	54.33		54.34	0.000157	0.82	302.41	60.83	0.06
Saccarappa West	99	300cfs	150.00	46.84	53.79		53.79	0.000154	0.65	232.13	53.99	0.05
Saccarappa West	99	1000cfs	481.97	46.84	55.23		55.27	0.000673	1.54	313.27	57.81	0.12
Saccarappa West	99	1500cfs	711.32	46.84	55.89		55.95	0.001056	2.02	351.64	59.50	0.15
Saccarappa West	99	500cfs	248.64	46.84	54.33		54.34	0.000301	0.95	261.83	55.82	0.08
Saccarappa West	50	300cfs	150.00	46.60	53.77		53.78	0.000316	0.93	160.73	44.18	0.09
Saccarappa West	50	1000cfs	481.97	46.60	55.14		55.21	0.001322	2.10	229.19	56.83	0.18
Saccarappa West	50	1500cfs	711.32	46.60	55.74		55.86	0.001846	2.70	266.19	65.52	0.22
Saccarappa West	50	500cfs	248.64	46.60	54.28		54.31	0.000613	1.35	184.57	48.27	0.12

HEC-RAS Plan: Existing Con (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Saccarappa West	0	300cfs	150.00	49.69	53.76		53.76	0.000279	0.76	196.99	75.69	0.08
Saccarappa West	0	1000cfs	481.97	49.69	55.11		55.15	0.000759	1.59	304.22	86.87	0.14
Saccarappa West	0	1500cfs	711.32	49.69	55.72		55.78	0.001003	2.01	359.12	91.23	0.17
Saccarappa West	0	500cfs	248.64	49.69	54.27		54.29	0.000438	1.05	236.38	78.03	0.11
Saccarappa East	1745	300cfs	150.00	60.44	65.07		65.08	0.000058	0.40	372.44	134.71	0.04
Saccarappa East	1745	1000cfs	518.03	60.44	66.21		66.22	0.000266	0.94	548.98	174.48	0.09
Saccarappa East	1745	1500cfs	788.68	60.44	66.79		66.81	0.000384	1.20	655.24	190.01	0.11
Saccarappa East	1745	500cfs	251.36	60.44	65.45		65.46	0.000118	0.59	426.28	148.74	0.06
Saccarappa East	1744	300cfs	150.00	63.94	64.74	64.73	65.03	0.049518	4.27	35.12	58.58	0.97
Saccarappa East	1744	1000cfs	518.03	63.94	65.49	65.49	66.08	0.042739	6.14	84.31	72.94	1.01
Saccarappa East	1744	1500cfs	788.68	63.94	65.89	65.89	66.62	0.039992	6.85	115.20	80.58	1.01
Saccarappa East	1744	500cfs	251.36	63.94	65.02	64.98	65.38	0.042254	4.83	52.01	63.97	0.94
Saccarappa East	1743	300cfs	150.00	59.86	61.55	61.55	61.97	0.048559	5.20	28.82	34.89	1.01
Saccarappa East	1743	1000cfs	518.03	59.86	62.43	62.50	62.95	0.059701	5.76	89.97	109.56	1.12
Saccarappa East	1743	1500cfs	788.68	59.86	62.67	62.82	63.36	0.071977	6.67	118.30	133.11	1.25
Saccarappa East	1743	500cfs	251.36	59.86	62.07	62.07	62.40	0.054374	4.63	54.30	85.47	1.02
Saccarappa East	1742	300cfs	150.00	55.28	56.60	56.62	56.92	0.061143	4.53	33.10	58.63	1.06
Saccarappa East	1742	1000cfs	518.03	55.28	57.34	57.37	57.77	0.052059	5.22	99.22	125.71	1.04
Saccarappa East	1742	1500cfs	788.68	55.28	57.55	57.63	58.16	0.060565	6.27	125.77	135.33	1.15
Saccarappa East	1742	500cfs	251.36	55.28	56.86	56.88	57.24	0.057902	4.97	50.54	74.76	1.07
Saccarappa East	1741	300cfs	150.00	49.46	54.36	52.58	54.39	0.001843	1.24	120.58	104.61	0.20
Saccarappa East	1741	1000cfs	518.03	49.46	55.75	53.97	55.79	0.001801	1.62	319.69	185.66	0.22
Saccarappa East	1741	1500cfs	788.68	49.46	56.42	54.42	56.47	0.001469	1.76	448.17	197.00	0.21
Saccarappa East	1741	500cfs	251.36	49.46	54.83	53.03	54.86	0.001885	1.46	172.61	120.80	0.21
Saccarappa East	1740.64	300cfs	150.00	50.83	53.86		54.04	0.032116	3.44	43.61	60.71	0.72
Saccarappa East	1740.64	1000cfs	518.03	50.83	55.32		55.53	0.009359	3.64	142.50	71.50	0.45
Saccarappa East	1740.64	1500cfs	788.68	50.83	55.97		56.24	0.008849	4.16	189.81	74.26	0.46
Saccarappa East	1740.64	500cfs	251.36	50.83	54.43		54.58	0.013422	3.13	80.23	66.52	0.50
Saccarappa East	1690.64	300cfs	150.00	49.00	53.78		53.80	0.001324	1.29	116.43	63.16	0.17
Saccarappa East	1690.64	1000cfs	518.03	49.00	55.18		55.27	0.002517	2.41	215.27	73.33	0.25
Saccarappa East	1690.64	1500cfs	788.68	49.00	55.81		55.95	0.003206	3.01	261.98	76.10	0.29
Saccarappa East	1690.64	500cfs	251.36	49.00	54.31		54.35	0.001750	1.65	152.59	70.53	0.20
Saccarappa East	1640.64	300cfs	150.00	47.41	53.75		53.76	0.000504	0.99	151.31	57.41	0.11
Saccarappa East	1640.64	1000cfs	518.03	47.41	55.09		55.16	0.001689	2.16	239.63	69.85	0.21
Saccarappa East	1640.64	1500cfs	788.68	47.41	55.68		55.80	0.002369	2.80	281.25	70.98	0.25
Saccarappa East	1640.64	500cfs	251.36	47.41	54.26		54.29	0.000883	1.37	183.16	65.25	0.14
East Chnl Lower	1562.64	300cfs	300.00	49.20	53.71		53.72	0.000524	0.83	362.93	202.59	0.11
East Chnl Lower	1562.64	1000cfs	1000.00	49.20	55.02		55.06	0.000971	1.54	650.24	225.90	0.16
East Chnl Lower	1562.64	1500cfs	1500.00	49.20	55.60		55.66	0.001207	1.92	781.79	228.27	0.18
East Chnl Lower	1562.64	500cfs	500.00	49.20	54.20		54.22	0.000691	1.07	468.29	218.74	0.13
East Chnl Lower	1491.15	300cfs	300.00	51.44	53.12	53.12	53.53	0.057933	5.10	58.77	73.39	1.01
East Chnl Lower	1491.15	1000cfs	1000.00	51.44	54.14	54.14	54.74	0.049978	6.22	160.78	133.43	1.00
East Chnl Lower	1491.15	1500cfs	1500.00	51.44	54.55	54.55	55.28	0.047394	6.83	219.46	151.53	1.00
East Chnl Lower	1491.15	500cfs	500.00	51.44	53.48	53.48	53.98	0.055866	5.69	87.87	90.64	1.02
East Chnl Lower	1473.87	300cfs	300.00	46.54	48.68	49.41	51.36	0.340099	13.14	22.84	24.36	2.39
East Chnl Lower	1473.87	1000cfs	1000.00	46.54	50.19	51.40	53.18	0.142178	13.86	72.16	36.08	1.73
East Chnl Lower	1473.87	1500cfs	1500.00	46.54	51.11	52.08	53.76	0.159913	13.05	114.97	71.05	1.81
East Chnl Lower	1473.87	500cfs	500.00	46.54	49.17	49.98	51.97	0.278790	13.44	37.20	33.07	2.23
East Chnl Lower	1358.96	300cfs	300.00	36.41	41.55	38.41	41.56	0.000203	0.66	453.90	199.13	0.08
East Chnl Lower	1358.96	1000cfs	1000.00	36.41	41.82	39.73	41.88	0.001566	1.97	508.59	201.21	0.22
East Chnl Lower	1358.96	1500cfs	1500.00	36.41	42.14	40.33	42.25	0.002394	2.61	573.65	203.36	0.27
East Chnl Lower	1358.96	500cfs	500.00	36.41	41.60	38.83	41.62	0.000525	1.08	464.09	199.52	0.12
East Chnl Lower	1230.90	300cfs	300.00	34.41	41.54		41.54	0.000059	0.52	580.97	146.15	0.05
East Chnl Lower	1230.90	1000cfs	1000.00	34.41	41.72		41.76	0.000566	1.65	607.79	147.04	0.14
East Chnl Lower	1230.90	1500cfs	1500.00	34.41	41.96		42.05	0.001066	2.33	643.24	148.14	0.20
East Chnl Lower	1230.90	500cfs	500.00	34.41	41.57		41.58	0.000159	0.85	585.75	146.32	0.08
East Chnl Lower	1191.96	300cfs	300.00	35.40	41.53	37.33	41.54	0.000140	0.80	376.19	92.67	0.07
East Chnl Lower	1191.96	1000cfs	1000.00	35.40	41.62	38.70	41.72	0.001450	2.60	384.53	92.77	0.23
East Chnl Lower	1191.96	1500cfs	1500.00	35.40	41.74	39.30	41.97	0.002964	3.79	396.23	92.91	0.32
East Chnl Lower	1191.96	500cfs	500.00	35.40	41.54	37.83	41.57	0.000384	1.32	377.65	92.69	0.12
East Chnl Lower	1191.90		Bridge									
East Chnl Lower	1146.96	300cfs	300.00	34.49	41.53		41.53	0.000058	0.66	454.54	88.57	0.05
East Chnl Lower	1146.96	1000cfs	1000.00	34.49	41.59		41.67	0.000617	2.17	460.49	88.75	0.17
East Chnl Lower	1146.96	1500cfs	1500.00	34.49	41.69		41.85	0.001311	3.20	469.16	89.01	0.25
East Chnl Lower	1146.96	500cfs	500.00	34.49	41.54		41.56	0.000159	1.10	455.56	88.61	0.09

HEC-RAS Plan: Existing Con (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East Chnl Lower	1116.94	300cfs	300.00	35.50	41.52		41.53	0.000100	0.78	382.63	84.90	0.07
East Chnl Lower	1116.94	1000cfs	1000.00	35.50	41.53		41.63	0.001109	2.61	383.18	85.00	0.22
East Chnl Lower	1116.94	1500cfs	1500.00	35.50	41.54		41.77	0.002484	3.91	383.99	85.15	0.32
East Chnl Lower	1116.94	500cfs	500.00	35.50	41.52		41.55	0.000278	1.31	382.73	84.92	0.11
East Chnl Lower	0	300cfs	300.00	26.48	41.52	28.56	41.52	0.000002	0.16	1905.32	260.62	0.01
East Chnl Lower	0	1000cfs	1000.00	26.48	41.52	29.66	41.52	0.000023	0.52	1905.32	260.62	0.03
East Chnl Lower	0	1500cfs	1500.00	26.48	41.52	30.21	41.53	0.000051	0.79	1905.32	260.62	0.05
East Chnl Lower	0	500cfs	500.00	26.48	41.52	28.94	41.52	0.000006	0.26	1905.32	260.62	0.02

APPENDIX I: CONSTRUCTION SCHEDULE

S.D. Warren Co., Westbrook, Maine
Saccarappa Surrender Application, West Channel Design
Construction Schedule
October, 2015

Task	TaskDescription	Construction Duration (weeks)																																										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
1	Prepare access to island	■																																										
2	Decommision Power House		■	■	■	■	■																																					
3	Divert river flow into tailrace & west channel						■	■																																				
4	Remove east portion of east spillway								■	■	■																																	
5	Divert river flow into eastern channel											■																																
6	Cofferdam in upper west channel & tailrace											■	■	■	■																													
7	Continue removal of eastern spillway											■	■	■																														
8	Remove west spillway & forebay structures													■	■	■	■	■	■	■	■	■	■	■																				
9	Fill tailrace channel													■	■	■	■	■	■	■	■	■	■	■																				
10	Construct Denil fishway & appurtenances															■	■	■	■	■	■	■	■	■	■	■	■	■	■															
11	Construct western channel fish passage																		■	■	■	■	■	■	■	■	■	■	■															
12	Removal of temp structures																													■	■	■												
13	Decommission transmission line																												■	■	■	■												
14	Testing & adaptive management of fish passage																															■	■	■	■									
15	Commence fishway operations																																			■								

APPENDIX J: ORDER ISSUING NEW LICENSE, EEL WEIR, FLOW RELEASE MODIFICATION (03/23/2015)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

150 FERC ¶ 62,185
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

S.D. Warren Company Project No. 2984-042

ORDER ISSUING NEW LICENSE

(Issued March 23, 2015)

INTRODUCTION

1. On March 29, 2002, S.D. Warren Company (S.D. Warren or licensee) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),[1] an application for a new license to continue operation and maintenance of the Eel Weir Project No. 2984 (Eel Weir Project or project). The project's authorized capacity being licensed is 1.8 megawatts (MW). The project is located at the outlet of Sebago Lake on the Presumpscot River in Cumberland County, Maine.[2] The project does not occupy federal land.

2. As discussed below, this order issues a new license for the project.

BACKGROUND

3. The Commission issued the original license for the project in 1984, and the license expired on March 31, 2004.[3] Since then, S.D. Warren has operated the project under annual licenses pending the disposition of its new license application.

4. On August 2, 2002, the Commission issued a public notice that was published in the *Federal Register* accepting the application for filing and setting October 2, 2002, as the deadline for filing motions to intervene and protests.[4] The U.S. Department of the

---

[1] 16 U.S.C. §§ 797(e) and 808 (2012).

[2] The Presumpscot River is a navigable waterway of the United States. Central Maine Power Company, 36 F.P.C. 967, 968 (1966). Therefore, section 23(b)(1) of the FPA, 16 U.S.C. § 817(1)(2012), requires the project to be licensed.

[3] 26 FERC ¶ 62,241 (1984). The license was effective April 1, 1962, and terminated 20 years from the first day of the month in which the license was issued.

[4] 67 *Fed. Reg*. 51559-51560 (August 8, 2002).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Interior (Interior) and the Maine State Planning Office (Maine SPO); American Rivers and Friends of the Presumpscot River; Friends of Sebago Lake; Stephen M. Kasprzak; Sebago Lake Marina; Town of Frey, Maine; Sebago Lake Landowners/Users Coalition; Douglas C. Fray and Northwest Shores Association; Sebago Pines Property Owners and Road Users Association; Kettle Cove Marina; Sebago Harbor Association; and the Maine Public Employees for Environmental Responsibility filed timely motions to intervene.[5] State Representative Janice E. Labrecque and Richardson's Boat Yard and Marina filed late motions to intervene, which were granted.[6]

5. On June 5, 2003, the Commission issued a public notice that was published in the *Federal Register* indicating that the application was ready for environmental analysis and setting August 4, 2003, as the deadline for filing comments, recommendations, terms and conditions, and fishway prescriptions.[7] Interior (on behalf of the U.S. Fish and Wildlife Service (FWS)), Maine SPO (on behalf of the Maine Department of Marine Resources and the Maine Department of Inland Fisheries and Wildlife (Maine DIFW)), Maine Department of Environmental Protection (Maine DEP), Mr. Kasprzak, Friends of Sebago Lake, Charles M. Frechette, and Sebago Lake Landowners/Users Coalition filed comments and recommendations. S.D. Warren filed reply comments on September 17, 2003.

6. A draft Environmental Assessment (draft EA) was prepared by Commission staff and issued on July 11, 2005, analyzing the impacts of the proposed project and alternatives to it. Fourteen entities, agencies, and interest groups and 42 individuals filed comments on the draft EA.[8] A final EA was prepared by Commission staff and issued on November 29, 2005.

7. On May 26, 2011, S.D. Warren filed an amendment to its license application,[9] proposing changes to project operations and lake level management, as well as several other measures (described in more detail below).

---

[5] Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c) (2014).

[6] *See* Secretary's notice issued June 18, 2014 (unpublished).

[7] 68 *Fed. Reg*. 34941-34942 (June 11, 2003).

[8] *See* Final EA at 16.

[9] S.D. Warren filed additional information related to its amendment on June 6,

(continued ...)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

8. On June 9, 2011, the Commission issued a public notice of the amendment proposal and established July 11, 2011, as the deadline for filing comments on the proposal.[10] Maine Department of Conservation (Maine DOC), Maine DIFW, Maine DEP, Mr. Frechette, Harvey Dutil, Mr. Kasprzak, Neil Garston, and Friends of Sebago Lake filed timely comments in response to the notice.[11] S.D. Warren filed reply comments on July 25, 2011, June 4, 2012, and October 26, 2012.

9. A supplemental EA analyzing the impacts of the amendment proposal and alternatives to it was prepared by Commission staff and issued on April 8, 2014. S.D. Warren, Maine DEP, Maine State Historic Preservation Commission, and 16 individuals filed comments on the supplemental EA. Substantive comments on the supplemental EA are discussed below. The interventions, comments, recommendations, and conditions have been fully considered in determining whether, and under what conditions, to issue this license.

PROJECT DESCRIPTION

A. Project Area

10. The Eel Weir Project is located at Sebago Lake near the cities of Standish and Windham, in Cumberland County, about 14 miles northwest of Portland, Maine. The Presumpscot River originates at the outlet of Sebago Lake and flows in a southeasterly direction for about 25 miles before emptying into the Atlantic Ocean at Casco Bay.

B. Project Facilities

11. The Eel Weir Project consists of the 12-mile-long, 28,771-acre Sebago Lake with a useable storage volume of 177,120 acre-feet at a normal maximum elevation of 266.65 feet mean sea level (msl). Although Sebago Lake is a natural lake, a 1,350-foot-long, 22-foot-high dam controls Sebago Lake between elevations 248.0 feet msl and 266.65 feet msl. Flow from Sebago Lake passes through a screened canal intake gatehouse into a 4,820-foot-long earthen power canal. Flow in the power canal passes into the bypassed reach through a 40-foot-long canal waste gate structure with three minimum flow gates

---

2011.

[10] 76 *Fed. Reg*. 35213 (June 16, 2011).

[11] After the public notice period ended, more than 60 comment letters were filed.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

located just downstream of the canal intake gatehouse. Flow in the power canal also passes downstream through a 69-foot-wide by 32-foot-long powerhouse that houses three turbine-generators with a total installed capacity of 1.8 MW. Flows discharged from the powerhouse enter a 35-foot-long tailrace that leads to the Presumpscot River.

12. The project also includes a 3.5-mile-long, 11-kilovolt (kV) transmission line connecting the powerhouse to S.D. Warren's Dundee Project No. 2942 powerhouse for distribution to S.D. Warren's paper mill located in Westbrook, Maine. A more detailed project description is contained in ordering paragraph (B)(2).

13. The project creates a 6,700-foot-long bypassed reach. Minimum flows are released to the bypassed reach over the spillway or through the power canal's three minimum flow gates. There are no recreation facilities at the project.

C. Project Boundary

14. The existing project boundary encloses the dam, embankments, intake gatehouse, powerhouse, tailrace, Sebago Lake at elevation 267.0 feet msl, and the power canal at elevation 262.65 feet msl. The project boundary does not enclose the project's transmission line as discussed further below.

D. Current Project Operation

15. The Eel Weir Project is operated in a store-and-release mode to achieve the lake elevations and flow releases required by a Commission-approved Lake Level Management Plan (LLMP)[12] and a 1992 order requiring minimum flows in the Eel Weir bypassed reach.[13] The LLMP specifies that Sebago Lake be managed to achieve target elevations of: (1) 266.65 feet msl (spillway crest) no sooner than May l and no later than the second week in June; (2) 265.17 feet msl (approximately 1.5 feet below the spillway crest) on August 1; (3) 265.0 feet msl on September 1 and 263.3 feet msl on October 15; (4) 262.5 feet msl on November 1; and (5) 263.5 feet msl on January 1. The LLMP also requires that Sebago Lake be drawn down to a target elevation of 261.0 feet msl or lower between November 1 and January 1 in 2 out of every 9 years to enhance sand accretion at the Lake's beaches. The lake levels required by the LLMP are intended to protect aquatic

---

[12] 79 FERC ¶ 61,064 (1997), *order on reh'g* 80 FERC ¶ 61,207 (1997), and as amended in 92 FERC ¶ 62,180 (2000), *order on reh'g* 94 FERC ¶ 61,034 (2001).

[13] 58 FERC ¶ 62,006 (1992).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

resources and minimize erosion along the shoreline, while providing adequate conditions for recreation and boating.

16. The currently-required minimum bypassed reach flows are: (1) 25 cfs from November 1 through March 31; (2) 75 cfs from April 1 through June 30; (3) 50 cfs from July 1 through August 31; and (4) 75 cfs from September 1 through October 31 to protect water quality, aquatic resources, and angling opportunities in the Presumpscot River.

17. The project's average annual generation is approximately 12,300 megawatt-hours (MWh).

E. Proposed Operation and Environmental Measures

18. S.D. Warren proposes to operate the project using a "flow-based regime" whereby it would maintain target discharges that vary by time of year, instead of trying to meet specific target lake levels as it does under the LLMP. For example, when Sebago Lake is between elevations 266.65 feet msl and 262.0 feet msl, S.D. Warren would release a total project discharge[14] of: (1) 408 to 1,000 cfs from June 16 through October 15; (2) 500 to 1,000 cfs from October 16 through November 15; and (3) 500 to 1,167 cfs from November 16 through June 15. When Sebago Lake is above elevation 266.65 feet msl, S.D. Warren would release a total project discharge up to 1,500 cfs. When Sebago Lake is below elevation 262.0 feet msl, S.D. Warren would release a 408 cfs total project discharge. Under average inflow conditions, S.D. Warren's proposed operation would increase flood storage and decrease lake levels throughout most of the year when compared to current operation under the LLMP.[15]

19. In addition to the proposed flow-based regime, S.D. Warren proposes to: (1) discontinue drawing Sebago Lake down to a target elevation of 261.0 feet or lower between November 1 and January 1 in 2 out of every 9 years; (2) limit releases to the bypassed reach to 75 cfs, except when lake elevations exceed 266.65 feet msl; (3) discharge up to 1,000 cfs (the maximum capacity) through the powerhouse during high flow events to reduce releases to the bypassed reach; (4) continue to release the required minimum bypassed reach flows of 25 cfs from November 1 to March 31, 75 cfs from April 1 to June 30, 50 cfs from July 1 to August 31, and 75 cfs from September 1 to

---

[14] Total project discharge would be the sum of flow released from the powerhouse and the flow released into the bypassed reach.

[15] *See* supplemental EA at 88-90.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

October 31; (5) continue to operate an existing lake level gage; and (6) continue to cooperate and coordinate with upstream pond owners to manage flood flows.[16]

20. S.D. Warren also proposes to: (1) consult with resource agencies on the need for upstream and downstream American eel passage at the Eel Weir dam; (2) evaluate opportunities for establishing a conservation easement on lands around the bypassed reach in consultation with the town of Windham as part of a Land for Maine's Future program; (3) plan and design any changes to current land use(s) to be consistent with the aesthetic character of the project area; (4) protect and mitigate project-related effects on archeological sites, in consultation with the Maine Historic Preservation Office (Maine SHPO); and (5) protect project structures that have been determined to meet National Register of Historic Places criteria in consultation with the Maine SHPO. Lastly, S.D. Warren proposes to discontinue required wetlands monitoring because it believes that wetlands monitoring data collected to date show little change in wetlands from 1998 to 2002.

SUMMARY OF LICENSE REQUIREMENTS

21. As summarized below, this license, which authorizes 1.8 MW of renewable energy, requires a number of measures to protect and enhance fisheries resources, water quality, recreation, and cultural resources at the project.

22. To protect geology and soils, aquatic resources, and to improve public boat access, the license requires the conditions of the Maine DEP water quality certification (discussed further below).

23. To protect water quality, aquatic resources, and angling opportunities in the Presumpscot River, the license requires S.D. Warren to release a minimum flow into the bypassed reach of 75 cfs from November 1 through March 31 and 125 cfs from April 1 through October 31, and to develop a minimum flow release plan. To determine the effects of the minimum flows on coldwater refugia[17] in the bypassed reach, the license requires a bypassed reach monitoring plan.

---

[16] According to the operating parameters for Sebago Lake approved by order amending LLMP issued on August 28, 2000, 92 FERC ¶ 62,180 (2000), every effort will be made by the Maine Department of Conservation to delay or reduce drawdown flows from the upstream Brandy Pond and Long Lake through the state-owned Songo Lock and Dam.

[17] Coldwater refugia are areas within a river that is colder than the surrounding

(continued ...)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

24. To manage flood flows at the project, the license requires S.D. Warren to develop a protocol for coordinating project operation with the upstream owner of Brandy Pond and Long Lake located on the Songa River.

25. To enhance and maintain recreation opportunities at the project, the license requires S.D. Warren to develop and implement a land use and recreation management plan (LRMP) to: (1) guide how project lands will be managed, including considerations for maintaining the aesthetic character of project lands; (2) maintain angling access to the Eel Weir bypassed reach; and (3) provide improved public boat access to Sebago Lake.

26. To protect cultural resources, the license requires S.D. Warren to implement a Programmatic Agreement (PA) that requires development of a Historic Properties Management Plan (HPMP).

WATER QUALITY CERTIFICATION

27. Under section 401(a)(1) of the Clean Water Act (CWA),[18] the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides that the certification shall become a condition of any federal license that authorizes construction or operation of the project.[19]

28. On March 19, 2002, S.D. Warren applied to the Maine DEP for water quality certification for the Eel Weir Project. Each year from March 19, 2002, until January 25, 2011, S.D. Warren withdrew and refiled its water quality certification application (for a total of nine times). On August 30, 2011, the Maine DEP issued certification for the Eel Weir Project that includes 12 conditions which are set forth in Appendix A of this order and incorporated into the license by ordering paragraph (D).[20] Four of the conditions are general or administrative and are not discussed.[21]

---

waters, usually due to input from a spring or colder tributary. Coldwater refugia can provide important habitat for trout and salmon during the summer.

[18] 33 U.S.C. § 1341(a)(1) (2012).

[19] 33 U.S.C. § 1341(d) (2012).

[20] The Maine Board of Environmental Protection (Maine Board) affirmed the

(continued ...)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Certification Conditions

29. Conditions 1 and 2 require the licensee to manage lake levels and project releases according to a flow-based regime consistent with S.D. Warren's proposal.

30. Specifically, condition 1 requires that lake levels be managed between 262.0 and 266.65 feet msl, with lake levels above or below this range triggering increased or decreased flow releases, respectively, and with a goal of achieving a level of 266.0 feet between May 1 and June 15 each year. Condition 1 also requires a plan to monitor lake levels.

31. Condition 2 requires S.D. Warren to: (1) release a minimum total project flow of 270 cfs at all times except between June 1 and September 30 when the minimum total project flow release will be 408 cfs to facilitate spillage at the downstream Dundee and Gambo Dams[22] to maintain dissolved oxygen in the Presumpscot River; (2) release a minimum flow of 75 cfs into the bypassed reach downstream of the dam at all times; and (3) develop a minimum flow monitoring plan.

32. Condition 3 requires S.D. Warren to limit flow releases from the project to 1,000 cfs or less during the landlocked Atlantic salmon spawning season (i.e., October 16 through November 15).

---

water quality certification and denied the appeals filed by Mr. Frechette of Sebago Lake Marina and Douglas Watts. The Maine Supreme Judicial Court denied Mr. Watts' appeal of the Maine Board's decision. *See Watts v. Board of Environmental* Protection, 2014 ME 91, 97A.3d 115.

[21] The general conditions state that: (1) any variations from proposed plans are subject to review and approval by the Maine DEP; (2) the licensee must comply with all federal, state, and local licenses, permits, and conditions; (3) the certification shall be effective concurrent with the date of the new license; and (4) if part of the certification is declared to be unlawful by a reviewing court, the remainder of the certification shall remain in effect.

[22] *See S.D. Warren Company*, Order Issuing New License, 105 FERC ¶ 61,010 (2003). Flow releases at the Eel Weir Project are needed to meet the required flow releases at the downstream Dundee and Gambo Dams to maintain dissolved oxygen levels in the Presumpscot River.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

33. Conditions 4 and 5 require the licensee to install and operate upstream and downstream eel passage facilities within 2 years of license issuance. The licensee must study the effectiveness of the facilities, conduct the approved effectiveness studies, submit the results of the studies, and implement any changes to the facilities required by Maine DEP.

34. Condition 6 reserves the right of Maine DEP to require the licensee to install fish passage facilities to pass anadromous and/or resident fish species upstream and downstream through the project area.

35. Condition 7 reserves the right of Maine DEP to require the licensee to modify lake level management to ensure that project operation does not cause or contribute to a decline in Sebago Lake water quality.

36. Condition 8 requires the licensee to improve public boat access to Sebago Lake after conducting a study and preparing a report.

37. The certification includes conditions that require S.D. Warren to file plans and reports with Maine DEP, notify Maine DEP of modifications to project operations, and implement unspecified long-term changes to project operations or facilities based on new information or results from studies or monitoring without Commission review or approval. Therefore, Article 401 of this license requires the licensee to file, for Commission approval, plans required by the certification conditions, file reports with the Commission, notify the Commission of planned and unplanned deviations from license requirements, and file amendment applications, as appropriate.

COASTAL ZONE MANAGEMENT ACT

38. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),[23] the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.

39. By letter filed November 14, 2011, the Maine SPO notified S.D. Warren that the Eel Weir Project is not within the Maine designated coastal zone and that no consistency certification is required.

---

[23] 16 U.S.C. § 1456(c)(3)(A) (2012).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

SECTION 18 FISHWAY PRESCRIPTION

40. Section 18 of the FPA[24] provides that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

41. By letter filed August 1, 2003, Interior requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 406 of the license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Eel Weir Project.

THREATENED AND ENDANGERED SPECIES

42. Section 7(a)(2) of the Endangered Species Act of 1973[25] requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

43. In a letter filed November 1, 2011, the U.S. Fish and Wildlife Service stated that no federally listed threatened or endangered species or critical habitat are known to occur in the project area. In the supplemental EA, staff concluded that issuing a license would not affect federally listed threatened or endangered species or critical habitat.[26] Therefore, no further action under the Endangered Species Act is required.

NATIONAL HISTORIC PRESERVATION ACT

44. Under section 106 of the National Historic Preservation Act (NHPA)[27] and its implementing regulations,[28] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register), defined as historic properties, and afford the

---

[24] 16 U.S.C. § 811 (2012).

[25] 16 U.S.C. § 1536(a) (2012).

[26] *See* supplemental EA at 28.

[27] 16 U.S.C. § 470 *et seq*. (2012).

[28] 36 C.F.R. Part 800 (2014).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

45. The Eel Weir Project, including the dam, canal, forebay, powerhouse, and tailrace, is eligible for inclusion in the National Register as a historic district because it is associated with events that have made significant contributions to the broad patterns of our history in the context of industry and engineering.[29] Additionally, two surveys conducted in 2001 and 2002 by S.D. Warren within the project area identified 47 archaeological sites potentially eligible for inclusion in the National Register and concluded that none of the archaeological sites are located in the in the project's Area of Potential Effect (APE).[30]

46. To protect listed and eligible historic properties that could be affected by project-related activities, the Commission executed a Programmatic Agreement (PA) with the Maine SHPO on September 14, 2005, and invited S.D. Warren and a number of entities to concur with the stipulations of the PA.[31] The U.S. Bureau of Indian Affairs and the Passamaquoddy Tribe at Pleasant Point Reservation concurred. The PA requires S.D. Warren to prepare an Historic Properties Management Plan (HPMP), in consultation with the Maine SHPO, that contains the principles and procedures to address the continued use, and protection of, historic properties; mitigation of unavoidable adverse effects; compliance with laws and regulations of human remains; and discovery of previously unidentified resources to ensure that any adverse effects on known and unknown

---

[29] The term "eligible for inclusion in the National Register" includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria at 36 C.F.R. Part 60 (2014).

[30] The project's APE is co-terminus with the project boundary (i.e., lands around Sebago Lake and its tributaries to an elevation of 267.0 feet msl, the 6,700-foot-long bypassed reach, and the properties occupied by the project works). *See* supplemental EA at 239 through 243.

[31] The entities included the Passamaquoddy Tribe, Pleasant Point Reservation; Passamaquoddy Tribe, Indian Township Reservation; Houlton Maliseet Band of Indians; Penobscot Indian Nation; Aroostook Band of Micmac Indians; U.S. Bureau of Indian Affairs; Maine DEP; and Friends of Sebago Lake.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

potential historic properties and archaeological resources are satisfactorily resolved over the term of any new license issued for the project. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 408 requires S.D. Warren to implement the PA and to file its HPMP, prepared in consultation with the Maine SHPO, with the Commission for approval within one year of license issuance.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

47. Section 10(j) of the FPA[32] requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act[33] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

48. In response to the June 5, 2003 public notice that the project was ready for environmental analysis, Interior[34] filed five recommendations under section 10(j). On August 5, 2003, Maine SPO filed eleven recommendations under section 10(j), but those recommendations were subsequently withdrawn.[35]

49. One of the five recommendations filed by Interior was determined to be outside the scope of section 10(j) and is discussed in the next section.

50. In the final EA, staff adopted Interior's recommendation to develop and implement a lake water level and stream flow monitoring plan. The plan is required in the license by Articles 401 and 404.

51. In the draft EA, Commission staff made an initial determination that Interior's remaining recommendations may be inconsistent with the comprehensive planning

---

[32] 16 U.S.C. § 803(j)(1) (2012).

[33] 16 U.S.C. §§ 661 *et seq.* (2012).

[34] Interior filed recommendations on August 1, 2003.

[35] *See* Maine DEP's August 30, 2011 water quality certification at 3 ("the terms and conditions in the attached water quality certification represent the State's sole, official recommendations regarding the subject application for new license, superseding all preliminary recommendations by individual State agencies.").

20150323-3007 FERC PDF (Unofficial) 03/23/2015

standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA. Those recommendations were: (1) release 200 cfs to the bypassed reach from April 1 to October 31, and 115 cfs from November 1 to March 31; (2) limit Sebago lake fluctuation to no more than 2 feet from April 1 to December 15, and no more than 3 feet from December 16 to March 31; and (3) develop a shoreline management plan (SMP) to protect riparian resources. By letter dated July 29, 2005, Commission staff advised Interior of its preliminary determination and attempted to resolve the apparent inconsistency. By letter dated September 14, 2005, Commission staff notified Interior that a section 10(j) meeting to attempt to resolve the remaining issues would be held in the city of Hallowell, Maine.

52. Commission staff held a section 10(j) meeting on September 22, 2005.[36] At the meeting, the inconsistency regarding Sebago Lake level fluctuations was resolved. During the meeting, Interior clarified that the purpose of the recommendation was to protect riparian areas, and Interior and Commission staff agreed that an SMP, or similar measure, could be used to address Interior's riparian habitat protection goals. In the supplemental EA, staff recommended an LRMP that would protect riparian habitat. Article 407 of the license requires an LRMP, similar to staff's recommendation and discussed further below.

53. The two unresolved recommendations from Interior are discussed below.

Bypassed Reach Minimum Flows

54. Interior recommended minimum flows in the bypassed reach of 200 cfs from April 1 through October 31 and 115 cfs from November 1 through March 31. In the draft EA,[37] Commission staff concluded that, although Interior's recommended flows would improve fish habitat for desirable species, they would also improve habitat for smallmouth bass, which is considered undesirable under Maine DIFW's management goals for landlocked Atlantic salmon and brook trout. Additionally, staff concluded that Interior's flows would eliminate the coldwater refugia in the bypassed reach. Therefore, in the draft EA, Commission staff recommended minimum flows of 50 cfs from November 1 to March 31, 100 cfs from April 1 to June 30, 75 cfs from July 1 to August 31, and 100 cfs from September 1 to October 31.

---

[36] A summary of the 10(j) meeting was issued on October 11, 2005.

[37] *See* draft EA at 211.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

55. At the 10(j) meeting, Interior reiterated the fish habitat improvements that would occur under its recommended bypassed reach flow regime, stated that it did not consider the presence of smallmouth bass to be a threat to salmonid management goals, and emphasized that flows higher than Commission staff recommended in the draft EA could still be compatible with protecting the coldwater refugia. In the final EA,[38] staff revised its recommended minimum flows to 125 cfs from April 1 through October 31 and 75 cfs from November 1 through March 31, concluding that this flow regime would provide the best balance between cost, availability of aquatic habitat, protection of coldwater refugia, and angler suitability. Staff recommended the same minimum flows in the supplemental EA.[39] This license requires the staff-recommended minimum flows for the bypassed reach, as well as monitoring to determine the effect of the minimum flows on the coldwater refugia in the bypassed reach.

56. For the reasons discussed above, in accordance with FPA section 10(j)(2)(A), Interior's recommended bypassed reach minimum flows are inconsistent with the comprehensive planning standard of sections 4(e) and 10(a) of the FPA. In accordance with section 10(j)(2)(B) of the FPA, the measures required by the license, including the minimum bypassed reach flows required by Article 402, and the bypassed reach monitoring plan required by Article 404, will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project.

Shoreline Management Plan

57. Interior recommended that S.D. Warren develop an SMP to protect riparian resources around Sebago Lake. At the 10(j) meeting, Interior discussed the need to identify critical habitat areas and land ownership for implementing specific protection measures. In addition, Interior recommended that the Commission exert authority over unregulated activities such as temporary boat docks within the project boundary.

58. After the section 10(j) meeting held on September 22, 2005, Commission staff recommended an SMP in the final EA[40] that would include conservation easements,

---

[38] *See* final EA at 237-238.

[39] *See* supplemental EA at 275.

[40] *See* final EA at 228-229. In the draft EA, Commission staff recommended an SMP that would include conservation easements and buffer zones. The SMP would require S.D. Warren to establish a buffer zone on project lands within 200 feet of the normal high water elevation around Sebago Lake and identify additional lands within 200

(continued ...)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

buffer zones, mapping Sebago Lake's shoreline, and a permitting program for unregulated activities to protect recreational opportunities and shoreline habitat at the project. Commission staff revised its recommended SMP in the final EA, because the installation and use of temporary docks and seasonal water supply lines could disturb the shoreline areas of Sebago Lake and adversely affect riparian and other sensitive habitats.

59. In the 2011 amendment to its application, S.D. Warren indicated that there is no need for an SMP or a permit program because it would duplicate existing state and local shoreline permitting and zoning requirements. In the supplemental EA,[41] Commission staff reassessed this issue and concluded that because there is no evidence in the record of significant shoreline effects associated with shoreline use or construction of structures, a comprehensive SMP is not needed and would not be worth the cost. Instead, Commission staff recommended that S.D. Warren develop and implement an LRMP to, among other things, guide how lands within the project boundary will be managed.

60. As recommended by staff in the supplemental EA, Article 407 of this license requires S.D. Warren to develop and implement an LRMP to guide how project lands will be managed. The LRMP also requires S.D. Warren to develop and implement plans to maintain angling access to the bypassed reach and improve public boat access to Sebago Lake (discussed further below). In addition, Article 409 of this license allows S.D. Warren to regulate project land and water for specific uses and occupancies, including landings, boat docks, or similar structures, to enhance the project's scenic, recreational, and other environmental values.

61. For the reasons discussed above, in accordance with FPA section 10(j)(2)(A), Interior's recommended SMP is inconsistent with the comprehensive planning standard of sections 4(e) and 10(a) of the FPA. In accordance with section 10(j)(2)(B) of the FPA, the measures required by the license, including the LRMP required by Article 407, and the regulation of use and occupancy on project lands and waters required by Article 409, will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by this project.

SECTION 10(a)(1) OF THE FPA

---

feet of the normal high water elevation around Sebago Lake that may warrant protection. *See* draft EA at 213-214.

[41] *See* supplemental EA at 278-279.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

62. Section 10(a)(1) of the FPA[42] requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

63. Interior made one recommendation under section 10(j) that is not a specific measure to protect, mitigate damages to, or enhance fish and wildlife. Consequently, this recommendation is considered under the broad public-interest standard of section 10(a)(1).[43]

64. Interior recommended that S.D. Warren monitor recreation use at the project and file a report with the Commission. In the supplemental EA,[44] Commission staff concluded that Interior's recommendation is consistent with the Commission's FERC Form No. 80 reporting requirement which requires licensees to file a report of recreation use with the Commission every 6 years throughout the license term.[45] This program should be sufficient to address the adequacy of recreation facilities and the need for additional facilities to meet future demand at the project and no additional monitoring is necessary to address Interior's recommendation.

COMMENTS ON THE SUPPLEMENTAL EA

65. As stated above, S.D. Warren, Maine DEP, and other entities and interested individuals filed comments on the supplemental EA issued on April 8, 2014. The comments are addressed below.

A. Proposed Flow-Based Regime Operation

66. In the supplemental EA, staff recommended that S.D. Warren operate the project in accordance with the current Commission-approved LLMP from May 15 to October 15 to maintain higher Sebago Lake levels for recreational boating during the late-summer

---

[42] 16 U.S.C. § 803(a)(1) (2012).

[43] *See* supplemental EA at 282-283.

[44] *See* supplemental EA at 279-280.

[45] *See* 18 C.F.R. § 8.11 (2014).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

and early fall periods, and from October 16 through May 14, operate the project in a flow-based regime as proposed by S.D. Warren.

67. S.D. Warren states that the proposed flow-based regime is an attempt to balance conflicting uses, i.e., higher lake levels for recreational uses and more flow releases to benefit downstream aquatic resources. Maine DEP indicated that the staff recommendation to operate the project under a lake-level based plan during the spring, summer, and early-fall months (May 15 through October 15), will decrease flows in the Presumpscot River during later summer and could cause non-attainment of state water quality standards for dissolved oxygen (DO) standards and result in the loss of sensitive organisms such as stoneflies and mayflies.

68. Mr. Frechette recommends modifying the staff-recommended October 15 water surface target elevation,[46] to 263.5 feet msl with an allowable target range of ± 0.5 feet to allow S.D. Warren to retain water in the lake from storm events in August and September and release the water to benefit downstream aquatic resources. Mr. Frechette states that water levels at or slightly above 263.5 feet msl in October would help to mitigate harm to aquatic habitat and mammals. In the supplemental EA,[47] staff concluded that fall lake levels under its recommended alternative would reduce any adverse effects on littoral zone habitat (used by aquatic species and mammals), compared to the S.D. Warren's proposal and the certification conditions.

69. Roger Wheeler opposes the staff recommendation to operate the project under a lake-level based plan during the spring, summer, and early-fall months (May 15 through October 15) because the higher lake levels would exacerbate beach erosion. In the supplemental EA,[48] Commission staff determined that operating the project under the LLMP between May 15 through October 15 would reduce erosion potential during the late-October to May period when average wind speeds would be the highest, but would maintain higher lake levels during the summer peak and early fall recreation season when average wind speeds and potential beach erosion would be the lowest and public use the highest.

---

[46] In the supplemental EA, staff recommended an October 15 water surface target elevation of 263.3 feet msl.

[47] *See* supplemental EA at 190.

[48] *See* supplemental EA at 59 and 273.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

70. Certification conditions 1 and 2, which are mandatory and included in this license, require S.D. Warren to operate the project throughout the year according to the flow-based regime included in its 2011 proposal. Therefore, the project will be operated as recommended in S.D. Warren's, Maine DEP's, and Roger Wheeler's comments on the supplemental EA and the modification proposed by Mr. Frechette in comments on the supplemental EA cannot be implemented. In the supplemental EA, Commission staff concluded that there would be some benefit under the flow-based regime from less shoreline erosion associated with more frequent lower lake levels, but the flow-based regime would result in lower lake levels during the recreation season, especially during dry, low inflow years.

B. Bypassed Reach Minimum Flows

71. S.D. Warren states that the staff-recommended 125-cfs minimum bypassed reach flows from April 1 to October 31 are higher than needed, would result in a negative impact to coldwater refugia, would require expensive modifications to the project's canal waste gates, and would reduce generation.[49] In the supplemental EA, Commission staff summarized the habitat available under a range of minimum flows and concluded that, generally, the amount of riffle and run habitat in the bypassed reach increases for juvenile and adult life stages of brook trout and landlocked Atlantic salmon (the primary life stages and species for which the bypassed reach is managed by Maine DIFW) with flows up to approximately 200 cfs. The one exception is adult landlocked Atlantic salmon, for which the most habitat occurs at a flow of 400 cfs. Angler suitability of the bypassed reach increases up to flows of 115 cfs before declining slightly at 172 cfs. Flows above 75 cfs in the summer decrease the size of coldwater refugia and coldwater refugia are eliminated at flows of 172 cfs and higher. Based on this information, the increase from 75 cfs to 125 cfs provides measureable benefits to aquatic habitat and angler suitability, with a slight risk of affecting coldwater refugia.[50] To document the effects on coldwater refugia, Commission staff recommended monitoring the coldwater refugia following implementation of its recommended minimum flows (discussed further below).

72. S.D. Warren estimates that the modifications to the canal waste gates to release the 125-cfs minimum flow would cost over $100,000 and these flows would reduce annual generation by about 1,000 MWh. Because the benefits of the staff-recommended

---

[49] S.D. Warren indicates that the three existing minimum flow waste gates can only discharge 25 cfs, for a total discharge of 75 cfs (see license application at A-13).

[50] *See* supplemental EA at 274-275.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

minimum flows are worth the cost discussed here and below, Article 402 requires minimum flows in the bypassed reach of 125 cfs from April 1 through October 31, and Article 403 requires that S.D. Warren develop and implement a minimum flow release plan.

C. Flow and Temperature Monitoring

73. S.D. Warren states that the temperature monitoring component of the staff-recommended operation compliance monitoring plan is only necessary because the staff-recommended minimum flows for the bypassed reach are too high and would eliminate coldwater refugia. S.D. Warren also states that temperature monitoring may be technically difficult and expensive. While monitoring to determine effects on coldwater refugia may require multiple measurements within each refuge area, the monitoring is necessary to identify possible effects on coldwater refugia and would be worth the additional cost and effort. If the temperature monitoring demonstrates adverse effects to the coldwater refugia from the minimum flows, the Commission may consider requiring changes to the minimum flow requirements.

D. Conservation Easement

74. During pre-filing consultation, Maine DIFW requested that S.D. Warren grant a perpetual easement to the state to ensure that land necessary to access the fishery in the Eel Weir bypassed reach remains open to the public.[51] Maine DIFW indicated that sales of land by S.D. Warren raised concern about the future of S.D. Warren-owned lands that are used for accessing the bypassed reach and associated parking.[52] Additionally, the town of Windham requested, during pre-filing consultation, that S.D. Warren consider establishing a land grant and/or perpetual easement with the town for land around the bypassed reach.[53] In response to this information, S.D. Warren proposed, in its license application, to evaluate opportunities for establishing a conservation easement on S.D. Warren-owned land around the bypassed reach with the town of Windham as part of the Land for Maine's Future program. In addition, the Recreation Resources Study Report

---

[51] *See* Maine DIFW's May 5, 2000, and September 31, 2001, letters in Appendix B-3 of the license application; and August 5, 2003, filing.

[52] *Ibid.*

[53] *See* the town of Windham's August 19, 1999, letter in Appendix B-3 of the license application.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

prepared by S.D. Warren during pre-filing concluded that increased use of the bypassed reach fishery could result in the need for more formal access facilities.[54]

75. In the supplemental EA,[55] Commission staff recommended that any new license include procedures for consulting with the town of Windham and Maine DIFW on establishing a conservation easement as part of the staff-recommended LRMP. In its comments on the supplemental EA, S.D. Warren states that although it proposed to initiate discussions with the town of Windham on developing a conservation easement, it should not be required to create a conservation easement because no entity has agreed to accept a conservation easement to date. In addition, S.D. Warren states that there is insufficient justification to require any lands placed in a conservation easement to be included in the project boundary.

76. Maine DIFW states that the bypassed reach fishery attracts some of the highest angler use of any comparable fishery in the state.[56] Estimates from 1993 to 2000 indicate that the number of angler days[57] in the bypassed reach ranged from 2,811 in 1993 to 8,801 in 2000.[58] To support the year-round fishery, Maine DIFW stocks the bypassed reach with brook trout throughout the spring and again in the fall each year.[59] In addition, Maine DIFW occasionally stocks the bypassed reach with landlocked Atlantic salmon and brown trout to diversify angling opportunities.[60] Anglers access the fishery from a parking area directly adjacent to the east side of the bypassed reach. From the parking area, trails on S.D. Warren-owned land lead to angling access locations along the

---

[54] *See* Recreation Resources Study Report at 51 in Appendix D-7 of the license application.

[55] *See* supplemental EA at 279.

[56] *See* Maine DIFW's May 5, 2000, letter in Appendix B-3 of the license application.

[57] An angler day is one person fishing for any amount of time on a single day.

[58] *See* Recreation Resources Study Report at 44 in Appendix D-7 of the license application.

[59] *See* http://www.maine.gov/ifw/fishing/opportunities/sebagolakes.htm.

[60] *See* Maine DIFW's June 17, 2011, filing at 3.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

bypassed reach; however; none of these access areas are located within the project boundary.

77. In the supplemental EA,[61] staff determined that ensuring public access to the bypassed reach would be important for maintaining this popular recreational fishery. Because it is uncertain whether a conservation easement could be negotiated to protect angling access to the bypassed reach, this license does not require S.D. Warren to conduct additional consultation to that end. Instead, Article 407 requires S.D. Warren to consult with Maine DIFW, Maine DEP, and the town of Windham to develop a plan for maintaining the existing access areas on S.D. Warren-owned lands and enclosing these areas within the project boundary as project recreation areas under the required LRMP. This will ensure that angling access to the bypassed reach is maintained by the licensee throughout the term of the license.

E. Wetlands Monitoring

78. S.D. Warren conducted wetlands monitoring from 1998 through 2002 to determine the effects of the existing LLMP on wetlands within or adjacent to Sebago Lake.[62] In the 2005 final EA, staff determined that the results of the wetlands monitoring showed minimal changes in species composition and percent total cover of vegetation in the monitored wetlands. However, staff concluded that a definitive answer on the relative importance of water levels compared to other factors could not be determined using the limited data available.[63] Therefore, staff recommended that S.D. Warren develop and implement a similar plan to monitor wetlands once every 5 years for term of license.[64]

79. In its 2011 amendment to its application, S.D. Warren proposed to discontinue wetlands monitoring in the project area, because monitoring data indicate little change in wetlands from existing project operation, and its proposed flow-based operation would be even less likely to affect wetlands. In the supplemental EA, staff recommended an elevation-based LLMP during the growing season that is similar to staff-recommended

---

[61] *See* supplemental EA at 235 and 293.

[62] On April 21, 1997, the Commission issued an order approving settlement and amending license that required S.D. Warren to conduct wetlands monitoring in the project area for a maximum of five years. *See* 79 FERC ¶ 61,064 (1997).

[63] *See* final EA at 161.

[64] *See* final EA at 228.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

operation in the 2005 final EA; therefore, staff continued to recommend that S.D. Warren develop and implement a plan to monitor wetlands on a 5-year cycle.[65] In its comments, S.D. Warren states that the additional wetlands monitoring recommended by staff in the supplemental EA is unnecessary. In regard to the flow-based regime, staff concluded in the supplemental EA that the flow-based operation proposed by S.D. Warren would provide more natural variability in lake levels during the growing season and monitoring wetlands would not be necessary.[66] Because certification condition 1.A (ordering paragraph (D)) requires flow-based operation of the project year-round, wetlands monitoring is not needed and the license does not require the development and implementation of a plan to monitor wetlands.

F. Boat Launch Facility

80. In the supplemental EA,[67] Commission staff recommended that S.D. Warren develop a plan to construct, operate, and maintain a shallow-water boat launch on S.D. Warren-owned lands in the Sebago basin[68] as part of the LRMP. Certification condition 8 requires S.D. Warren to conduct a study in consultation with Maine DIFW that evaluates options for providing improved public boat access to Sebago Lake. In addition, certification condition 8 states that after reviewing the study report, Maine DEP will reopen the water quality certification to require improved public boat access to Sebago Lake as it deems necessary and appropriate.

81. In its comments on the supplemental EA, S.D. Warren states that it should not be required to install the shallow-water boat launch facility recommended by Commission staff without conducting the study and consulting with Maine DIFW as required by certification condition 8. In addition, S.D. Warren states that Maine DIFW has expressed

---

[65] The growing season is approximately May 1 through September 15.

[66] In the supplemental EA, the 2014 staff alternative with mandatory conditions did not recommend that S.D. Warren develop and implement a plan to monitor wetlands. *See* supplemental EA at 20 and 269.

[67] *See* supplemental EA at 278-279.

[68] Sebago basin is a shallow bay that forms the Sebago Lake outlet on the east side of the lake, immediately upstream of the Eel Weir dam. *See* supplemental EA, Appendix A, figure 2.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

a willingness to consider alternatives to constructing a new boat launch to improve public boat access to Sebago Lake.[69]

82. Constructing a shallow-water boat launch in the Sebago basin would provide an alternative location for private dock owners to launch boats during the off season[70] when boating access is not available from existing public launches or private docks due to lower lake levels. However, because conducting the study and consultation required by certification condition 8 will help inform a decision on the most effective option for improving public boat access to Sebago Lake, this license does not require S.D. Warren to construct a shallow-water boat launch in the Sebago basin. Instead, Article 407 requires that the LRMP include measures for providing improved public boat access to Sebago Lake based on the results of the public boat access study required by certification condition 8.

G. American Eel Passage

83. S.D. Warren states that, although it accepts the certification requirement to develop a plan for upstream and downstream American eel passage, it continues to believe that the plan is premature until eel passage is required at the downstream North Gorham Project (FERC Project No. 2519). S.D. Warren requests that the Commission allow sufficient time to develop the plan, particularly the downstream eel passage plan, because downstream passage will require modification to one or more of the project's gates and is complicated by incomplete study results from downstream projects and the need to protect Atlantic salmon spawning and exclude other species of fish from entering Sebago Lake.

84. American eels occur in the Presumpscot River, both upstream and downstream of the project dam. By order issued February 26, 2009 (126 FERC ¶ 62,152), the Commission approved S.D. Warren's upstream eel passage plan for its five projects located in the lower Presumpscot River downstream of the Eel Weir Project, and upstream eel passage facilities are now operational at each of those projects. In addition, conditions 4 and 5 of the certification require that upstream and downstream eel passage facilities be operational within two years of license issuance. Even though there are no passage facilities at the North Gorham Project which is located about 1.4 miles downstream of the Eel Weir powerhouse, successful operation of the eel passage

---

[69] *See* Maine DIFW's June 17, 2011, filing at 4.

[70] The off season is October 16 through May 14.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

facilities at S.D. Warren's five downstream projects will likely result in higher numbers of eels reaching the Eel Weir dam. Without safe and effective upstream passage, these eels may not be able to access the habitat upstream of Eel Weir dam. The required eel passage facilities will ensure that eels can access to the habitat upstream of Eel Weir dam and will limit entrainment by providing safe and effective downstream passage for eels migrating downstream from Sebago Lake and its tributaries.

85. The plans required by certification conditions 4 and 5, combined with the Commission approval required by Article 401, would allow sufficient consultation and review to ensure that upstream and downstream American eel passage facilities are designed and implemented at the project in a timely, efficient, and effective way.

H. Upstream and Downstream Passage for Landlocked Atlantic Salmon

86. Friends of Sebago Lake states that Commission staff did not adequately consider the potential benefits of upstream and downstream passage for landlocked Atlantic salmon at the Eel Weir dam and that Commission staff relied too heavily on Maine DIFW's opposition to landlocked Atlantic salmon passage in its analysis. In the supplemental EA,[71] staff evaluated the potential benefits of providing passage for landlocked Atlantic salmon and concluded that passage could restore historically significant spawning habitat and provide access to smelt forage in Sebago Lake, both of which could enhance the landlocked Atlantic salmon fishery. However, Commission staff also indicated that Maine DIFW, which manages landlocked Atlantic salmon in the project area, does not support providing upstream and downstream passage at the Eel Weir dam for several reasons.[72] Maine DIFW indicates that if downstream passage is provided at Eel Weir dam, then landlocked Atlantic salmon may spawn in the bypassed reach rather than the Jordan River where Maine DIFW collects broodstock for its landlocked Atlantic salmon hatchery program.[73] A reduction in the availability of broodstock from the Jordan River could adversely affect Maine DIFW's landlocked Atlantic salmon hatchery program, which supports fisheries in the project area and elsewhere in Maine. Maine DIFW also indicated that if an upstream passage facility is provided at Eel Weir dam, then the landlocked Atlantic salmon that currently inhabit the bypassed reach and support popular fishery there could migrate out of the bypassed reach

---

[71] *See* supplemental EA at 184-187.

[72] *See* supplemental EA at 281.

[73] The Jordan River is a tributary of Sebago Lake.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

into Sebago Lake. A loss of fish from the bypassed reach could reduce the popularity and success of the bypassed reach fishery. Finally, Maine DIFW indicates that an upstream passage facility could introduce new fish species from downstream areas into Sebago Lake and would increase the risk for introducing fish diseases. Introducing new species and diseases into Sebago Lake could adversely affect the ecology and existing aquatic community within Sebago Lake. In the supplemental EA, Commission staff considered these potential effects and concluded that the potential benefits of providing upstream and downstream passage at Eel Weir dam for landlocked Atlantic salmon do not outweigh the potential risks to the existing fisheries and Commission staff did not recommend providing upstream and downstream passage at Eel Weir dam. For these reasons, this license does not require upstream or downstream passage at Eel Weir dam for landlocked Atlantic salmon at this time.

I. Historic Properties Management

87. S.D. Warren conducted two Phase 0 Historic Archaeological Surveys in 2001 and 2002 within the project's APE that identified 67 sites in the project area. Of the 67 sites, 47 are, or may be, eligible for listing on the National Register. The survey report recommended a Phase One archaeological study at 44 of the sites, a Phase Two archaeological study at 2 sites, and a Phase Three archaeological study at one site that is deemed to be eligible for the National Register. The Phase 0 surveys also assessed the archaeological potential of the project shoreline and concluded that there are no historic archaeological sites in the project's APE.[74]

88. The PA discussed above, requires S.D. Warren to prepare an HPMP that includes a plan to address the National Register eligibility of, and the effects attributable to the project on, the 47 archaeological sites that have been identified for further investigation. However, in comments, S.D. Warren states that the Phase 0 surveys conducted in 2001 and 2002 may no longer reflect current conditions, project operations, and the ability to obtain access to private lands, and it proposes to file an updated Phase 0 analysis within one year of license issuance and complete a Phase One study within three years of completing the Phase 0 update. Because of the amount of time that has passed since the project's Phase 0 surveys were completed, it is appropriate to update the Phase 0 analysis prior to preparing the HPMP. Therefore, Article 408 of the license requires S.D. Warren to file an HPMP within one year of license issuance for Commission approval that includes, in part, an updated Phase 0 analysis and a description of and schedules for

[74] *See* supplemental EA at 239-243.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

further work to be completed (e.g., Phase One, Phase Two, Phase Three surveys) as determined through consultation with the Maine SHPO.

J. Shoreline Erosion

89. Deb Boxer recommends lowering the staff-recommended May 15 target lake level for Sebago Lake from 266.15 feet msl to 264.5 feet msl for the first five years of flow-based operation to rebuild the lake shoreline. Certification condition 1.A, which is mandatory and included in this license, requires S.D. Warren to maintain lake levels within a target range with the goal of achieving a target lake level of 266.0 feet msl between May 1 and June 15 annually. Therefore, the modification to the May 15 target lake level proposed by Ms. Boxer cannot be implemented.

90. Ms. Boxer also recommends that S.D. Warren be required to develop a photo record of at least five major beaches on the lake during the first five years of flow-based operation. In the supplemental EA,[75] staff determined that the flow-based operation required by certification condition 1.A would provide more natural variability in lake levels than the LLMP. Staff indicated that average lake levels would likely be lower than recent levels in the spring and fall, when wind speeds are generally higher. The lower lake levels should reduce beach erosion associated with wave action and storm events during the spring and fall and may result in sand accretion to beaches. Therefore, a photo record of lake beaches is not needed.

91. Lastly, Ms. Boxer states that there should be a moratorium on shoreline cement wall construction or large boulder hardscaping until a comprehensive review of other major lakes around the country determines the effects of these structures on scour. In the supplemental EA,[76] staff indicated that the State of Maine's Natural Resources Protection Act protects Sebago Lake through a permitting program in which activities requiring a permit include constructing structures within Sebago Lake.[77] In addition, Article 409 of this license permits the licensee to grant permission to construct embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline, if the proposed structure is consistent with the purposes of protecting and

---

[75] *See* supplemental EA at 58-59.

[76] *See* supplemental EA at 238.

[77] The permitting program requires a permit for dredging, dewatering, filling or constructing structures within Sebago Lake.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

enhancing the scenic, recreational, and other environmental values of the project. The licensee must also ensure that the structures for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements.[78] The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing these types of modifications, if necessary.

K. Downstream Cumulative Affects – Red Tide

92. Mr. Kasprzak suggests that operation of the project under the existing LLMP results in unnatural low and high flow releases of fresh water that may be contributing to an increase in the number and intensity of red tide events in Casco Bay.[79, 80] While operating the project under the LLMP may at times result in flows that are lower or higher than would occur without the project, there is no information in the record to suggest these effects result in a significant change in the freshwater discharge into Casco Bay or have any influence on the number or intensity of red tides in Casco Bay. Analysis by Maine DEP of this issue has been inconclusive,[81] and a report on Casco Bay red tide events found that red tides may be triggered more by regional water circulation than by local nutrient inputs.[82] In addition, the report did not identify freshwater input to Casco

---

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

[79] Casco Bay is an inlet of the Gulf of Maine and has a drainage are of 986 square miles and is about 25 miles downstream from the project. In addition to the Presumpscot River, the other freshwater tributaries to Casco Bay are the Royal, Fore, and Stroudwater Rivers.

[80] Red tide is the common name for a phenomenon known as an algal bloom that takes on a red or brown color and can occur in an estuarine or marine environment.

[81] *See* Maine DEP's August 30, 2011 filing at 38.

[82] Battelle, 2010. Red Tides in Inshore and Offshore Casco Bay and Their Relationship to Local and Gulf of Maine Physical and Biological Conditions. Final Report. Available at http://www.cascobayestuary.org/wp

(continued ...)

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Bay as a factor in the occurrence of red tide events. In any case, this license does not require S.D. Warren to operate according to the LLMP and instead the project will be operated according to the flow-based regime proposed by S.D. Warren and required by the certification (ordering paragraph (D)).

L. Project Economics

93. In its license application S.D. Warren reports the average annual generation of the project as 12,300 MWh.[83] In the supplemental EA (and previous EAs), Commission staff used 12,300 MWh to represent the average annual generation that would occur under the no action alternative.[84] S.D. Warren states that the supplemental EA overestimates average annual generation and that over the past five years (from 2009 through 2013), the average annual generation of the project was 6,604 MWh.[85] S.D. Warren provides no explanation for why average annual generation over the past five year is almost half the average annual generation that it reported in its license application. It is possible generation was lower because inflow to Sebago Lake was below average or because the project was offline more than prior years; however, no flow or operation data are available to verify these possibilities. Because S.D. Warren's recent estimate is only based on a five year period that could be influenced by anomalous conditions, the economic analysis in this order relies on the original estimate for average annual generation that S.D. Warren provide in its license application, which is likely based on a longer period of record.

94. S.D. Warren also indicates that implementing the staff-recommended minimum bypassed reach flow would cost over $100,000 because the three existing minimum flow gates would need to be modified to release the minimum flows, and increasing the minimum bypassed reach flow would reduce annual generation by about 1,000 MWh. In the supplemental EA,[86] staff estimated that the cost to modify two gates to release the 125-cfs minimum flow would be $66,960, and staff estimated that lost generation due to

---

content/uploads/2014/08/2010_battelle_red_tides_full_report.pdf.

[83] *See* the license application at A-9.

[84] *See* the supplemental EA at 253.

[85] *See* NJS Law PLC letter filed on May 8, 2014, on behalf of S.D. Warren.

[86] *See* supplemental EA at 260.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

the 125-cfs minimum flows would be 956 MWh. Staff's cost estimate to modify two minimum flow gates is about two-thirds the cost of S.D. Warren's cost estimate to modify three minimum flow gates; however, S.D. Warren indicates that all three gates will require modification in order to release the 125-cfs minimum flow. Using this new information, the economic analysis presented in this order has been revised to include S.D. Warren's $100,000 estimate to modify all three minimum flow gates. Because S.D. Warren did not describe how it calculated its 1,000 MWh estimate of lost generation for the 125-cfs minimum flow, the economic analysis in this license order uses staff's estimate of lost generation associated with the 125-cfs minimum flow.

95. As discussed above, in the supplemental EA Commission staff recommended that S.D. Warren develop a plan to construct, operate, and maintain a shallow-water boat launch on S.D. Warren-owned lands in the Sebago basin as part of the staff-recommended LRMP. Staff estimated that the cost to construct the shallow-water boat launch in Sebago basin would be $53,570 and operation and maintenance (O&M) would be $2,680 annually.

96. Certification condition 8 requires S.D. Warren to conduct a study in consultation with Maine DIFW to evaluate options for providing improved public boat access to Sebago Lake. In addition, certification condition 8 states that, after reviewing the study report, Maine DEP will reopen the water quality certification to require improved public boat access to Sebago Lake as it deems necessary and appropriate. Because conducting the study and consultation required by certification condition 8 will help determine the most effective option for improving public boat access on Sebago Lake, this license does not require S.D. Warren to construct a shallow-water boat launch in the Sebago basin. Article 401 of this license requires S.D. Warren to file the study report with the Commission and reserves the Commission's right to require changes to project facilities based on the information contained in the study report. Staff estimates that the annual cost to conduct the study and file the study report will be $528. The economic analysis presented in this order has been revised to include this estimate.

97. S.D. Warren contends that staff underestimated the cost of annual O&M in the supplemental EA and states that because of the additional measures included in the staff-alternative, annual O&M costs would be over $100,000 above the current O&M costs during each of the first four years of the new license.[87] In a letter filed on December 4,

[87] The estimated annual O&M cost would initially increase over four years to implement measures required by this license, and then stabilize or gradually increase over the term of the license.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

2002, S.D. Warren indicated the average annual O&M cost of the project is $100,189 (2002$). In the supplemental EA, staff estimated that the annual O&M costs under the existing license (i.e., the no action alternative) would be $228,153 (2014$), and under the staff alternative with mandatory conditions, which includes the same measures as required by this license, the costs would be $343,619 (2014$).[88] The difference between staff's estimates for annual O&M under the no action alternative and the staff alternative with mandatory conditions is $115,466, which exceeds the net increase in annual O&M costs estimated by S.D. Warren.

98. S.D. Warren indicates that the economic analysis in the supplemental EA does not account for $400,000 of repair work completed in the project canal area in 2014. When estimating the costs of relicensing a project, the Commission includes ongoing and new costs and does not consider expenses incurred during the prior license. Because the cost of the canal repair was incurred under the existing license,[89] the cost estimates presented in this order do not include the cost of the canal repairs.

ADMINISTRATIVE PROVISIONS

A. Annual Charges

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

B. Exhibit F and G Drawings

100. Exhibit F drawings sheets 1 and 2 filed on March 29, 2002, are approved and made part of the license (ordering paragraph (C)). The Exhibit F drawing sheet 3 filed on December 1, 2014, showing the cross section of the repaired power canal was approved and made part of the license on January 30, 2015.[90] The Commission requires licensees to file sets of approved project drawings in electronic file format. Article 202 requires the filing of these drawings.

101. The three Exhibit G drawings filed on March 29, 2002, labeled sheet 1, 2, and 3 of 3 do not include three known reference points and are not stamped by a registered land

---

[88] *See* supplemental EA at 267.

[89] *See* Notice of Authorization for Continued Project Operation issued April 7, 2004.

[90] *See* 150 FERC ¶ 62,079 (2015).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

surveyor. In addition, sheet 1 shows and labels the project boundary contour line around Sebago Lake, but does not show and label the upstream extent of the project boundary enclosing Sebago Lake, sheet 2 does not show and label the project's transmission line connected to the project powerhouse, and sheet 3 includes a note stating "project boundary is 10-feet each side of the transmission line (not shown on this drawing because of scale)," but does not show and label where the project's transmission line interconnects with the existing Dundee Project No. 2942 powerhouse. Further, the Exhibit G drawings do not show or label lands owned by S.D. Warren or lands acquired by easement or lease.[91]

102. For these reasons, Exhibits G, sheets 1, 2, and 3 are not approved and are not made part of the license. Article 203 requires the licensee to file revised Exhibit G drawings that: (1) show three known reference points; (2) have been stamped by a registered land surveyor; (3) enclose within the project boundary all principal project works necessary for operation and maintenance of the project, including the upstream extent of Sebago Lake and the project's existing transmission line connected to the project powerhouse and connected to the Dundee Project powerhouse; and (4) show and label all lands within the project boundary owned by S.D. Warren or lands acquired by easement or lease.

C. Amortization Reserve

103. The Commission requires that for new major licenses, non-municipal licensees set up and maintain an amortization reserve account upon license issuance. Article 204 requires the establishment of the account.

D. Headwater Benefits

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

E. Use and Occupancy of Project Lands and Waters

---

[91] Section 4.41(h)(4) of the Commission's regulations require for non-federal lands within the project boundary, an Exhibit G that identify lands owned in fee by the applicant and lands the applicant plans to acquire in fee, and lands the applicant has acquired or plans to acquire rights to occupancy and use other than by fee title by easement or lease.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

105. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 409 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting and single family boat docks. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

F. Project Land Rights Progress Report

106. According to S.D. Warren, it owns approximately 292 acres of land in the project area around the project structures and adjacent to the Eel Weir bypassed reach. Of this total, 11.7 acres are located within the project boundary, including a small portion of the Sebago Lake shoreline near the project intake facilities, the Eel Weir dam and associated facilities, the power canal, and the Eel Weir powerhouse and tailrace.[92] Lands along the Sebago Lake shoreline are primarily privately owned; however, some shoreline lands are publicly owned.[93] S.D. Warren did not indicate whether it owns or has an easement for the land along the 3.5-mile-long Eel Weir Project transmission line.

107. Standard Article 5 set forth in Form L-3 requires the licensee to acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project, within five years. In order to monitor compliance with Article 5, Article 206 requires the licensee to file no later than four years after license issuance, a report detailing its progress on acquiring title in fee or the necessary rights to all lands within the project boundary. The report shall include specific documentation on the status of the rights that have been acquired as of the filing date of the progress report, and a plan and schedule to acquire all remaining land prior to the five-year deadline.

G. Start of Construction

108. Article 301 requires the licensee to commence construction of the project works (i.e., modifications to three minimum flow gates) within two years from the issuance date of the license and complete construction within five years from the issuance date of the license.

H. Review of Final Plans and Specifications

---

[92] *See* supplemental EA at 277.

[93] *See* license application figure E.1.7-2.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

109. Article 302 requires the licensee to provide the Commission's Division of Dam Safety and Inspections New York Regional Office (D2SI-NYRO) with a reservoir operation report prior to implementing project operation required by this license.

110. Article 303 requires the licensee to provide the Commission's D2SI-NYRO with cofferdam construction drawings.

111. Article 304 requires the licensee to provide the Commission's D2SI-NYRO with final contract drawings and specifications—together with a supporting design report consistent with the Commission's engineering guidelines.

112. Where new construction or modifications to the project are involved, the Commission requires licensees to file revised drawings of project features as-built. Article 305 provides for the filing of these drawings.

113. Article 306 requires the licensee to provide the Commission's D2SI-NYRO with project modification resulting from environmental requirements.

I. Commission Approval of Resource Plans, Notification, and Filing of Amendments

114. In Appendix A, there are certain certification conditions that either do not require the licensee to file plans with the Commission for approval; do not require the licensee to file reports with the Commission; or require agency, but not Commission notification of emergencies and other activities. Therefore, Article 401 requires the licensee to: file the plans with the Commission for approval; file reports with the Commission after monitoring has been completed; notify the Commission of emergencies and other activities; and file amendment applications, as appropriate.

STATE AND FEDERAL COMPREHENSIVE PLANS

115. Section 10(a)(2)(A) of the FPA,[94] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[95] Under section 10(a)(2)(A), federal and state agencies filed 26 comprehensive plans that address

[94] 16 U.S.C. § 803(a)(2)(A) (2012).

[95] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2014).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

various resources in Maine. Of these, the staff identified and reviewed 10 comprehensive plans that are relevant to this project.[96] No conflicts were found.

APPLICANT'S PLANS AND CAPABILITIES

116. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,[97] Commission staff evaluated S.D. Warren's record as a licensee for these areas: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public. This order adopts staff's findings in each of the areas.

A. Conservation Efforts

117. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. All power generated by the Eel Weir Project is used by S.D. Warren's paper production mill located in Westbrook, Maine.

118. Our review of S.D. Warren filing under section 16.10 and other publicly available information indicates that S.D. Warren supports a variety of energy conservation measures including routinely upgrading industrial components such as motors and a high-efficiency lighting program. We conclude that S.D. Warren is making a reasonable effort in encouraging energy conservation.

B. Compliance History and Ability to Comply with the New License

119. Based on a review of S.D. Warren's compliance with the terms and conditions of the existing license, staff finds that S.D. Warren's overall record of making timely filings and complying with its license is satisfactory. Therefore, staff believes S.D. Warren can satisfy the conditions of a new license.

---

[96] The list of applicable plans can be found in section IX of the supplemental EA for the project.

[97] 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2012).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

C. Safe Management, Operation, and Maintenance of the Project

120. Staff has reviewed S.D. Warren's record of management, operation, and maintenance of the Eel Weir Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. Staff concludes that the dam and other project works are safe, and that there is no reason to believe that S.D. Warren cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

121. Staff has reviewed S.D. Warren's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that S.D. Warren regularly inspects the project turbine-generator units to ensure they continue to perform in an optimal manner, schedules maintenance to minimize effects on energy production, and since the project has been in operation, has undertaken several initiatives to ensure the project is able to operate reliably into the future. Staff concludes that S.D. Warren is capable of operating the project to provide efficient and reliable electric service to its paper mill.

E. Need for Power

122. To assess the need for power, staff looked at the licensee's present and anticipated future use of project power, together with the need for power in the operating region in which the project is located. Historically, the Eel Weir Project has generated an average of 12,300 MWh annually and as licensed the average annual generation will be reduced. Electricity generated from the Eel Weir Project will help fulfill S.D. Warren's power needs at its paper mill.

123. Further, the project is located in the Northeast Power Coordinating Council, Inc. (NPCC) region of the North American Electric Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a 10-year period. NERC's most recent report on annual supply and demand projections indicates that, for the period 2014-2023, summer peak demand in the region is expected to increase at an average rate of 0.84 percent per year. The project, as licensed, has the potential to displace about 11,804 MWh of this demand. Staff concludes that the project's power will help continue to meet S.D. Warren's power needs and displace the need for power in the NPCC region.

F. Transmission Services

124. The project includes a 3.5-mile-long transmission line that connects the generators in the project powerhouse to S.D. Warren's Dundee Project No. 2942 powerhouse for

20150323-3007 FERC PDF (Unofficial) 03/23/2015

transmission to S.D. Warren's paper mill located in Westbrook, Maine. S.D. Warren is proposing no changes that would affect its own or other transmission services in the region. The project and project transmission line are important elements in providing power and voltage control to S.D. Warren.

G. Cost Effectiveness of Plans

125. S.D. Warren plans to make a number of operational modifications to enhance environmental resources affected by the project. Based on S.D. Warren's record as an existing licensee, staff concludes that these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

126. S.D. Warren provided extensive opportunity for public involvement in the development of its application for a new license for the Eel Weir Project. During the previous license period S.D. Warren maintained lake levels to provide water related recreational activities such as swimming, fishing and boating access, and maintained year round downstream flows to enhance the public use of project lands and facilities such as angling downstream of the dam in the bypassed reach. S.D. Warren uses the project to help meet the power needs of its paper mill.

PROJECT ECONOMICS

127. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,[98] the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

128. In applying this analysis to the Eel Weir Project, staff considered three options: no-action alternative, S.D. Warren's proposal, and the project as licensed herein. Under the no-action alternative, the project would continue to operate as it does now. The

[98] 72 FERC ¶ 61,027 (1995).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

project has an installed capacity of 1.8 MW, has a dependable capacity of 0.38 MW, and generates an average of 12,300 MWh of electricity annually. The average annual project cost is about $228,153, or $18.55/MWh. When we multiply our estimate of average generation by the alternative power cost of $36.83/MWh,[99] staff gets a total value of the project's power of $453,009 in 2015 dollars. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power. Therefore, the project costs $224,856, or $18.28/MWh, less to produce power than the likely alternative cost of power.

129. As proposed by S.D. Warren, the levelized annual cost of operating the Eel Weir Project is $268,719, or $21.39/MWh. The proposed project would generate an average of 12,563 MWh of energy annually. When we multiply our estimate of average generation by the alternative power cost of $36.83/MWh, staff gets a total value of the project's power of $462,695, in 2015 dollars. Therefore, in the first year of operation, the project would cost $193,976, or $15.44/MWh, less than the likely alternative cost of power.

130. As licensed herein with mandatory conditions and staff measures, the levelized annual cost of operating the project would be about $348,095, or $29.49/MWh. The proposed project would generate an average of 11,804 MWh of energy annually. When we multiply our estimate of average generation by the alternative power cost of $36.83/MWh, staff gets a total value of the project's power of $434,741 in 2015 dollars. Therefore, in the first year of operation, project power would cost $86,646, or $7.34/MWh, less than the likely cost of alternative power.

COMPREHENSIVE DEVELOPMENT

131. Sections 4(e) and 10(a)(1) of the FPA[100] require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

---

[99] The alternative power cost of $36.83 per MWh is based on the U.S. Energy Information Administration fuel cost data.

[100] 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

132. The supplemental EA for the project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the supplemental EA and the comments thereon, licensing the Eel Weir Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of this license.

133. Based on an independent review and evaluation of the Eel Weir Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the supplemental EA, the proposed Eel Weir Project, with the staff-recommended measures, is best adapted to a comprehensive plan for improving or developing the Presumpscot River.

134. This alternative was selected because: (1) issuance of a new license will serve to maintain a beneficial, and dependable source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreation resources, and historic properties; and (3) the 1.8 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

LICENSE TERM

135. Section 15(e) of the FPA[101] provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for projects with extensive measures.[102] This license authorizes no new capacity, a moderate amount of new construction including upstream and downstream eel passage facilities and modifications to the minimum flow gates, and a moderate amount of new environmental mitigation measures including increasing minimum flows in the bypassed reach. Consequently, a 40-year license term for the Eel Weir Project is appropriate.

The Director Orders:

---

[101] 16 U.S.C. § 808(e) (2012).

[102] *See Consumers Power Co.*, 68 FERC ¶ 61,077 at 61,383-84 (1994).

20150323-3007 FERC PDF (Unofficial) 03/23/2015

(A) This license is issued to S.D. Warren Company (licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the Eel Weir Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

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

(2) Project works consisting of: (a) a 1,350-foot-long dam, that includes: (i) a 900-foot-long, non-overflow concrete retaining wall and earth-fill east embankment that varies in height from a few inches to 20 feet; (ii) a 115-foot-long, 22-foot-high stone masonry and concrete spillway; (iii) a 35-foot-long, 17-foot-wide stone masonry and concrete river gatehouse with five 6.4-foot-high, 4.8-foot-wide wooden gates, (iv) a 260-foot-long stone masonry and earth-fill west embankment; and (v) a 40-foot-long, 12-foot-wide canal intake gatehouse on the west embankment with four 8.8-foot-high, 7-foot-wide wooden intake gates; (b) a 90-foot-long fish screen with ¾-inch clear-bar spacing located immediately upstream of the canal intake gatehouse; (c) a 4,820-foot-long, 15-foot-deep earthen power canal; (d) a 40-foot-long, 19-foot-high canal waste gate structure with three 17-foot-wide, 11-foot-high steel slide gates; (e) a minimum flow gate located within each steel slide gate, with a maximum hydraulic capacity of 25 cubic feet per second (cfs); (f) the 28,771 acre Sebago Lake with a gross storage volume of 330,000 acre-feet and useable storage of 177,120 acre-feet at a normal maximum elevation of 266.65 feet mean sea level; (g) a 6,700-foot-long bypassed reach; (h) a 69-foot-wide, 32-foot-long powerhouse containing three turbine-generator units rated at 600 kilowatts (kW), for a total installed capacity of 1.8 MW; (i) a 35-foot-long, 32-foot-wide tailrace; (j) a 3.5-mile-long, 11-kilovolt transmission line connecting the powerhouse to S.D. Warren's Dundee Project (P-2942); and (k) appurtenant facilities.

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

<u>Exhibit A:</u> The following sections of Exhibit A filed on March 29, 2002:

Page A-3 entitled "Project Description", pages A-11 through A-16 entitled "Project Structures", and Table A-1 on pages A-18 and 19.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Exhibit F: The following Exhibit F drawing numbers 1001 and 1002 filed on March 29, 2002, and Exhibit F drawing number 1003 filed on December 1, 2014:

Exhibit F Drawing	FERC No. 2984-	Description
F-1	1001	Floor Plan and Elevation
F-2	1002	Powerhouse Building Sections
F-3	1003	Headworks Plan, Profile, and Sections

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

(C) The Exhibits A and F described above are approved and made part of the license.

(D) This license is subject to the conditions submitted by the Maine Department of Environmental Protection under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1) (2012), as those conditions are set forth in Appendix A to this order.

(E) This license is also subject to the articles set forth in Form L-3, (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States" (*see* 54 F.P.C. 1792 *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. *Administrative Annual Charges*. The licensee must pay the United States annual charges, effective the first day of the month in which this license is issued, and as determined in accordance with provisions of the Commission's regulations in effect from time to time, to reimburse the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 1.8 megawatts.

Article 202. *Exhibit F Drawings*. Within 45 days of the date of issuance of this license, the licensee must file the approved exhibit drawings in electronic file format on compact disks (CD).

Digital images of the approved exhibit drawings must be prepared in electronic format. Prior to preparing each digital image, the FERC Project-Drawing Number (i.e., P-2984-1001 through P-2984-1003) must be shown in the margin below the title block of

20150323-3007 FERC PDF (Unofficial) 03/23/2015

the approved drawing. The licensee must file two sets of exhibit drawings in electronic format on CD with the Secretary of the Commission, ATTN: OEP/DHAC.

Exhibit F drawings must be identified as Critical Energy Infrastructure Information (CEII) under 18 C.F.R. § 388.113(c). Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this license, and a file extension in the following format [P-2984-1001, F-1, Description, MM-DD-YYYY.TIF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY – black & white raster file
FILE TYPE – Tagged Image File Format (TIFF), CCITT Group 4
RESOLUTION – 300 dots per inch (dpi) desired (200 dpi minimum)
DRAWING SIZE FORMAT – 24” X 36” (minimum), 28” X 40” (maximum)
FILE SIZE – less than 1 megabyte desired

Article 203. *Exhibit G Drawings*. Within 90 days of the issuance date of the license, the licensee must file, for Commission approval, revised Exhibit G drawings that: (1) show three known reference points; (2) have been stamped by a registered land surveyor; (3) enclose within the project boundary all principal project works necessary for operation and maintenance of the project, including the upstream extent of Sebago Lake and the project’s existing transmission line connecting the project powerhouse to the Dundee Project (P-2942) powerhouse; and (4) show and label all lands within the project boundary owned by S.D. Warren or lands acquired by easement or lease. The Exhibit G drawings must comply with sections 4.39 and 4.41 of the Commission’s regulations.

Article 204. *Amortization Reserve*. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee must set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee must deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee must set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee must maintain the amounts established in the project amortization reserve account until further order of the Commission.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

The specified reasonable rate of return used in computing amortization reserves must be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly included in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios must be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity must be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 205. *Headwater Benefits.* If the license's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 206. *Project Land Rights Progress Report*. No later than four years after license issuance, the licensee must file a report with the Commission describing the status of acquiring title in fee or the rights for all the lands within the project boundary. The report must provide an overview map of each parcel and summary table identifying the licensee's rights over each parcel within the project boundary. The report must also include specific supporting documentation showing the status of the land rights on all parcels of land within the project boundary that: (1) have been acquired up to the date of filing of the report, including pertinent deeds, lease agreements, and/or bill of sale information that specifically verify the licensee's rights; and (2) the licensee's plan and schedule for acquiring all remaining project lands prior to the five-year deadline, including a history of actions taken, current owner information, the type of ownership to be acquired whether in fee or by easement, and the timeline for completing property acquisition.

Article 301. *Start of Construction.* The licensee must commence construction of the project works within two years from the issuance date of the license and must complete construction of the project within 5 years from the issuance date of the license.

Article 302. *Reservoir Operation Report.* At least 90 days prior to implementing project operation required by this license, the licensee must submit one copy to the Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer and two

20150323-3007 FERC PDF (Unofficial) 03/23/2015

copies to the Commission (one of these must be a courtesy copy to the Director, D2SI), of a report describing the effects of modifying project operations on local flooding and spillway adequacy of the project dam.

The report must include a flood routing study that evaluates the ability of the project to safely pass flows up to the Inflow Design Flood. The frequency that the non-overflow structures would be overtopped under the historical and limited drawdowns should be compared. The report must discuss if there would be an increased likelihood of low-lying structures located upstream and downstream of the reservoir being flooded under the new operating scenario. If necessary, the report must include a plan and schedule for performing any remedial measures necessary to ensure the continued safe operation of the project during high flows.

The licensee must not implement project operation required by this license until the D2SI – New York Regional Engineer determines that these altered project operations have no adverse impact on project safety and issues a letter indicating such.

Article 303. *Cofferdam and Deep Excavation Construction Drawings*. Before starting construction that requires cofferdams or deep excavations, the licensee must review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction and must ensure that construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of any cofferdams or deep excavations, the licensee must submit one copy to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer and two copies to the Commission (one of these copies must be a courtesy copy to the Commission's Director, D2SI), of the approved cofferdam and deep excavation construction drawings and specifications, and the letters of approval.

Article 304. *Contract Plans and Specifications*. At least 60 days prior to start of construction, the licensee must submit one copy of its final contract plans and specifications and supporting design report to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer, and two copies to the Commission (one of these must be a courtesy copy to the Director, D2SI). The submittal must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI – New York Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Article 305. *As-built Drawings*. Within 90 days of completion of construction of the facilities authorized by this license, including the upstream and downstream eel passage facilities and minimum flow gate modifications, the licensee must file for Commission approval, revised Exhibits A, F, and G, as applicable, to describe and show those project facilities as built. A courtesy copy must be filed with the Commission's Division of Dam Safety and Inspections (D2SI) - New York Regional Engineer, the Director, D2SI, and the Director, Division of Hydropower Administration and Compliance.

Article 306. *Project Modification Resulting From Environmental Requirements*. If environmental requirements under this license require modification that may affect the project works or operations, the licensee must be consult with the Commission's Division Dam Safety and Inspections – New York Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 401. *Commission Approval, Notification, and Filing of Amendments*.

(a) Requirement to File Plans for Commission Approval.

Various conditions of this license found in the Maine Department of Environmental Protection's (Maine DEP) water quality certification (certification) conditions (Appendix A) require the licensee to prepare plans in consultation with other entities and for approval by the Maine DEP, and implement specific measures without prior Commission approval. The following table indicates the deadline for filing the plans with the Commission for approval. The plans are listed below.

Maine DEP Certification Condition No.	Plan Name	Date Due
1(D)	Impoundment Water Level Monitoring Plan	Within 6 months of license issuance and at least 60 days prior to implementing the plan
2(E)	Minimum Flow Monitoring Plan	Within 6 months of license issuance and at least 60 days prior to implementing the plan
4(B)	Final Upstream Eel Passage Design and Operation Plan	Within 1 year of license issuance and at least 60 days prior to commencing construction of the upstream passage facilities

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Maine DEP Certification Condition No.	Plan Name	Date Due
4(D)	Upstream Eel Passage Effectiveness Testing Plan	Within 1 year of license issuance and at least 60 days prior to operation of the upstream passage facilities
5(B)	Final Downstream Eel Passage Design and Operation Plan	Within 1 year of license issuance and at least 60 days prior to commencing construction of the downstream passage facilities
5(D)	Downstream Eel Passage Effectiveness Testing Plan	Within 1 year and at least 60 days prior to operation of the downstream passage facilities

The licensee must include with each plan filed with the Commission documentation that the licensee developed the plan in consultation with the Maine Department of Marine Resources and/or the Maine Department of Inland Fisheries and Wildlife and has received approval from the Maine DEP, as appropriate. The licensee must 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 must include the licensee's reasons, based on project-specific information. The Commission reserves the right to make changes to any plan submitted. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan or changes in project operations or facilities, including any changes required by the Commission.

(b) Requirement to File Reports.

Certain conditions of the Maine DEP's certification conditions require the licensee to file reports with other entities. These reports document compliance with requirements of this license and may have a bearing on future actions. Each such report must also be submitted to the Commission. These reports are listed in the following table:

Maine DEP Certification Condition No.	Description	Date Due
2(F)	Dissolved Oxygen Monitoring Report	By March 1 following each year of monitoring

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Maine DEP Certification Condition No.	Description	Date Due
4(E)	Upstream Eel Passage Effectiveness Study Report(s)	By November 1 following each year of effectiveness testing
5(E)	Downstream Eel Passage Effectiveness Study Report(s)	By April 1 following each year of effectiveness testing
8(C)	Public Boat Access Study Report	Within 1 year of license issuance

The licensee must submit to the Commission documentation of any consultation with the aforementioned entities (section (a) of this article), and copies of any comments and recommendations made by any consulted entity in connection with each report. The Commission reserves the right to require changes to project operations or facilities based on the information contained in the report and any other available information.

(c) Requirement to Notify the Commission of Planned and Unplanned Deviations from License Requirements.

Maine DEP certification conditions 1(A), 2(A), 2(B), and 3(A) would allow the licensee to temporarily modify project operations for maintenance or construction activities, extreme hydrologic conditions, or electrical emergencies. The Commission must be notified prior to implementing such modifications, if possible, or in the event of an emergency, as soon as possible, but no later than 10 days after each such incident.

(d) Requirement to File Amendment Applications.

Some of the conditions in Appendix A contemplate the Maine DEP ordering unspecified, long-term changes to project operation or facilities based on new information or results of studies or monitoring or studies required by the certification, but do not appear to require Commission approval for such changes (e.g., modification of project operation to address water quality, modifications to upstream and downstream eel passage facilities, and modification of recreation facilities). Such changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license.

Article 402. *Minimum Flow Release.* The licensee must release a minimum flow of 125 cfs to the bypassed reach from April 1 through October 31 for the protection and enhancement of aquatic habitat and angler suitability. Minimum flows for the period from November 1 to March 31 and instructions for temporarily modifying minimum

20150323-3007 FERC PDF (Unofficial) 03/23/2015

flows are specified in water quality certification condition 2 required by ordering paragraph (D). Upon completion of the modifications to the minimum flow gates required in Article 403, the licensee must notify the Commission and begin to release 125 cfs into the bypassed reach from April 1 through October 31.

Article 403. *Minimum Flow Release Plan*. Within 3 months of license issuance, the licensee must file a Minimum Flow Release Plan for Commission approval. The plan must include, but not necessarily be limited to:

(1) functional design drawings showing the proposed modifications to the minimum flow gates to release a 125-cfs minimum flow; and

(2) a construction schedule.

The plan must be developed after consultation with the Maine Department of Environmental Protection, the Maine Department of Inland Fisheries and Wildlife, and the U.S. Fish and Wildlife Service. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the agencies above, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must 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 must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan according to the approved schedule, including any changes required by the Commission.

Article 404. *Bypassed Reach Monitoring Plan*. Within 6 months of license issuance, the licensee must file a Bypassed Reach Monitoring Plan for Commission approval. The purpose of the plan is to monitor temperature in the two coldwater refugia identified in the bypassed reach.

The plan must be developed after consultation with the Maine Department of Environmental Protection, the Maine Department of Inland Fisheries and Wildlife, and the U.S. Fish and Wildlife Service. The licensee must include with the plan an implementation schedule, documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to the agencies above, and specific descriptions of how the agencies' comments are accommodated by the plan. The

20150323-3007 FERC PDF (Unofficial) 03/23/2015

licensee must 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 must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan according to the approved schedule, including any changes required by the Commission.

Article 405. *Flood Management Communication Protocol*. Within 6 months of license issuance, the licensee must file a protocol, for Commission approval, that describes how the licensee will communicate and coordinate with upstream pond owners in order to manage floods within the Presumpscot River basin.

The protocol must be developed after consultation with the Maine Department of Environmental Protection and the Maine Department of Inland Fisheries and Wildlife. The licensee must include with the protocol an implementation schedule, documentation of consultation, copies of recommendations on the completed protocol after it has been prepared and provided to the agencies above, and specific descriptions of how the agencies' comments are accommodated by the protocol. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the protocol with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific reasons.

The Commission reserves the right to require changes to the protocol. Implementation of the protocol must not begin until the licensee is notified by the Commission that the protocol is approved. Upon Commission approval, the licensee must implement the protocol according to the approved schedule, including any changes required by the Commission.

Article 406. *Reservation of Authority to Prescribe Fishways*. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or to provide for the construction, operation, and maintenance of such fishways as may be prescribed by the Secretary of the Interior pursuant to section 18 of the Federal Power Act.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Article 407. *Land Use and Recreation Management Plan*. Within 18 months of license issuance, the licensee must file a Land Use and Recreation Management Plan (LRMP) for Commission approval. The plan must include, but not necessarily be limited to:

(1) a description of how project land will be managed, including considerations for maintaining the aesthetic character of project land;

(2) measures for maintaining angling access to the Eel Weir bypassed reach including:

(a) a description of existing parking areas, paths, access areas, and signage to support angling access to the bypassed reach, including operation and maintenance measures; and

(b) maps showing and labeling all recreation facilities and areas used by anglers to access the bypassed reach;

(3) measures for improving public boat access to Sebago Lake based on the results of the public boat access study required by water quality certification condition 8; and

(4) revised Exhibit G drawing(s) showing a project boundary enclosing the recreation facilities and areas identified in items 2 and 3.

The licensee must prepare the plan after consultation with the Maine Department of Inland Fisheries and Wildlife, Maine Department of Environmental Protection, and town of Windham. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and town, and specific descriptions of how the agencies' and town's comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies and town to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval, the licensee must implement the plan according to the approved schedule, including any changes required by the Commission.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Article 408. *Programmatic Agreement and Historic Properties Management Plan*. The licensee must implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the State of Maine, State Historic Preservation Officer (Maine SHPO), for Managing Historic Properties that May be Affected by a License Issuing to S.D. Warren Company for the Continued Operation of the Eel Weir Hydropower Project in Cumberland County, Maine (FERC No. 2984-042)," executed on September 14, 2005. Pursuant to the requirements of this Programmatic Agreement, the licensee must file, for Commission approval, an HPMP within one year of issuance of this order that includes, in part, an updated Phase 0 analysis and a description of and schedules for further work to be completed at the project (e.g., Phase One, Phase Two, Phase Three surveys) as determined through consultation with the Maine SHPO. The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee must obtain approvals from the Commission and the Maine SHPO, before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effects.

Article 409. *Use and Occupancy*. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline;

20150323-3007 FERC PDF (Unofficial) 03/23/2015

and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee must require multiple use and occupancy of facilities for access to project lands or waters. The licensee must also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee must: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

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

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary,

20150323-3007 FERC PDF (Unofficial) 03/23/2015

for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

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

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

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

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

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the

20150323-3007 FERC PDF (Unofficial) 03/23/2015

protection and enhancement of the project's scenic, recreational, and other environmental values.

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

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

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

(G) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825*l* (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2014). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing must constitute acceptance of this order.

Ann F. Miles
Director
Office of Energy Projects

20150323-3007 FERC PDF (Unofficial) 03/23/2015

Form L-3
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION
TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING NAVIGABLE
WATERS OF THE UNITED STATES

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

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

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

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the

20150323-3007 FERC PDF (Unofficial) 03/23/2015

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

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15

20150323-3007 FERC PDF (Unofficial) 03/23/2015

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

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

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

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

Article 10. The Licensee shall, after notice and opportunity for hearing,

20150323-3007 FERC PDF (Unofficial) 03/23/2015

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

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

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full

20150323-3007 FERC PDF (Unofficial) 03/23/2015

reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

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

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

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

20150323-3007 FERC PDF (Unofficial) 03/23/2015

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

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

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

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere

20150323-3007 FERC PDF (Unofficial) 03/23/2015

with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the

20150323-3007 FERC PDF (Unofficial) 03/23/2015

license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 27. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 28. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

APPENDIX A

Maine Department of Environmental Protection
Water Quality Certification Conditions
Issued August 30, 2011

1. WATER LEVELS

   A. Except as temporarily modified by (1) approved maintenance activities or fishway construction, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, the Department, and appropriate state and/or federal agencies, lake levels shall be managed within a target range between 266.65 feet msl and 262.0 feet msl, with lake levels above or below this range triggering increased or decreased flow releases, respectively, from the project dam, and with the goal of achieving a level of 266.0 feet msl (0.65 feet below spillway crest elevation) between May 1 and June 15 annually, in accordance with the applicant's lake level management plan and operating parameters for Sebago Lake dated May 26, 2011, as revised June 6, 2011.

   B. "Extreme Hydrologic Conditions" means the occurrence of events beyond the applicant'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.

   C. "Emergency Electrical System Conditions" means operating emergencies beyond the applicant'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 temporary abnormal operating conditions, 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.

   D. The applicant shall, within 6 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 the impoundment water levels required by Part A of this condition. These plans shall be reviewed by and must receive approval of the Department.

2. MINIMUM FLOWS

20150323-3007 FERC PDF (Unofficial) 03/23/2015

A. Except as temporarily modified by (1) approved maintenance activities or fishway construction, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, the Department, and appropriate state and/or federal agencies, a total minimum flow of 270 cfs (16,200 cfm) shall be released from the project at all times, except that a total minimum flow of 408 cfs (24,500 cfm) shall be released from the project between June 1 and September 30 annually whenever spillage is required at the downstream Dundee and Gambo Dams to maintain dissolved oxygen levels in the Presumpscot River.

B. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, the Department, and appropriate state and/or federal agencies, an instantaneous minimum flow of 75 cfs (4,500 cfm) shall be released into the bypassed river reach (Eel Weir Bypass) below the project dam at all times, and the occurrence of flow releases greater than 300 cfs (18,000 cfm) into the Eel Weir Bypass shall be minimized. The flow released into the Eel Weir Bypass shall be counted as part of the total minimum flow release specified in Part A of this condition.

C. “Extreme Hydrologic Conditions” means the occurrence of events beyond the applicant’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.

D. “Emergency Electrical System Conditions” means operating emergencies beyond the applicant'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 temporary abnormal operating conditions, 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 6 months of issuance of a New License for the project by FERC or upon such other schedule as may be established by FERC, submit plans for providing and monitoring the minimum flow releases required by Parts A and B of this condition. These plans shall be reviewed by and must receive approval of the Department.

20150323-3007 FERC PDF (Unofficial) 03/23/2015

F. The applicant shall, in compliance with Condition 6 of the April 30, 2003 water quality certification (included at the end of this Appendix) for the Presumpscot River Hydro Projects, and in accordance with an approved plan, continue to monitor dissolved oxygen levels in the Presumpscot River to determine the effectiveness of the required spillage at the Dundee and Gambo Projects, in combination with the new minimum flow requirement from the Eel Weir Project, as set forth in Part A of this condition, in meeting Class B dissolved oxygen standards in the Presumpscot River above Westbrook. 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 flow required by this order and/or such other measures as may be deemed necessary to meet Class B dissolved oxygen standards in the Presumpscot River from Dundee Dam to Saccarappa Dam under dry weather conditions.

3. LANDLOCKED SALMON SPAWNING SEASON FLOW CAP

A. Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrologic conditions, as defined below, (3) emergency electrical system conditions, as defined below, or (4) agreement between the applicant, the Department, and the Department of Inland Fisheries and Wildlife, flows from the project shall be capped at 1,000 cfs (60,000 cfm) during the landlocked salmon spawning season from October 16 through November 15 annually.

B. “Extreme Hydrologic Conditions” means the occurrence of events beyond the applicant’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.

C. “Emergency Electrical System Conditions” means operating emergencies beyond the applicant'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 temporary abnormal operating conditions, 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.

D. Upon notification from the Department of Inland Fisheries and Wildlife that there is evidence that project flows are attracting landlocked salmon to the outlet dam during the spawning season, the Department reserves the right, after notice to the applicant and opportunity for hearing, to reopen this certification for consideration

20150323-3007 FERC PDF (Unofficial) 03/23/2015

of making such changes in the flow cap required by Part A of this condition as may be deemed necessary to protect landlocked salmon during their annual spawning runs.

4. UPSTREAM EEL PASSAGE

A. Upstream eel passage facilities shall be installed and operational at the Eel Weir Project within 2 years following the issuance of a new FERC license for the project.

B. The applicant shall, at least 60 days prior to construction or upon such other schedule as established by FERC, submit final design, location, and operational plans for the upstream eel passage facilities required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive approval of DEP prior to construction. In reviewing the plans, the DEP will consider the recommendations of DMR.

C. The applicant shall, in consultation with the Department of Marine Resources, conduct a study or studies to determine the effectiveness of the upstream eel passage facilities required by this condition.

D. The applicant shall, concurrent with the commencement of facilities operation or upon such other schedule as established by FERC, submit plans for a study or studies to determine the effectiveness of the upstream eel passage facilities required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive the approval of DEP prior to implementation. In reviewing the plans, the DEP will consider the recommendations of DMR.

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 the upstream eel passage effectiveness study or studies, along with any recommendations for changes in the design and/or operation of any eel passage facilities installed pursuant to this condition.

F. The applicant shall be responsible for taking such actions as are needed to effectively pass eels upstream through the project. After reviewing the results of the effectiveness study or studies, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require reasonable changes in the design and/or operation of the upstream eel passage facilities installed pursuant to

20150323-3007 FERC PDF (Unofficial) 03/23/2015

this condition as may be deemed necessary to effectively pass eels upstream through the project.

5. DOWNSTREAM EEL PASSAGE

A. Downstream eel passage facilities shall be installed and/or operational measures to provide downstream eel passage shall be implemented at the Eel Weir Project within 2 years following the issuance of a new FERC license for the project.

B. The applicant shall, at least 60 days prior to construction/implementation or upon such other schedule as established by FERC, submit final design, location, and operational plans for the downstream eel passage facilities and/or operational measures required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive approval of DEP prior to construction. In reviewing the plans, the DEP will consider the recommendations of DMR.

C. The applicant shall, in consultation with the Department of Marine Resources, conduct a study or studies to determine the effectiveness of the downstream eel passage facilities and/or operational measures required by this condition.

D. The applicant shall, concurrent with the installation and/or implementation of downstream eel passage facilities/operational measures or upon such other schedule as established by FERC, submit plans for a study or studies to determine the effectiveness of the downstream eel passage facilities and/or operational measures required by Part A of this condition, prepared in consultation with the Department of Marine Resources. These plans shall be reviewed by and must receive the approval of DEP prior to implementation. In reviewing the plans, the DEP will consider the recommendations of DMR.

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 downstream eel passage effectiveness study or studies, along with any recommendations for changes in the design and/or operation of any passage facilities installed and/or the operational measures implemented pursuant to this condition.

F. The applicant shall be responsible for taking such actions as are needed to effectively pass eels downstream through the projects. After reviewing the results of the effectiveness study or studies, and after notice to the applicant and opportunity for hearing, the Department reserves the right to require changes in

20150323-3007 FERC PDF (Unofficial) 03/23/2015

the design and/or operation of the downstream eel passage facilities installed and/or the operational measures implemented pursuant to this condition as may be deemed necessary to effectively pass eels downstream through the project.

6. ANADROMOUS/RESIDENT SPECIES FISH PASSAGE

Upon notification from the Department of Inland Fisheries and Wildlife and/or the Department of Marine Resources that circumstances or conditions warrant the installation of fish passage facilities at the Eel Weir Dam, the Department reserves the right, after notice to the applicant and opportunity for hearing, to reopen this certification for consideration of requiring the installation of such fish passage facilities as may be deemed necessary to pass anadromous and/or resident fish species, including but not limited to landlocked Atlantic salmon, upstream and downstream through the project area.

7. LAKE WATER QUALITY

Upon any future determination by the Department that the water quality of Sebago Lake is declining and that the operation of the Eel Weir Project, as approved by this certification and as conditioned by the new FERC license for the project, may be causing or contributing to this decline in water quality, the Department reserves the right, after notice to the applicant and opportunity for hearing, to reopen this certification for consideration of requiring such modification of the lake level management plan in effect for the project as may be deemed necessary to ensure that the operation of the project does not cause or contribute to any decline in the water quality of Sebago Lake.

8. PUBLIC BOAT ACCESS

A. The applicant shall provide improved public boat access to Sebago Lake.

B. The applicant shall, in consultation with the Department of Inland Fisheries and Wildlife, conduct a study to evaluate the options for providing improved public boat access to Sebago Lake.

C. The applicant shall, within 1 year following the issuance of a new FERC license for the project, or upon such other schedule as established by FERC, submit a study report evaluating the options for providing improved public boat access to Sebago Lake, including any necessary parking facilities, along with any proposal(s) for providing such access. This report shall include comments and

20150323-3007 FERC PDF (Unofficial) 03/23/2015

recommendations from the Department of Inland Fisheries and Wildlife for improving public boat access to the lake.

D. After reviewing the report on public boat access, and after notice to the applicant and the Department of Inland Fisheries and Wildlife, and after opportunity for hearing, the Department will reopen this certification to require such improved public boat access to Sebago Lake as is deemed necessary and appropriate to meet public recreational demand.

9. LIMITS OF APPROVAL

This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variations from the plans and proposals contained in said documents are subject to the review and approval of the Department prior to implementation.

10. COMPLIANCE WITH ALL APPLICABLE LAWS

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project, in accordance with the terms of this certification.

11. EFFECTIVE DATE

This water quality certification shall be effective concurrent with the effective date of the new license issued for the project by the Federal Energy Regulatory Commission.

12. SEVERABILITY

In the event that any provision, or part thereof, of this certification is declared to be unlawful by a reviewing court, the remainder of the certification shall remain in full force and effect, and shall be construed and enforced in all respects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

Document Content(s)

P-2984-042Order.DOC.....1-68

APPENDIX K: 2013 & 2014 FISH PASSAGE EFFECTIVENESS TESTING REPORTS CUMBERLAND MILLS

Report

Downstream Anadromous Fish and Eel Passage
Freshet Channel, Cumberland Mills Site
Presumpscot River, Westbrook, Maine
Stage 1 Testing (2013)

Submitted By

Sappi/Warren Release Papers
89 Cumberland Street
Westbrook, Maine 04092

December 31, 2013

With Assistance From:

Acheron

Engineering, Environmental and Geologic Consultants
Newport, Maine

1.0 Background

On or about October 5, 2010, the Commissioner of the Maine Department of Inland Fisheries and Wildlife signed an order regarding fish passage facilities at the Cumberland Mills site on the Presumpscot River in Westbrook, Maine. The order included an Effectiveness Testing Plan (April 8, 2010) that specifies the nature and scope of studies that are required to evaluate the effectiveness of the fish passage facilities after they are placed into operation. The Effectiveness Testing Plan includes testing requirements over a span of several years.

The Effectiveness Testing Plan includes requirements for Sappi/Warren Release Papers to submit a study plan to the Department of Marine Resources for each year and each stage of the effectiveness testing. A report on Stage I of the effectiveness testing is to be submitted to DMR by December 31, 2013.

This document constitutes the report for the first year of study of the downstream anadromous fish and eel passage facilities in the freshet channel or Stage 1 testing as required by the Order.

2.0 Scope of Study

The scope of Stage 1 (2013) testing of fishway effectiveness for downstream passage of anadromous fish and eels will include the following tasks:

- ***C**onfirming through visual observations, physical measurements and flow measurements that all elements of the required downstream anadromous fish and eel passage facilities at Cumberland Mills, including the freshet channel Denil fishway, mechanical flashboard system, main channel gates and flashboards, and fish barrier dam, have been constructed and are operating as designed.*
- *Measurements to confirm that the 10-foot wide section of the mechanical flashboard system dedicated to downstream fish passage provides a minimum flow of 150 cubic feet per second. Measurements of the flow rate in the freshet channel are to be obtain and recorded based on measurements of the head on the barrier dam. Observations will be made to ensure that the flow measurements in the freshet channel are being made and recorded on a daily basis. These flow measurements will provide the basis for determining the flow through the 10 foot section of the mechanical flashboard system.*
- *Visual observations and measurements to confirm that the plunge pool below the 10-foot wide section provides a minimum water depth of 3 feet and width of 10 feet during the downstream migration season. Measurements will be made of the*

approximate water surface elevation in the plunge pool during the season. The water surface elevations and the elevation of the bottom of the pool will be used to calculate the approximate depth of water in the plunge pool.

- *Visual observations and measurements to confirm that the plunge pool below the 40-foot section of the mechanical flashboard provides a minimum water depth of 3 feet over the range of flows expected during the downstream migration season. Measurements will be made of the approximate water surface elevation in the plunge pool during the season. The water surface elevations and the elevation of the bottom of the pool will be used to calculate the approximate depth of water in the plunge pool.*
- *Visual observations will be conducted during the downstream migration season to assess whether anadromous fish or eels are becoming stranded or injured as they migrate downstream past the freshet channel dam and Denil fishway. Visual observations will be made downstream from the freshet channel dam, at the barrier dam and at the bridge downstream of the fishway entrance. Since eels are known to migrate downstream during the non-daylight period of the day, observations will be made during daylight and non-daylight periods.*

3.0 Schedule

Each of the tasks listed above were completed on five separate days spaced out during the upstream fish migration season as listed below.

Species	**Upstream Migration Period**	**Downstream Migration Period**
River Herring (alewife and blueback herring)	May 1 – July 15	July 15 – Nov 15 (juveniles) May 15 – Aug 1 (adults)
American Shad	May 1 – July 15	Aug 1 – Nov 15 (juveniles) May 15 – Aug 1 (adults)

The five tasks listed in Section 2 were completed on the following dates:

- *July 23, 2013*
- *August 8, 2013*
- *September 3, 2013*
- *September 26, 2013*
- *October 22, 2013*
- *November 6, 2013*

4.0 Summary of Inspection Procedure

- *Through the use of visual observations, physical measurements and flow measurements it was determined that all elements of the required downstream anadromous fish and eel passage facilities at Cumberland Mills, including the freshet channel Denil fishway, mechanical flashboard system, main channel gates and flashboards, and fish barrier dam, were constructed and were operating as designed on the date of the inspections.*

- *Measurements were being made continuously to confirm that the 10-foot wide section of the mechanical flashboard system dedicated to downstream fish passage provides a minimum flow of 150 cubic feet per second. Measurements of the flow rate in the freshet channel were being obtained and recorded based on measurements of the head on the barrier dam. Observations were made to assure that the flow measurements in the freshet channel were being made and recorded on a daily basis. These flow measurements were used at the basis for determining the flow through the 10 foot section of the mechanical flashboard system.*

- *Visual observations and measurements were made to confirm that the plunge pool below the 10-foot wide section provides a minimum water depth of 3 feet and width of 10 feet during the downstream migration season. Measurements were made of the approximate water surface elevation in the plunge pool during each inspection. The water surface elevations and the elevation of the bottom of the pool were used to calculate the approximate depth of water in the plunge pool.*

- *Visual observations and measurements were used to confirm that the plunge pool below the 40-foot section of the mechanical flashboard provides a minimum water depth of 3 feet over the range of flows during the downstream migration season. Measurements were made of the approximate water surface elevation in the plunge pool during each inspection. The water surface elevations and the elevation of the bottom of the pool were used to calculate the approximate depth of water in the plunge pool during each inspection.*

- *Visual observations were conducted during each inspection to assess whether anadromous fish or eels were becoming stranded or injured as they migrate downstream past the freshet channel dam and Denil fishway. Visual observations were made downstream from the freshet channel dam, at the barrier dam and at the bridge downstream of the fishway entrance. Since eels are known to migrate downstream during the non-daylight period of the day, one inspection was done after dark.*

5.0 Anomalies and Observations

- *There were no anomalies observed during any of the inspections during the downstream fish passage season.*

6.0 Conclusions

- *All elements of the required downstream anadromous fish and eel passage facilities at Cumberland Mills, including mechanical flashboard system and fish barrier dam, were constructed and were operating as designed on the date of the inspections.*
- *Flow measurements were being made and recorded on a daily basis of flows in the freshet channel during the upstream anadromous fish migration season, using a head measurement device on the barrier dam.*
- *The depth of water in the plunge pool downstream of the 10 ft section and the 40 ft section of the freshet channel dam with the mechanical gates exceeded 3 feet during each inspection.*
- *There were no visual indications of anadromous fish or eels becoming stranded or injured as they migrate downstream past the freshet channel dam (with the Obermeyer gates), the barrier dam or the bridge downstream of the barrier dam. That bridge was reconstructed in 2012 so is no longer is a potential impediment to either upstream or downstream movement of fish and eels.*
- *There were no anomalies observed during any of the inspections during the downstream fish passage season.*

End of Document

S. D. Warren Company
Westbrook, Maine

REPORT
STAGE 2 (2014) EFFECTIVENESS TESTING FOR UPSTREAM ANADROMOUS FISH PASSAGE
&
AMERICAN SHAD PRESENCE STUDY

CUMBERLAND MILLS SITE, WESTBROOK, MAINE

S. D. Warren Company
89 Cumberland Street
Westbrook, Maine 04092

December 2014

With Assistance From:

Acheron
Engineering, Environmental and Geologic Consultants
Newport, Maine

1.0 BACKGROUND

On or about October 5, 2010 the Commissioner of the Maine Department of Inland Fisheries and Wildlife signed an Order regarding fish passage facilities at the Cumberland Mills site on the Presumpscot River in Westbrook, Maine. The Order included an Effectiveness Testing Plan (April 8, 2010) that specifies the nature and scope of studies that are required to evaluate the effectiveness of the fish passage facilities after they are placed into operation. The Effectiveness Testing Plan includes testing requirements over a span of several years.

The Effectiveness Testing Plan includes requirements for Sappi/Warren Release Papers to submit a study plan and report to the Department of Marine Resources for each year and each phase of effectiveness testing by December 31st.

The first study was completed in 2013. The plan for the 2014 study was submitted in February 2014. This document constitutes the report for the 2014 study of the effectiveness of the upstream anadromous fish passage facility for Stage 2 testing as required by the Order.

This report is divided into two parts based on the organization of the Effectiveness Testing Plan, April 8, 2010 included with the Order. This document does not address upstream eel passage since that issue has been addressed separately. The two parts of this report address:

- ***Stage 2 Effectiveness Testing for Upstream Anadromous Fish Passage for Alewife and Blueback Herring***
  This portion of the report describes the results of the monitoring and counting of the target species to evaluate the efficiency and effectiveness of the Cumberland Mills fishway. The following tasks were the three essential elements of this part of the study.
  - Observations of fish behavior at or near the fishway entrance.
  - Regular visual observations to assess whether alewife and blueback herring are successfully finding the entrance and entering the Denil fishway.
  - Observation and counting of fish entering and exiting the fishway using video recording equipment installed at the entrance and exit of the Denil fishway.

- ***2014 American Shad Presence Study***
  The following tasks are the two essential elements of this part of the report.
  - Regular visual observations were made in the vicinity of the fishway entrance to determine the presence and relative abundance of American shad.
  - Review was conducted of video recordings from within the fishway to determine the presence and relative abundance of American shad.

Figure 1, below, depicts the location of the cameras within the fishway at Cumberland Mills.

Cumberland Mills Dam Fishway Location

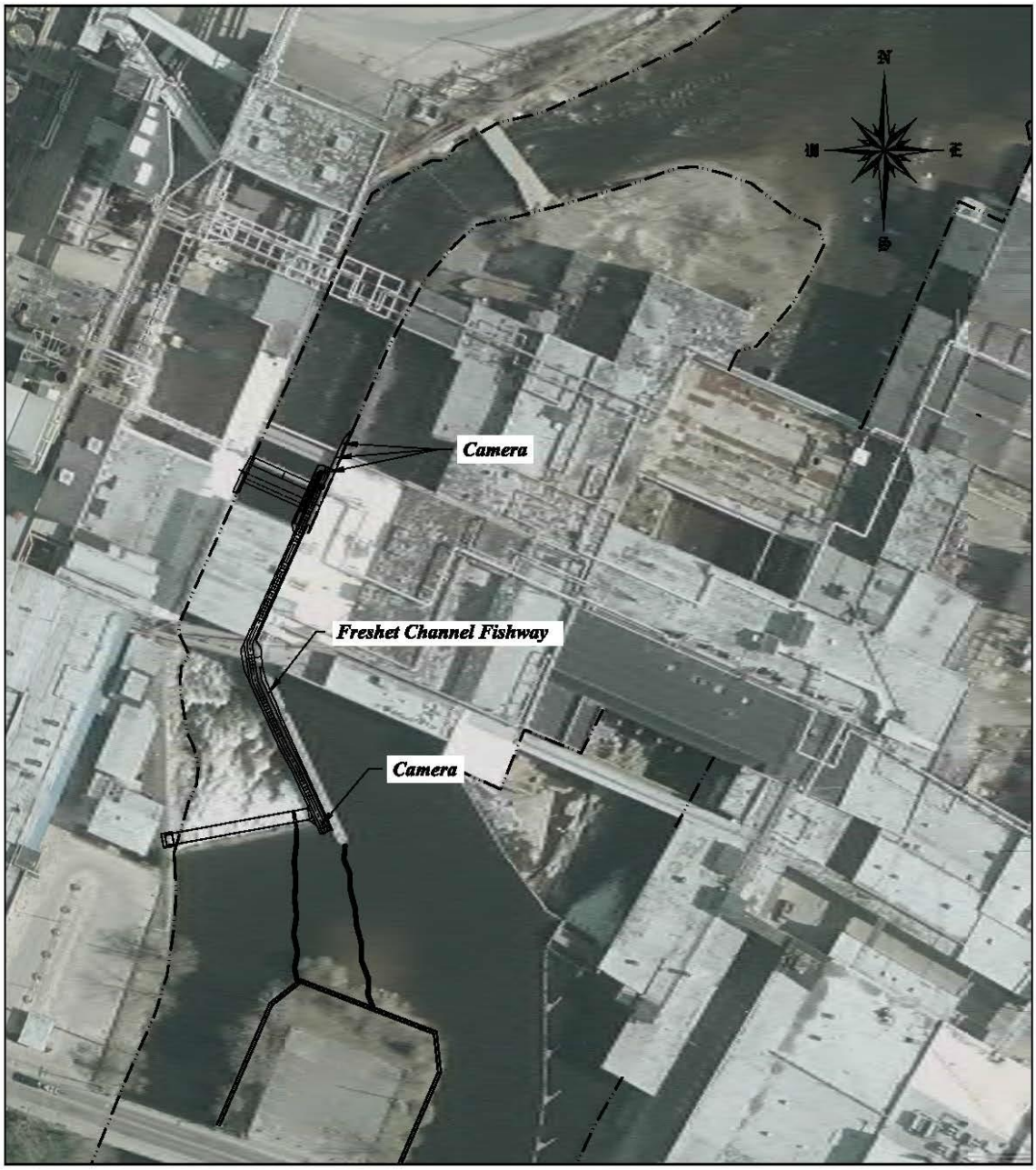


Figure #1

Acheron Engineering Services
Newport, Maine

Sappi / Warren Release Papers
Westbrook, Maine

2.0 SCOPE OF STUDY

This section of the report outlines the scope of study that was detailed in the 'Effectiveness Testing Study Plan for Upstream Anadromous Fish Passage at Cumberland Mills Site, Westbrook, Maine, that was submitted by Sappi/Warren Release Papers to the Maine Department of Marine Resources (MDMR), the Maine Department of Environmental Protection (MDEP) and the U.S. Fish and Wildlife Service (USFWS) in February 2014.

The 2014 Upstream Anadromous Fish Passage Study included two distinct parts that were based on the Effectiveness Testing Plan that was included with the Order. These included stage 2 effectiveness testing for upstream anadromous fish passage for alewives and blueback herring and the first year shad presence testing. The scope of study for both parts of the Upstream Anadromous Fish Passage Study are detailed in this section of the report.

2.1 Stage 2 Effectiveness Testing for Upstream Anadromous Fish Passage for Alewife and Blueback Herring

The following tasks describe the essential elements of this portion of the 2014 Upstream Anadromous Fish Passage study.

2.1.1 Observation of fish behavior at or near the fishway entrance:

Observations of fish behavior at or near the fishway entrance were made with video cameras mounted at or near the fishway entrance. Sappi installed and activated four video cameras and a 4-channel digital video recorder at the Cumberland Mills fishway site on May 6, 2014 (refer to Figure 1). One camera was installed near the exit end of the fishway, directly downstream of the bar rack. This camera pointed upstream toward the fishway exit and enabled Sappi to observe and count the fish exiting the fishway. One camera was installed in the entrance of the fishway, pointing downstream toward the entrance. This camera was used to observe and count fish entering the fishway. Two additional cameras were installed directly outside of the entrance to the fishway along the training wall. These two cameras enabled Sappi to observe fish congregation adjacent near the entrance, as well as to assess whether fish were being delayed outside the entrance.

Due to the physical configuration of the channel, the velocity of the river in right side of the freshet channel is lower than the velocity on the left side of the channel (looking downstream). It was anticipated that fish moving upstream would favor the right side due less turbulence and lower velocities. Observations were made during daylight hours two to three times per week between May 1st and July 15th at or near the freshet channel dam and in the vicinity of the Obermeyer dam to determine whether fish attempted to pass, or congregated near the barrier dam and Obermeyer dam.

2.1.2 Regular visual observations to assess the ability of alewife and blueback herring to successfully find the entrance and enter the Denil fishway:

The videos from the cameras outside the fishway entrance were used to assess whether alewife and blueback herring successfully found the entrance and entered the Denil fishway. The fixed cameras were positioned at two locations and various depths to observe the behavior of fish in and near the entrance. Using this technique, the cameras were positioned near the entrance to observe fish swimming up to and toward the entrance of the fishway. The water depth at the entrance varied with the flow rate in the river so the locations were periodically refined based on flow rates, velocities and depth. Video observations were recorded during daylight hours.

2.1.3 Observation and counts of fish entering and exiting the fishway with video recording equipment installed at the entrance and exit of the fishway:

One video camera was installed near the entrance end of the fishway and one video camera was installed near the exit end of the fishway. The video cameras were mounted for continuous monitoring during daylight hours. The mounting system allowed for the adjustment of the underwater position of the cameras. Video observations at the entrance end were challenging due to the greater depth, less light, variable turbidity and entrained air bubbles that occurred as water cascaded through the baffles. During high flow periods, video observations were also especially challenging due to elevated levels of turbidity. Air bubbles were not an issue at the exit end of the fishway.

The estimated number of fish exiting the fishway was quantified by counting the number of fish passing by the exit end camera during the first ten minutes of every daylight hour from May 6 through June 15. The fish count for each 10 minute interval was multiplied by six to estimate the number fish exiting the fishway each daylight hour. This procedure was approved by the Maine Department of Marine Resources. The daily total was derived my summing the hourly estimates for each daylight hour of each day. The seasonal total was derived by summing the daily total estimates. The counts were terminated on June 15 because no river herring were observed in the fishway after June 13th.

A diligent attempt was made to try to estimate the number of fish entering the fishway. However due to the ambient conditions of light, turbidity, turbulence and air bubbles combined with the fact that the fish entered and exited the fishway in schools, sometime moving in both directions at the same time, it was not possible to develop and accurate estimate of the number of fish entering the fishway.

2.2 2014 American Shad Presence Study

The following tasks describe the essential elements of the first year (2014) of the American shad presence study.

2.2.1 Regular visual observations for American shad

Video recordings were made in the vicinity of the fishway entrance to determine the presence and relative abundance of American shad. These video recordings were accomplished using the same equipment and procedure described in Section 2.1. It was relatively easy to differentiate American shad from river herring based on size. Video from the fishway exit was used to quantify the number of American shad passing, as the clarity of the videos at the entrance made it challenging to try to identify species.

American shad generally migrate after the end of the alewife run, the video from the exit end camera was reviewed at random intervals after the herring migration season, between June 15th and July 15th.

2.2.2 Review of the video recordings for American shad

The video recording obtained from cameras inside and outside of the fishway were reviewed at random intervals to determine the presence and relative abundance of American shad inside the fishway.

The results of these qualitative and quantitative observations are described in Section 4.0.

3.0 OBSERVATION SCHEDULE

Qualitative and quantitative observations were made during the upstream migration period for River Herring and American Shad. The upstream migration season for the target species of this study is listed in Table 1, below.

Table 1: Upstream Fish Migration Season

Species	Upstream Migration Period
River Herring (Alewife and Blueback Herring)	May 1 – July 15
American Shad	May 1 – July 15

The video cameras remained in operation for the entire duration of the upstream migration season. The following sections outline the general observation schedule, as well as specifics pertaining to each species.

3.1 Observation of Fish Behavior at or near the Fishway Entrance

The video cameras remained operational throughout the upstream migration season and have been reviewed to evaluate fish behavior at or near the fishway entrance.

3.2 Regular Visual Observations to assess whether Alewife and Blueback Herring are successfully finding the Entrance and Entering the Denil Fishway

These visual observations occurred simultaneous to the recorded observations described in Section 3.1. The video cameras remained operational for the duration of the upstream migration season and were periodically reviewed to assess whether alewife and blueback herring were successfully finding the entrance and entering the Denil fishway.

3.3 Observation and Counting of Fish Entering and Exiting the Fishway using Video Recording Equipment installed at the Entrance and Exit of the Fishway

The video monitoring equipment was operational throughout the upstream migration season. A subset of the total recording period, consisting of the first 10 minutes of every hour was analyzed to count the total number of alewife and blueback herring combined without any attempt to identify and count each species. The total number of American shad was also counted during this same period. Fish counts were conducted from May 6th to June 15th.

3.4 Regular Visual Observations for American Shad

The visual observations for American shad were done on the same schedule described in Section 3.0. It is recognized that American shad may migrate at a slightly different time than the river herring but an overlap is common. The video cameras were operational throughout the upstream migration season and were reviewed to attempt to identify the nature and extent of the American shad presence in the Presumpscot River at Cumberland Mills. Observations were conducted from May 6th to July 15th.

3.5 Review of the Video Recording for American Shad

Portions of the video recording were reviewed to determine if any American shad were present near the entrance, inside the entrance or at the exit of the fishway. The results are described in Section 4. A randomly selected portion of the exit camera video was reviewed specifically for American Shad. One hour of every other day from June 15 through July 22, during daylight hours, was selected for inspection. The one hour of viewing changed each day. On June 15, the view time was from 8:00 AM through 9:00 AM. On June 17, the view time was from 9:00 AM though 10:00AM. The hour selected for viewing continued on that pattern until July 22nd.

4.0 RESULTS

This section details the observations and quantitative measurements that took place at the Cumberland Mills Fishway during the 2014 study. The results are organized based on the two distinct components of the study; stage 2 effectiveness testing for upstream anadromous fish passage for alewife and blueback herring, and the shad presence study.

4.1 Stage 2 Effectiveness Testing for Upstream Anadromous Fish Passage for Alewife and Blueback Herring

4.1.1 Observations of fish behavior at or near the fishway entrance:

Sappi was able to successfully observe fish behavior near the entrance to the fishway, as well as in the vicinity of the barrier dam and Obermeyer dam. Visual observations were made two to three times per week during daylight hours between May 1 and July 15 at the barrier dam and Obermeyer gate. There were no fish observed attempting to pass the barrier dam, or at or near the Obermeyer dam.

4.1.2 Regular visual observations to indicate whether alewife and blueback herring successfully found and entered fishway:

The review of the videos taken within the entrance and outside the entrance area indicate that river herring (Alewife and Blueback herring) were successful at finding and entering the fishway. There was no fish congregation observed outside the fishway entrance. Additionally, fish were observed moving easily into the fishway.

4.1.3 Observation and counting of fish entering and exiting the fishway using video recording equipment:

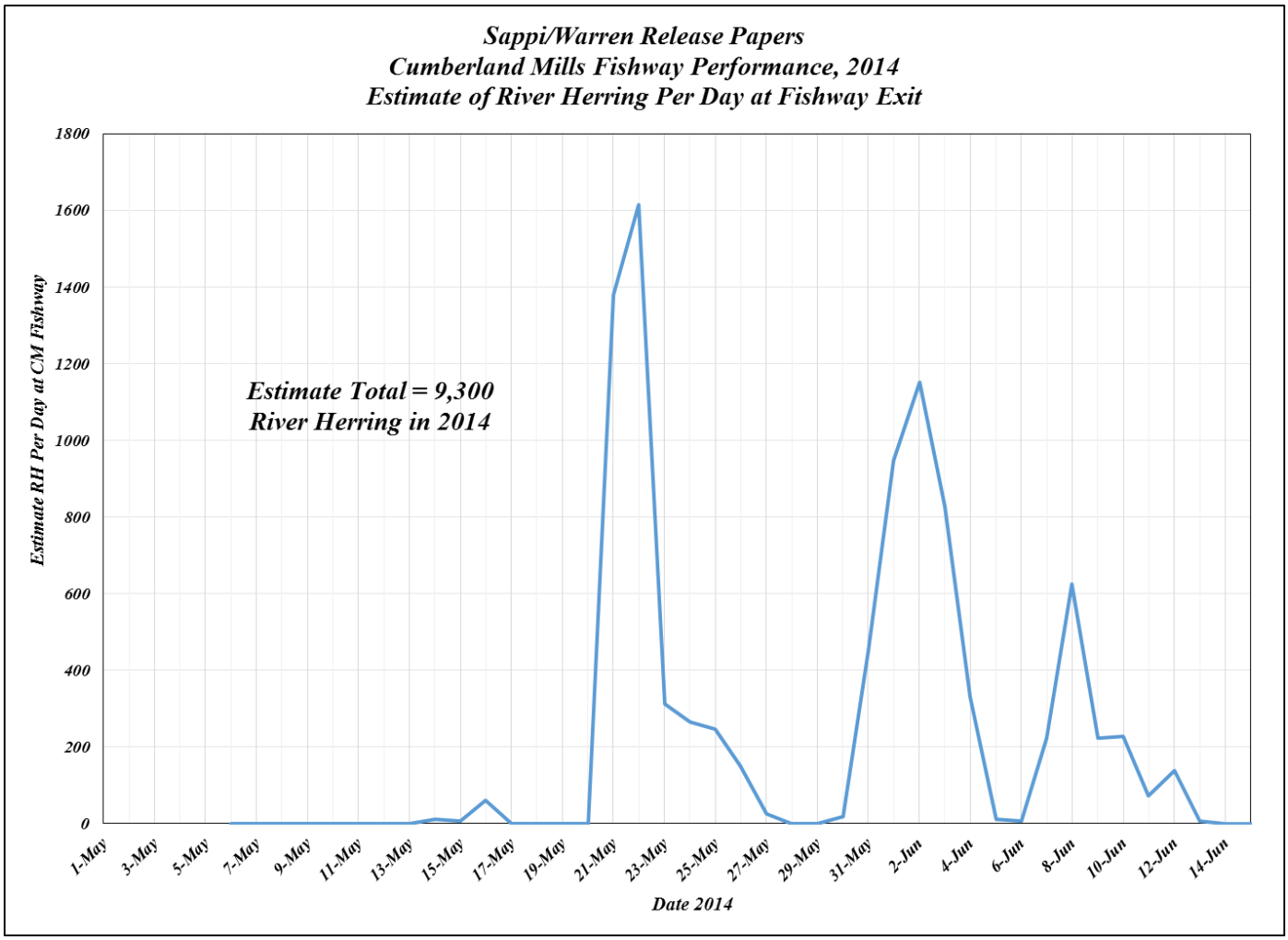
Sappi was able to successfully estimate the number of river herring that exited the fishway, but was unable to estimate the number of river herring entering the fishway. Generally the quality of the video at the fishway exit was sufficient to allow Sappi to count the fish passing by the exit end camera. The fish passing by the exit end camera were generally in single file and the water clarity allowed for an accurate count for the first 10 minutes of every daylight hour. Refer to Section 2.1.3 for details on how daily counts were calculated.

There was less light at the fishway entrance, which inhibited visual observations. The bubbles created by the cascading flow of water over the baffles just upstream of the entrance further inhibited the viewing and counting process. Additionally, the river herring tended to enter the fishway in schools of ten or more and in some occasions, the herring would turn around and exit the fishway soon after entering. The lack of clarity and rapid movement of fish entering and exiting the fishway at the same time made it impossible to generate an accurate count of the number of

fish entering the fishway. Therefore the passage efficiency of the fishway, or the ratio of the number of fish exiting the fishway to the number of fish entering the fishway could not be calculated.

The fish counts at the exit end of the fishway are summarized in Figure 2, below. A total of approximately 9,300 river herring passed by the exit end of the Cumberland Mills fishway during the upstream migration season of 2014.

Figure 2: Estimate of River Herring per Day at Fishway Exit



4.2 2104 Shad Presence Study

4.2.1 Regular visual observations for American shad:

American Shad were not observed at the Cumberland Mills fishway during the 2014 study. Sappi collected video at the entrance and exit of the fishway. For the reasons mentioned above in 4.1.3 the videos taken at the entrance to the fishway

made it challenging to make accurate observations. This was primarily due to the presence of aeration bubbles introduced as water passed over the upstream baffles in the vicinity of the entrance. The clarity of video taken at the exit end camera was sufficient to identify species, so this video was used to determine the presence or absence of shad at the fishway. Additionally, since shad generally migrate after the end of the alewife run, the video of the exit end of the fishway was reviewed at random intervals from June 15th through July 22nd. No shad were observed at the exit end of the fishway.

4.2.2 Review of video recording for American shad:

The first 10 minutes of every hour of video recordings at the exit end of the fishway were viewed from May 6 through June 15th. Random segments of the camera video at the exit end of the fishway were viewed at random intervals (10 minutes every two days) from June 15 through July 15th. No shad were observed at the exit of the fishway. The entrance camera video was also viewed from May 6 through June 15th (the first 10 minutes of every hour of every day). No shad were observed at the entrance end but at times the visibility was so poor that positive identification of shad was not practical.

5.0 CONCLUSIONS AND RECOMMENDATIONS

During the 2014 Cumberland Mills fishway effectiveness study a total of four video cameras were set up inside and near the Cumberland Mills fishway to observe and count fish entering and exiting the fishway. There were no fish observed congregating outside the entrance to the fishway, indicating that the fish were not delayed as they attempted to enter the fishway. There were no fish observed at the barrier dam or near the Obermeyer dam, indicating that fish did not bypass the entrance to the fishway and attempt to migrate upstream by means other than the fishway. The number of river herring exiting the fishway was estimated by counting fish passing by the exit end camera for 10 minutes of every daylight hour of each day from May 6 through June 15. The estimated number of fish exiting the fishway was derived by extrapolating the 10 minute counts by the total daylight hours of each day and the total number of days from May 6 through June 15. The estimated total number of river herring that exited the fishway in 2014 was 9,300. Sappi attempted to estimate the number of fish entering the fishway, however, the effort was not successful for a variety of reasons that have been addressed in this report. Therefore, Sappi was unable to calculate the efficiency (ratio of fish exiting to fish entering the fishway) for the 2014 season.

No shad were observed near the entrance, inside the entrance or at the exit end of the Cumberland Mills fishway in 2014. In addition to river herring, brown trout, suckers, eels and bass were observed in the fishway.

Recommendations, based on the results and conclusions from the 2014 upstream anadromous fish passage effectiveness testing at Cumberland Mills are listed below.

- If the upstream anadromous fish passage effectiveness study is repeated in 2015, the video cameras should be set up in approximately the same locations.
- The number of anadromous fish exiting the fishway should be estimated using the same procedures described in this report. The exit end video provides a reliable and accurate method of estimating the total number of fish exiting the fishway.
- Some alternative procedure will need to be developed to accurately estimate the number of anadromous fish entering the fishway.

End of Document

APPENDIX L: 2014 EEL PASSAGE RESULTS, SACCARAPPA

S.D. WARREN COMPANY
WESTBROOK, MAINE

FERC PROJECT NO. 2897, SACCARAPPA SITE, WESTBROOK, MAINE
FERC PROJECT NO. 2932, MALLISON FALLS, GORHAM/WINDHAM, MAINE
FERC PROJECT NO. 2941, LITTLE FALLS, GORHAM/WINDHAM, MAINE
FERC PROJECT NO. 2931, GAMBO SITE, GORHAM/WINDHAM, MAINE
FERC PROJECT NO. 2942, DUNDEE SITE, GORHAM/WINDHAM, MAINE

CONSOLIDATED REPORT

2014 UPSTREAM EEL PASSAGE EFFECTIVENESS STUDY

SUBMITTED BY:
S.D. WARREN COMPANY
89 CUMBERLAND STREET
WESTBROOK, ME 04092

WITH ASSISTANCE BY:
Acheron
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com

DATE:
DECEMBER 2014

TABLE OF CONTENTS

1.0 Background 1
2.0 History of Eel Passage Facilities 4
2.1 Saccarappa Site 4
2.2 Mallison Falls Site 6
2.3 Little Falls Site 7
2.4 Gambo Site 9
2.5 Dundee Site 10
3.0 Scope of Work 12
3.1 Scope of Study 12
3.2 Schedule 13
3.3 Deviations from Scope of Study and Schedule 14
4.0 Study Results 15
4.1 Saccarappa Hydroelectric Facility Study Results 15
4.1.1 Saccarappa: Eastern Channel Eel Ramp 15
4.1.2 Saccarappa: Western Channel Eel Ramp 16
4.2 Mallison Falls Hydroelectric Facility Study Results 17
4.3 Little Falls Hydroelectric Facility Study Results 18
4.4 Gambo Hydroelectric Facility Study Results 19
4.5 Dundee 20
4.6 Eel Counts at Little Falls and Gambo 22
4.7 Eel Ramp Efficiency Test Results 23
4.7.1 Saccarappa West 23
4.7.2 Saccarappa East 24
4.7.3 Little Falls 25
4.7.4 Gambo 26
5.0 Conclusions and Recommendations 28
5.1 Saccarappa 28
5.2 Mallison Falls 28
5.3 Little Falls 29
5.4 Gambo 29
5.5 Dundee 30

1.0 Background

On October 2, 2003, the Federal Energy Regulatory Commission (FERC) issued licenses to S.D. Warren for the Saccarappa Hydroelectric Facility located in Westbrook, Maine; and the Mallison Falls, Little Falls, Gambo and Dundee Hydroelectric Facilities located in Gorham/Windham, Maine. Refer to Figure 1, Project Location Map, at the end of this section. Article 405 of the licenses outlines requirements for eel passage at each facility. The following is a copy of Article 405 from one of the licenses. They are all the same or very similar. Sections that pertain directly to this effectiveness study are highlighted in bold font.

> *Article 405. The licensee shall develop and implement an upstream American eel passage plan. The plan shall include provisions to install, operate, maintain,* ***and evaluate****, as appropriate, upstream fish passage facilities for American eel at the Saccarappa Project. The purpose of the plan is to enhance upstream passage at the Saccarappa Project and movement throughout the Presumpscot River drainage. The licensee may prepare a single plan that encompasses other licensee-owned projects on the Presumpscot River having similar license conditions and schedules.*
>
> *Within 180 days of license issuance, the licensee shall file, for Commission approval, an upstream American eel passage plan that includes, at a minimum:*
>
> *(1) Final detailed design drawings and other design criteria for the proposed upstream eel passage facility;*
>
> *(2) The proposed location of the upstream eel passage facility, determined in consultation with the Maine Department of Marine Resources (MDMR) and the U.S. Fish and Wildlife Service (USFWS);*
>
> *(3) Quantification of the flows required to operate the upstream eel passage facility;*
>
> *(4) An operation and maintenance plan, including a schedule for operating the installed upstream eel passage facility;*
>
> *(5) An erosion and sedimentation control plan, if ground-disturbing activities are required as part of the eel passage design and construction; and*
>
> *(6) A schedule for implementing the plan, which provides for installing the upstream eel passage facility within 2 years of license issuance.*
>
> ***The upstream American eel passage plan also shall include provisions to evaluate the effectiveness of the upstream eel fish passage facility. The monitoring provisions of the plan shall include a description of the study methodology employed, as well as a schedule for: (1) implementing the monitoring provisions; (2) consulting with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results (in the form of a final report), along with any recommended changes to the facility, agency comments, and the licensee's response to agency comments with the Commission.***

If the results of the monitoring indicate that changes in project structures or operations are necessary to facilitate upstream eel passage, the Commission may direct the licensee to make such reasonable changes in the design of the facilities and/or operations, as necessary.

The licensee shall prepare the upstream American eel passage plan in consultation with the MDMR, the Maine Department of Environmental Protection, and the USFWS. *The licensee shall include, with the plan, documentation of agency consultation, copies of comments and recommendations on the plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information.*

The Commission reserves the right to require changes to the upstream American eel passage plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission. Any structure built in accordance with this plan shall be shown on the as-built drawings filed pursuant to Article 305 of this license.

Article 405 of the license specifically requires that S. D. Warren propose and implement a plan to study and evaluate the effectiveness of the eel passage facilities installed at each of the Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee sites. Furthermore, it specifies that S.D. Warren consult with the Maine Department of Marine Resources (MDMR), the Maine Department of Environmental Protection (MDEP) and the U.S. Fish and Wildlife Service (USFWS) concerning the results of the effectiveness study and file a report with said results, along with any agency comments, S.D. Warren responses to comments and recommended changes to the facility.

This document is the final report that details the 2014 Eel Passage Effectiveness Study for passage locations at Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee Hydroelectric Facilities on the Presumpscot River. This report includes the history of eel passage facilities at each hydroelectric station, scope and schedule of the 2014 study, results of study and recommendations.

The 2014 Eel Passage Effectiveness Study of the five licensed sites was conducted in conjunction with a parallel study of the Cumberland Mills site in Westbrook (located approximately one mile downstream of Saccarappa. That site is not a FERC licensed facility because there is no power generation capability at the site. A separate report has been prepared for the study of that facility.

N
Presumpscot River Eel Study Dam Locations
Dundee Dam
Gambo Dam
Little Falls Dam
Mallison Falls Dam
Saccarappa Falls Dam
Acheron Engineering Services
Newport, Maine
Figure 1
S.D. Warren Company
Westbrook, Maine

2.0 History of Eel Passage Facilities

S.D. Warren previously conducted in depth eel studies to determine the most effective location(s) for permanent eel passage at Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee Hydroelectric Facilities on the Presumpscot River. This section of the report describes process that S.D. Warren underwent to determine the location of the current eel passage facilities.

2.1 Saccarappa Site

S.D. Warren conducted an initial study at Saccarappa in 2000 that documented primary eel passage locations, however it was determined that these study results needed to be confirmed before permanent passage could be designed and installed. A study was conducted in 2005 to determine the most effective siting for permanent eel passage structures at Saccarappa. The study, which had originally been scheduled to begin on May 15, 2005, was delayed due to high river flows until mid-July, when the river stage fell below 4.0 feet and allowed for installation of necessary project equipment. On July 19th and 20th, 2005 an interim passage structure was installed at the western spillway at Location 1 and a siting structure was installed at the eastern spillway at Location 2 (Figure 2). During the study period of July 19, 2005 to August 15, 2005, S.D. Warren spent approximately 4.25 hours during a total of eight nights observing elver behavior at Saccarappa. These observations, which are summarized in this section, were used to determine areas of maximum migrating elver congregation and determine the most effective locations for permanent eel passage structures.

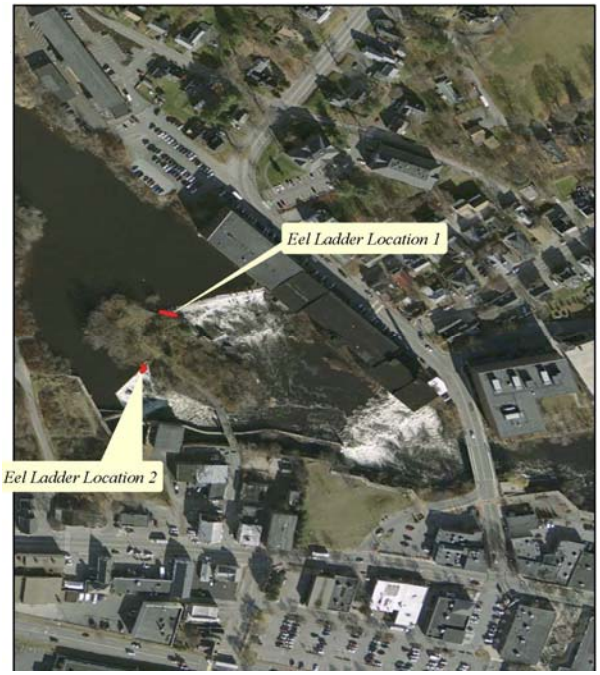


Figure 2: Saccarappa Eel Ramp Location Map

Spill conditions occurred at Saccarappa for a portion of the observation period. During these conditions, which resulted in approximately two to three inches of flow over the spillway crest, many elvers were observed ascending the portion of the western spillway near Location 1 that was protected by flashboards. Approximately 90% of the eels observed at the western spillway during the study used this protected area to pass the spillway. They ascended on the margins of flow, in areas of light flow and areas of wetness. While migrating eels were able to locate and utilize the siting structure at Location 1, it was observed that the majority of eels at this location successfully and preferably negotiated the spillway by climbing the sloping concrete structure. Observations showed a successful rate of passage in the western spillway, however the true rate of successful passage was not able to be determined due to safety concerns.

Eel counts indicated that numerous elvers also ascended the eastern spillway at Location 2. The majority used a concrete sloped area of the eastern spillway abutment wall to ascend the portion of the spillway

protected by flashboards. The majority observed followed attraction flows up the dam, passing primarily under the temporary flashboards. Observations indicated that regardless of eel passage siting, elvers can successfully traverse the eastern spillway where leakage provides attraction flow and a wetted surface.

Based on the results of the 2005 study, Location 1 on the western spillway and Location 2 on the eastern spillway were determined to be the most effective locations for permanent eel passage at Saccarappa. Permanent eel passage was installed and operated at these locations beginning in 2006. Passage for the eastern spillway is depicted in Photos 1 and 2 and includes Enkamat and tapered peg substrate, allowing for passage of yellow eels. Eel passage for the western spillway consists of an aluminum ramp (Photos 1 and 2).

Photo 1 – Saccarappa Eastern Spillway Eel Ramp

Photo 2 - Saccarappa Eastern Spillway Ramp

Photo 3 – Saccarappa Western Spillway Ramp

The upstream eel passage facilities located as depicted in Figure 2 and depicted in the photos above are the facilities that were evaluated during the 2014 study.

2.2 Mallison Falls Site

S.D. Warren conducted an initial study at Mallison Falls in 2000 that documented the primary eel passage location, however it was determined that these study results needed to be confirmed before permanent passage could be designed and installed. A study was conducted in 2005 to confirm the most effective siting for a permanent eel passage structure at Mallison Falls. The study, which had originally been scheduled to begin on May 15, 2005, was delayed due to high river flows until July, 2005, when the river stage fell below 4.0 feet and allowed for safe observation and installation of necessary project equipment. On August 1, 2005 a siting ramp was installed between the 6' and 12' penstock remnants (Figure 3). During the study period of July 19, 2005 to August 15, 2005, S.D. Warren spent approximately 3.5 hours during a total of eight nights observing elver behavior at Mallison Falls. These observations, which are summarized in this section, were used to determine areas of maximum migrating elver congregation and determine the most effective locations for permanent eel passage structures.

Figure 3: Mallison Falls Eel Ramp Location Map

Moderate spill conditions limited the investigation at Mallison Falls during the first night. Between several hundred and one thousand eels were observed during each of the remaining observation periods, which included time frames prior to and after installation of the siting ramp. Approximately 95% of elvers were observed on the east side of the spillway, primarily in the area of the old mill penstock remnants. These were observed ascending approximately 10 feet up the granite blocks at the head gate structure and then following leakage flow from between the blocks. Juvenile eels and elvers were also observed on the west side of the spillway. Elvers were observed successfully ascending the spillway, however no yellow phase eels were observed ascending the spillway.

Based on the results of the 2005 study, it was determined that the congregation point for elvers at the Mallison Falls Dam was at the remains of the granite block head gate structure. S.D. Warren installed an aluminum ramp at this location in 2006, refer to photographs below for detail. This eel ramp consists of three eel ramp sections connected by two turn pools.

Photo 4 - Upper Eel ramp Sections

Photo 5- Turn Pool with Lower Spray bar

Photo 6 - Upper Spray bar & Transition To Headpond (Cover Removed)

The upstream eel passage facility located as depicted in Figure 3 and depicted in the photos above is the facility evaluated during the 2014 study.

2.3 Little Falls Site

S.D. Warren conducted an initial study at Little Falls in 2000 to document eel passage locations, however the study results were inconclusive. Another study was conducted in 2005 to determine the appropriate siting for a permanent eel passage structure. This study, which had originally been scheduled to begin on May 15, 2005, was delayed due to high river flows until July, 2005, when the river stage fell below 4.0 feet and allowed for safe observation and installation of necessary project equipment. On July 28, 2005 a siting ramp was installed at the intersection of the spillways at Little Falls. Between July 19, 2005 and August 15, 2005, S.D. Warren spent approximately 3 hours during a total of 10 nights observing elver behavior. Major maintenance activities that resulted in the dewatering of the forebay and diversion of the entire river flow through a sluice gate were conducted during the majority of the observation period. Although observations were made during this period, they were inconclusive. Once the amount of diverted river flow was decreased, S.D. Warren was able to conduct a more intense evaluation, however the results were still inconclusive. Another eel passage study was conducted at Little Falls in 2013. These

observations, which are summarized in this section, were used to determine areas of maximum migrating elver congregation and determine the most effective locations for permanent eel passage structures.

During the study period between May 8, 2013 and August 20, 2013 S.D. Warren observed night time elver behavior at Little Falls. Approximately 100 elvers were observed at or ascending the dam during the study period. Substantial flow conditions were experienced during a significant portion of the observation period. During high flow periods, safety concerns limited the extent of observations. It was noted that elvers were predominantly observed congregating and ascending near the sluice gate structure, especially during high flow periods. During this study S.D. Warren also used electrofishing to collect physical information about the migrating elvers. A total of 261 eels were identified during this process, 206 of which were elver-sized. Additionally, a Nova Scotia box trap was deployed below the sluiceway on the bank at Little Falls from July 17, 2013 to August 14, 2013. The box trap deployed at Little Falls caught an average of six elvers per night. Large eels were relatively rare at Little Falls.

Based on the results of the 2013 study, it was determined that an eel ramp should be installed at the stone stairs (Figure 4, Photo 7). The current ramp was installed over the stone stairs from a turn pool downstream of the lowest step and is fed by two ramps leading from the gate side and the spillway side of the stairs and exit over the spillway. A ramp leads from the turn pool down to the high area on the ledge. Attraction flow is separately valved to provide attraction from both the gate- and the spillway side natural rock ramps.

Figure 4: Little Falls Eel Ramp Location Map

Photo 7 - Little Falls Eel Ramp

The upstream eel passage facility located as depicted in Figure 4 and depicted in the photo above is the facility evaluated during the 2014 study.

2.4 Gambo Site

S.D. Warren conducted an initial study at Gambo in 2000 that documented eel passage locations, however it was determined that these study results needed to be confirmed before permanent passage could be designed and installed. A study was conducted in 2005 to determine the most effective siting for a permanent eel passage structure at Gambo. This study entailed of the installation of interim eel passages and siting ramps consisting of Enkamat and attraction flow pumps. The 2005 monitoring results were used to determine the design and location of effective upstream eel passage at Gambo. The study, which had originally been scheduled to begin on May 15, 2005, was delayed due to high river flows until July 2005, when the river stage fell below 4.0 feet and allowed for installation of necessary project equipment. On July 19, 2005 an interim passage facility was installed at the location shown in Figure 5. During the study period of July 19, 2005 to August 15, 2005, S.D. Warren spent approximately 3.5 hours during a total of eight nights observing elver behavior at Gambo. These observations, which are summarized in this section, were used to determine areas of maximum migrating elver congregation and determine the most effective locations for permanent eel passage structures.

Figure 5: Gambo Site Eel Ramp Location Map

Significant spill conditions (5” – 6”) were experienced over the entire spillway during the majority of the observation period. Six inches of flashboards were added to the spillway to help facilitate passage and several hundred eels were observed ascending the ledges at the river bank, however they were inhibited from advancing the Gambo Dam due to the high volume of water associated with spill conditions. Approximately 10 yellow eels were observed in areas of elver concentration. Due to low observed passage at this facility, two elver release tests were conducted at Gambo. On July 27, 2005 a total of (219) 4” – 5” elvers were released at the base of the passage facility and many were observed retreating off of the ramp into a holding pool below the ramp entrance. A total of 98 eels were successfully ascended the ramp during the 12 hours immediately following the release. Based on observations during this release it was determined that elvers were able to successfully ascend the eel ramp. A second test, during which 100 more elvers were released at the base of the passage ramp, was conducted on August 1, 2005. Again, many elvers retreated to the holding pool at the base of the ramp. This study observed a 37% passage rate after 12 hours. Low passage rates for both tests was attributed to stress due to being held captive for 10 – 12 hours prior to testing.

Based on the results of the 2005 study, it was determined that elvers congregate and may pass at the natural ledge and concrete steps on the west spillway abutment and S.D. Warren installed a 6' wooden eel ramp at the west abutment and an Enkamat transition at the flashboards (Figure 5). Refer to the following photographs for details.

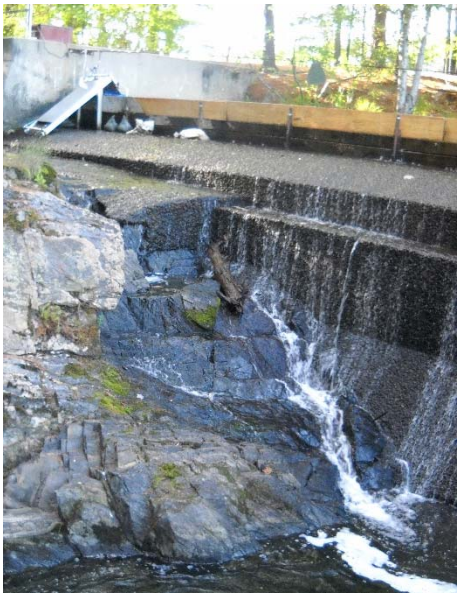


Photo 8 – Gambo Eel Ramp Location

Photo 9 – Gambo Ramp Location

The upstream eel passage facility located as depicted in Figure 5 and depicted in the photos above is the facility evaluated during the 2014 study.

2.5 Dundee Site

S.D. Warren conducted an initial study at Dundee in 2000 that documented eel passage locations, however the study results needed to be confirmed before permanent passage could be designed and installed. A study was conducted in 2005 to determine the most effective siting for a permanent eel passage structure at Dundee. The study, which had originally been scheduled to begin on May 15, 2005, was delayed due to high river flows until July, 2005, when the river stage fell below 4.0 feet and allowed for safe observation and installation of necessary project equipment. On July 28, 2005 a siting ramp fitted with Enkamat was installed at the location depicted in Figure 6. Attraction flow was generated using a spray bar, providing a steady flow and consistently wetted surface. During the study period of July 19, 2005 to August 15, 2005, S.D. Warren spent approximately 2.25 hours during a total of six nights observing elver behavior at Dundee.

Figure 6: Dundee Site Eel Ramp Location Map

These observations, which are summarized in this section, were used to determine the most effective locations for permanent eel passage structures.

Between several hundred and several thousand 3” - 7” elvers were observed during the observation period, which included dates prior to and after siting facility installation. At least 2,000 eels were observed at the eastern spillway base, while approximately 200 were observed ascending the eastern abutment wall to a flowing drain approximately 15’ up the spillway. Many elvers were also observed ascending the intersection of the abutment wall and spillway. While many elvers appeared to be attracted to the man-made attraction flow at the siting ramp, the majority were attracted to flow from a shelf at the base of the abutment wall and many were observed ascending ledges at the base of the spillway. On August 2, 2005 a total of 300 elvers were stained red and released approximately 100 feet below the spillway. Approximately 200 additional stained elvers were released at the same location on August 6, 2005. Only five of the released elvers were recollected at the siting facility. Based on the number of naturally migrating elvers collected at the siting facility and visual observations, it was apparent that they are able to successfully ascend Dundee Dam along the eastern abutment wall. The low study passage rate was attributed to elvers retreating to holding pools from stress of being held captive prior to testing.

Based on the results of the 2005 study, it was determined that the majority of elvers congregate and pass at the abutment wall. Due to the height of the Dundee Dam, S.D. Warren installed a lift at this location in 2006. This lift is comprised of entrance ramps, rails, a hopper, the head frame and the discharge pipe and traverses the entire 42’ height of the Dundee Dam. This has been designed to that eels make their way up one of both of the entrance ramps via attraction flow from the headpond and fall into a hopper, which is lifted by a hoist and tipped over to discharge into a pipe to the headpond.

Photo 10 – Dundee Eel Lift

Photo 11 – Lift Entrance

Photo 12 – Top of Lift

The upstream eel passage facility located as depicted in Figure 6 and depicted in the photos above is the facility evaluated during the 2014 study.

3.0 Scope of Work

This section of the report outlines the scope of work for the 2014 'Evaluation of Upstream Eel Passage Effectiveness' study plans that were submitted by S.D. Warren to the Maine Department of Marine Resources (MDMR), the Maine Department of Environmental Protection (MDEP) and the U.S. Fish and Wildlife Service (USFWS) in April 2014 for Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee Hydroelectric Facilities. This section of the report also identifies any unforeseen deviations from this scope that occurred during the 2014 study.

3.1 Scope of Study

The scope of the study to evaluate the effectiveness of the upstream eel passage facilities at Saccarappa, Mallison Falls, Little Falls, Gambo and Dundee hydroelectric facilities included:

- At each site, visual observations were made at, in and in the immediate vicinity of eel ramp(s) to collect empirical data to address the following issues regarding the effectiveness of the eel ramp(s):
  - Are eels congregating downstream from and in the general vicinity of the entrance to the eel ramp(s)?
  - Are eels reasonably able to find the location of the entrance to the eel ramp(s)?
  - Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp(s)?
  - Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?
  - Once the eels that ascend the ramp(s) reach the exit end, are the eels reasonably able to exit the ramp(s) and enter the headpond above the dam spillway(s).
  - To what extent (if any) does river flow and the depth of flow over the spillway(s) affect each of the factors listed above?
  - Are eels using other areas in the general vicinity of the ramp(s) to attempt to ascend the dam(s) and enter the headpond above the dam(s)? If so, are those attempts successful?
- The following procedures were used by personnel conducting the field study to make the visual observations described above:
  - Visual observations during late evening and nighttime hours were made with the aid of battery powered flashlights. Field personnel made visual observations in the general vicinity of the entrance to the ramp(s), at the entrance, inside the ramp(s) and at the exit of the ramp(s).
  - Field personnel attempted to make use of a submersible camera for the study but it turned out not to be useful or effective. Therefore the attempt was abandoned.

- Field personnel kept detailed field notes of their observations. Photographs were obtained to document examples of the visual observations. Facts such as weather conditions, depth of flow over the spillways, and other constraints or limitations were noted in the field notes.

3.2 Schedule

The upstream eel passage season for the Presumpscot River listed in the FERC license (Page 53 of Appendix 1) is *April 1 through June 30 with provisions for the period to be adjusted based on the results of studies by S.D. Warren.* In a FERC Order Approving Final Upstream Eel Passage dated February 26, 2009, the Commission recognized that the MDEP agreed with S.D. Warren's plan to operate upstream eel passage from May 15 through August 15. However the Order does not formally modify the dates listed in the original license. The upstream eel passage season for the Presumpscot River listed in the Cumberland Mills Order for the Cumberland Mills fish passage project is from *June 1 through September 30.* The eel passage season in the Cumberland Mills Order was established by the Maine Department of Marine Resources. Therefore, the 2014 effectiveness study was conducted from June 1 through September 30 for all facilities.

The schedule for all field study at the site was predicated on safety. Personnel obtained extensive safety training, including procedures for cessation of work at the site when weather conditions, high river flows or other issues arose that would increase the risk to health and safety of field personal. The study was completed without any incidents. Observations were made in accordance with the schedule outlined in Figure 7, excepting modifications due to storm events.

Figure 7: Weekly FERC Project Eel Passage Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
Saccarappa East				
	Observation (1 hour) Daily Notes			
Saccarappa West				
	Observation, Daily Notes			
Mallison Falls				
		Observations (1 hour), Daily Notes, Install Trap	Pull trap, Count eels	
Little Falls				
Eel Counts, Daily Notes	Eel Counts, Daily Notes	Eel Counts, Daily Notes	Eel Counts, Daily Notes, Observation (1 hour)	Eel Counts, Daily Notes
Gambo				
Eel Counts, Daily Notes	Eel Counts, Daily Notes	Eel Counts, Daily Notes	Eel Counts, Daily Notes, Observation (1 hour)	Eel Counts, Daily Notes
Dundee				
Observations, Operate Eel Lift, Daily Notes				

3.3 Deviations from Scope of Study and Schedule

Any deviations that were made from the approved scope of study and schedule are outlined below.

- *Deviation #1:* A submersible camera with IR light was not used to make underwater observations in the vicinity of the entrances. This was unnecessary, as clear visual observations were able to be made in the vicinity ramp entrance(s) without the submersible camera. Additionally, personnel were unable to safely access many ramp entrance(s).

- *Deviation #2:* On several occasions, observation days were shifted due to storm events and high-river flows. The changes in schedule were considered necessary because some of the sites were not considered safe during heavy rains or high flow conditions.

4.0 Study Results

This section details the observations at Saccarappa, Mallison Falls, Little Falls, Gambo, and Dundee Hydroelectric facilities between June 1, 2014 and September 30, 2014.

4.1 Saccarappa Hydroelectric Facility Study Results

Saccarappa Dam and Hydroelectric Facility consists of a spillway located in each of the eastern and western channels, hence there are two separate eel passage observation summaries presented below.

4.1.1 Saccarappa: Eastern Channel Eel Ramp

Visual observations were made at, in and in the immediate vicinity of the eel ramp at the eastern spillway at Saccarappa Dam during the 2014 study. Table 1: Saccarappa (East) Eel Passage Observations, details empirical data that was collected in order to address the effectiveness of the eel ramp.

Table 1: Saccarappa (East) Eel Passage Observations

Effectiveness Criteria	Results of Observations
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	Eel congregation was observed below the eastern eel ramp, however, not in large numbers.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	Unknown - Very few eels were observed at the eel ramp.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	Unknown - Very few eels were observed at the eel ramp.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Unknown - Very few eels were observed at the eel ramp.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Unknown - Very few eels were observed at the eel ramp.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	Unknown - Very few eels were observed at the eel ramp.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Based on observations made during the 2014 eel passage season, it became apparent that the only time eels attempted to use the eel ramp in the eastern channel was during periods of significant spillage over the eastern spillway. Given the shape and roughness of the Ogee spillway in the eastern channel, eels can pass the site at multiple locations without delay when spillage is low or minimal. It is doubtful that, even though eels did not use the east side ramp in significant numbers, they experienced any significant impediments to passage in the eastern channel.

In summary, the observations outlined in Table 1 indicate that very few eels were observed in or in the vicinity of the eel passage located at the eastern spillway of the Saccarappa Dam. The lack of eels present made it difficult to assess the whether eels were successfully entering and exiting the ramp, the impact of

flow on successful ascension, as well as whether ascension was taking place in the vicinity of the ramp. Given the configuration and characteristics of the eastern channel and the eastern spillway, eels had many more desirable options to achieve passage and did not need to use the ramp to achieve passage.

4.1.2 Saccarappa: Western Channel Eel Ramp

Visual observations were made at, in and in the immediate vicinity of the eel ramp on the western spillway during the 2014 study period to collect empirical data to address the following issues regarding the effectiveness of the eel ramp and eel passage in the western channel (Table 2):

Table 2: Saccarappa (West) Eel Passage Observation Results

Effectiveness Criteria	**Results of Observations**
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	Yes. Eels were frequently observed congregating in the small pools that exist in cavities in the bedrock 5 to 10 feet downstream from the entrance to the eel ramp.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	Yes. Eels were observed moving from the pools downstream toward the entrance to the eel ramp.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	During low flow periods (no flow over the spillway) eels were observed following the attraction flow and entering the ramp. During periods when there was flow over the spillway, eels were observed that had missed the entrance and were attempting to ascend the steep face of the dam.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Yes. Eels were able to successfully ascend the western channel ramp within a reasonable amount of time.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Yes.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	Flow over the spillway critically impacts the ability of eels to successfully find and ascend the ramp. When spillage existed over the spillway, eels attempted to ascend the dam at various sites along the dam. During no- and low flow periods eels successfully navigated to and up the eel ramp.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Yes. Eels were observed ascending the dam face often and successfully. Generally, the smaller eels were more successful than the larger eels. The downstream face of the dam is very steep (much steeper than the spillway in the eastern channel) so the larger eels were generally less successful.

In summary, the observations outlined in Table 2 indicate that many eels were observed in the western channel at Saccarappa Dam. During times of low flow over the spillway, eels attempted to ascend the dam and were observed successfully reaching the headpond. During periods of high flow over the spillway, observations of eel activity was not practical. During periods of little or no flow over the spillway, eels

were able to locate and ascend the eel ramp. Overall, eels were able to successfully ascend both the eel ramp and dam face. The smaller eels were more successful at ascending the dam face than the larger eels.

4.2 Mallison Falls Hydroelectric Facility Study Results

Visual observations were made at, in and in the immediate vicinity of the eel ramp at the Mallison Falls Dam during the 2014 study period. Table 3 details empirical data that was collected in order to address the effectiveness of the eel ramp.

Table 3: Mallison Falls Eel Passage Observation Results

Effectiveness Criteria	**Results of Observations**
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	Eels were observed below, but not at the entrance to the ramp.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	Eels were observed bypassing the ramp entrance and congregating on the masonry adjacent to the penstock. Leakage through the abandoned penstock seem to attract eels to that area.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	Eels were observed having difficulty ascending the vertical concrete foundation wall to find the entrance to the ramp. A trap was set up once per week at the exit end of the Mallison Falls ramp. Three eels were captured on one night during the period from July 1 through the end of September. These data along with observations indicate that eels were not able to find the entrance and use the ramp.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Unknown. Eels were generally not able to find and reach the ramp entrance.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Unknown. No eels were actually observed ascending and exiting the ramp at Mallison Falls.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	River flow has no effect on eels finding or using the ramp at Mallison Falls because there is no water flow in the vicinity of the ramp during the study.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Yes. Eels were observed climbing into and exiting from cracks in the masonry structure in the general vicinity of the eel ramp. There are multiple potential pathways for eels to use to pass through the masonry structure. Observations within the small pathways are impossible to monitor.

In summary, the observations outlined in Table 3 indicate that eels were generally not able to find and enter the eel ramp at the Mallison Falls site. Eels were observed bypassing the ramp and congregating near the masonry structure on either side of the abandoned penstock. Eels were observed climbing the

masonry walls and entering cracks along the downstream face of the masonry walls. Small eels were also observed exiting from cracks in the masonry into the headpond above the dam.

4.3 Little Falls Hydroelectric Facility Study Results

Visual observations were made at, in and in the immediate vicinity of the eel ramp at Little Falls Dam during the 2014 study period to collect empirical data to address the following issues regarding the effectiveness of the eel ramp (Table 4):

Table 4: Little Falls Eel Passage Observation Results

Effectiveness Criteria	**Results of Observations**
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	No. Eels were not observed congregating in the vicinity of the entrance to the eel ramp. Generally, eels moved easily and quickly from the water downstream of the entrance and easily into the ramp. Eels entered from both sides of the ramp.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	Yes. Observations indicate that eels of all sizes were able to locate the entrance.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	Yes. Observations indicate that eels of all sizes were able to move successfully from the riverine habitat into the eel ramp.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Yes. Eels were able to successfully ascend the ramp at Little Falls within a reasonable amount of time.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Yes.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	The release of water through the sluice gate nearest to the ramp did have an adverse impact on the ability of eels to find and enter the ramp. The water exiting that gate splashes over the entrance to the ramp making it difficult for eels to find and enter the ramp. Eels that successfully exited the fish ramp were observed to be flushed back downstream when the sluice gate closest to the ramp was open.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Yes. No eels were observed on the dam face, however eels were observed climbing the masonry walls near the gate structures. There are cracks in the masonry walls with some leakage flow. Eels were observed being attracted to and climbing into cracks in masonry.

In summary, the observations outlined in Table 4 indicate that eels did easily find, enter and ascend the eel ramp at the Little Falls Dam site. Eels were also observed climbing onto the masonry walls of the dam structure and entering cracks in the masonry walls. The overall success of eel passage at Little Falls was observed to be adversely affected when the sluice gate closest to the eel ramp was open to pass excess river flows. Eel count results from the eel trap at Little Falls are provided in Section 4.6.

4.4 Gambo Hydroelectric Facility Study Results

Visual observations were made at, in and in the immediate vicinity of the eel ramp at the Gambo Dam during the 2014 study period. Table 5 details empirical data that was collected in order to address the effectiveness of the eel ramp.

Table 5: Gambo Eel Passage Observation Results

Effectiveness Criteria	**Results of Observations**
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	Eels were observed congregating in the pools in the bedrock channel 10 to 15 feet easterly of the ramp. The channel is shown in Photo 8 in Section 2.4 of this report. The steep rock/concrete face inhibits eel movement toward the ramp. Small eels were observed successfully ascending the bedrock and moving toward the dam. Some eels, especially larger eels had difficulty ascending the rock face and tended to congregate in the pools in the channel. Some days, thousands of eels were observed congregating in the pools in the channel.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	In general eels had difficulty finding the Gambo eel ramp because there the flow over water over the dam as well as through and under the flashboards provided attraction flow for the eels. The attraction flow from the ramp cannot be differentiated from flow through the dam.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	Generally no. The physical barrier created by the steep rock/concrete wall at the upstream end of the channel prevented eels from being able to move from the riverine habitat to the eel ramp at Gambo.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Yes. The eel ramp is very short and those eels that did find the ramp entrance were able to ascend the ramp without delay or difficulty.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Yes.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	During periods of high flow over the spillway and/or flashboards, the flow cascading downstream into the channel inhibited the eels' ability to ascend the steep face of the wall to reach the dam and/or the eel ramp.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Yes. Eels were observed at several locations on both sides of the island that exists between the narrow channel near the eel ramp and the river.

In summary, the observations outlined in Table 5 indicate that eels congregated in pools in the bedrock channel below the eel ramp. Many smaller eels were able to ascend the steep bedrock face at the upstream end of the channel and enter the ramp or ascent the face of the dam. Larger eels were not as successful at

climbing the rock face. During periods of higher flows over the dam, the pool depth would rise and eel passage success would increase. Eels were also observed trying to ascend the dam in other areas. Eel count results from the eel traps at Gambo are described in Section 4.6.

4.5 Dundee

Visual observations were made at, in and in the immediate vicinity of the eel ramps and lift at Dundee Dam during the 2014 study period to collect empirical data to address the following issues regarding the effectiveness of the eel ramp (Table 6):

Table 6: Dundee Eel Passage Observation Results

Effectiveness Criteria	**Results of Observations**
Are eels congregating downstream from and in the general vicinity of the entrance to eel ramp(s)?	Yes. Eels were observed congregating in the corner of the intersection of the dam footing and abutment wall. The vertical walls create an impediment that delayed the movement of eels toward and into the entrances of the eel ramps and lift.
Are eels reasonably able to find the location of the entrance to the eel ramp(s)?	Eel have difficulty finding and reaching either of the entrances because of the vertical concrete surfaces described above. Many eels were however able to overcome this impediment and reach the entrances to the eel ramps and lift.
Are eels reasonably able to move from the riverine habitat below the entrance to the eel ramp(s) and into the eel ramp?	The vertical walls can be navigated by small eels but larger eels had considerable difficulty scaling the vertical walls to reach the entrances.
Are the eels that move into the entrance to the ramp(s) able to ascend the ramp(s) in a reasonable amount of time?	Yes. The eel lift is operated once per day and a large number of eels were observed in the bucket as it dumped eels into the impoundment above the dam.
Once the eels that ascend the ramp(s) reach the exit end, are they reasonably able to exit the ramp and enter the headpond above the dam spillway(s)?	Yes. The eel lift is operated once per day and effectively deposited the eels that entered the bucket into the impoundment.
To what extent does river flow and depth of flow over the spillway(s) affect each of the factors listed above?	During high flows the eels are attracted to the left side of the river, although high flows inhibit their ability to find the second entrance. During low and moderate flows they are more successful at finding both of the entrances.
Are eels using other areas in the general vicinity of the ramps to attempt to ascend the dams and enter the headpond above the dams? If so, are those attempts successful?	Eels were observed climbing up to 15 feet up the face of the dam, though they were generally not successful at reaching the headpond. Some eels bypassed the first ramp and entered the second ramp directly from the ledge below.

Eel counts at Dundee were not part of the original study plan but on various days, as time was available, field personnel operated the lift at Dundee and estimated the number of eels in the bucket when it reached the top of the lift and was being dumped. The following is a summary of the estimates.

Table 7: Dundee Eel Estimate Results

Date	Estimated Number of Eels
July 14	400-500
July 15	3
July 16	250
July 21	100
July 28	75
August 4	50
August 5	30
August 7	50
August 8	30
August 11	25

The following is a photograph taken on July 14, 2014 of the lift bucket as it was being dumped.

Photo 13 – Eels in Lift Bucket at Dundee

These random data show that in spite of the challenges discussed above, a substantial number of eels did find the entrance to the lift and were successfully moved upstream over the dam.

In summary, the observations outlined in Table 6 indicate that eels congregated in a pool below the eel ramps leading to the entrance to the lift. The vertical walls below the entrances impede access to the entrance of the lift. While many smaller eels were able to ascend the small wall and enter the ramp, many larger eels were not as successful.

4.6 Eel Counts at Little Falls and Gambo

While eel observations occurred at all stations, eels were collected in traps and counted on a daily basis during the study period at Little Falls and Gambo. The following Figure 8 depicts the results of the eel counts. Figure 9 depicts Presumpscot River average daily temperature for the study period.

Figure 8: Number of Eels Captured in Traps at Little Falls and Gambo Facilities

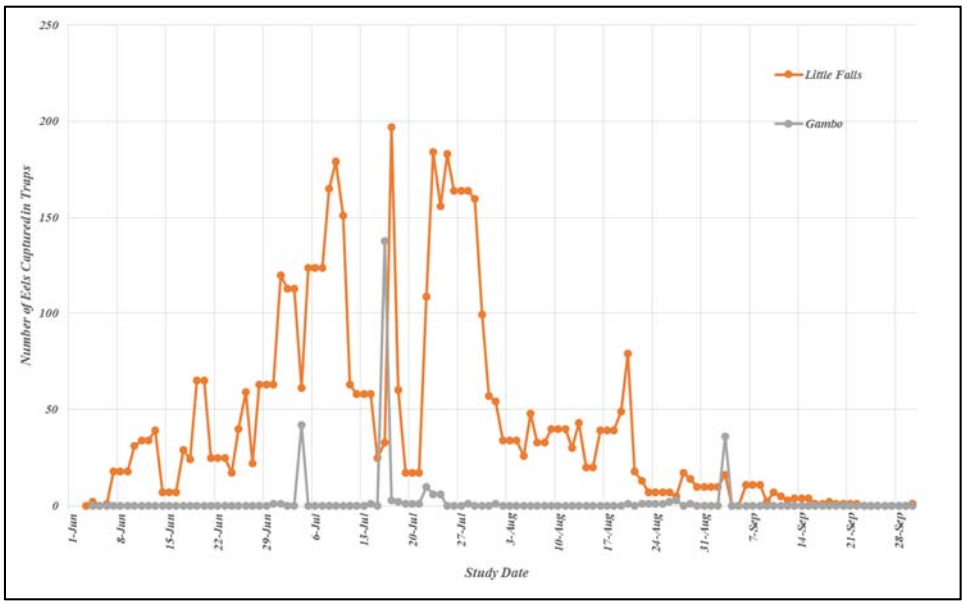
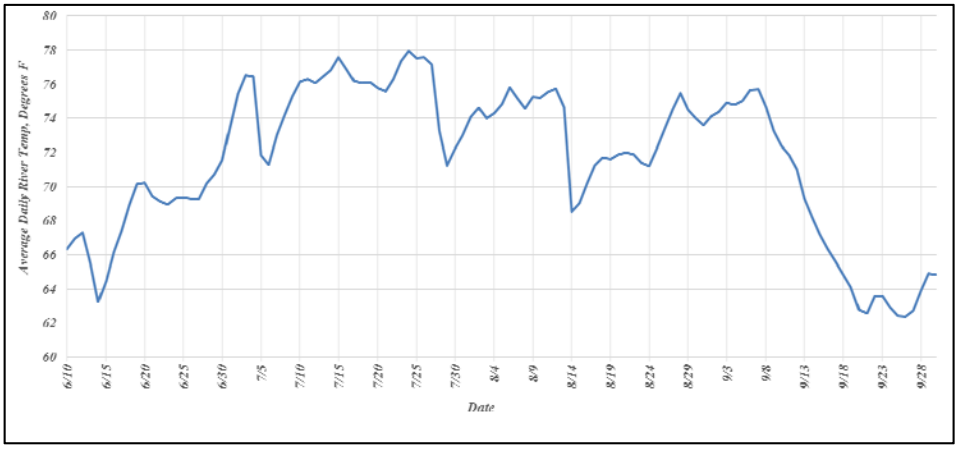


Figure 9: Average Daily Presumpscot River Temperature



The data presented in Figure 8 clearly indicate that the heart of the eel's upstream migration season at Little Falls was in July. The aberrant low count periods correspond to periods when the sluice gate nearest to the eel ramp was open and passing water. A total of 5,114 eels passed through the Little Falls ramp from June 1 through September 30, 2014. Approximately 3,317 passed in July and 889 passed in August. Based on visual observations, there are limited opportunities for eels to pass the Little Falls site without using the eel ramp but there is evidence that some attempted to pass using small cracks in the masonry.

It is interesting to note that the eel counts at Little Falls have little or no correlation with river water temperature. The upstream migration increased significantly when water temperature increased in early July. However, the warm river water temperatures continued through the end of August but the eel counts decline significantly around the first of August. The eel counts at Gambo are of little value because so few eels used the ramp at the Gambo dam.

4.7 Eel Ramp Efficiency Test Results

Eel ramp efficiency tests were performed at Saccarappa East and West, Little Falls and Gambo during the 2014 Effectiveness Study. The purpose of the efficiency tests was to assess the ability off eels to successfully ascend each of these eel ramps. For these tests, a tote was fixed to the entrance and a trap was set up at the exit ends of each tested ramp. A known number of eels was placed in the entrance tote. The eels used for the test came from traps at Cumberland Mills and at Little Falls. Observations were made at each location for a portion of the test period. After 24 hours, the number of eels that had successfully ascended the ramp into the exit trap were counted and released. Testing methods and results specific to each eel ramp are described below.

4.7.1 Saccarappa West

On July 23, 2014 a total of 100 eels, consisting of 15 eels from the Saccarappa West site and 85 eels from Little Falls, were placed in a tote at the bottom of the eel ramp at Saccarappa West. The top cover of the existing eel ramp was temporarily removed in order to install a 110-liter clear plastic tote at the entrance of the ramp (Photo 14). The tote was cut at the base so that it could be sealed to the eel ramp and was attached using self-tapping screws. Caulking and weather stripping was used to seal any gaps between the tote and the eel ramp. Small holes were drilled in the tote to allow water from the ramp to flow out of the tote without overflowing the tote. A trap was installed at the exit of the ramp. The top cover of the eel ramp was then replaced and the test was started by placing 100 eels into the entrance tote. The eels in exit trap were counted 24 hours later. The eels were then released at Little Falls. Results of this test are included in Table 8.

Photo 14 – Saccarappa West Ramp Entrance

Table 8: Saccarappa West Efficiency Test Results

Start of Test (Date and Time)	Eels In	End of Test (Date and Time)	Eels Out	Eel Ramp Efficiency	Test Duration
7/23/2014 at 19:00	100	7/24/2014 at 19:00	136	**136%**	24 hours

At the end of the test period there were no eels in the entrance tote and 136 eels in the exit trap. These data suggest that all of the eels placed in the entrance tote successfully ascended the ramp. Either some eels found their way into the ramp during the test or there were eels in the ramp at the time the test started. Overall, the results of this efficiency test indicates that eels are successfully able to ascend the ramp at Saccarappa West. The same general procedure was used for the efficiency tests at all of the sites.

4.7.2 Saccarappa East

On July 23, 2014 a total of 100 eels taken from the Little Falls site were placed in a tote at the entrance of the eel ramp at Saccarappa East. A temporary trap was also installed at the exit of the ramp. After 24 hours, the eels in the exit trap were counted. These eels were then released at Little Falls. The results of this test are included in Table 9.

Photo 15 – Saccarappa East Efficiency Test

Table 9: Saccarappa East Efficiency Test Results

Start of Test (Date and Time)	Eels In	End of Test (Date and Time)	Eels Out	Eel Ramp Efficiency	Test Duration
7/23/2014 at 19:30	100	7/24/2014 at 19:30	83	**86%**	24 hours

At the end of the test period there were no eels in the entrance tote and 83 eels in the exit trap. It was observed that eels were able to ascend the ramp within 30 minutes. Some eels were observed exiting the ramp directly into the headpond, hence bypassing the trap at the top of the ramp. These results and observations indicate that all test subjects were able to successfully enter and ascend the ramp and that the calculated efficiency of 86% it not an accurate reflection of the actual efficiency because some eels managed to bypass the trap at the exit. Overall, the results of this efficiency test indicate that eels are successfully able to ascend the ramp at Saccarappa East.

4.7.3 Little Falls

A total of three efficiency tests were conducted at Little Falls. The tests took place on July 9, July 17 and July 22, 2014. For each test, eels were taken from the trap at Little Falls and placed in a tote at the entrance. The eels in the exit trap were counted at the end of the 24 hour test.

For all tests that took place at Little Falls, the last section of the cover to the eel ramp was removed and a 110-liter clear plastic tote was modified so that it could be sealed to the eel ramp entrance (Photo 16). The tote was installed using self-tapping screws. Caulking and weather stripping was used to seal any gaps between the tote and the eel ramp. Small holes were drilled in the tote to allow for water flow from the ramp to run into the tote without overflowing the tote. The top cover of the eel ramp was then replaced. This process was repeated for each test that took place at Little Falls. The results of each test are presented in Table 10.

Photo 16 – Little Falls Efficiency Test

Table 10: Little Falls Efficiency Test Results

Start of Test (Date and Time)	Eels In	End of Test (Date and Time)	Eels Out	Eel Ramp Efficiency	Test Duration in Hours
7/9/2014 1815	100	7/10/2014 1815	151	**151%**	24
7/17/2014 1800	100	7/18/2014 1500	60	**60%**	21
7/22/2014 1805	100	7/23/2014 1805	184	**184%**	24

The first efficiency test began on July 9, 2014. One hundred eels were taken from the daily count trap at Little Falls and released into the tote at the entrance of the ramp. At the end of the test period there were no eels in the entrance tote and 151 eels in the exit trap. Rain during the afternoon and night of the test caused seal around the edges of the tote to wash away leaving gaps that allowed eels to enter the ramp and ascend the ramp. There may also have been some eels in the ramp before the test began. Overall, this test indicated that eels were able to successfully ascend the ramp.

The second efficiency test began on July 17, 2014. One hundred eels were taken from the trap and placed in the tote at the entrance of the ramp. At the end of the test period there were no eels present in the entrance tote and 60 eels present in the exit trap. However, a seal on the screen in the exit trap failed allowing eels to exit the trap without being counted. It is believed that this issue skewed the results of this test.

The last efficiency test began on July 17, 2014. One hundred eels were taken from the trap and placed in the tote at the entrance of the ramp. At the end of the test period there were no eels present in the entrance tote and 184 eels present in the exit trap. These results and observations indicate that all of the eels in the entrance tote entered and ascended all or a portion of the ramp. The seals at both the entrance and exit held, so no additional migrating eels were able to access or leave the ramp during the test. The most logical explanation for the high eel count in the trap at the end of the 24 hour test period is that there were eels in the ramp at the beginning of the test. Overall, the results of this efficiency test indicates that eels are able to successfully ascend the ramp at Little Falls within a 24 hour period.

4.7.4 Gambo

A total of two efficiency tests took place at Gambo. The tests took place on July 30 and September 2, 2014. For each test, eels were taken from Little Falls and placed in a tote installed at the entrance as described above.

For all tests that took place at Little Falls, the eel ramp was unbolted and placed inside the same 100-liter clear plastic tote that was used for the Saccarappa East efficiency test. This tote already contained small holes to regulate water flow through and water level in the tote. A temporary trap was installed at the exit of the ramp. This process was repeated for each test that took place at Gambo. The results of each test are presented in Table 11.

Table 11: Gambo Efficiency Test Results

Start of Test (Date and Time)	Eels In	End of Test (Date and Time)	Eels Out	Eel Ramp Efficiency	Test Duration
7/30/2014 at 17:00	99	7/31/2014 at 17:00	54	**55%**	24
9/2/2014 at 19:30	43	9/2/2014 at 20:00	36	**84%**	0.5

The first efficiency test began on July 30, 2014. Ninety-nine eels from the trap at Little Falls were placed into the tote at the entrance of the ramp. At the end of the test period there were 6 eels in the entrance tote, one eel on the ramp and 54 eels in the exit trap. It was also observed that 25-30 eels made it up the ramp within the first 30 minutes of testing. Eels were observed bypassing the trap through a small gap between the exit trap and top of the ramp. Some eels most likely bypassed the exit trap and went straight into the head pond. Overall, it was observed that eels were able to successfully ascend the ramp.

The second efficiency test began on September 2, 2014. Forth-three eels were taken from Little Falls and released into the tote at the ramp entrance. This time, the gap between the exit trap and headpond was covered. The eels were placed in the entrance tote at 19:30 and were counted again at 20:00. At this time, one eel was observed at the ramp exit, while 36 eels were observed in the exit trap. At the end of the test on the following day, however, only one eel was present in the exit trap. It is suspected that the trap was tampered with during the 24 hour test period. Overall, observations from the evening of September 2nd

indicate that most of the eels placed in the entrance tote were able to successfully ascend the ramp within the first 30 minutes of the test.

5.0 Conclusions and Recommendations

The following sections provide a summary of the conclusions and recommendations based on observations during the 2014 eel passage effectiveness study of the five sites on the Presumpscot River.

5.1 Saccarappa

Eastern Side: The observations made during the 2014 study indicate that very few eels used the ramp to pass the eastern spillway of the Saccarappa Dam. The observations indicate that eels have many other options to pass the eastern spillway and very few eels were observed using the eastern ramp. The only exception was during periods of high flows over the spillway. During these high flow periods, the eastern eel ramp appeared to be the most desirable option for upstream passage. The eastern ramp should continue to be operated as it was in 2014. The short section of flashboards on top of the dam in the vicinity of the ramp should continue to be installed each year to protect the approach to the eastern ramp

Western Side: The observations made during the 2014 study indicate that eels used the western ramp to pass the spillway. During periods of high flow over the spillway, eels were drawn to the eastern side of the western channel because of the relatively low flow and low current velocities in that area. During periods of low or no flow over the spillway, eels attempted to ascend the dam with limited success due to steepness of the downstream face. During these low flow periods, there is still enough leakage to provide attraction flow at multiple locations. It may be helpful to increase the attraction flow in the vicinity of the ramp to help attract eels to that location.

Based on the observations, the eel ramps are sited in the best location and are being operated to maximize utilization and provide effective upstream passage.

5.2 Mallison Falls

Observations made during the 2014 study at Mallison Falls indicate that the existing eel ramp did not significantly enhance eel passage at the Mallison Falls site. The observations indicate that the eels that did enter the area near the entrance to the ramp were not able to find the entrance because the entrance is located on a concrete shelf. Eels were observed congregating near the masonry structure on either side of the old penstock that penetrates the masonry wall. This conclusion is however based on very limited observations. It is very difficult to make good observations of eel activity from above and there was no means of safe access to the entrance area.

Any modifications of the Mallison Falls eel ramp based on the limited observations in 2014 would be premature. Some means should be provided to safely access the area near the existing entrance and the area downstream of the end of the penstock. Additional observations should be made to better assess where and how eels are moving and congregating. Potentially, additional night-time observations would provide a sound technical basis for modifications to the existing eel ramp at Mallison Falls.

Photograph 17: Eel Ramp and Penstock at Mallison Falls Dam

5.3 Little Falls

Observations and eel counts at Little Falls clearly indicate that the new eel ramp at that site was properly sited and was operated to provide safe and effective passage of eels. The only recommendation is that the sluice gate nearest the eel ramp should become the last gate to be opened and the first gate to be closed during high flow events. Modifying the sequence of sluice gate operation will reduce and minimize the amount of time that water from the gate adversely affects the effectiveness of the Little Falls ramp. Also reducing the amount of time that gate is open, will reduce the opportunity for eels that exit the ramp to be flushed downstream through the open gate. The eel ramp should continue to be operated in a manner similar to the way it was operating during the 2014 season. The trap at Little Falls should be removed or a bypass installed to allow eels to have uninterrupted access to the headpond.

5.4 Gambo

Observations and eel counts at the Gambo site indicate that eels are delayed and or prevented from passing the Gambo site because of the eels inability to easily ascend the near vertical rock/concrete face at the upstream end of the channel on the west side of the river. The observations during the 2014 study indicate that eels congregated in a pool at the upstream end of this channel. Smaller eels were at times able to ascend the rock/concrete face and continue toward the entrance of the ramp or simply move over the dam into the headpond. The larger eels were at time unable to navigate this impediment.

There are several potential ways to remedy this situation. One is to install a second ramp generally as depicted in the figure below. Another option would be to place a concrete fill with a slope of 3/1 and a roughened surface at the upstream end of the channel. A third option might be to remove some of the existing concrete and shape the bedrock to decrease the slope of the existing pathway from the bottom of the channel to entrance of the existing ramp. Any of these options would eliminate the existing impediment to effective passage. In addition, the attraction flow should be increased.

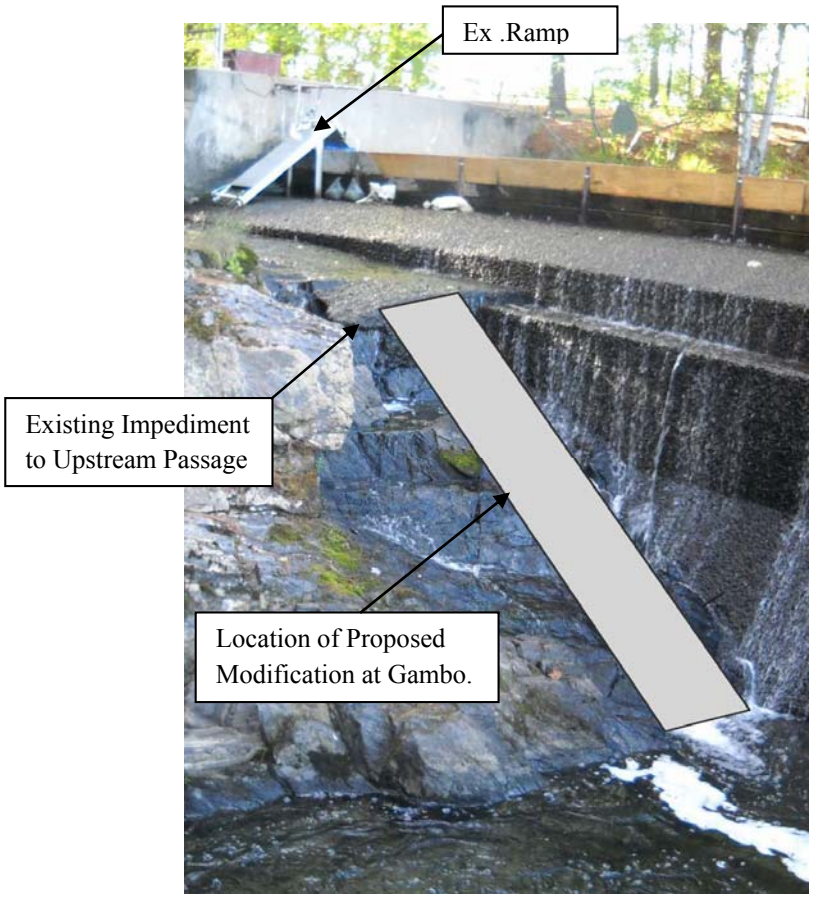


Figure 10: Downstream View of the West Side of Gambo Dam and Existing Eel Ramp

5.5 Dundee

Observations and eel counts at the Dundee site indicate that some eels, especially larger eels, face some challenges as they attempt to transition from the riverine environment to either of the two ramps that guide eels into the lift. The eels are being delayed by the vertical concrete surfaces at the base of the dam. However, in spite of the impediments, a substantial number of eels did eventually find the ramps and were successfully transported via the lift into the impoundment above the Dundee dam. Clearly the effectiveness of eel passage at Dundee would be improved by simply filling in the corner between the dam foundation and the foundation of the abutment wall with concrete. A figure showing an example of the potential modification is provided below. The concrete surface should have a slope of about 3/1 and the surface should be very rough. With this minor modification, eels of all sizes will be able to more easily reach the top of the foundation and gain easier access to the small ramps to reach the lift.

Figure 11: Location of Proposed Modifications to Dundee Eel Passage Facilities

End of report

APPENDIX M: WETLAND SURVEY

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Saccarappa Falls Fish Passage Project
Assessment of Wetland Resources
due to
Lowering of Impoundment

Mark Hampton Associates, Inc.
Portland, ME

August 2015

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

3983 MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Saccarappa Falls Fish Passage Project
Wetland Impacts
August 2015

FERC has requested information be provided in regards to the potential impacts to existing wetlands associated and adjacent to the Presumpscot River from the lowering of the water level 4-5 feet by the removal of the Saccarappa Dam in Westbrook. The project area encompasses the length of the Presumpscot River from Saccarappa Falls, in Westbrook, to the Mallison Dam in South Windham. A total river length of 4.8 miles. The project area also includes the lower portion of the Little River from its mouth at the Presumpscot 1.5 miles upstream to the Route 202/4 bridge in Gorham.

Little River Vegetative Cover Type

During the growing season of 1997, Sappi, then S.D. Warren, completed a vegetative cover type mapping study of the impoundment area. This work was presented in a report completed by Kleinschmidt in 1999 and subsequently reiterated in a report completed by HDR, Inc in 2013. This report included the area along the banks of the Presumpscot River, however, it did not include the Little River at all. So, in July 2015, a similar study of that portion of the Little River was completed. Interpretation of aerial photography and topographic information, as well as review of National Wetland Inventory (NWI) maps was completed in the office. Ground truthing this information was completed in the field by field observation of both sides of the river banks along the impoundment study area.

According to the NWI maps there are no mapped wetland cover types along this portion of the Little River. However, field work found that there are wetland cover types present through this section of the impoundment. The cover types include palustrine forested and palustrine scrub/shrub.

Palustrine wetlands are nontidal wetlands. These wetlands are dominated by trees, shrubs and groundcover including ferns and mosses. Palustrine wetlands are found along the shoreline of streams, brooks, rivers, lakes and ponds. They may also be found as isolated depressions and hydrolgic swales away from bodies of water.

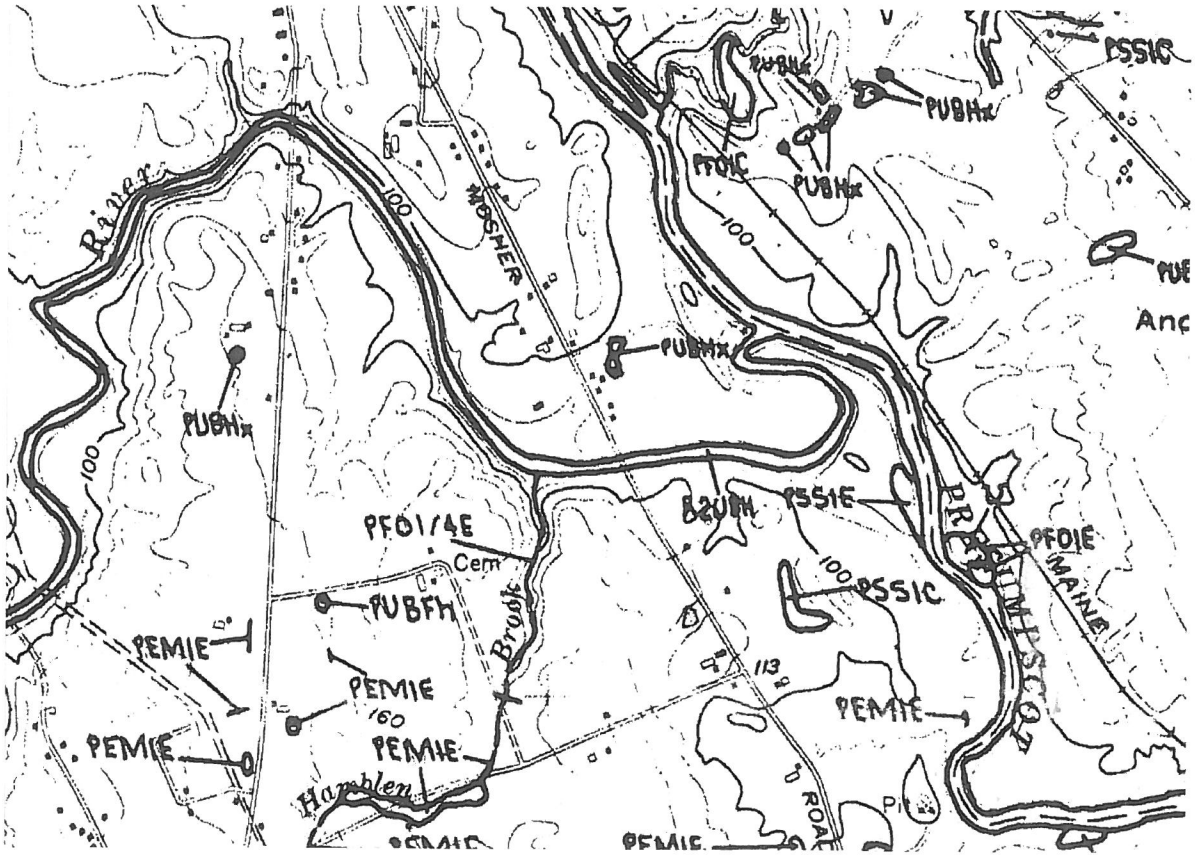
Palustrine forested wetland is characterized by woody vegetation greater than 20 feet in height. They normally possess an overstory of trees, an understory of younger trees and shrubs and a goundcover. This is the dominant wetland cover type found along the Little River, just as it is the dominant cover type along the Presumpscot River. Dominant species in this cover type include ash, red maple, hemlock, gray birch, and spruce. The shrub layer may include red osier dogwood, speckled alder and saplings of the dominant species. The herbaceous layer may include cinnamon fern, sensitive fern, royal fern, sphagnum moss, gold thread and sedges and rushes.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

1 acre 5 acres 10 acres 20 acres 40 acres

ACREAGE GUIDE

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

Palustrine scrub/shrub wetland includes area dominated by woody vegetation less than 20 feet in height. The species include shrubs, young trees, and an herbaceous layer. These wetlands may be a successional stage leading to palustrine forested wetlands, or they represent a stable vegetative community. Dominant species include saplings of forested species, red osier dogwood, black willow, speckled alder, buttonbush, and high bush blueberry. The herbaceous layer species will be similar to the herbaceous layer in the forested wetland.

The location of the different wetland cover types identified in the field are depicted on the attached plan of this portion of the impoundment.

Lowering Impoundment Impacts on Wetlands

Assessment of the wetlands found along the length of the impoundment including sections of the both the Presumpscot and Little Rivers, was completed in May 2015 by boat. Cross sections along the rivers were established in the field. The nodes of these sections, those points on either bank of the cross section were photographed and field notes of the vegetative cover type were made. The summary of these notes and the corresponding river cross sections are presented in Appendix 1. Appendix 2 is an index sheet and overview panels and location of all the cross sections for both the Presumpscot and Little Rivers.

The wetlands found in the impoundment area are either hydrologically associated with or adjacent to the impoundment. Hydrologically associated with means that the wetland exists because of the impoundment. The first dam at Saccarappa Falls was reportedly construction in the early 19th century. The damming created an impoundment which over a period of years allowed for the establishment of wetlands to naturally occur along its shoreline where conditions were favorable. Over the years, with fluctuating water levels, these wetlands either survived and thrived or were replaced with somewhat poorly drained soils and dryer vegetative species. But once established, the wetlands found along the river shoreline continued to exist to this day. The wetlands are established at points along the river shoreline which are topographically conducive to the establishment of wetlands. Wetlands need a reliable source of water to maintain the hydrologic regime necessary. Wetlands existed along the impoundment area prior to any dam being built. When a dam was built, these wetlands adapted to the new hydrologic levels, if there was too much water, more emergents would grow, where dryer soils became wetter, wetter vegetative species thrived. And the adjacent shoreline topography drove the process. Where steep banks and well drained soils dominated, upland cover types continued to dominate. However, in those locations where flatter, and much less steep topography existed, wetlands moved inland with the increased elevation of the impoundment.

This process will be reversed with the removal of the Saccarappa Dam. As the water level in the impoundment is lowered, four to five feet, the wetlands associated with the impoundment will migrate with the lowering water level.

PFO = PALUSTRINE FORESTED
PSS = PALUSTRINE SCRUB/SHRUB

WETLAND COVER

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

400 0 200 400 800
1 inch = 400 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

W-1

AUGUST 2015

There are numerous unnamed and named streams, brooks and swales, surface water tributaries, which empty into the impoundment. Generally, there are wetlands found at these points. These wetlands derive their source of water from the swale, stream or brook and not so much from the impoundment.

These wetlands cover types are generally palustrine scrub shrub. These wetlands are found at the mouth which is generally created by the transport of soil from further up stream and deposited once the hydraulic gradient allows the sediment to fall out and accumulate. These wetlands may also move and change as significant storm events, over several years, flush water and sediments to the impoundment. Also, development in the impoundment watershed over a number of years will increase times of concentration and volumes of water to the impoundment. Lowering of the impoundment will cause these wetland to increase in area. The topography at these locations will be a shallow gradient. As the impoundment lowers, the wetlands at these locations will expand to meet the new shoreline.

Consequently, there will be no net loss of wetlands as a result of the lowering of the impoundment by four to five feet. There actually, may be, a slight increase in wetland area at those points along the river where surface water tributaries empty into the impoundment.

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Appendix 1

River Cross Sections
Vegetative Cover Types
Photographs

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Saccarappa Impoundment Cross Sections
Site Descriptions

Section 1 East	Wetland	Red maple, Speckled Alder
Section 1 West	Wetland	Speckled Alder, Dogwood
Section 2 East	Upland	Red Oak, Gray Birch, Steep Bank 2-3 feet
Section 2 West	Upland	Cinnamon Fern, Red Maple, Steep Bank 2-3 feet
Section 3 East	Wetland	Red Maple, Speckled Alder
Section 3 West	Upland	White Birch, Red Maple, Steep Bank 2-3 feet
Section 4 East	Upland	Red Maple, Hemlock, Red Oak, Steep Bank 4-5 feet
Section 4 West	Wetland	Red Maple, Cinnamon Fern, Spruce
Section 5 East	Wetland	Speckled Alder, Emergent plants
Section 5 West	Upland	Spruce, Hemlock, Red Maple
Section 6 East	Wetland	Cinnamon Fern, Speckled Alder, Red Maple, 1-2 ft Bank
Section 6 West	Upland	White Pine, Balsam, open field,
Section 7 East	Upland	Hemlock, Beech, Red Oak,
Section 7 West	Wetland	Common Cattail, Speckled Alder, Emergents
Section 8 East	Upland	Ash, Red Maple 3-4 ft bank
Section 8 West	Upland	White Birch, Red Maple, 3-4 ft bank
Section 9 East	Upland	Red Oak, White Pine, 20-30 ft bank
Section 9 West	Upland	Speckled Alder, Sensitive Fern, Red Maple 3-4 ft bank
Section 10 East	Upland	Beech, Red Oak, Hemlock 10-12 ft bank
Section 10 West	Upland	Ash, Speckled Alder 3-4 ft bank
Section 11 East	Upland	Yard, White Pine, 4-5 ft bank
Section 11 West	Upland	Ash, Speckled Alder,
Section 12 East	Wetland	Sensitive Fern, Red Maple,
Section 12 West	Wetland	Speckled Alder, Sensitive Fern

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Section 13 East	Wetland	Sensitive Fern, Red Maple,
Section 13 West	Upland	Red Maple, Red Oak, White Pine 3-4 ft bank
Section 14 East	Upland	Red Oak, Wild Sarsaparilla, Sensitive Fern, 4-5 ft bank
Section 14 West	Upland	White Pine, Hemlock, 8-10 ft bank
Section 15 East	Upland	Transmission Power Line, 4-6 ft bank
Section 15 West	Wetland	Speckled Alder, Elderberry,
Section 16 East	Upland	Hemlock, White Pine, 6-8 ft bank
Section 16 West	Upland	Hemlock, Beech, 3-4 ft bank
Section 17 East	Upland	Beech, Red Oak, 2-3 ft bank
Section 17 West	Upland	Hemlock, White Pine
Section 18 East	Upland	Red Oak, White Pine, Beech, 6 ft bank
Section 18 West	Wetland	Speckled Alder, Dogwood,
Section 19 East	Upland	Red Oak, Dogwood, Red Maple White Pine, 4-6 ft bank
Section 19 West	Upland	Ash, Dogwood, White Pine 8-10 ft bank
Section 20 East	Upland	Red Maple, Beech, Ash, Hemlock Red Oak, 6-8 ft bank
Section 20 West	Wetland	Cattails, Sedges, Rushes, Speckled Alder
Section 21 East	Upland	Ash Hemlock, Red Oak, Red Maple, 10-15 ft bank
Section 21 West	Upland	open field, Speckled Alder, Red Maple
Section 22 East	Upland	Ash Red Maple, Sensitive Fern, 4-6 ft bank
Section 22 West	Upland	Speckled Alder, Ash, 6-8 ft bank
Section 23 East	Upland	Hemlock, Poplar, White Pine, 4-6 ft bank
Section 23 West	Upland	Hemlock, Red Maple, Dogwood,
Section 24 East	Upland	Red Maple, Red Oak, White Pine Steep Bank to RR
Section 24 West	Upland	Gray Birch, Sensitive Fern, White Birch, Poplar 3-4 ft bank
Section 25 East	Upland	White Birch, White Pine, Red Oak, 6ft bank
Section 25 West	Wetland	Sensitive Fern, Speckled Alder, Sedges, Rushes

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

Section 26 East	Upland	Red Maple, Dogwood, White Birch 3-4 ft bank
Section 26 West	Upland	Red Oak, Sensitive Fern, Hemlock, Gray Birch, 3-4 ft bank
Section 27 East	Upland	Red Oak, Red Maple, Balsam, 3-5 ft bank
Section 27 West	Upland	White Pine, Red Maple, Dogwood
Section 28 East	Wetland	Berm to backwater wetland, Red Maple, Dogwood
Section 28 West	Upland	White Pine, Red Maple, Dogwood
Section 29 East	Wetland	Willow, Dogwood,
Section 29 West	Wetland	Speckled Alder, Royal Fern, Red Maple
Section 30 East	Upland	Dogwood, Red Maple, White Pine Red Oak, slope up 10 ft
Section 30 West	Wetland	Dogwood, grasses, sedges, emergents

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Little River Sections

Section 1 North	Upland	Red Oak, White Pine 6-8 ft bank
Section 1 South	Wetland	Dogwood, Willow
Section 2 North	Upland	Wild Roses, Dogwood, 2-3 ft bank
Section 2 South	Upland	Dogwood, Red Maple,
Section 3 North	Upland	Red Oak, Ash, 6 ft bank
Section 3 South	Upland	Hemlock, White Pine, White Birch, 4-6 ft bank
Section 4 North	Upland	Red Oak, Poplar, 6 ft bank
Section 4 South	Wetland	Ostrich Fern, Dogwood, Speckled Alder, Skunk Cabbage
Section 5 North	Upland	White Birch, Poplar 6 ft bank
Section 5 South	Upland	Red Oak, Red Maple, White Pine
Section 6 North	Upland	Dogwood, Red Maple, Red Oak, Ash, 8 ft bank
Section 6 South	Upland	Hemlock, White Pine, Red Oak, 20 ft bedrock outcrop
Section 7 North	Upland	Red Oak, Ash, Red Maple 8 ft bank
Section 7 South	Upland	White Pine, Red Oak, Speckled Alder,4 ft bank
Section 8 North	Upland	Red Oak, White Pine 6 ft bank
Section 8 South	Upland	Red Oak, 8 ft bank

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

Section 1 East

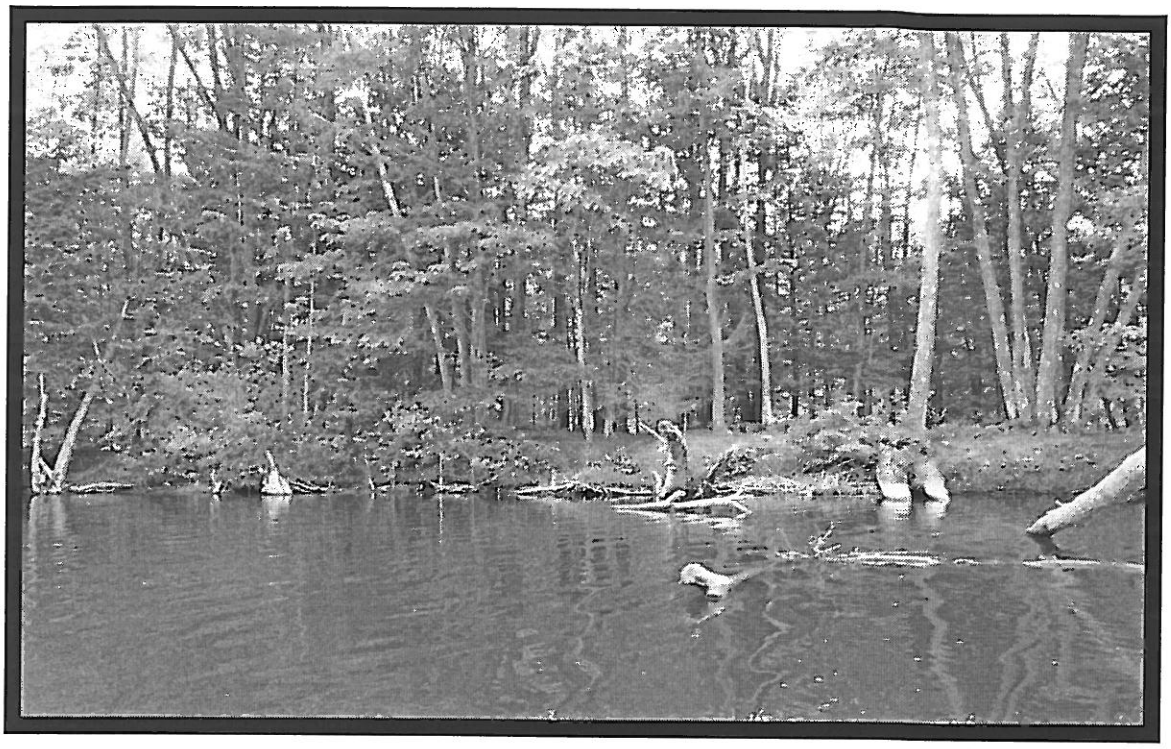
Section 1 West

Section 2 East

Section 2 West

Section 3 West

Section 3 East

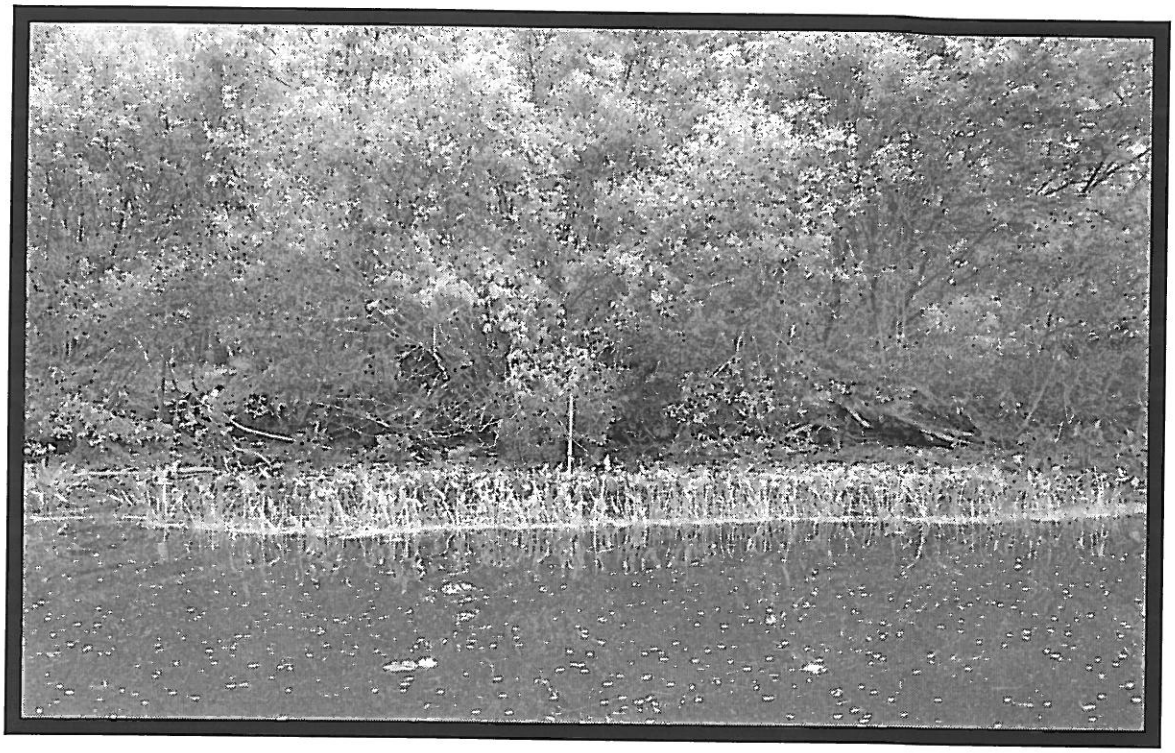


Section 4 East

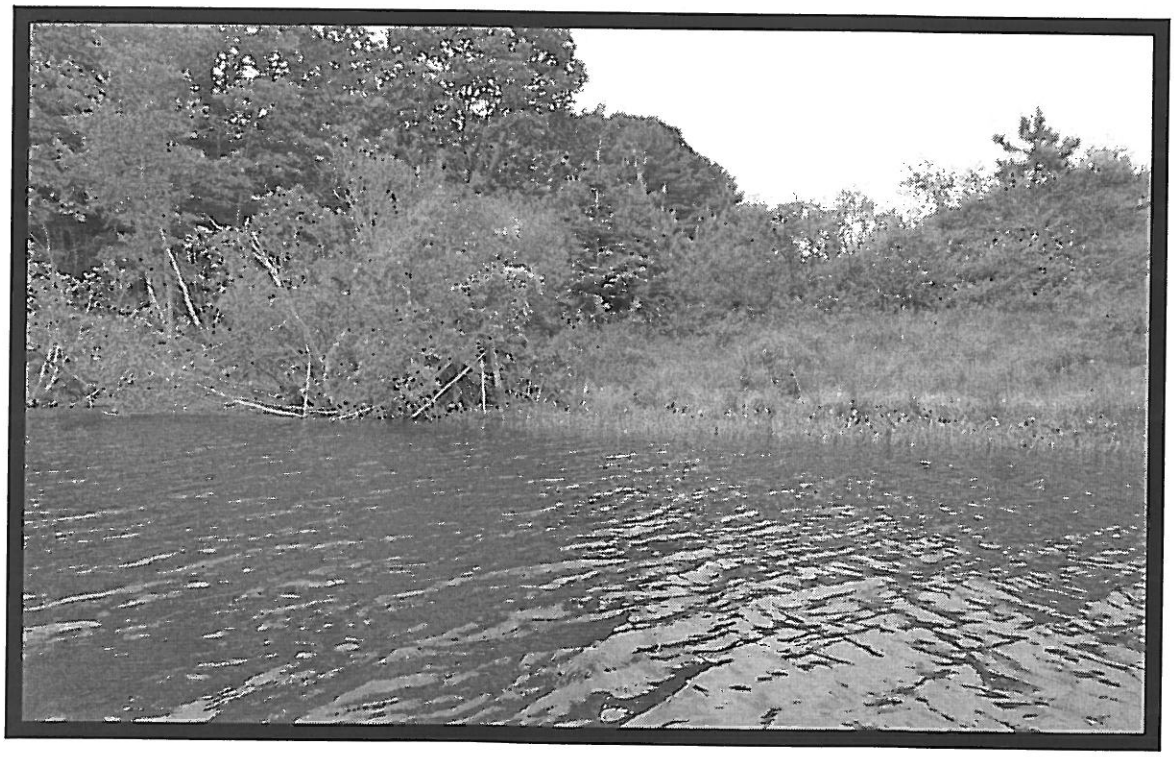
Section 4 West

Section 5 East

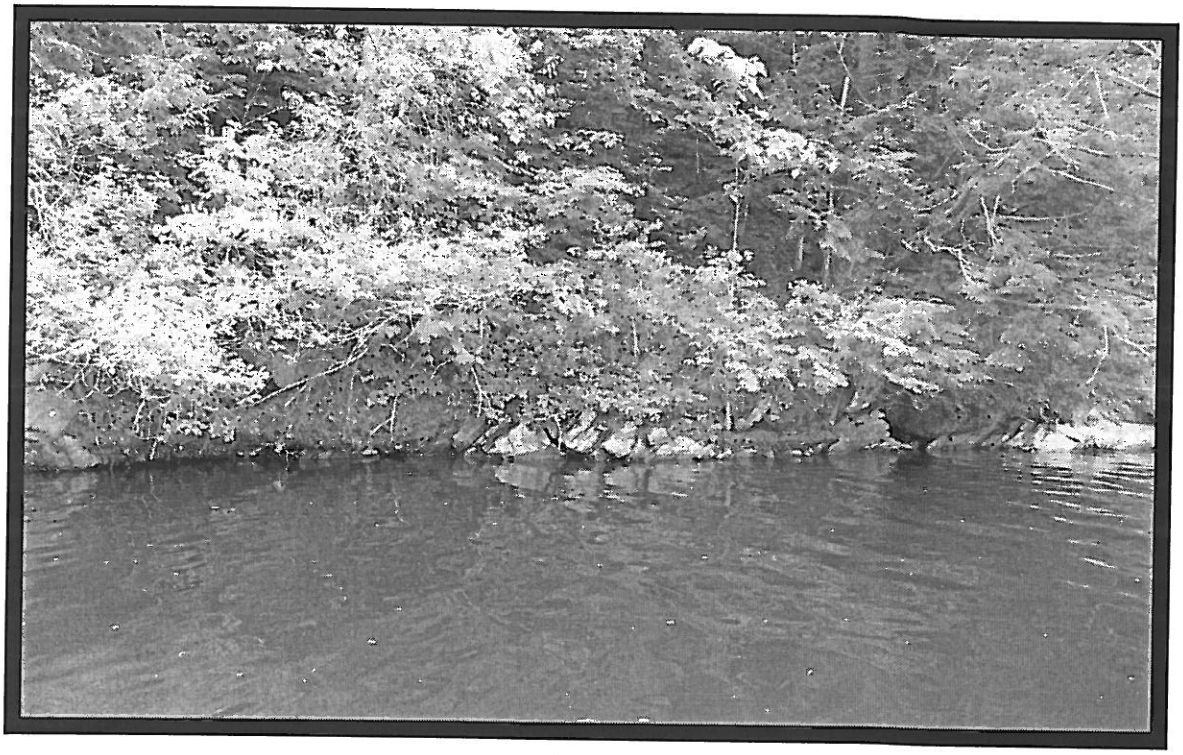
Section 5 West



Section 6 East



Section 6 West



Section 7 East

Section 7 West

Section 8 East

Section 8 West

Section 9 East

Section 9 West

Section 10 West

Section 10 East

Section 11 East

Section 11 West

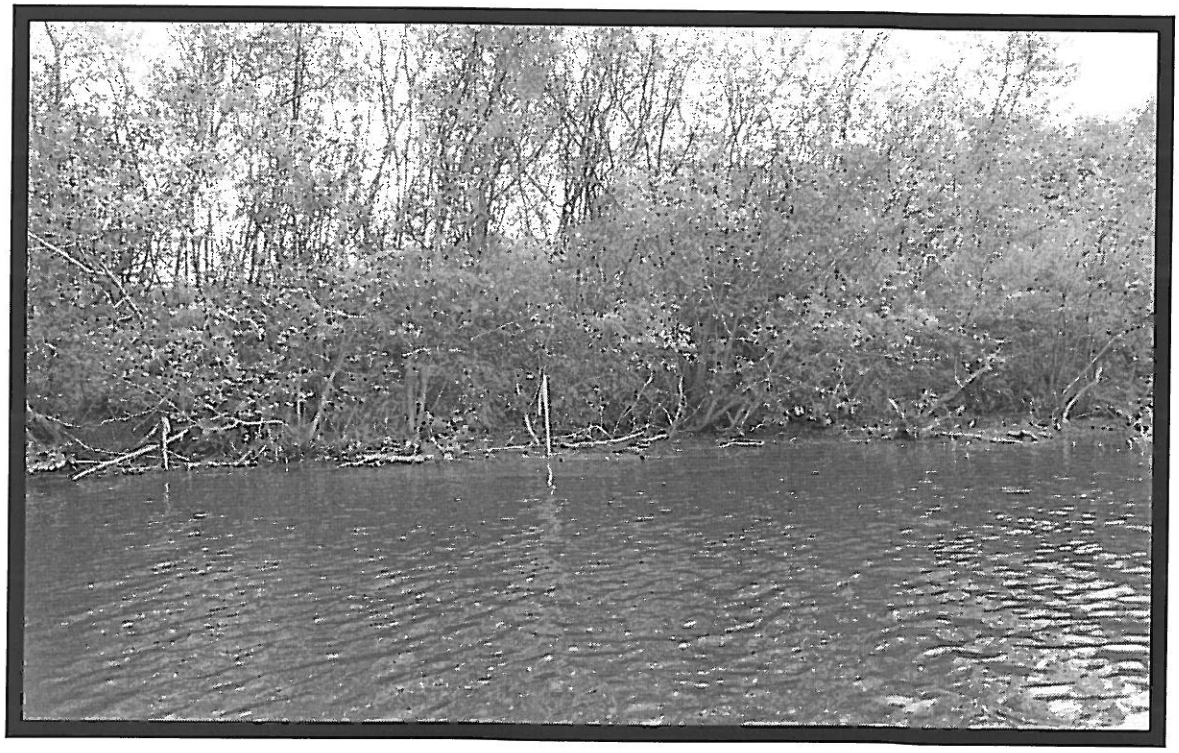
Section 12 West

Section 12 East

Section 13 West

Section 13 East

Section 14 East

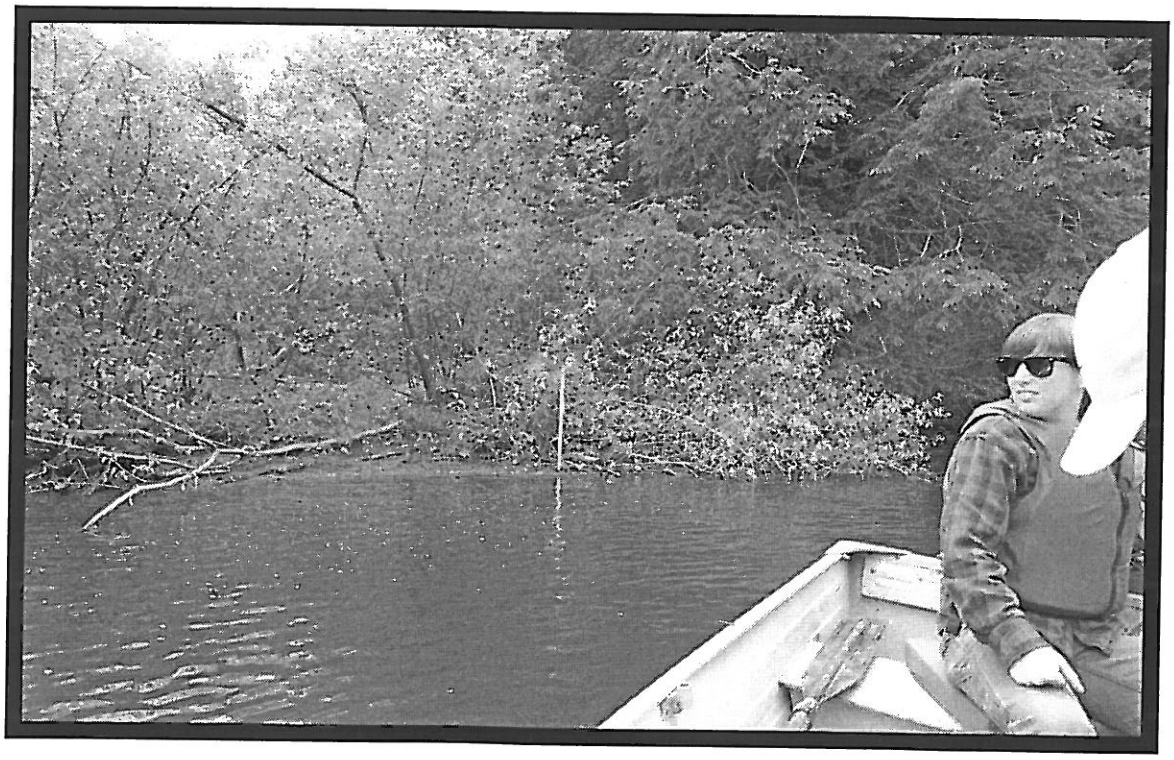


Section 14 West

Section 15 West

Section 15 East

Section 16 East



Section 16 Wast

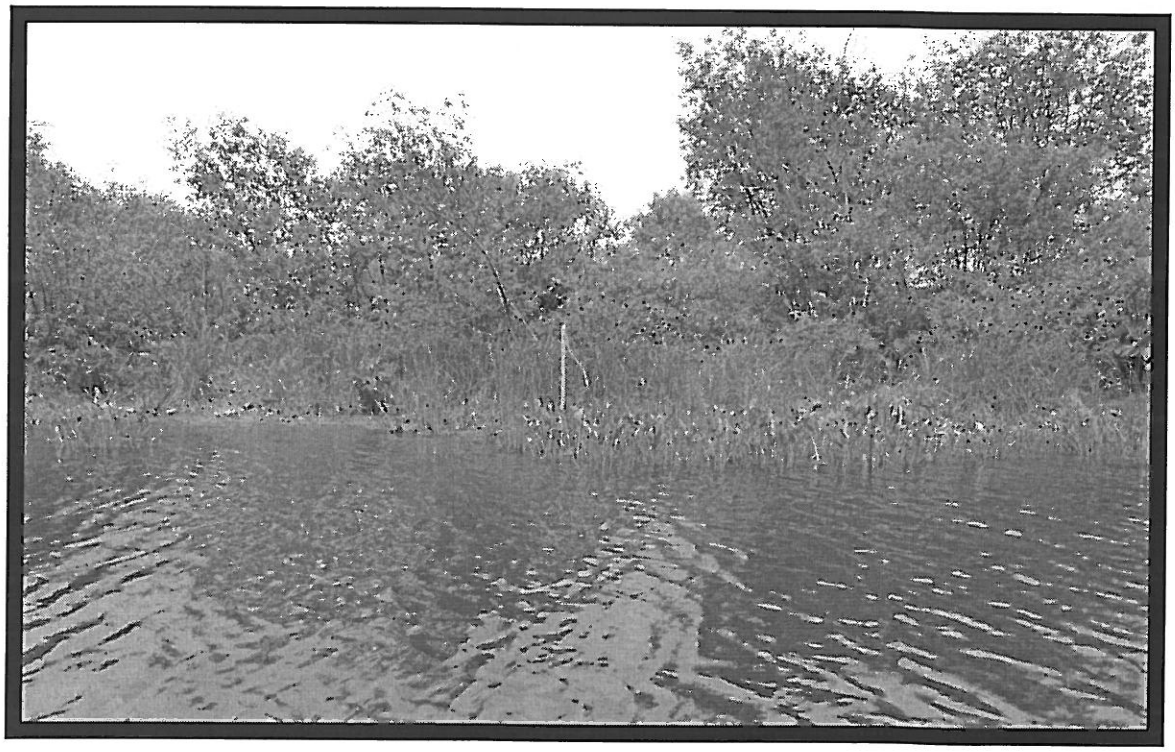
Section 17 West

Section 17 East

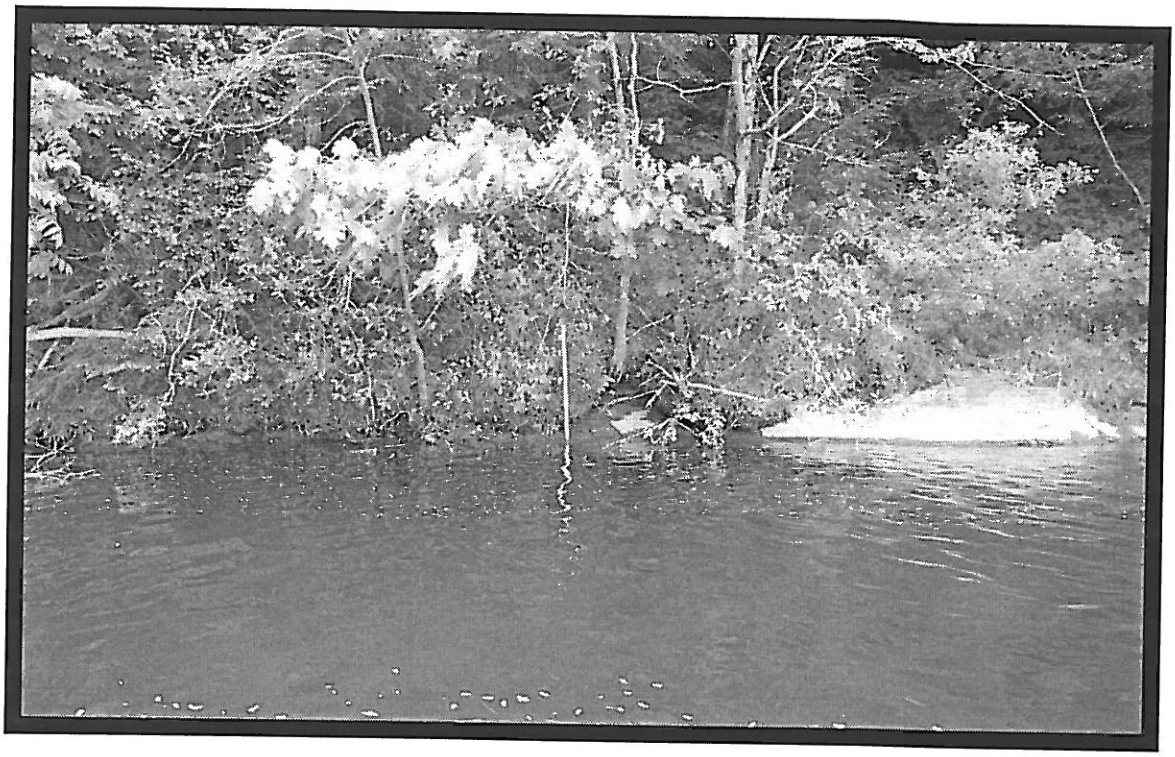
Section 18 East

Section 18 West

Section 19 West



Section 19 West

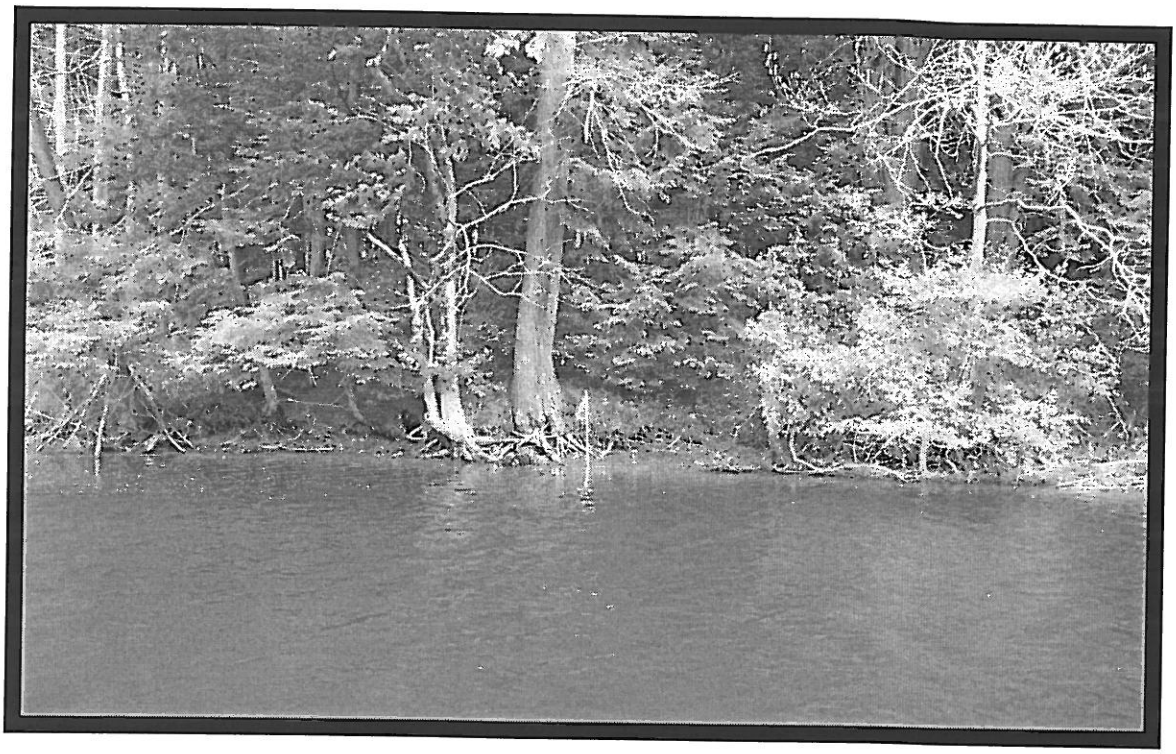


Section 20 East

Section 20 West

Section 21 East

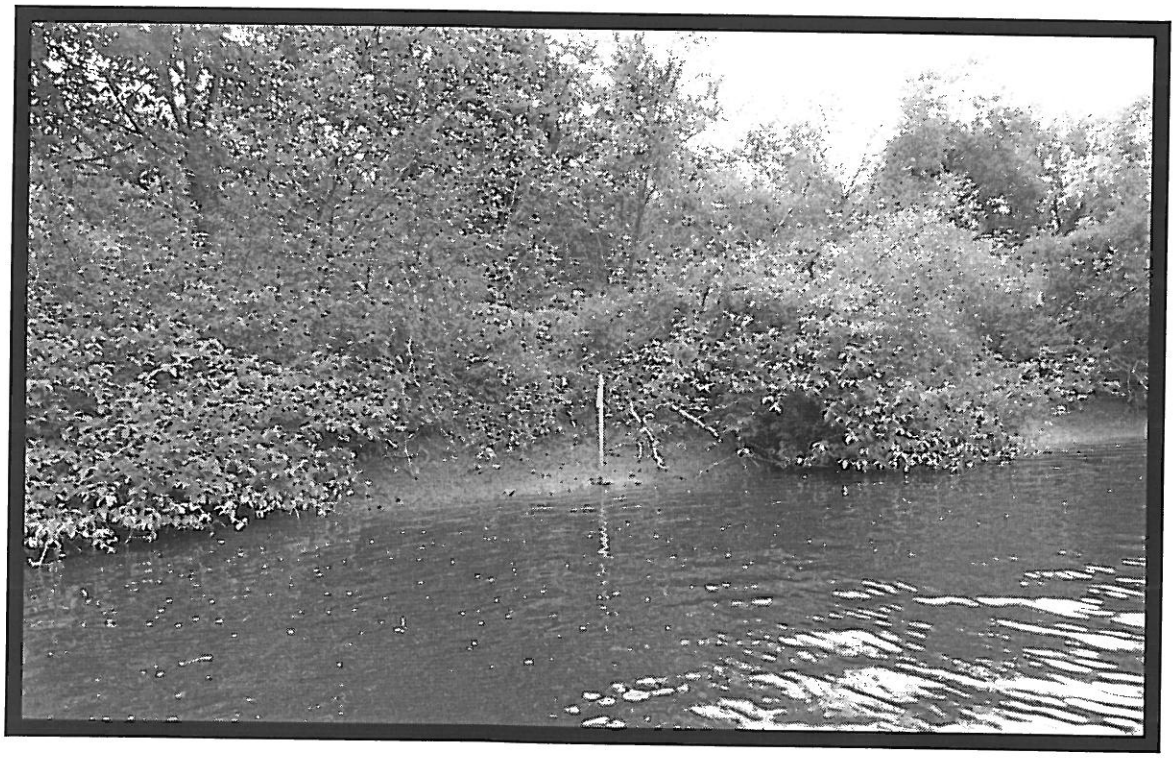
Section 21 West



Section 22 East

Section 22 West

Section 23 East



Section 23 West

Section 24 East

Section 24 West

Section 25 East

Sectino 25 West

Section 26 East

Section 26 West

Section 27 East

Section 27 West

Section 28 East

Section 28 West

Section 29 East

Section 29 West

Section 30 East

Section 30 West

Little River Sections

Section 1 North	Upland	Red Oak, White Pine 6-8 ft bank
Section 1 South	Wetland	Dogwood, Willow
Section 2 North	Upland	Wild Roses, Dogwood, 2-3 ft bank
Section 2 South	Upland	Dogwood, Red Maple,
Section 3 North	Upland	Red Oak, Ash, 6 ft bank
Section 3 South	Upland	Hemlock, White Pine, White Birch, 4-6 ft bank
Section 4 North	Upland	Red Oak, Poplar, 6 ft bank
Section 4 South	Wetland	Ostrich Fern, Dogwood, Speckled Alder, Skunk Cabbage
Section 5 North	Upland	White Birch, Poplar 6 ft bank
Section 5 South	Upland	Red Oak, Red Maple, White Pine
Section 6 North	Upland	Dogwood, Red Maple, Red Oak, Ash, 8 ft bank
Section 6 South	Upland	Hemlock, White Pine, Red Oak, 20 ft bedrock outcrop
Section 7 North	Upland	Red Oak, Ash, Red Maple 8 ft bank
Section 7 South	Upland	White Pine, Red Oak, Speckled Alder,4 ft bank
Section 8 North	Upland	Red Oak, White Pine 6 ft bank
Section 8 South	Upland	Red Oak, 8 ft bank

Section LR1 North

Section LR1 South

Section LR2 North

Section LR2 South

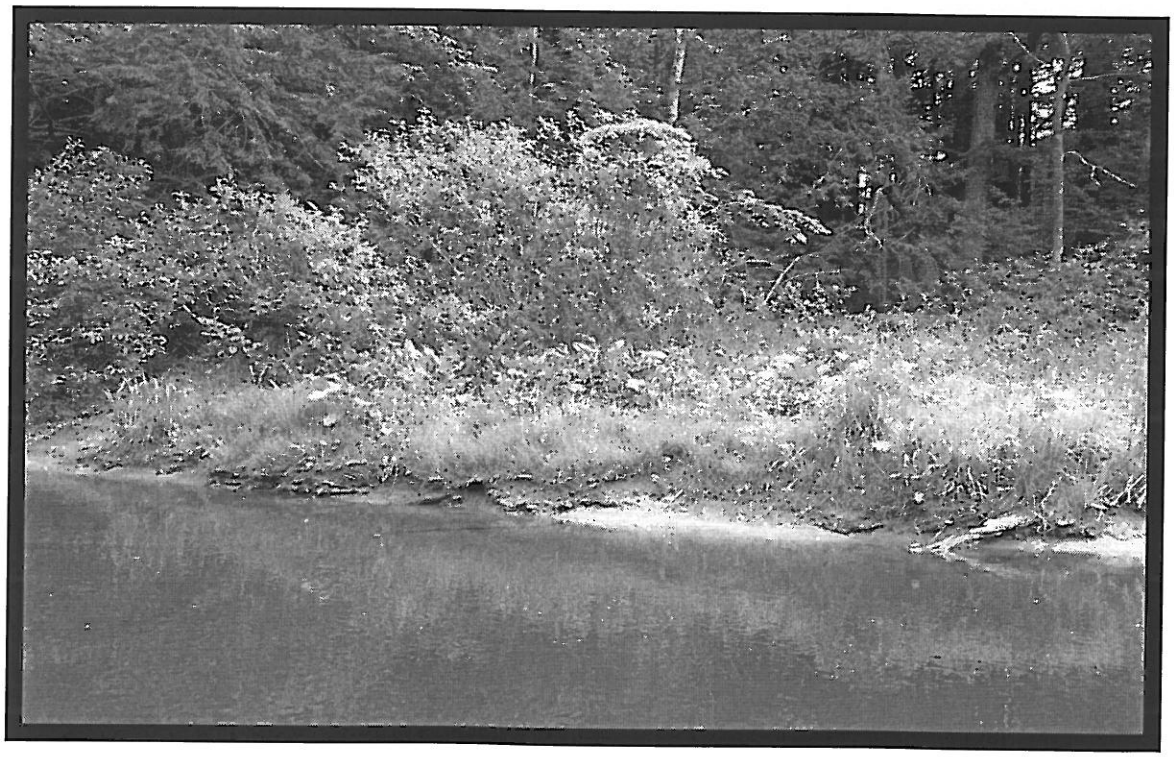
Section LR3 North

Section LR3 South

Section LR4 North

Seciton LR4 South

Section LR5 North



Section LR5 South

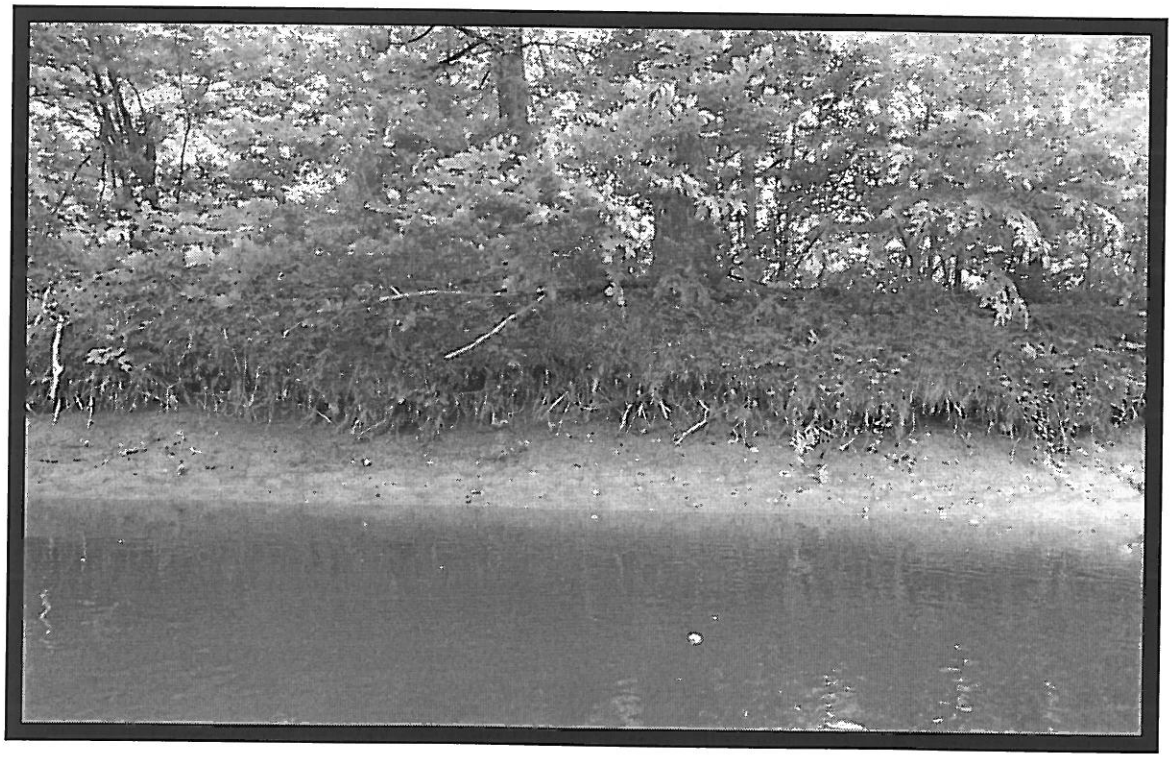
Section LR6 North

Section LR6 South

Section LR7 North

Section LR7 South

Section LR8 North



Section LR8 South

MARK HAMPTON ASSOCIATES, INC.

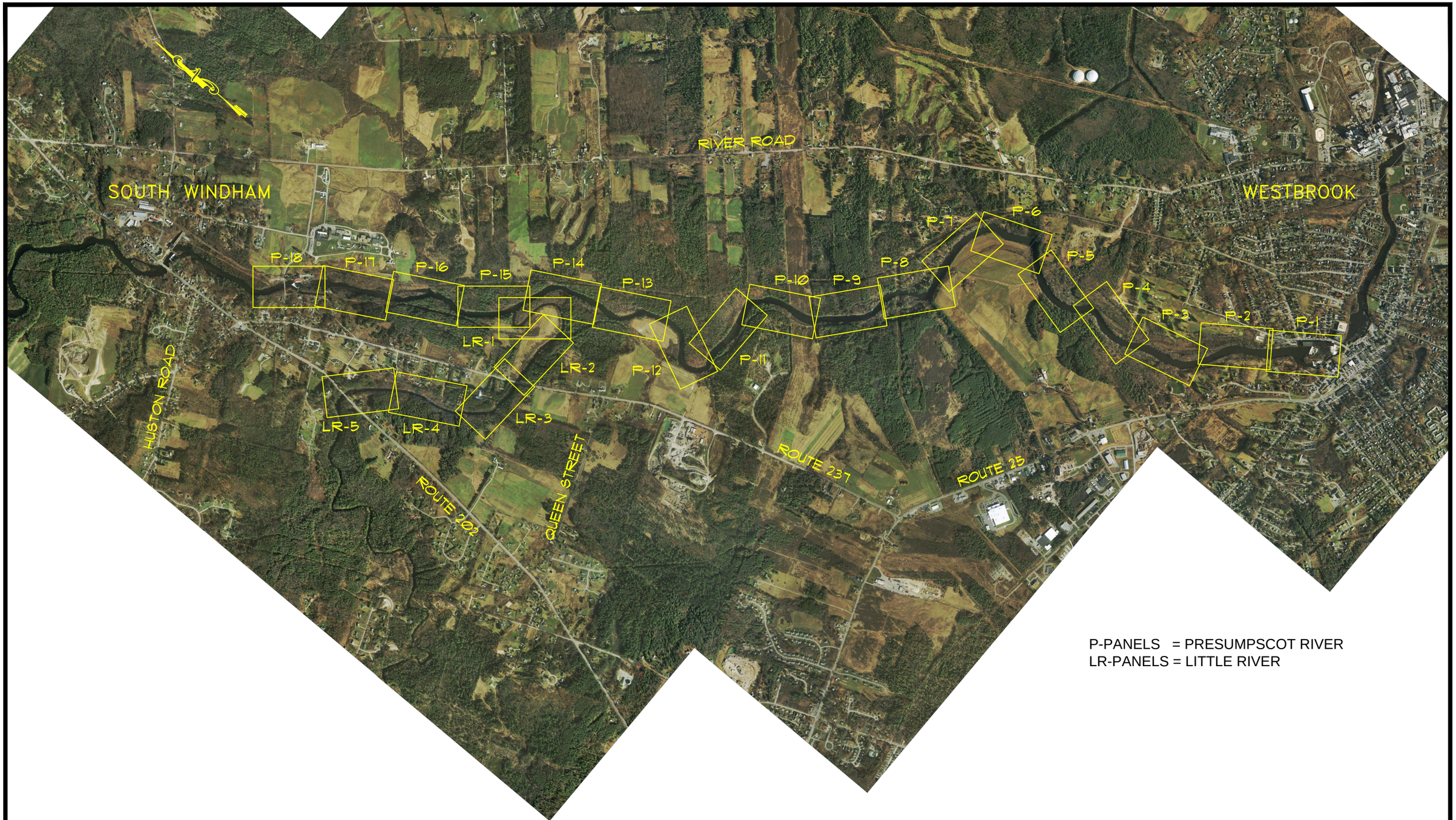
SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

Appendix 2

River Overview Panels
River Cross Section Locations

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline



P-PANELS = PRESUMPSCOT RIVER
LR-PANELS = LITTLE RIVER

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

2000 0 1000 2000 4000
1 inch = 2000 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

INDEX

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

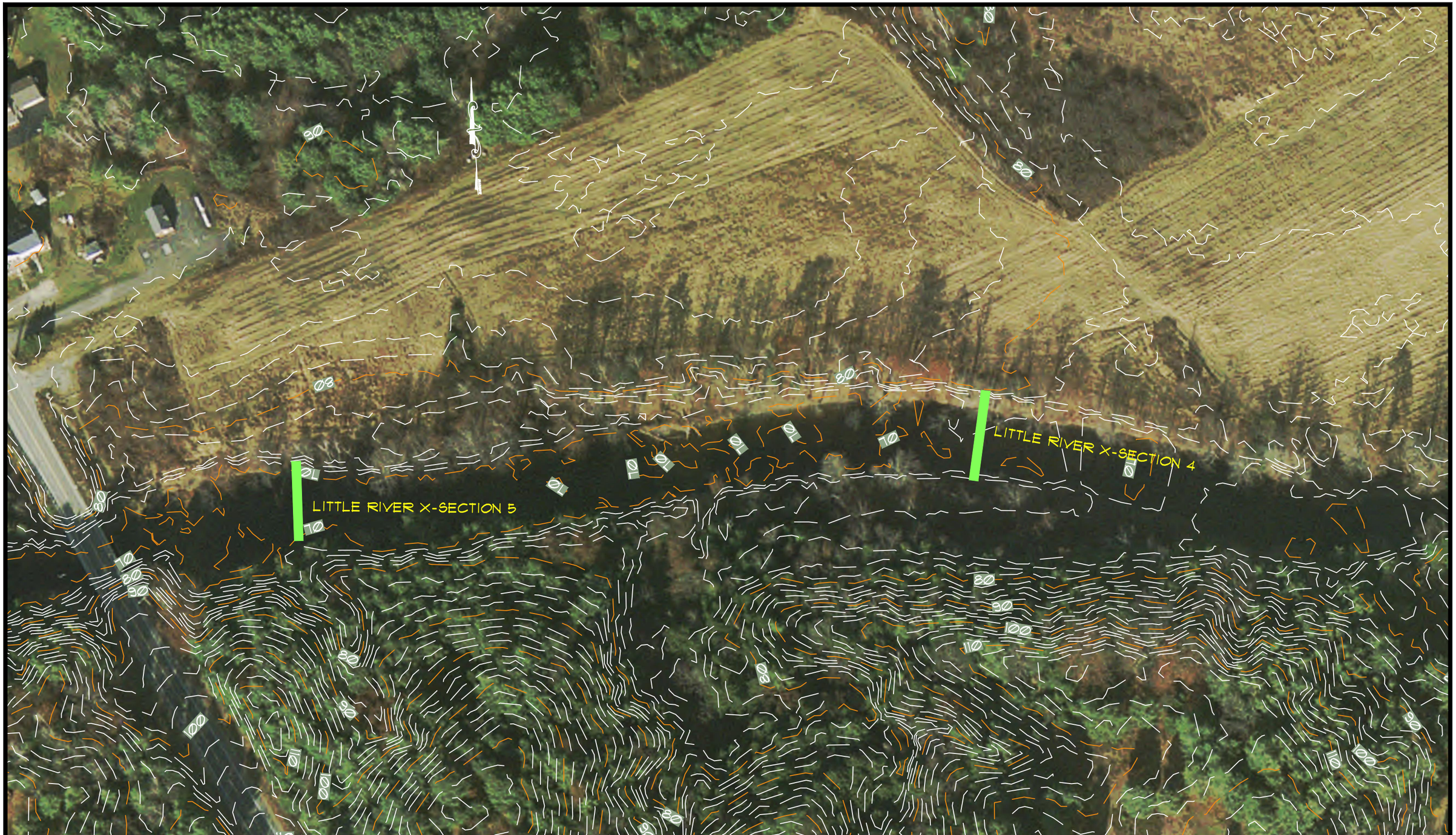
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

LR-1

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

LR-2

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

LR-3

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

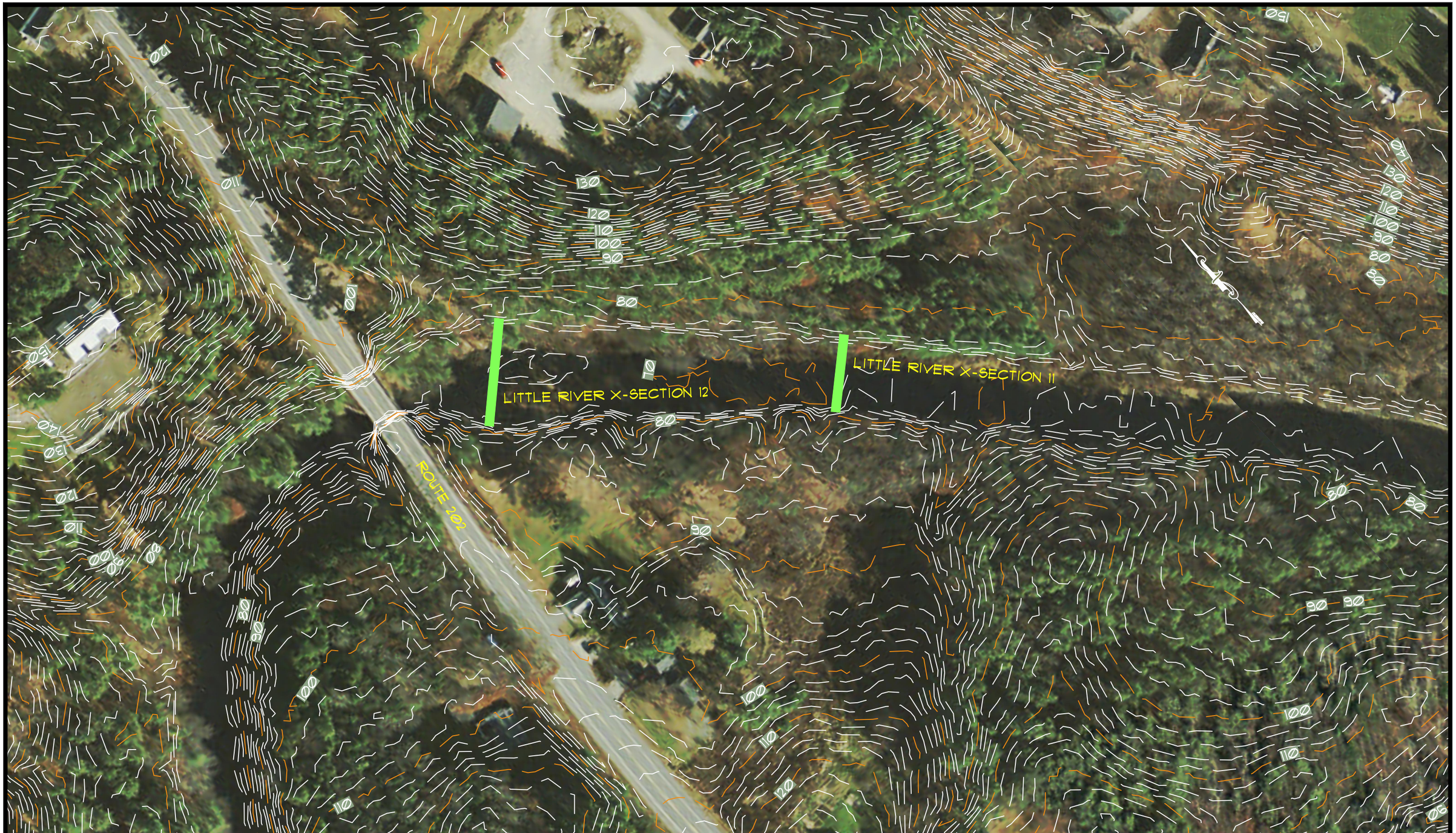
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

LR-4

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

LR-5

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-1

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-2

AUGUST 2015

Acheron Engineering Services
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-3

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-4

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-5

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-6

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-7

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

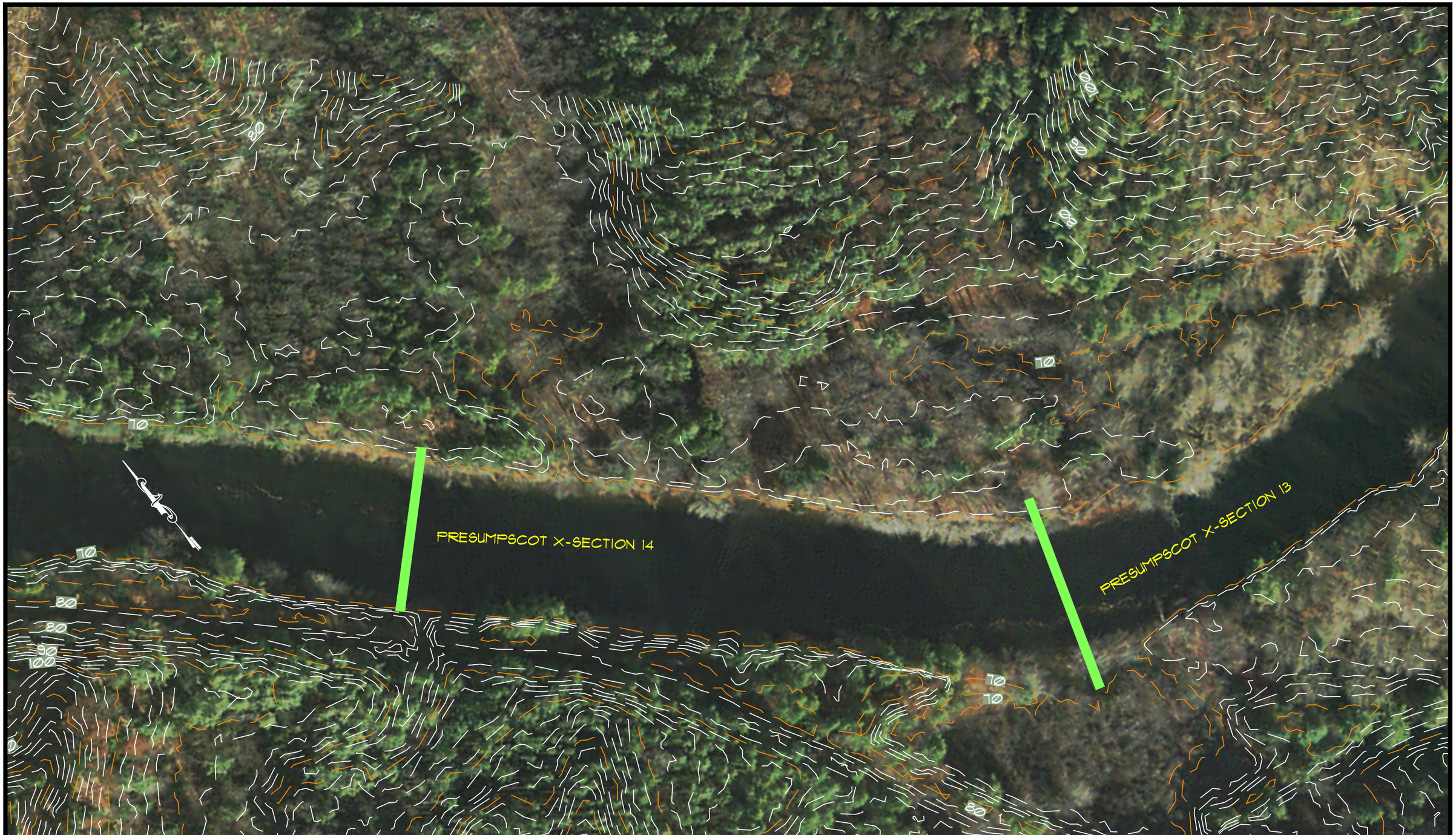
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-8

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-9

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

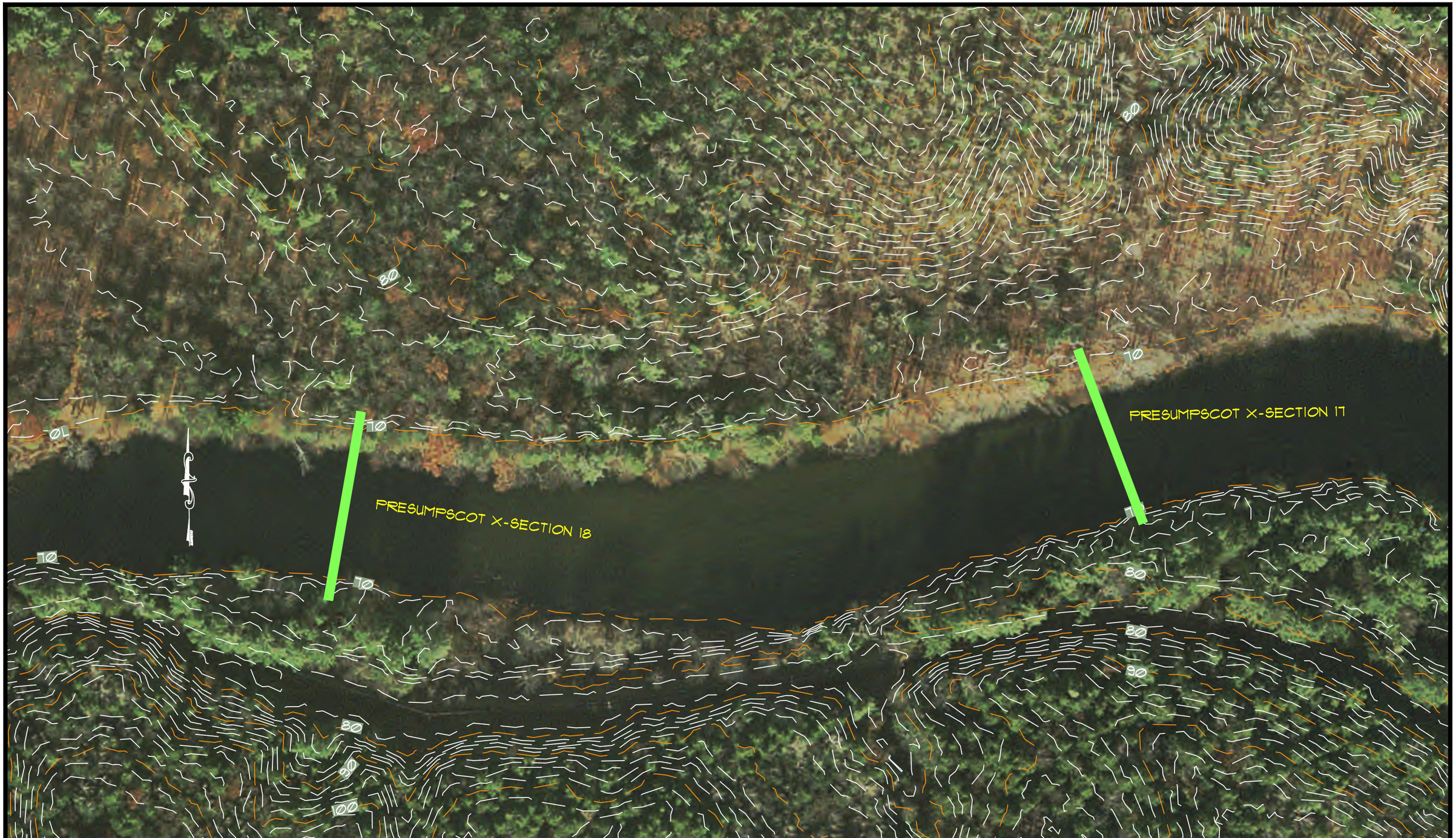
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-10

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-11

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

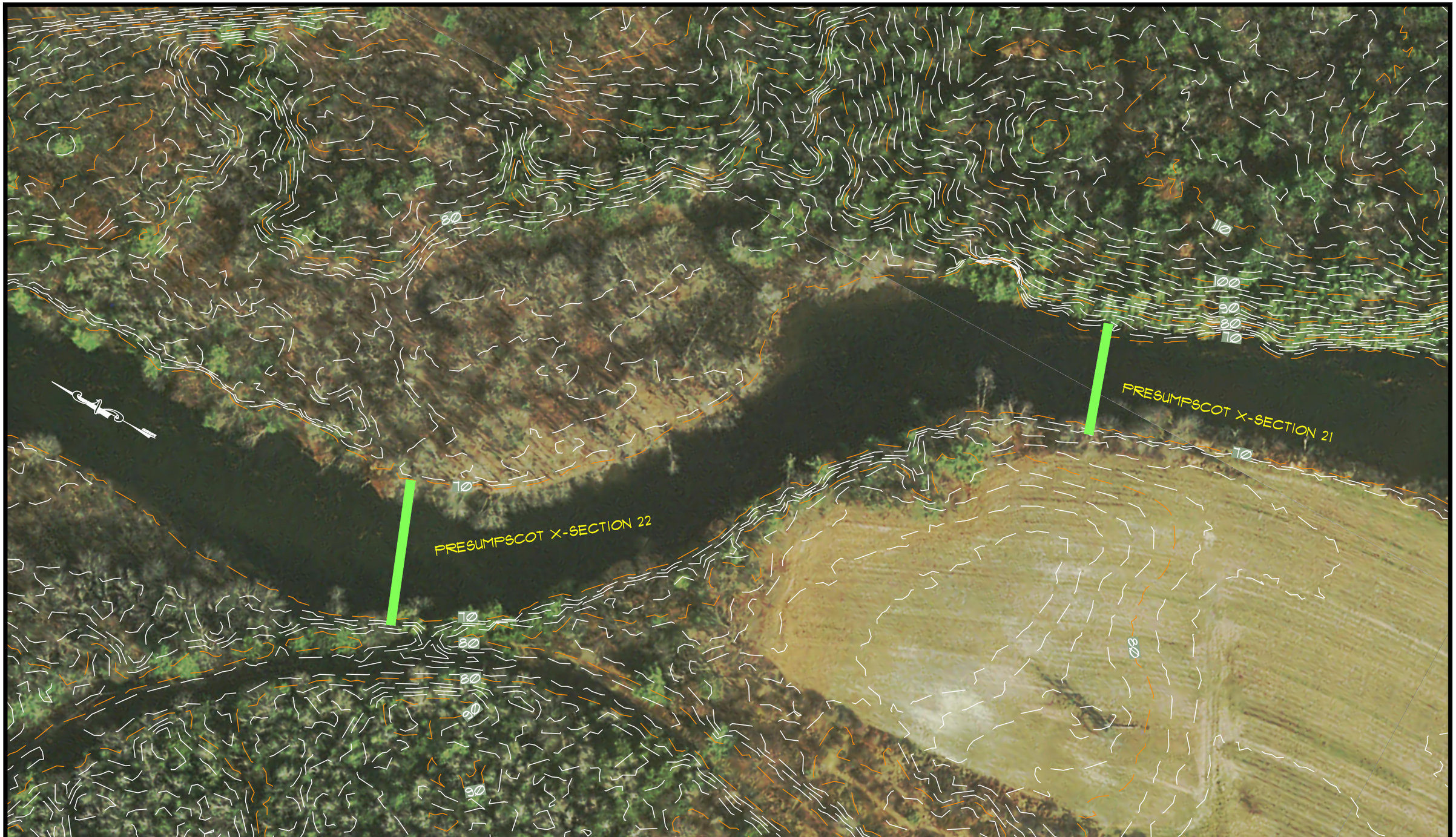
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-12

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

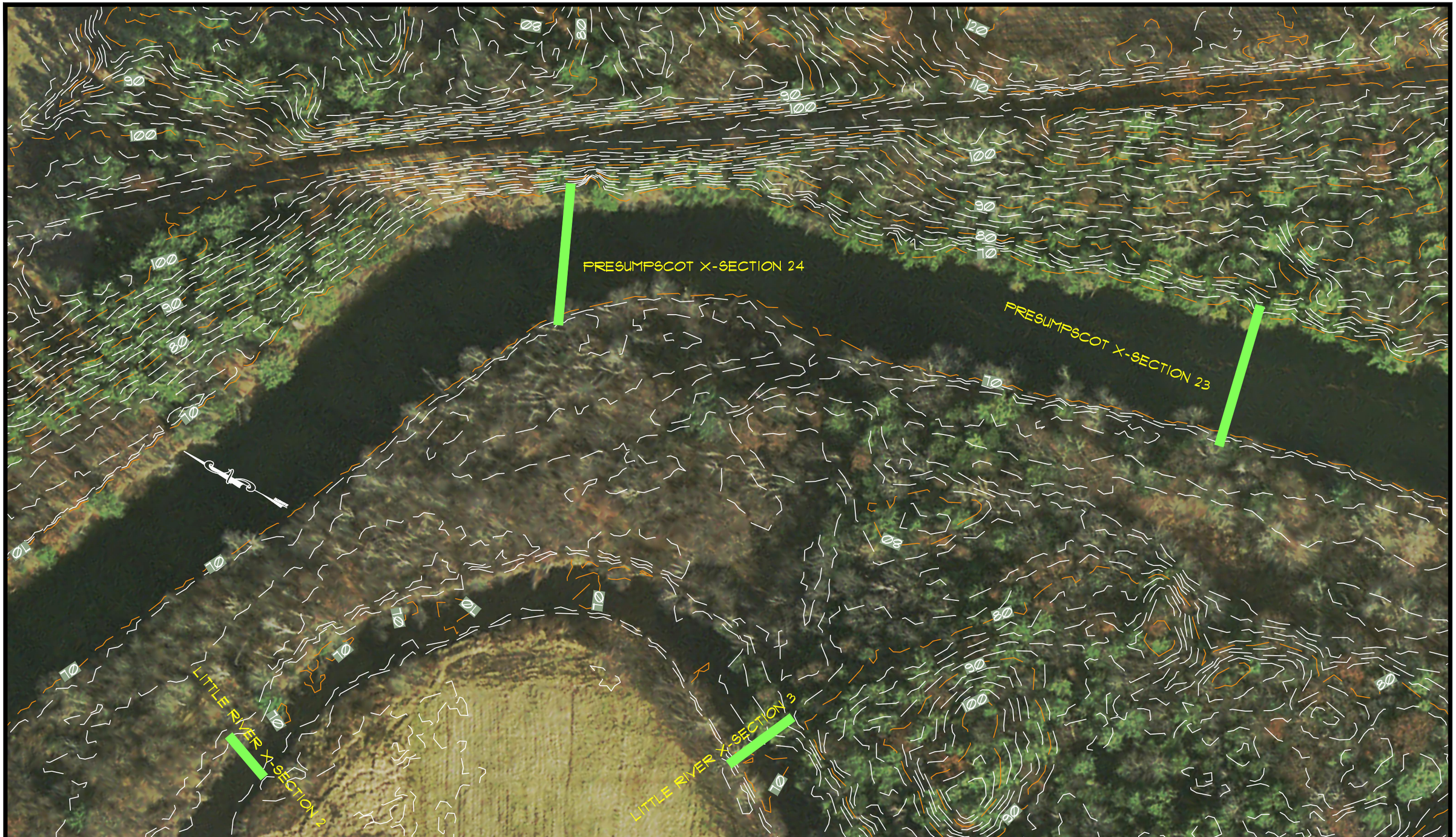
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-13

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-14

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

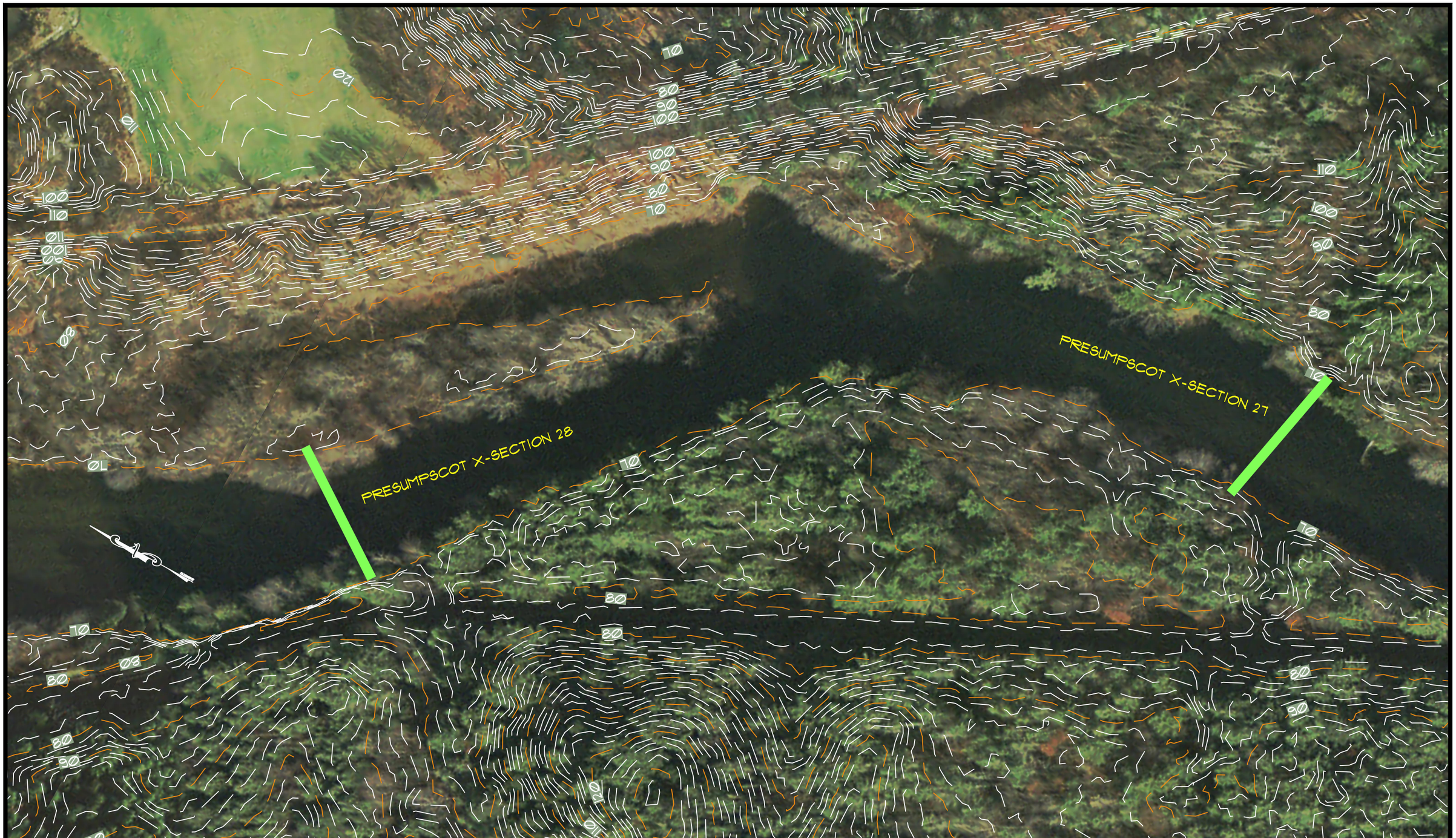
100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-15

AUGUST 2015



ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-16

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-17

AUGUST 2015

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants

MARK HAMPTON ASSOCIATES, INC.

100 0 50 100 200
1 inch = 100 ft. GRAPHIC SCALE.

Saccarappa Falls Fish Passage Project

FERC AIR Wetland Impact
Saccarappa Falls, Westbrook, Maine

P-18

AUGUST 2015

APPENDIX N: INTERIM RECREATION MONITORING REPORT
FERC ORDER OF APPROVAL

From: eFiling@ferc.gov
To: Goulet, Brad; efilingacceptance@ferc.gov
Subject: FERC Acceptance for Filing in P-2931-029, et al.:
Date: Friday, August 01, 2014 3:43:06 PM

Acceptance for Filing

The FERC Office of the Secretary has accepted the following electronic submission for filing (Acceptance for filing does not constitute approval of any application or self-certifying notice):

-Accession No.: 201408015168
-Docket(s) No.: P-2931-029, et al.:
-Filed By: S.D. Warren Company
-Signed By: Bradley Goulet
-Filing Type: Project Operations Compliance Report
-Filing Desc: Report / Form of S.D. Warren Company
Interim Recreation Monitoring Report for Presumpscot River Projects under P-2931, et. al..
-Submission Date/Time: 8/1/2014 3:25:14 PM
-Filed Date: 8/1/2014 3:25:14 PM

Your submission is now part of the record for the above Docket(s) and available in FERC's eLibrary system at:

http://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20140801-5168

If you would like to receive e-mail notification when additional documents are added to the above docket(s), you can eSubscribe by docket at:

https://ferconline.ferc.gov/eSubscription.aspx

There may be a 10 minute delay before the document appears in eLibrary.

Thank you again for using the FERC Electronic Filing System. If you need to contact us for any reason:

E-Mail: efiling@ferc.gov mailto:efiling@ferc.gov (do not send filings to this address)
Voice Mail: 202-502-8258.

Sappi Fine Paper North America

S.D. Warren Company
89 Cumberland Street
P.O. Box 5000
Westbrook, ME 04098

www.sappi.com

Brad Goulet
Hydrostation Manager
Direct tel +1 207 856 4083
Direct fax +1 207 856 4456
brad.goulet@sappi.com

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

August 1, 2014

RE: Interim Recreation Monitoring Report
Projects 2931-029, 2932-031, 2941-025, 2942-035, and 2897-029

Dear Ms. Bose,

BACKGROUND

By Order 146 FERC ¶ 62,175 dated March 11, 2014 modifying and approving S. D. Warrens (Warren) "Recreation Use Monitoring Plan", under § (C) the commission required Warren to file a report no later than July 21, 2014, describing the status of Warrens web-based voluntary survey from initiation through July 6, 2014. The Order further states The report shall contain at a minimum: (1) the number of responses received for each project identified in ordering paragraph (A); (2) an estimate of the annual visitation at each project identified in ordering paragraph (A); (3) identification of the confidence interval and margin of error deemed acceptable for this study; (4) the target number of responses for each project identified in ordering paragraph (A); (5) a discussion of the adequacy of the results; and (6) in the event that the results are inadequate, an alternative method for gathering recreation needs data. The licensee shall determine items (2) – (6) listed above in consultation with Maine Department of Conservation, now Maine Department of Agriculture, Forestry, and Conservation, (MDACF); the Maine Department of Inland Fisheries and Wildlife, (MDIFW); the Maine Department of Marine Resources, (MDMR); and the U.S. Fish and Wildlife Service, (USFWS); referred to in this document collectively as (Agencies). The licensee shall include with the status report documentation of consultation, copies of comments and recommendations on the status report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated in the status report. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information. The Commission reserves the right to require changes to the methods for gathering recreation needs data.

DISCUSSION

On July 16, 2014 the commission granted Warrens July 11, 2014, extension of time request (EOT), to allow adequate time for Warren to complete the agency consultation. The July 16, 2014 EOT sets a new filing date for Warrens Recreation Use Monitoring Report hereafter referred to as "Interim Recreation Monitoring Report", of August 4, 2014.

On July 11, 2014 by phone call, Warren consulted with Mr. Francis Brautigam from MDIFW regarding the aforementioned EOT request and the results of Warrens survey. In summary, Mr. Brautigam indicated the EOT was warranted and expressed satisfaction with Warrens level of effort in monitoring , the adequacy of features at the projects, and acknowledged the difficulty in obtaining statistically appropriate responses to the web based survey given the repetitive nature of angling use inflates the population size without increasing the number of survey respondents. Also on July 11, 2014, Warren circulated electronically a copy of Warrens EOT request and FERC Order 146 FERC ¶ 62,175. MDEP, MDIFW, and USFWS formally responded supporting Warrens EOT while MDMR and MDAFC expressed support informally.

On July 14, 2014 Warren met with representatives from MDEP, USFWS, and MDMR. The multi-purpose meeting included a discussion of Warrens EOT request, presentation of preliminary data, a general discussion of this report, and the difficulty in obtaining survey counts with a repetitive population of users. Similar to comments received from Mr. Brautigam, there was a general consensus that Warren was conducting sufficient site monitoring visits to insure accurate conclusions from the data.

On July 21, 2014, Warren submitted to the Agencies a draft copy of Warrens "Interim Recreation Monitoring Report" with cover containing the consultation requirements and a requested response date of July 29, 2014.

The full report and record of agency consultation are included with this letter as attachments.

If you have any questions concerning this matter, please contact me at 207-856-4083 or by e-mail at Brad.Goulet@SAPPI.com.

Sincerely,

Brad Goulet

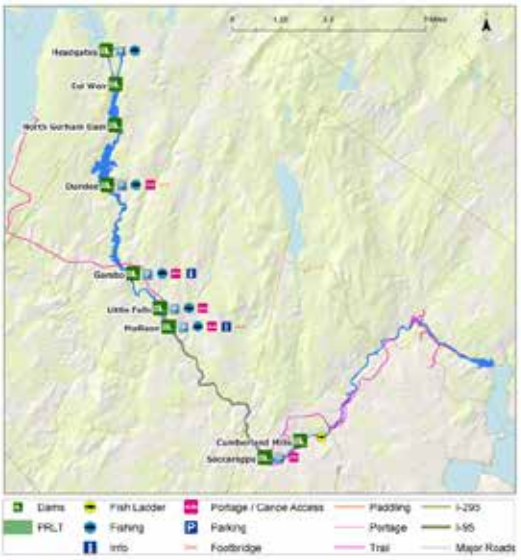
Brad Goulet
Hydro Manager/Utilities Engineer

Attachments:
Interim Recreation Use Monitoring Report
Agency Consultation Record

cc: *Electronically*
Mark Ivy FERC

Kathy Howatt MDEP
Megan Bishop MDEP
Steve Shepard USFWS
Robert Marvinney MDACF
Gail Wippelhauser MDMR
Francis Brautigam MDIFW

Interim Recreation Monitoring Report



sappi

Brad Goulet Hydro Manager

S.D.Warren Co

8/1/2014

Introduction

On August 27, 2013, as supplemented on December 20, 2013, S.D. Warren Company (Warren) filed a recreation use monitoring plan (monitoring plan) for the Gambo Project (FERC No. 2931), Mallison Falls Project (FERC No. 2932), Little Falls Project (FERC No. 2941), Dundee Project (FERC No. 2942), and Saccarappa Project (FERC No. 2897). The development of monitoring plans is required by articles 411, 410, 409, 411 and 409, respectively, of the licenses for the projects. The projects are located on the Presumpscot River in Cumberland County, Maine.

An Order Modifying and Approving Recreation Use Monitoring Plan (146 FERC ¶ 62,175) issued on March 11, 2014 requires the licensee to file a report on the status of the voluntary web-based survey used to assess the recreation needs at each site no later than July 21, 2014. The report is to demonstrate that the current method of sampling for the web-based survey is providing adequate results, along with agency comments and should include results from initiation of the survey through July 6, 2014. On July 11, 2014 Warren filed with the Commission an extension of time (EOT) request indicating there was insufficient time between the July 6 data collection date, and the July 21, 2014 reporting date, to complete a consultation cycle with Agencies and file the report. By Order dated July 16, 2014 the Commission granted Warrens request for an EOT and ordered a new interim report filing date of August 4, 2014.

Methods

Physical Counts: Recreational uses are monitored by on site visits utilizing two different Warren resources: (1) Warren's line crew and (2) Securitas. The line crew makes daily visits to each site between the hours of 7:00 am and 4:00 pm on weekdays and 6:00 am to 2:00 pm on weekends. The line crew completes (1) "Daily Recreational Monitoring Form" (sample attached as appendix A) each day.

Securitas is an independent contractor hired by Warren to perform security and public safety monitoring at all of the licensee's hydro sites. Securitas performs roving patrols between the hours of 10:00 am and 10:00 pm, 7 days per week from Memorial Day May 26, 2014 to Labor Day, September 01 2014. The patrols originate from Warren's Westbrook Manufacturing facility and proceed up-river (duration of 15 minutes at each site) then down-river, (duration of 15 minutes at each site). The patrols start each day at the next site up-river from the one that the patrol began on the day prior to ensure that all sites are visited at all time intervals during the day. Securitas employees perform recreational monitoring on all up-river trips and complete (4) "Daily Recreational Monitoring Forms" each day.

Self Directed Survey Counts:

A voluntary web-based survey (https://www.surveymonkey.com/s/river-rec) was designed and implemented to assess whether the recreational needs are being met at each site. Users of the licensee's recreation facilities are invited to participate in the online survey through informational cards placed in covered holders strategically located at each site, informational cards left on vehicle windshields, personal invitation to those users encountered by Warren staff, and a link from the Warren's Presumpcot River Tumblr Blog (http://presumpscotriver.tumblr.com/). The Tumblr blog is

updated weekly with informational reports on riverflow, identifies project recreation areas, and indicates recreation feature project status (e.g. .fishing access closed due to high flows).

In an effort to increase survey sample size, on July 18, 2014 Securitas began carry paper copies of the survey questions for face to face interviews with willing participants.

Data from the Daily Recreational Monitoring forms (Physical Counts) is entered into a spreadsheet preserving date, time, site, population, and activity data. Information from the Surveys collected by Securitas is copied into the web-based system and using survey analytics downloaded to a spreadsheet for further analysis. Both the Physical Count spreadsheet and Survey spreadsheet are used to develop reports to graphically present the data in a variety of formats.

Population:

The estimated population (Population size= N) for each site was calculated by multiplying the sum of the weekday averages of recreational users observed from physical counts by 68 (the number of weekday between Memorial Day and Labor Day) and adding the product of the sum of the weekend day averages of recreational users observed from physical counts and 28 (the number of weekend days between Memorial Day and Labor Day). The required sample size with a confidence level of 95% and a confidence interval of 5% was calculated using the following equation:

$$n = \frac{N * Z^2 * p * q}{E^2 * (N - 1) + Z^2 * p * q}$$

Where:

n = required sample size
N = population size
p& *q* = population proportions (0.5 and 1-0.5)
Z = z score corresponding to confidence level (1.96)
E = confidence interval (0.05)

Results

Tables 1 and 2 indicate by site and time block Warren's monitoring effort and the maximum individuals observed. **Tables 3 and 4** represent information from Warrens web based survey and indicate the number of survey responses and the average number of days per month a respondent visits a particular site. **Table 5** represents expected recreation visits and for this survey "population size (N)", by site and time block and **Table 6** represents the percentage of Anglers physically counted at sites and the

percentage they represent in the expected population. **Tables 7 through 11** represent averages of observed instances by project for each activity and time block.

The results of the recreation monitoring (Physical Counts) are reported graphically in figures 1.0 through 5.5. The results of the web-based survey (Survey Counts) are also presented graphically in figures 6.0 through 11.2. Free form comments written by many survey respondents follow the survey graphics and are unedited.

Conclusions

Based on survey responses regarding how many times per month respondents visited a site (**Table 3**), and both the percentage and number of angler visits represented in recreational monitoring visit counts (**Table 6**), The data indicates the Expected Recreation Visits (Table 2) DO NOT represent unique visits but rather include counting the same angler multiple times. The impact of including in the data all recreational visits as opposed to only unique recreational visits in determining population size misrepresents the survey sample size required when utilizing standard sample size methodology. Warren has attempted to increase survey sampling by implementing face to face interviews completed by Securitas beginning July 18, 2014. These additional surveys will increase total survey responses but Warren suggests those sites with a high proportion of Angling (Dundee, Mallison, & Gambo), will not collect sufficient survey responses to compensate for the same Angler being counted towards expected population and that Angler completing only one survey.

The Data indicates Warren's Mallison, Gambo, and, Dundee recreation facilities receive the highest level of public use and that the facilities for all five projects covered by this survey are adequate. The maximum number of users encountered during any time block at any site ranged from a high of twelve (12) at the Gambo site to a low of zero (0) at the Saccarappa site. The predominant activity for Warren's high use sites is angling followed by boating which represents the highest level of activity at Saccarappa and Little Falls two sites with minimal recreational users observed during monitoring visits.

Table 1						
Monitoring Effort 4/25 thru 7/6/2014						
	Project					
Time Block	DD	EW	GB	LF	ML	SC
06:00-010:00	21	24	20	14	13	17
10:00-12:00	65	78	62	53	45	32
12:00-14:00	54	32	72	78	83	53
14:00-16:00	54	58	45	52	57	47
16:00-18:00	57	69	48	40	38	20
18:00-22:00	75	59	79	87	85	68
Grand Total	**326**	**320**	**326**	**324**	**321**	**237**

Table 2					
Maximum Number of Users Observed by Time-Block 4/25 thru 7/6/2014					
Time Block	**Project**				
	Saccarappa	**Mallison**	**Little Falls**	**Gambo**	**Dundee**
06:00-010:00	0	3	2	2	3
10:00-12:00	1	4	4	10	5
12:00-14:00	2	2	1	8	8
14:00-16:00	1	8	3	4	4
16:00-18:00	0	10	2	12	5
18:00-22:00	2	8	1	4	8

Table 3	
Survey Responses 4/25 thru 7/6/2014	
Project	**# of Responses**
Saccarappa	58
Mallison	63
Little Falls	65
Gambo	66
Dundee	82

Table 4	
Survey Responses 4/25 thru 7/6/2014	
Project	**Average # of Days per Month Respondents Visit**
Saccarappa	2.33
Mallison	4.13
Little Falls	6.5
Gambo	10.84
Dundee	7.19

Table 5										
Expected Total Recreational Visits 4/25 thru 7/6/2014 (N)										
Time Block	**Project**									
	Saccarappa		**Mallison**		**Little Falls**		**Gambo**		**Dundee**	
	Wkday	**Wkend**	**Wkday**	**Wkend**	**Wkday**	**Wkend**	**Wkday**	**Wkend**	**Wkday**	**Wkend**
06:00-010:00	0	0	11	56	34	14	19	20	83	31
10:00-12:00	19	0	117	70	64	0	184	94	121	52
12:00-14:00	20	11	156	74	18	45	168	142	186	284
14:00-16:00	13	0	107	174	18	0	453	36	266	48
16:00-18:00	0	0	150	84	10	0	285	107	184	53
18:00-22:00	9	36	105	725	1	0	25	0	64	0
Grand Total	**61**	**48**	**646**	**1183**	**145**	**59**	**1134**	**399**	**906**	**467**

Table 6				
Angler Percentage and Expected Count				
	Weekday		Weekend	
4/25-7/6	%	Expected Count	%	Expected Count
Saccarappa	0.0%	0	0.0%	0
Mallison	89.1%	576	66.8%	790
Little Falls	0.0%	0	0.0%	0
Gambo	36.4%	413	27.8%	111
Dundee	72.7%	658	67.1%	313

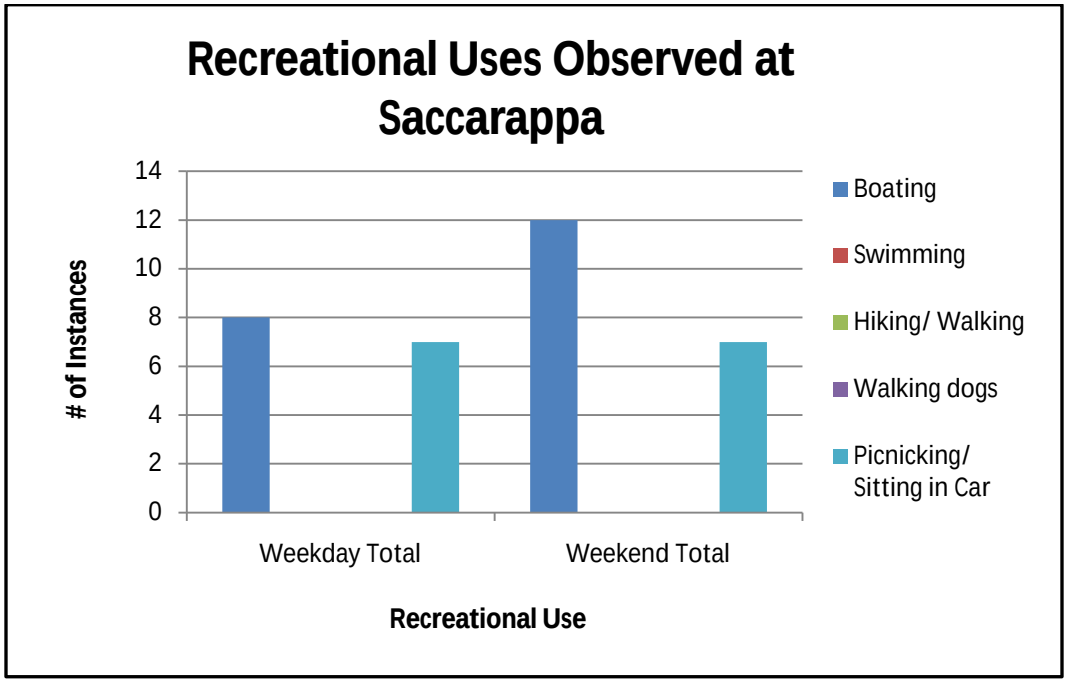


Figure 1.0 During a total of 237 recreation monitoring visits to the Saccarappa Project between April 25, 2014 and July 6, 2014 a total of 34 instances of either boating or picnicking/sitting in car were observed. A total of 15 instances were observed on weekdays and 19 instances were observed on weekend days. This chart reports the number of instances observed for each activity and when it was observed. An "Instance" is defined as each individual observed engaging in a recreational use at each visit. For example, 2 people are observed fishing in the 06:00 hour, in the 10:00 hour those same individuals are observed, plus an additional angler is observed on-site. This scenario would result in a total of 5 instances of angling being recorded.

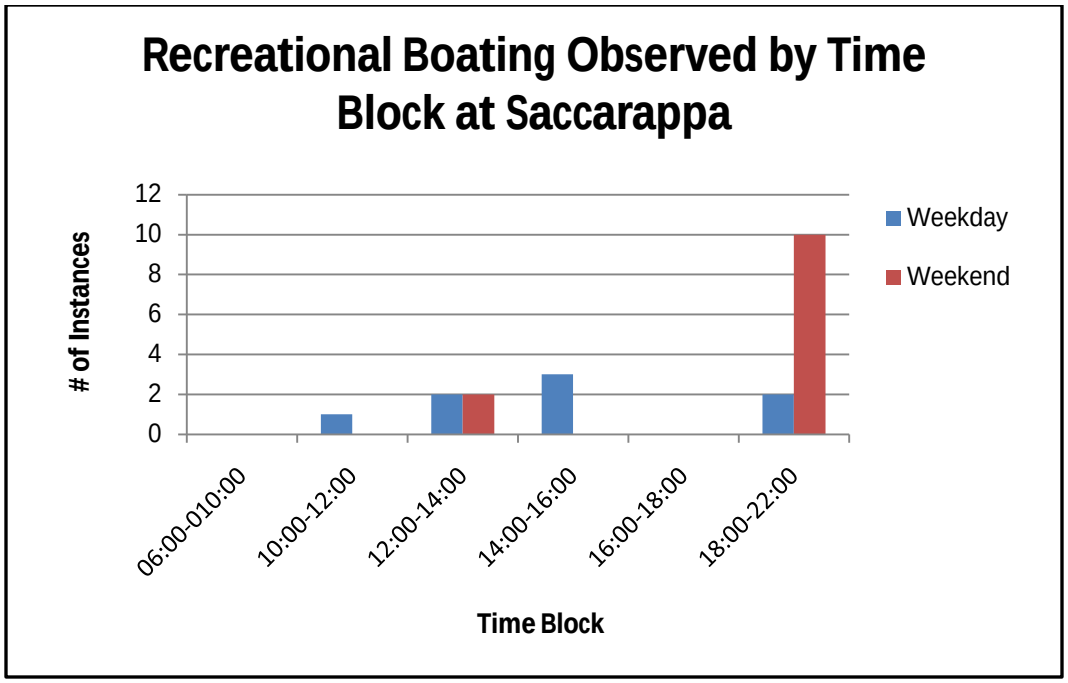


Figure 1.1 Of the 34 observed instances of recreation at the Saccarappa Project, there were 20 instances of boating recorded; 8 instances were recorded on weekdays and 12 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

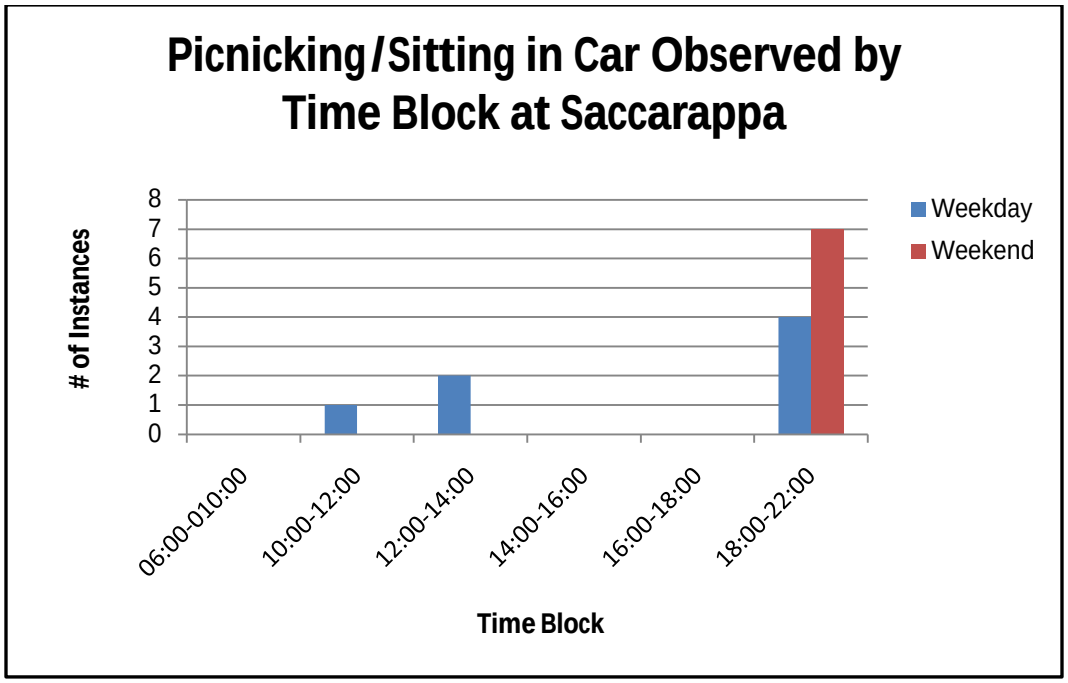


Figure 1.2 Of the 34 observed instances of recreation at the Saccarappa Project, there were 14 instances of picnicking/sitting in car recorded; 7 instances were recorded on weekdays and 7 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

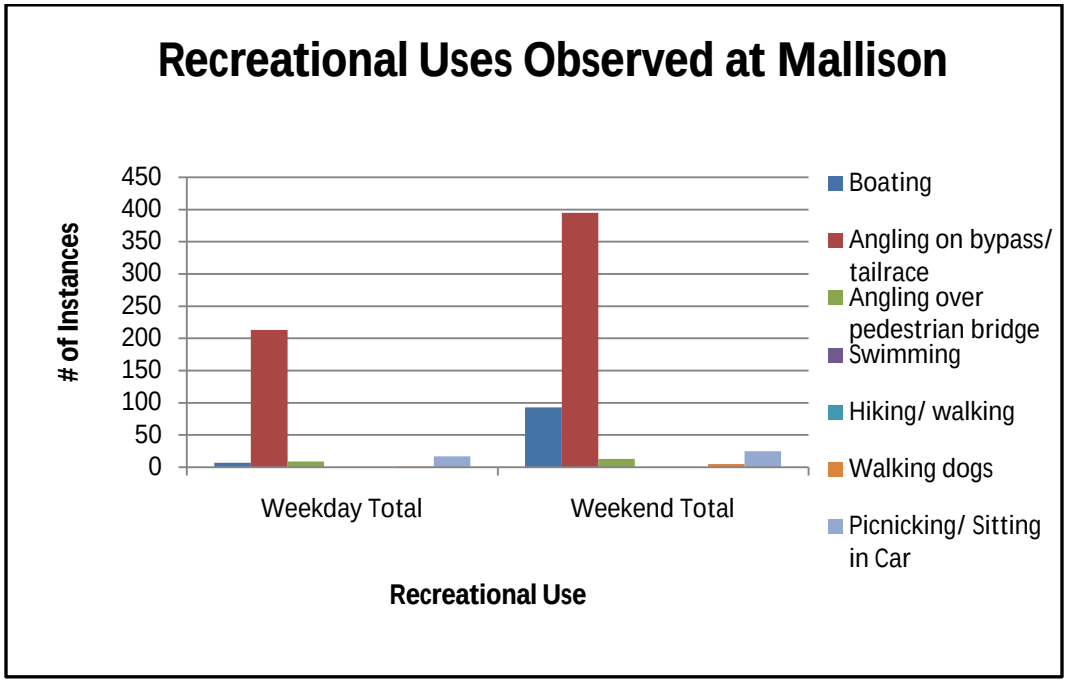


Figure 2.0 During a total of 321 recreation monitoring visits to the Mallison Project between April 28, 2014 and July 6, 2014 a total of 778 instances of either boating, angling, walking dogs or picnicking/sitting in car were observed. A total of 247 instances were observed on weekdays and 531 instances were observed on weekend days. This chart reports the number of instances observed for each activity and when it was observed. An "Instance" is defined as each individual observed engaging in a recreational use at each visit. For example, 2 people are observed fishing in the 06:00 hour, in the 10:00 hour those same individuals are observed, plus an additional angler is observed on-site. This scenario would result in a total of 5 instances of angling being recorded.

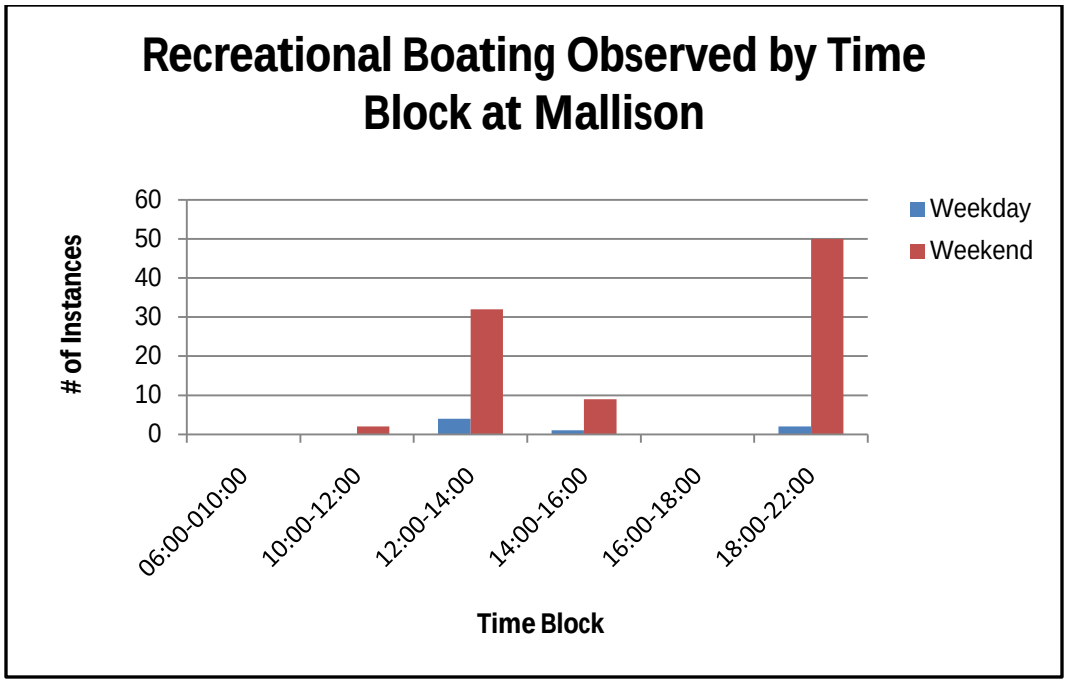


Figure 2.1 Of the 778 observed instances of recreation at the Mallison Project, there were 100 instances of boating recorded; 7 instances were recorded on weekdays and 93 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

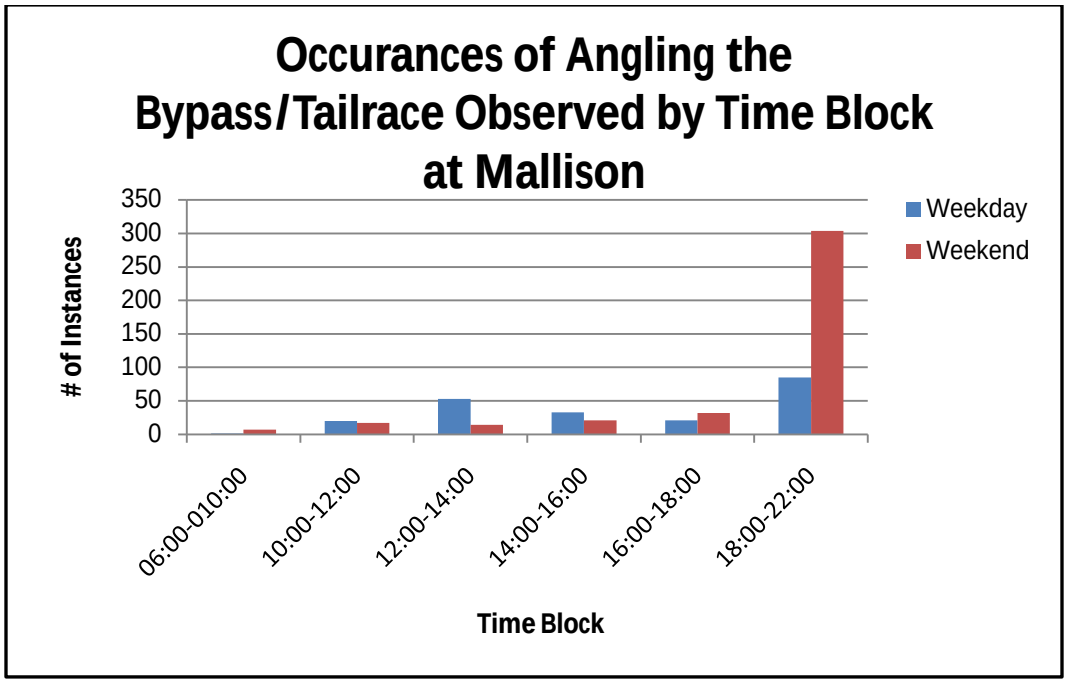


Figure 2.2 Of the 778 observed instances of recreation at the Mallison Project, there were 608 instances of angling downstream of the tailrace recorded; 213 instances were recorded on weekdays and 395 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

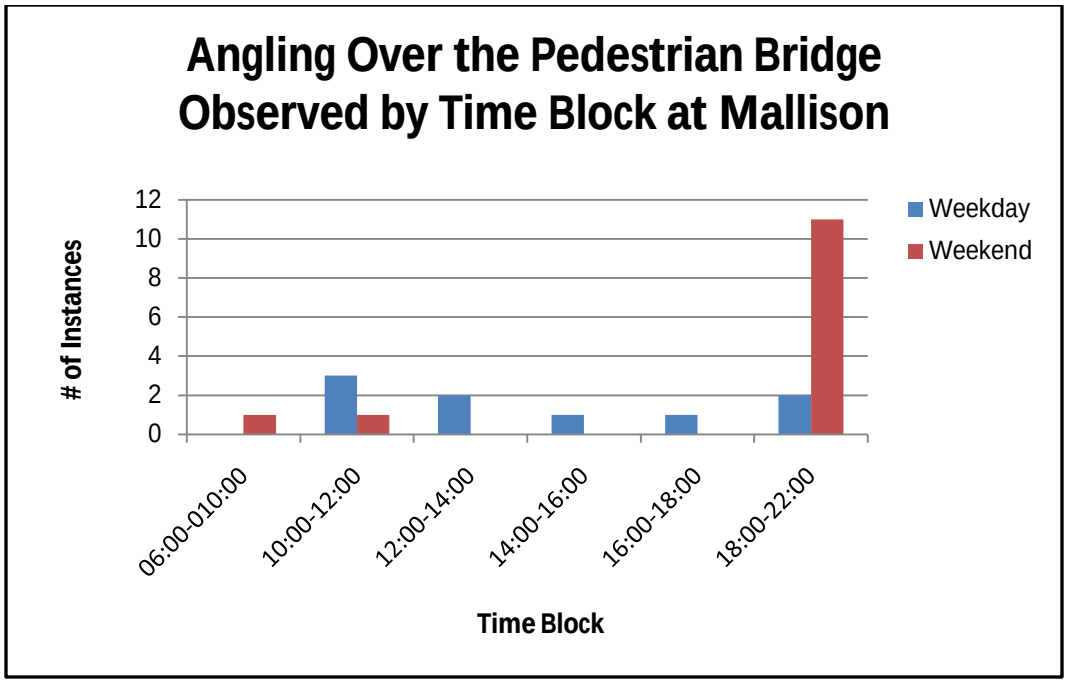


Figure 2.3 Of the 778 observed instances of recreation at the Mallison Project, there were 22 instances of angling over the pedestrian bridge recorded; 9 instances were recorded on weekdays and 13 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

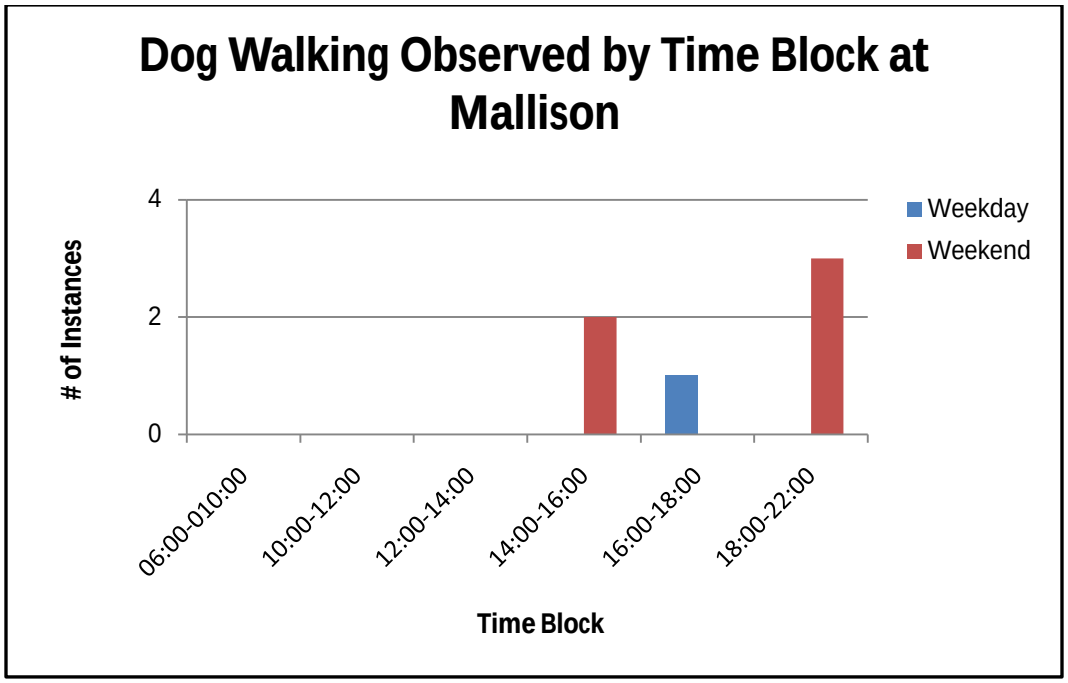


Figure 2.4 Of the 778 observed instances of recreation at the Mallison Project, there were 6 instances of dog walking recorded; 1 instance was recorded on a weekday and 5 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

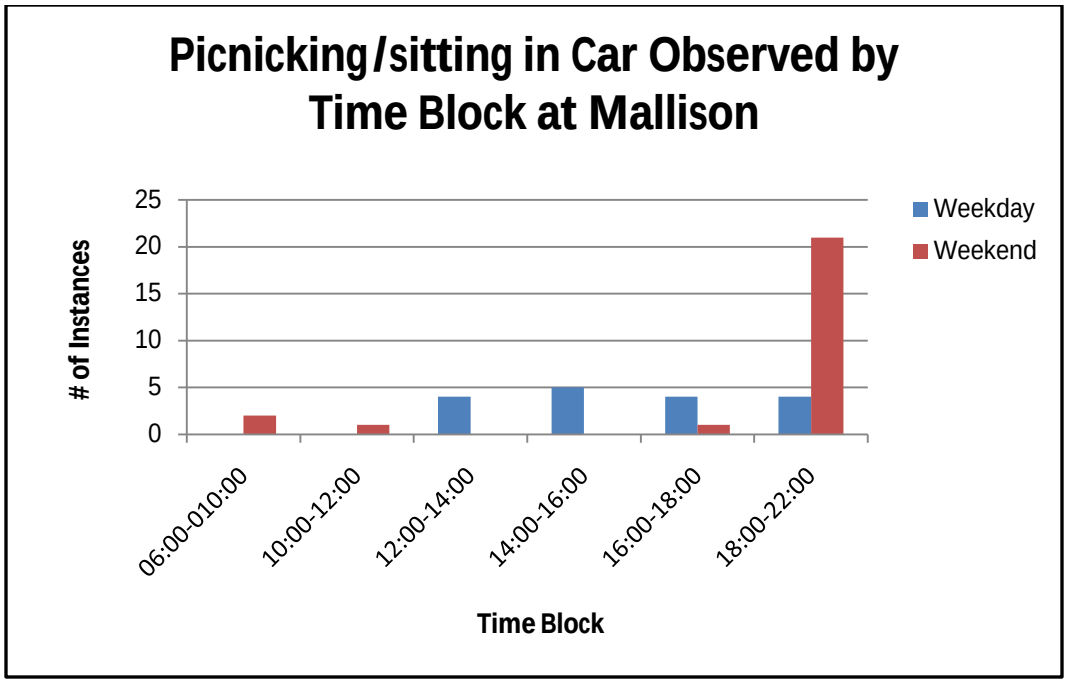


Figure 2.5 Of the 778 observed instances of recreation at the Mallison Project, there were 42 instances of picnicking/sitting in car recorded; 17 instances were recorded on weekdays and 25 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

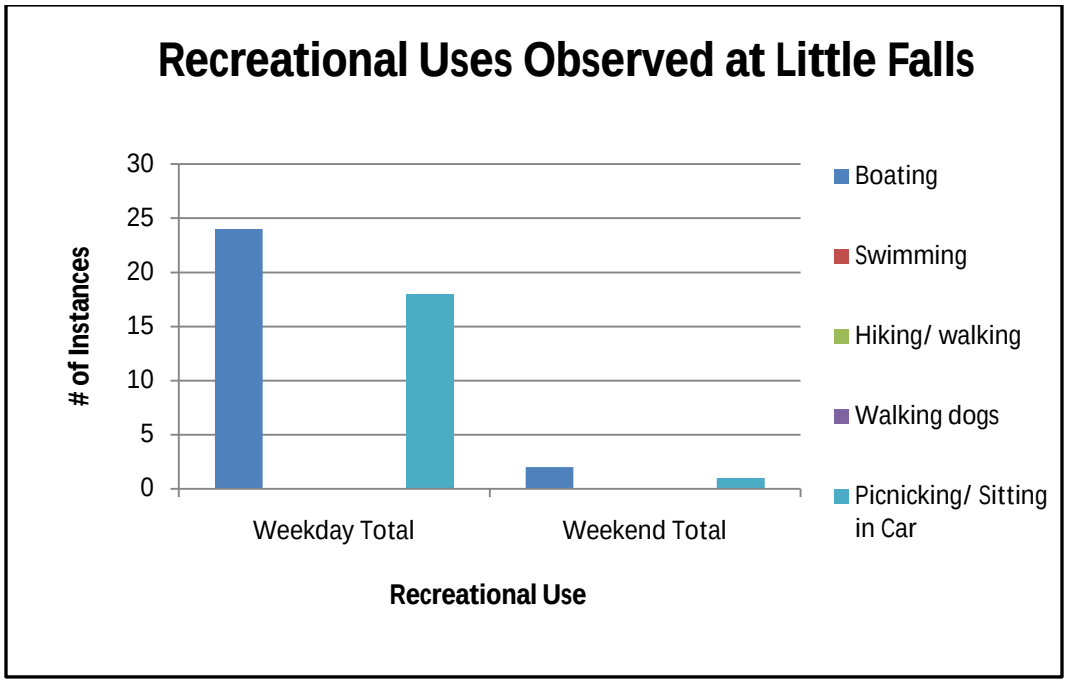


Figure 3.0 During a total of 324 recreation monitoring visits to the Little Falls Project between April 28, 2014 and July 13, 2014 a total of 45 instances of either boating or picnicking/sitting in car were observed. A total of 42 instances were observed on weekdays and 3 instances were observed on weekend days. This chart reports the number of instances observed for each activity and when it was observed. An "Instance" is defined as each individual observed engaging in a recreational use at each visit. For example, 2 people are observed fishing in the 06:00 hour, in the 10:00 hour those same individuals are observed, plus an additional angler is observed on-site. This scenario would result in a total of 5 instances of angling being recorded.

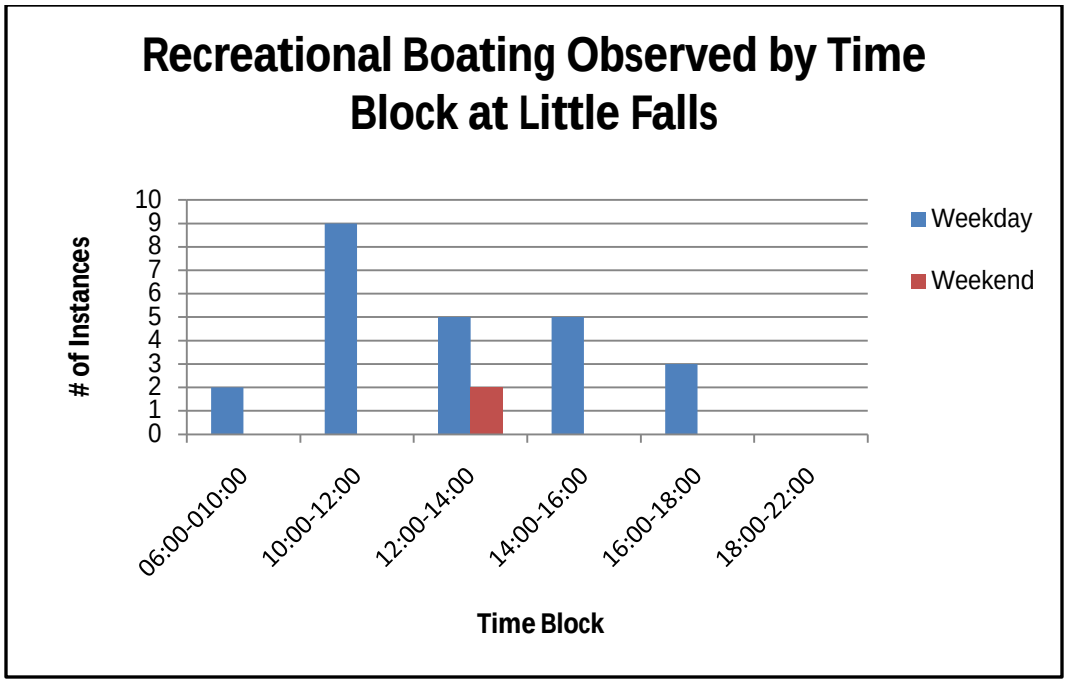


Figure 3.1 Of the 45 observed instances of recreation at the Little Falls Project, there were 26 instances of boating recorded; 24 instances were recorded on weekdays and 2 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

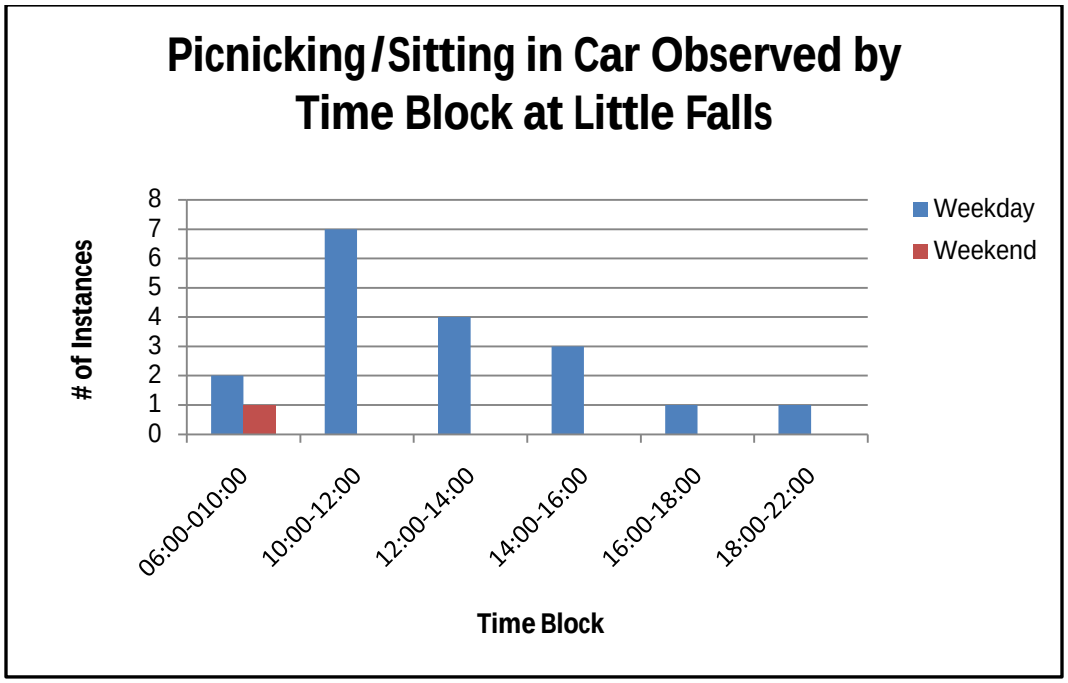


Figure 3.2 Of the 45 observed instances of recreation at the Little Falls Project, there were 19 instances of picnicking/sitting in car recorded; 18 instances were recorded on weekdays and 1 instance was recorded on a weekend day. This chart reports the time block in which those instances were observed.

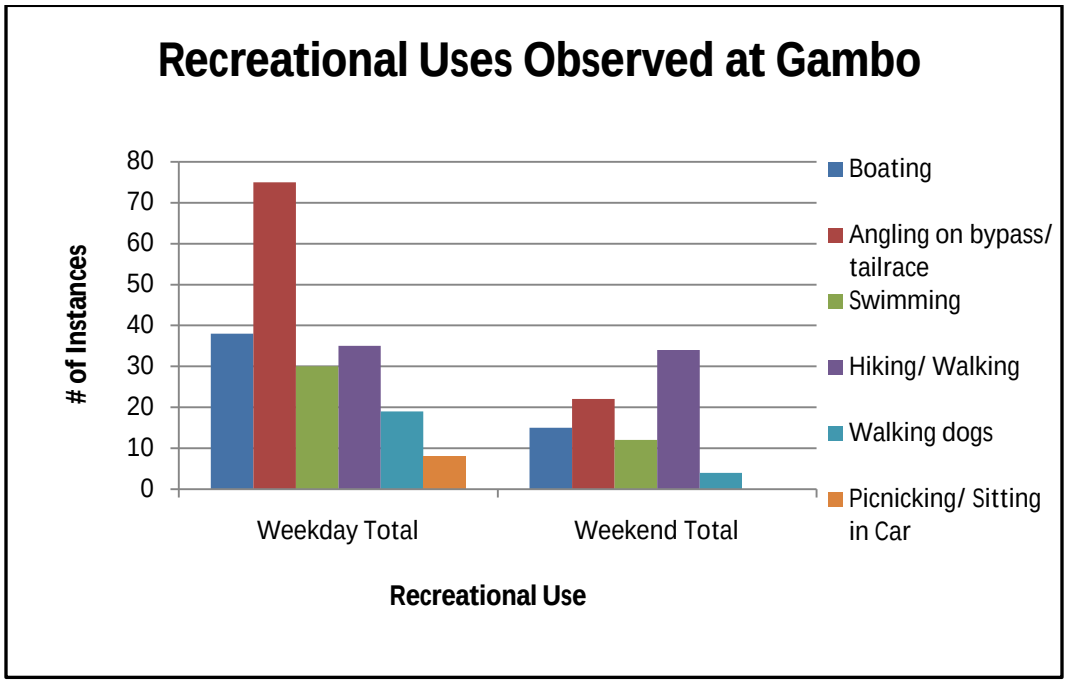


Figure 4.0 During a total of 326 recreation monitoring visits to the Gambo Project between April 28, 2014 and July 13, 2014 a total of 292 instances of either boating, angling, swimming, hiking/walking, walking dogs or picnicking/sitting in car were observed. A total of 205 instances were observed on weekdays and 87 instances were observed on weekend days. This chart reports the number of instances observed for each activity and when it was observed. An "Instance" is defined as each individual observed engaging in a recreational use at each visit. For example, 2 people are observed fishing in the 06:00 hour, in the 10:00 hour those same individuals are observed, plus an additional angler is observed on-site. This scenario would result in a total of 5 instances of angling being recorded.

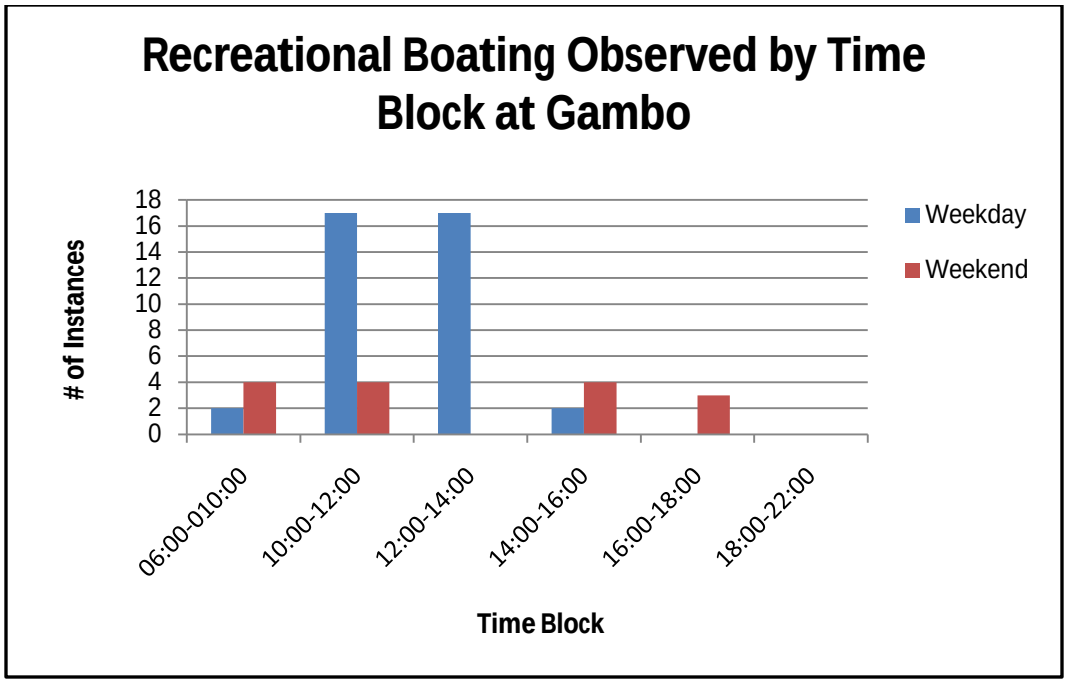


Figure 4.1 Of the 292 observed instances of recreation at the Gambo Project, there were 53 instances of boating recorded; 38 instances were recorded on weekdays and 15 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

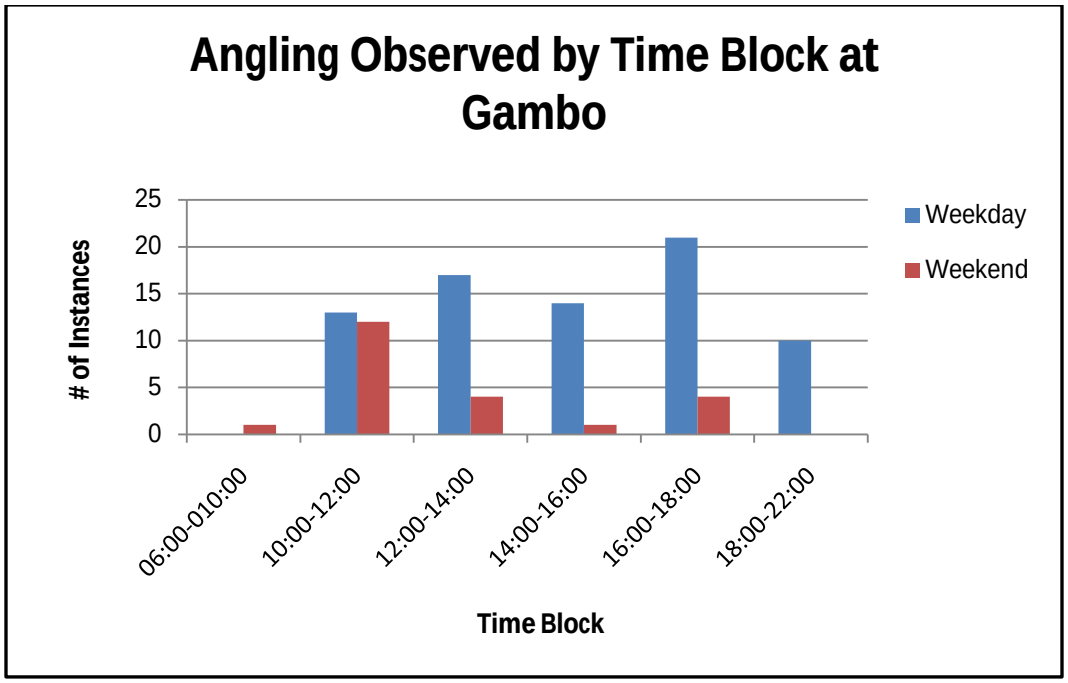


Figure 4.2 Of the 292 observed instances of recreation at the Gambo Project, there were 97 instances of angling recorded; 75 instances were recorded on weekdays and 22 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

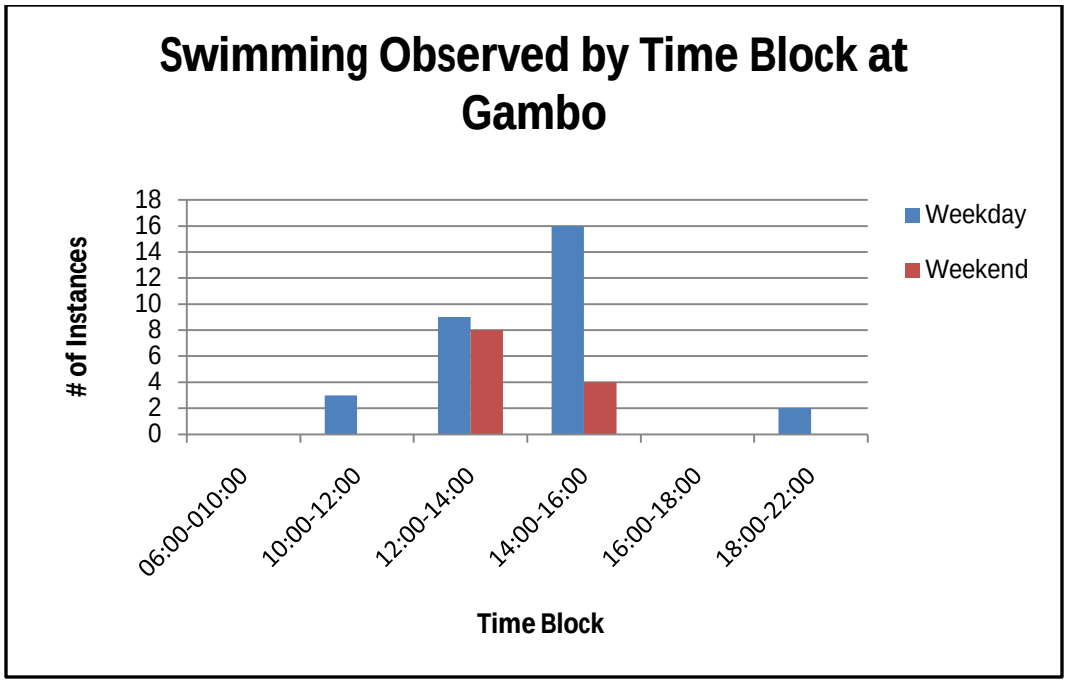


Figure 4.3 Of the 292 observed instances of recreation at the Gambo Project, there were 42 instances of swimming recorded; 30 instances were recorded on weekdays and 12 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

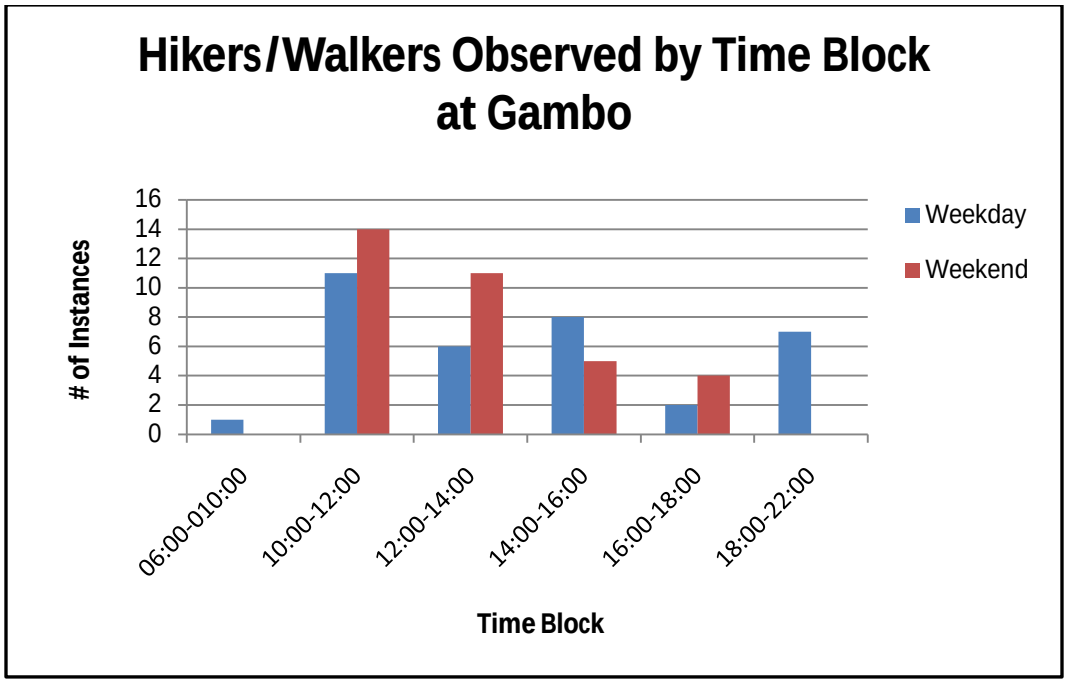


Figure 4.4 Of the 292 observed instances of recreation at the Gambo Project, there were 69 instances of hiking/walking recorded; 35 instances were recorded on weekdays and 34 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

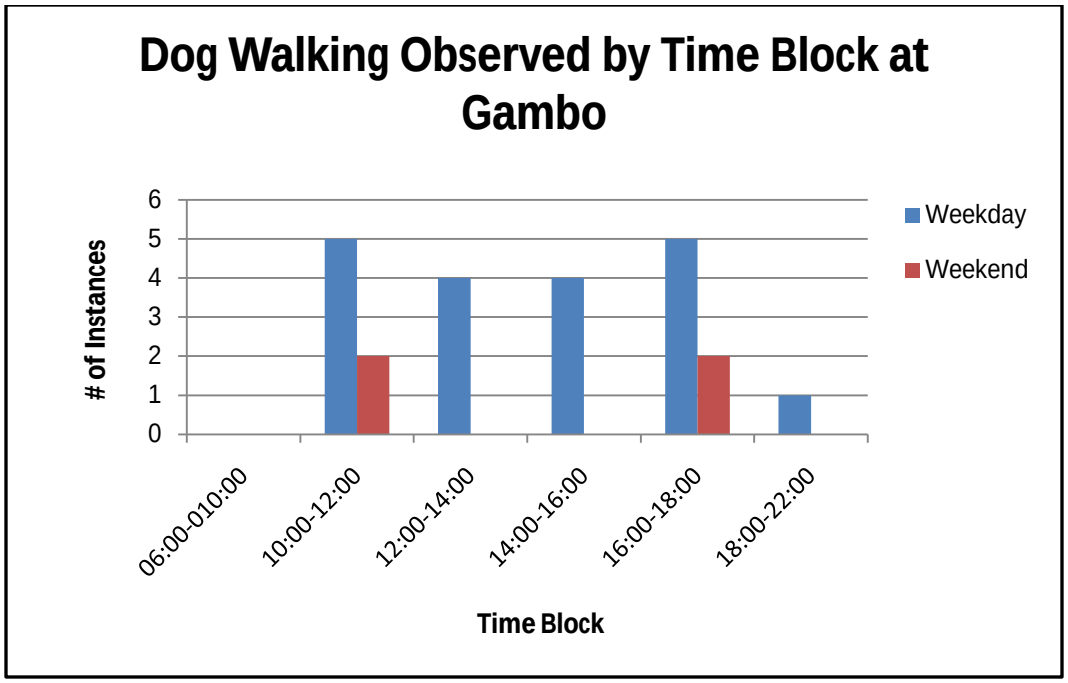


Figure 4.5 Of the 292 observed instances of recreation at the Gambo Project, there were 38 instances of dog walking recorded; 19 instances were recorded on weekdays and 4 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

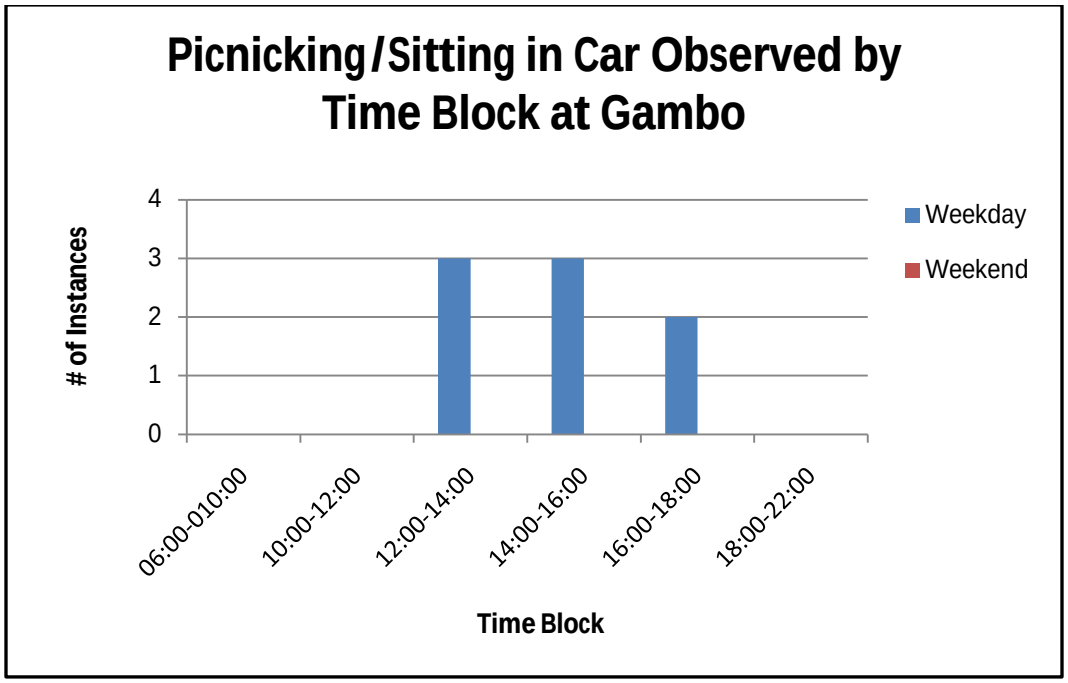


Figure 4.6 Of the 292 observed instances of recreation at the Gambo Project, there were 8 instances of picnicking/sitting in one's car recorded; all 8 instances were recorded on weekdays. This chart reports the time block in which those instances were observed.

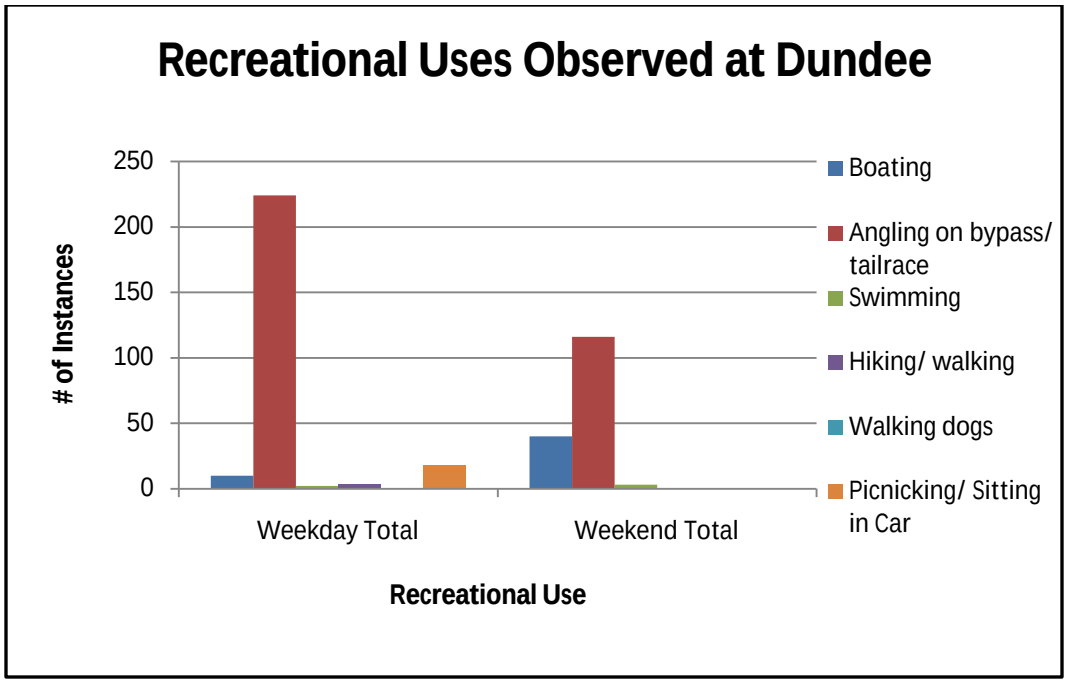


Figure 5.0 During a total of 326 recreation monitoring visits to the Dundee Project between April 28, 2014 and July 13, 2014 a total of 416 instances of either boating, angling, swimming, hiking/walking, or picnicking/sitting in car were observed. A total of 257 instances were observed on weekdays and 159 instances were observed on weekend days. This chart reports the number of instances observed for each activity and when it was observed. An "Instance" is defined as each individual observed engaging in a recreational use at each visit. For example, 2 people are observed fishing in the 06:00 hour, in the 10:00 hour those same individuals are observed, plus an additional angler is observed on-site. This scenario would result in a total of 5 instances of angling being recorded.

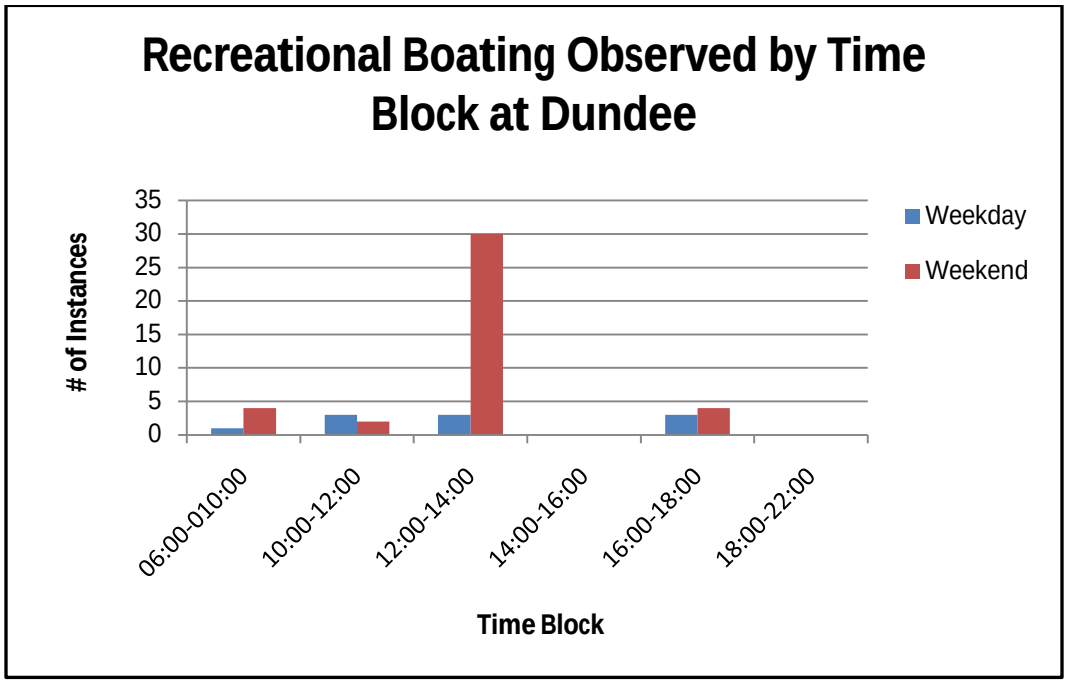


Figure 5.1 Of the 416 observed instances of recreation at the Dundee Project, there were 50 instances of boating recorded; 10 instances were recorded on weekdays and 40 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

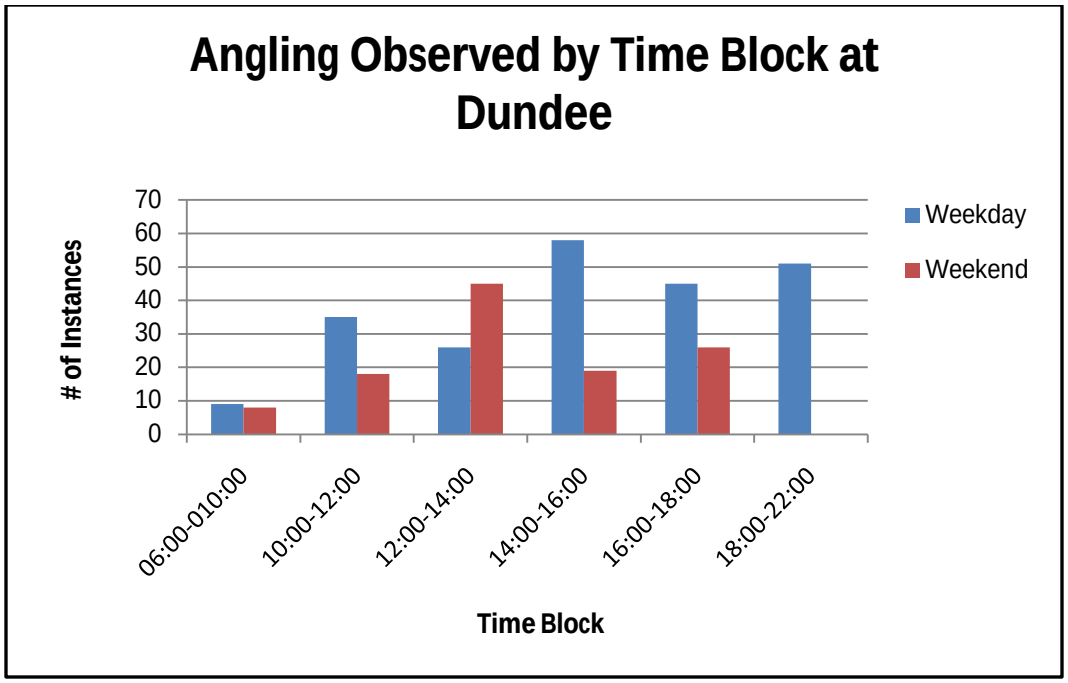


Figure 5.2 Of the 416 observed instances of recreation at the Dundee Project, there were 340 instances of angling recorded; 224 instances were recorded on weekdays and 116 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

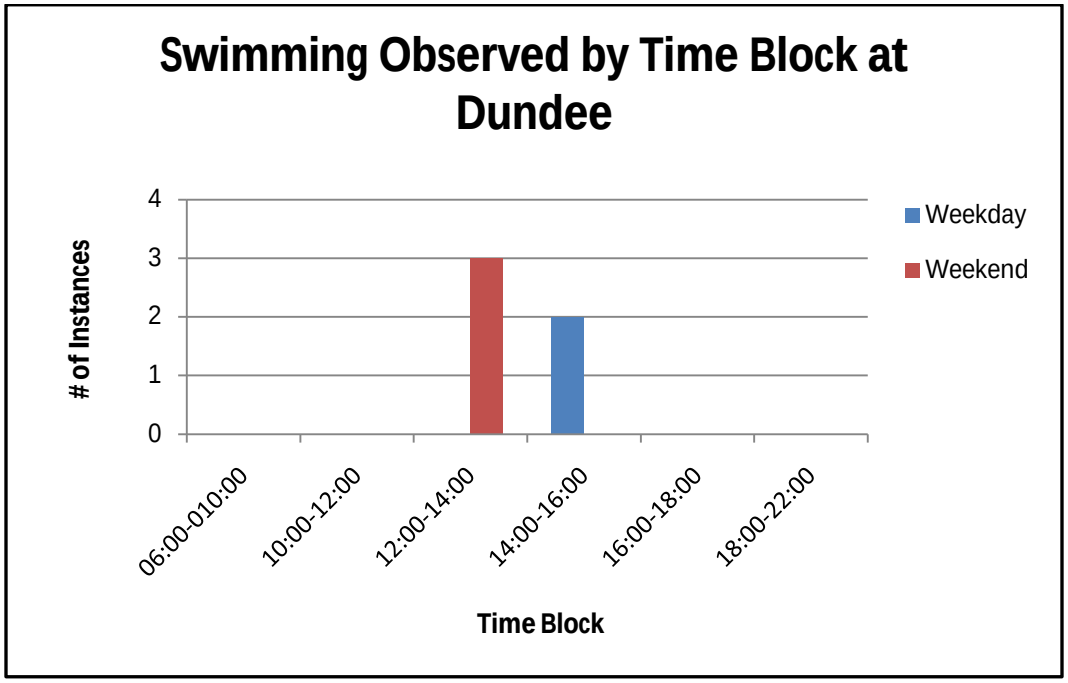


Figure 5.3 Of the 416 observed instances of recreation at the Dundee Project, there were 5 instances of swimming recorded; 2 instances were recorded on weekdays and 3 instances were recorded on weekend days. This chart reports the time block in which those instances were observed.

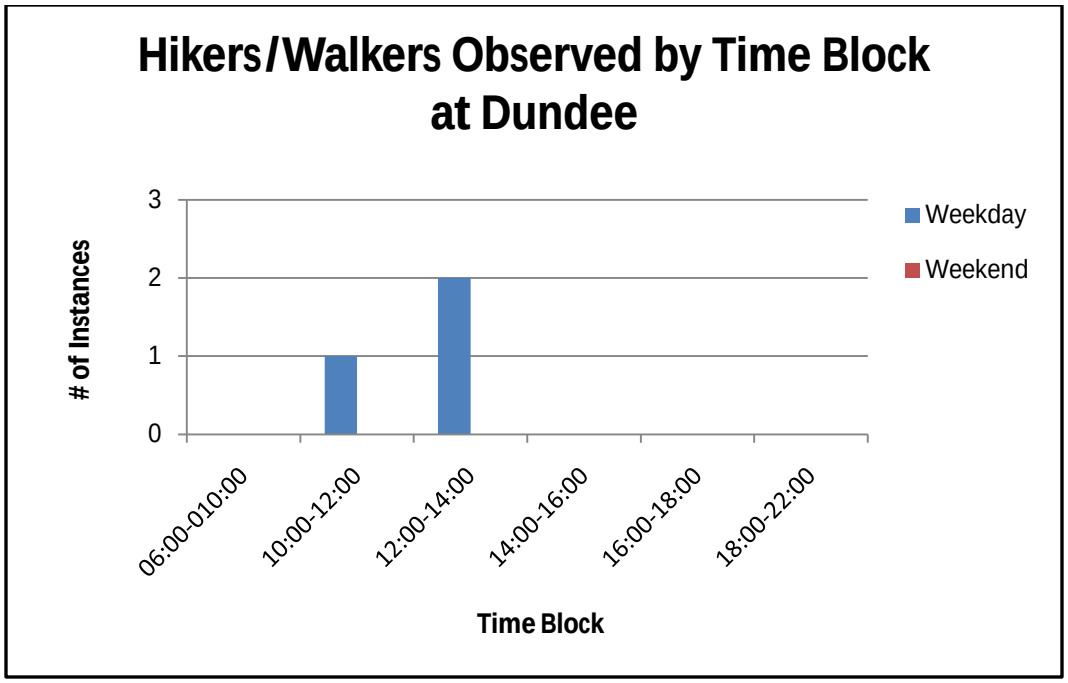


Figure 5.4 Of the 416 observed instances of recreation at the Dundee Project, there were 3 instances of hiking/walking recorded; all 3 instances were recorded on weekdays. This chart reports the time block in which those instances were observed.

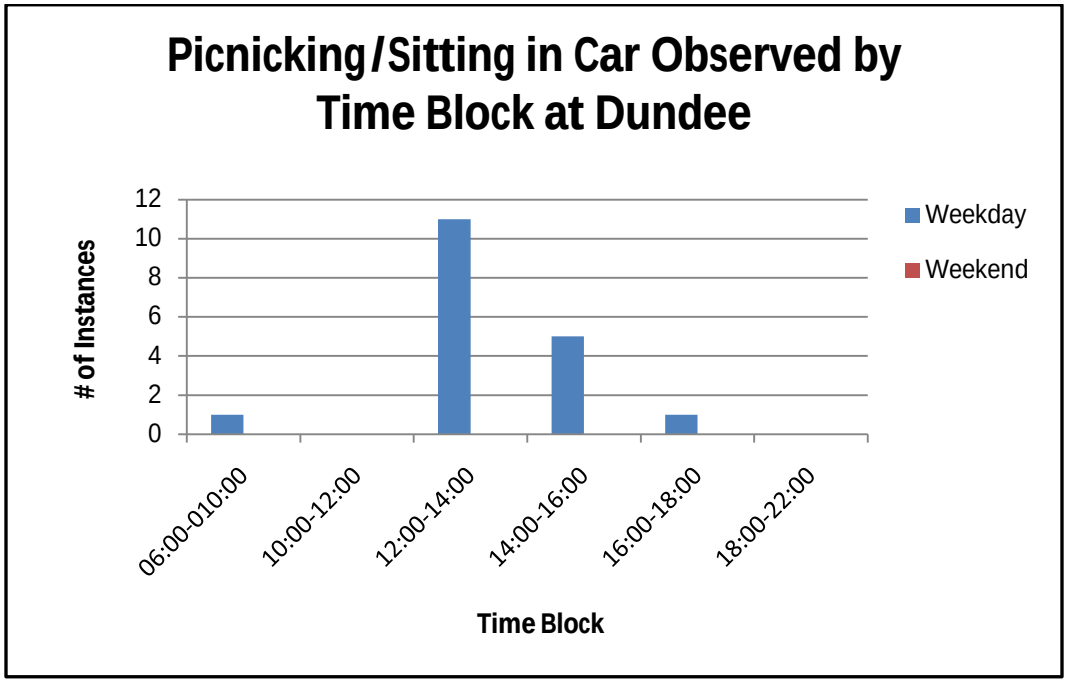


Figure 5.5 Of the 416 observed instances of recreation at the Dundee Project, there were 18 instances of picnicking/sitting in car recorded; all 18 instances were recorded on weekdays. This chart reports the time block in which those instances were observed.

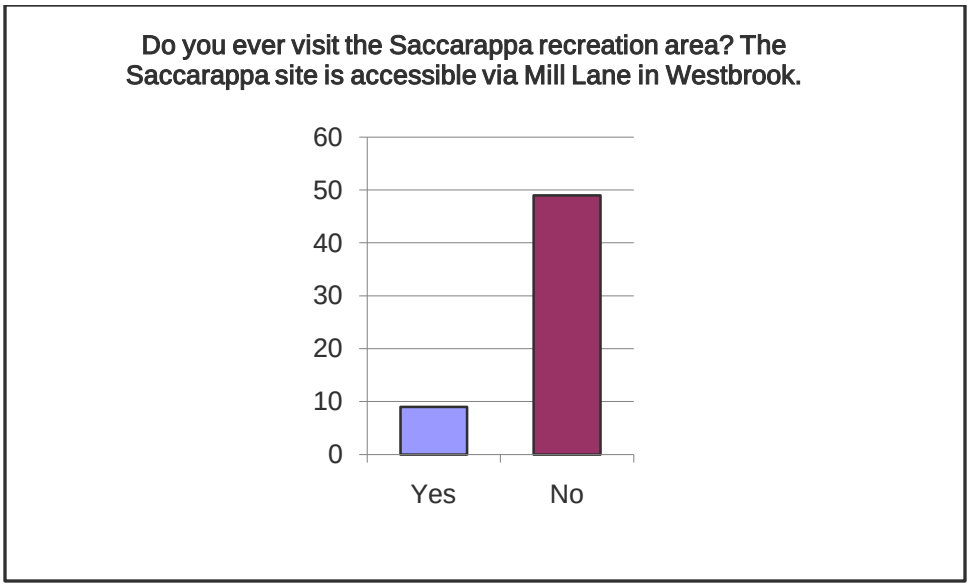


Figure 6.0 Of the survey's total respondents of 86, 58 people answered this question; 9 answered 'yes' and 49 answered 'no.'

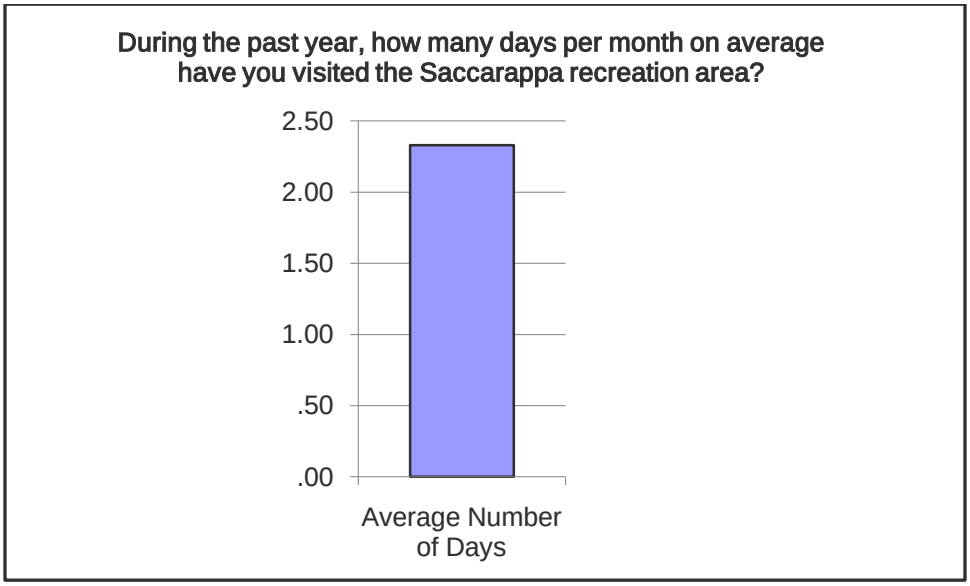


Figure 6.1 The average number of days per month that Saccarappa visitors use the site is 2.33.

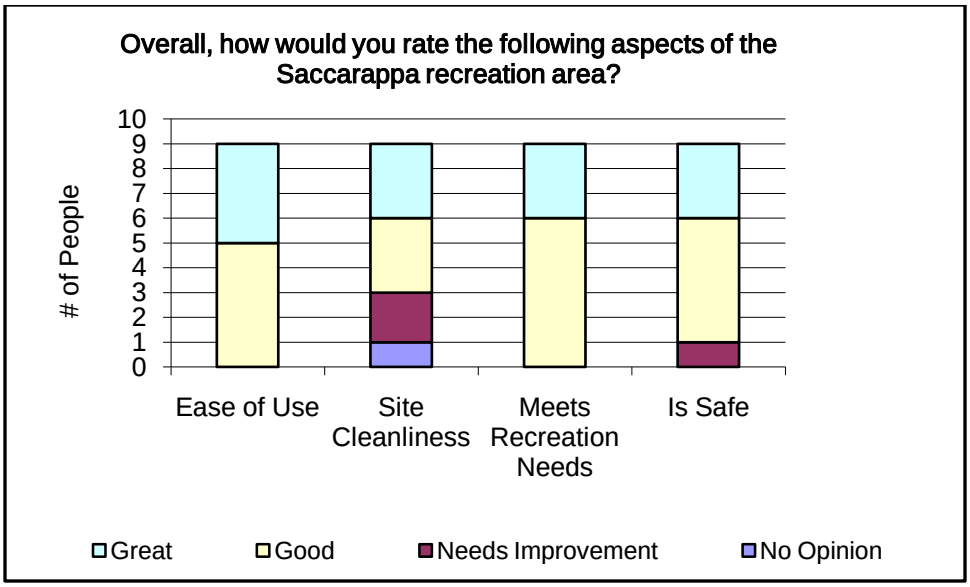


Figure 6.2 The (9) respondents who have visited the Saccarappa Project rate the site on a four point scale ranging from 'no opinion' to 'great.'

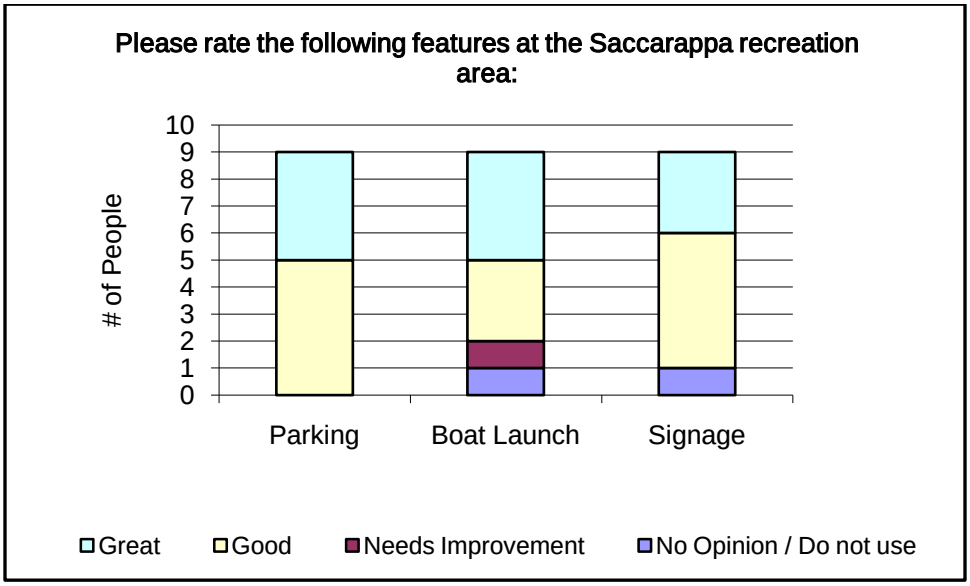


Figure 6.3 The (9) respondents who have visited the Saccarappa Project rate the site's features on a four point scale ranging from 'no opinion' to 'great.'

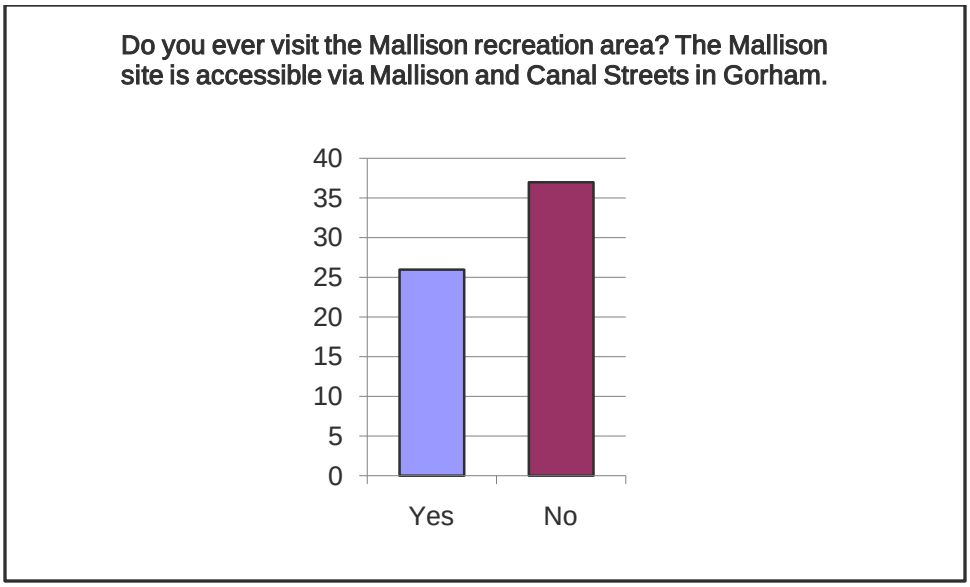


Figure 7.0 Of the survey's total respondents of 86, 63 people answered this question; 26 answered 'yes' and 37 answered 'no.'

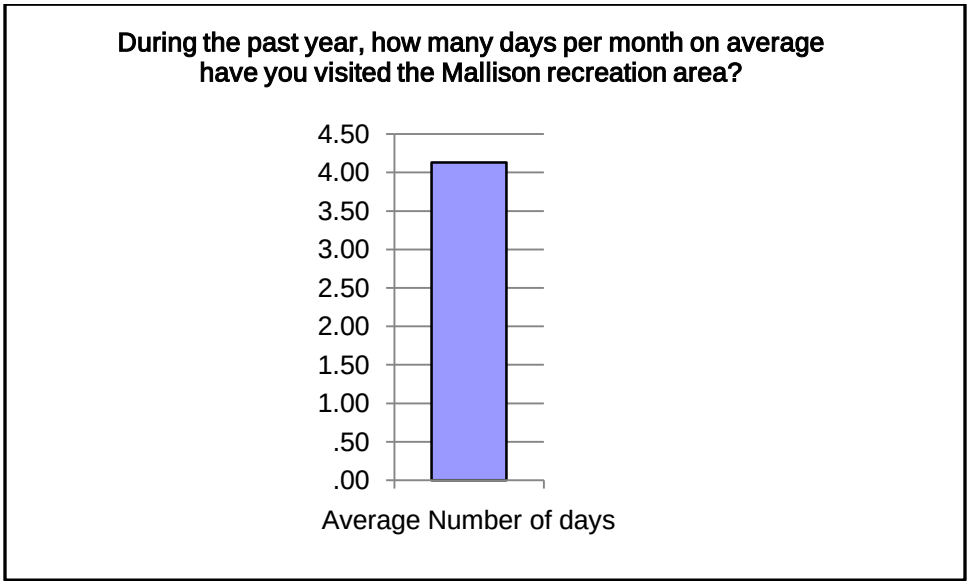


Figure 7.1 The average number of days per month that Mallison visitors use the site is 4.13.

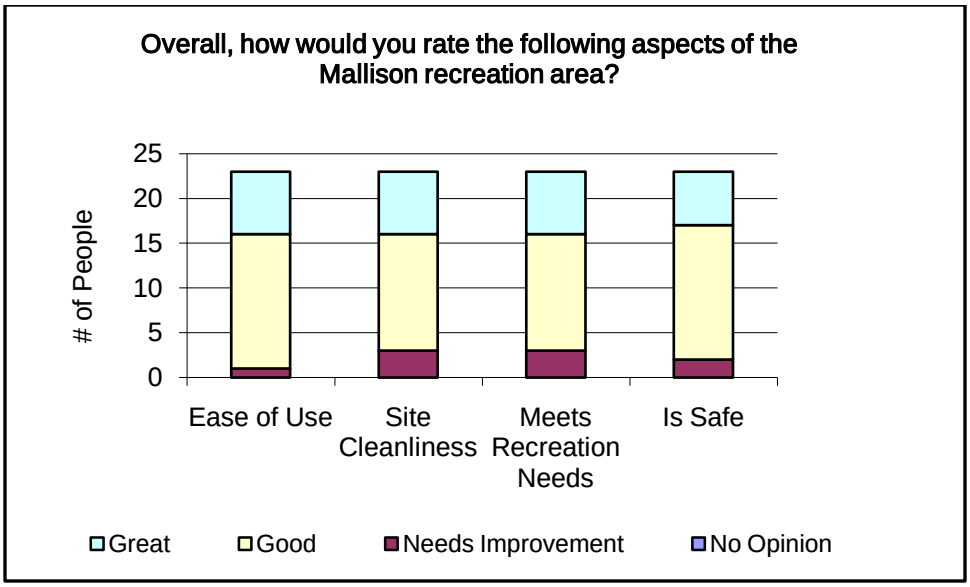


Figure 1.2 The (26) respondents who have visited the Mallison Project rate the site on a four point scale ranging from 'no opinion' to 'great.'

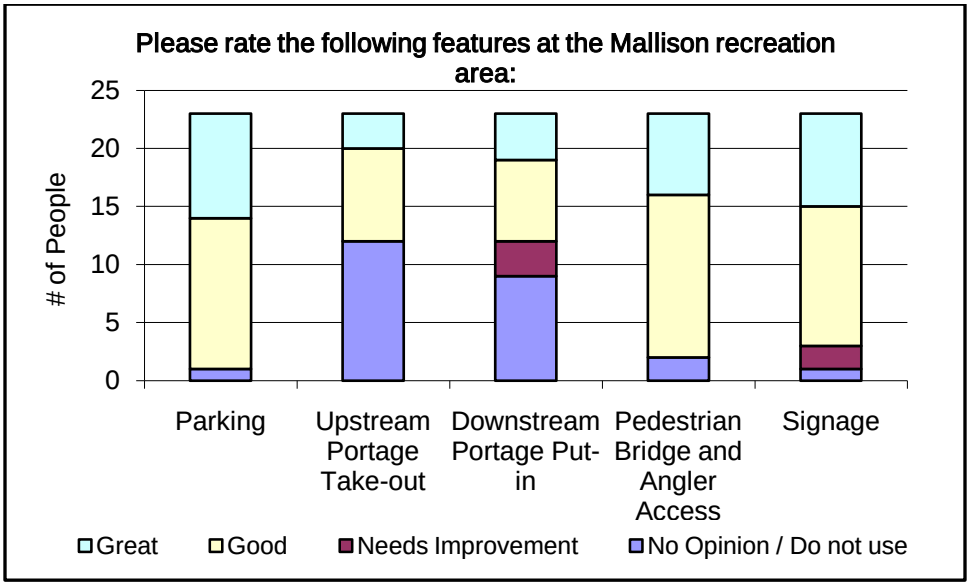


Figure 7.3 The (26) respondents who have visited the Mallison Project rate the site's features on a four point scale ranging from 'no opinion' to 'great.'

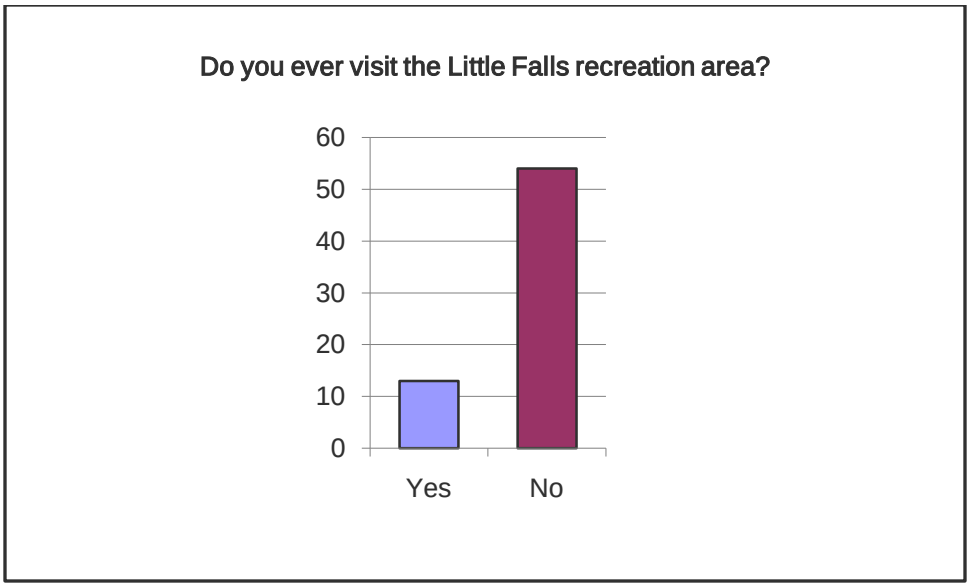


Figure 8.0 Of the survey's total respondents of 86, 65 people answered this question; 13 answered 'yes' and 52 answered 'no.'

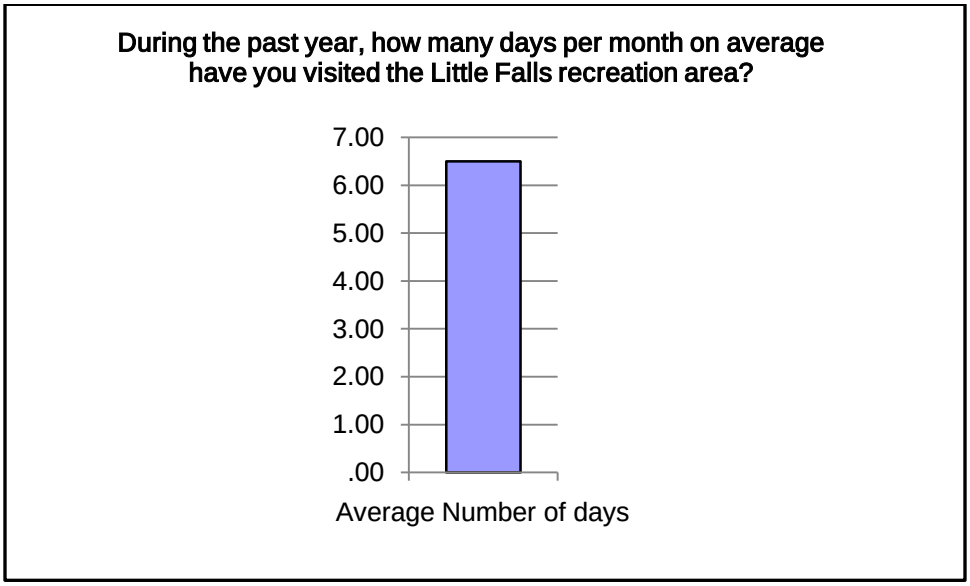


Figure 2.1 the average number of days per month that Little Falls visitors use the site is 6.5.

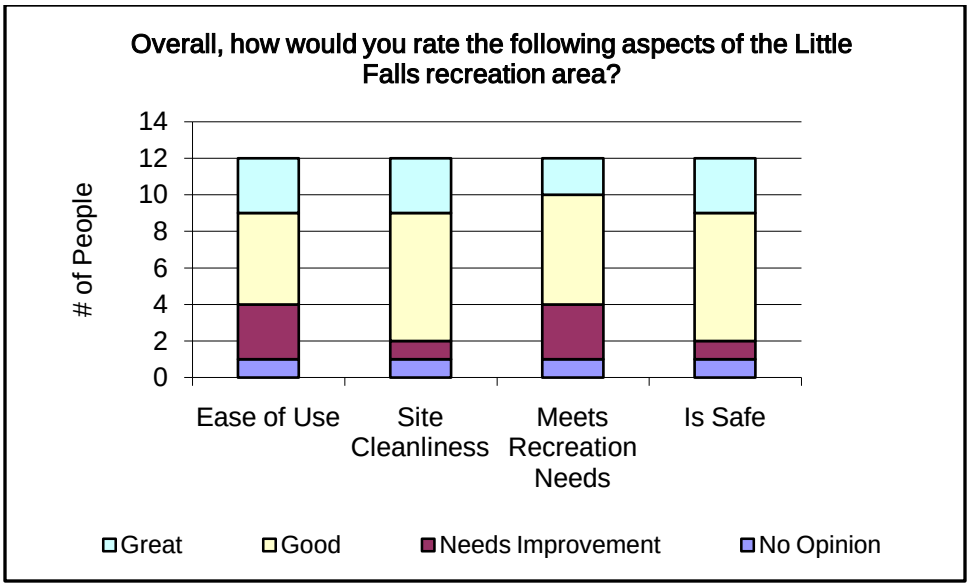


Figure 8.2 The (13) respondents who have visited the Little Falls Project rate the site on a four point scale ranging from 'no opinion' to 'great.'

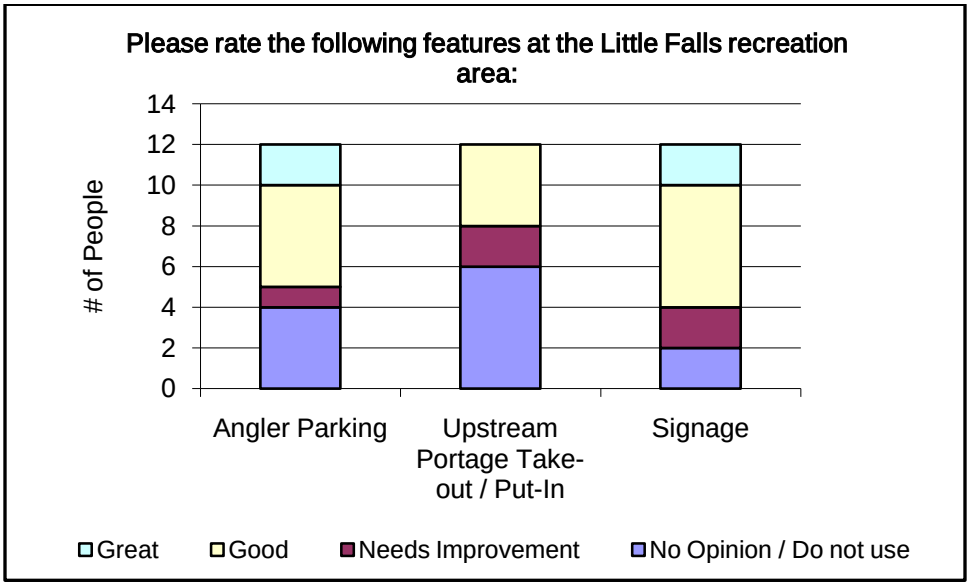


Figure 8.3 The (13) respondents who have visited the Little Falls Project rate the site's features on a four point scale ranging from 'no opinion' to 'great.'

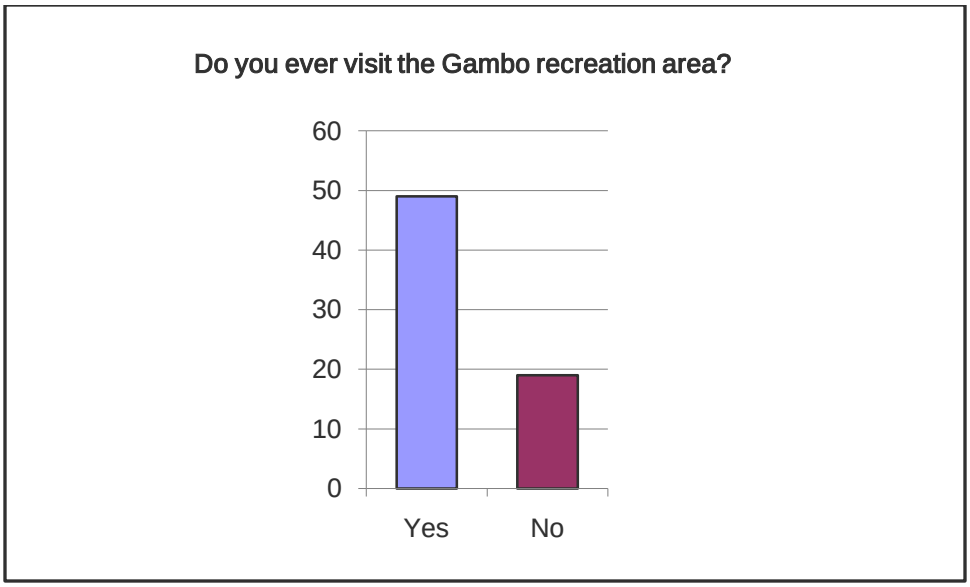


Figure 9.0 Of the survey's total respondents of 86, 66 people answered this question; 47 answered 'yes' and 19 answered 'no.'

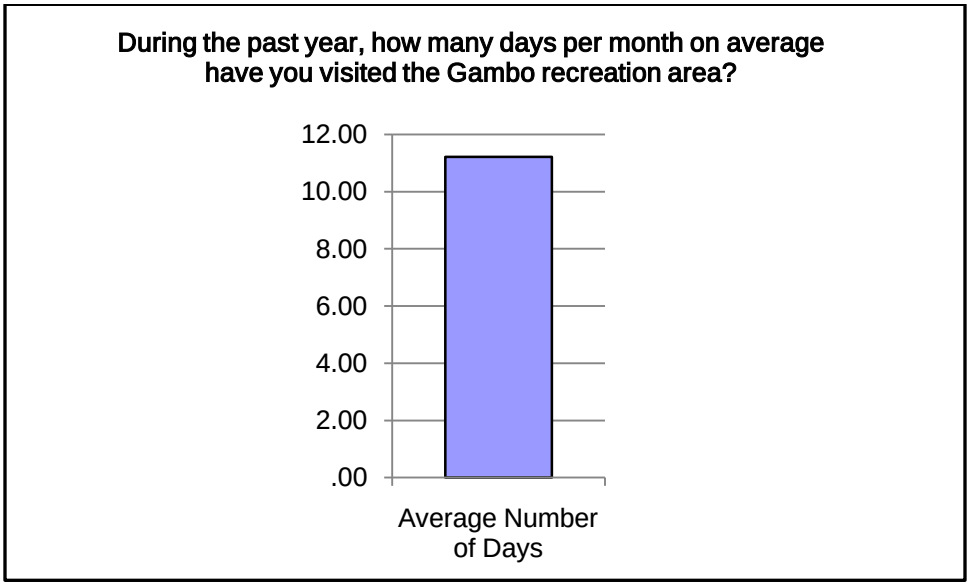


Figure 9.1 The average number of days per month that Gambo visitors use the site is 10.84.

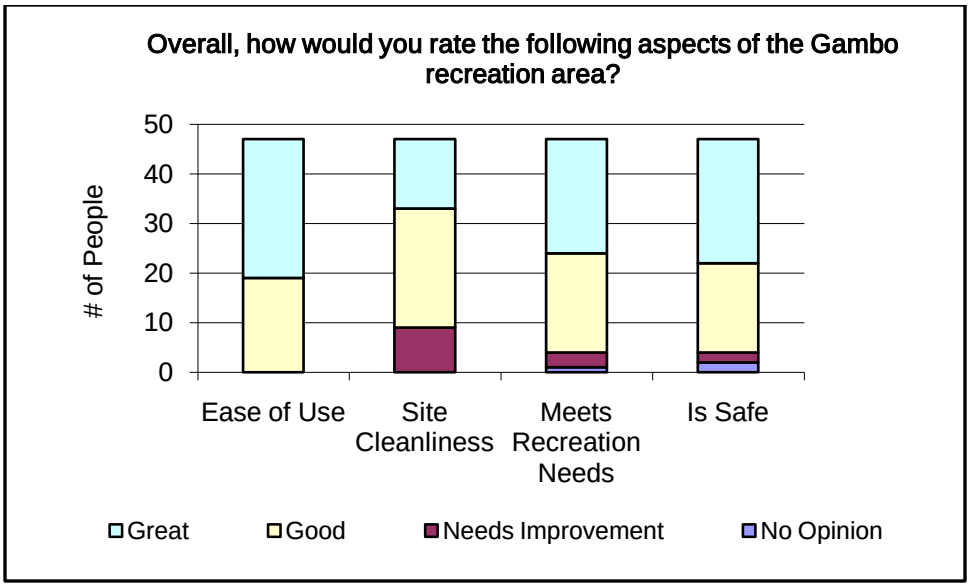


Figure 9.2 The (47) respondents who have visited the Gambo Project rate the site on a four point scale ranging from 'no opinion' to 'great.'

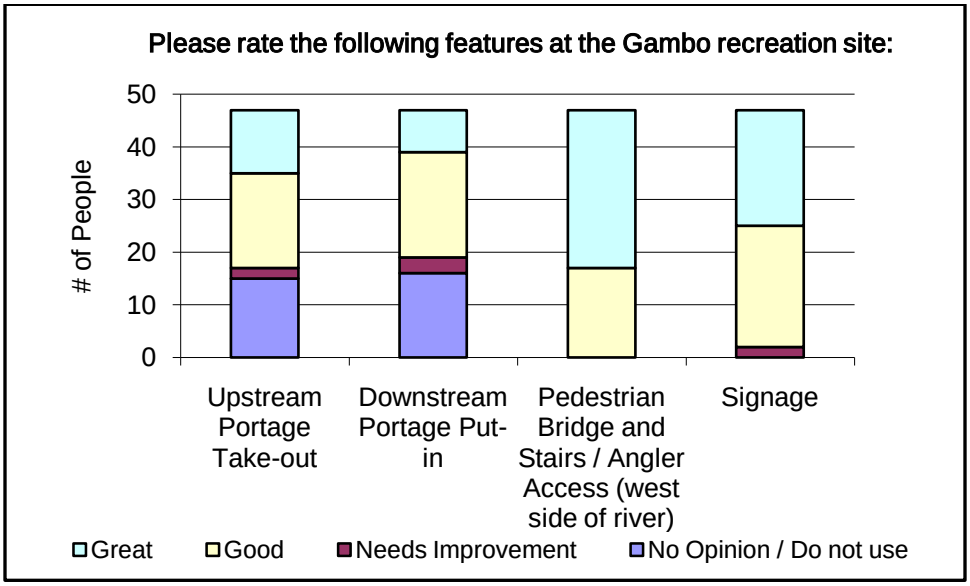


Figure 9.3 The (47) respondents who have visited the Gambo Project rate the site's features on a four point scale ranging from 'no opinion' to 'great.'

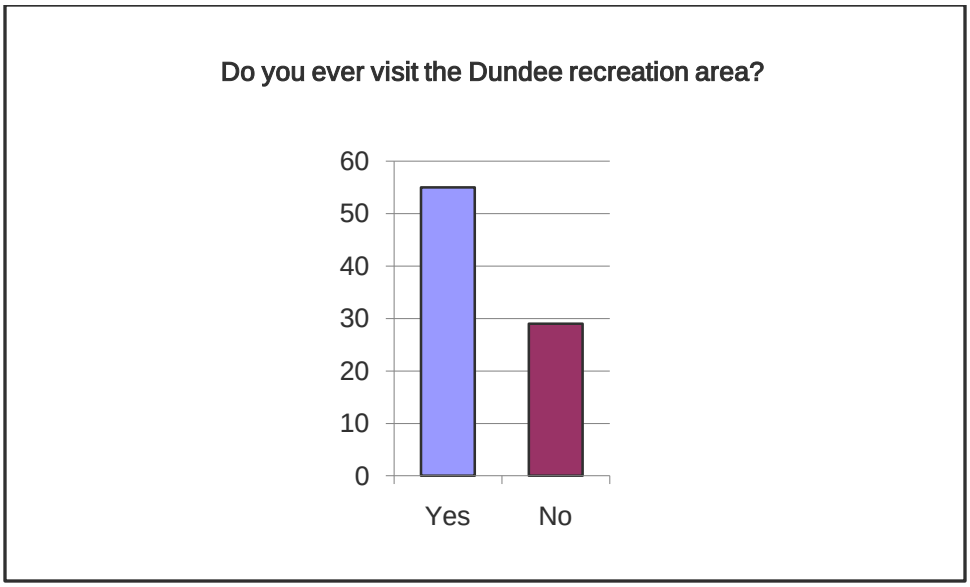


Figure 10.0 Of the survey's total respondents of 84, 82 people answered this question; 54 answered 'yes' and 28 answered 'no.'

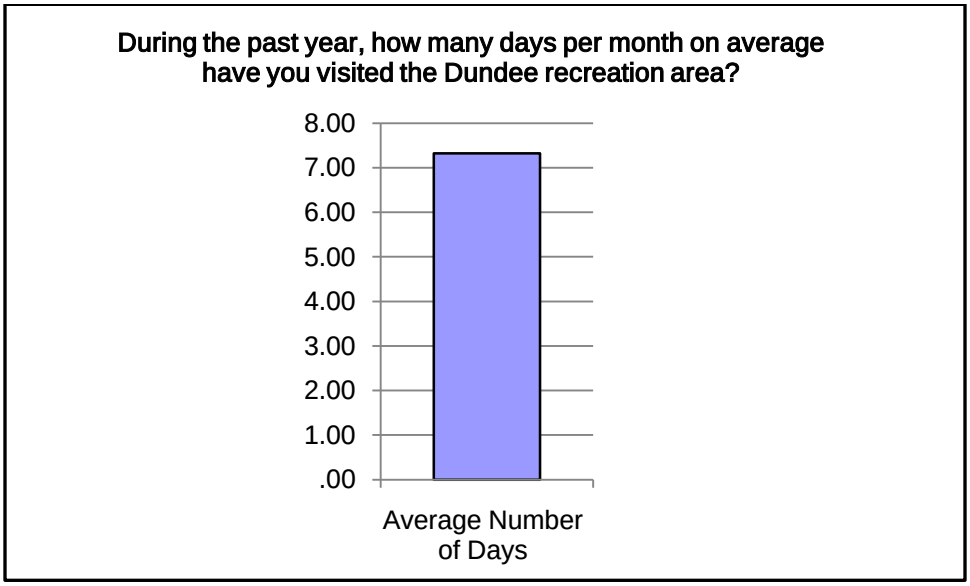


Figure 10.1 The average number of days per month that Dundee visitors use the site is 7.19.

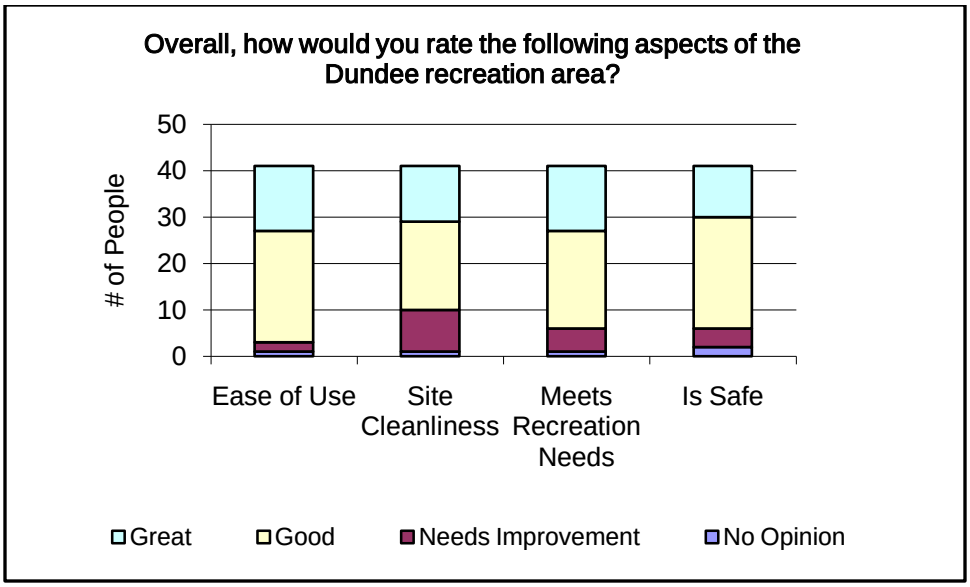


Figure 10.2 The (54) respondents who have visited the Dundee Project rate the site on a four point scale ranging from 'no opinion' to 'great.'

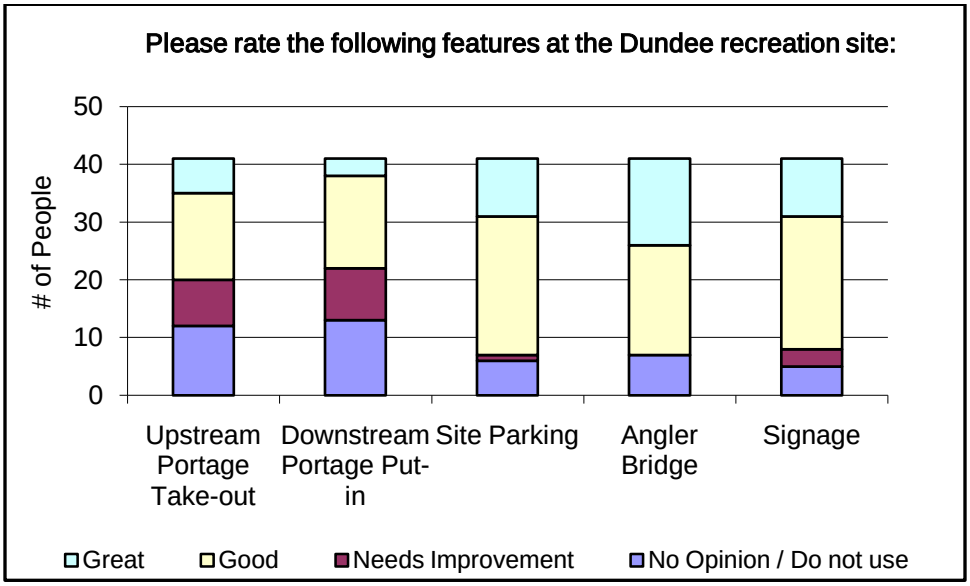


Figure 10.3 The (54) respondents who have visited the Dundee Project rate the site's features on a four point scale ranging from 'no opinion' to 'great.'

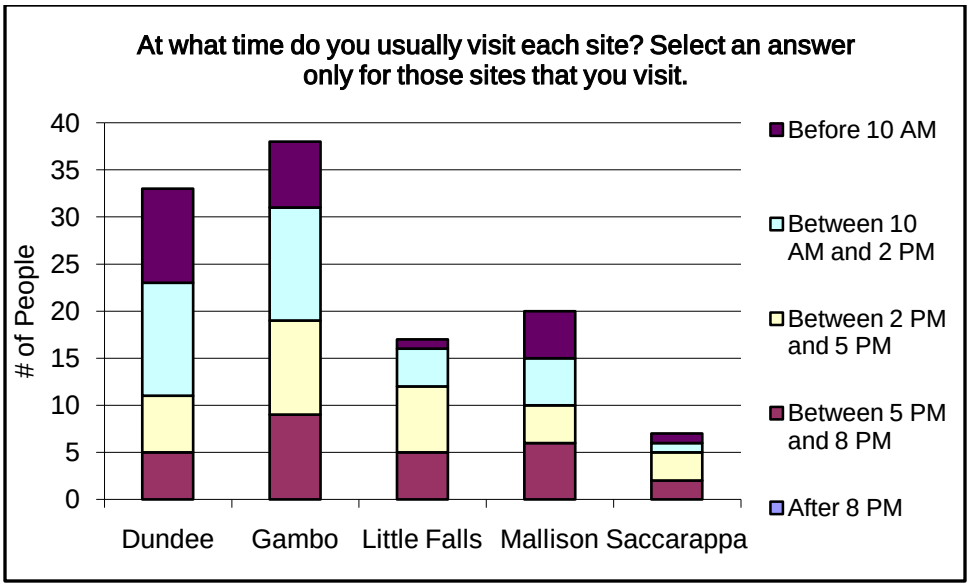


Figure 11.0 50 respondents answered this question, 36 did not answer.

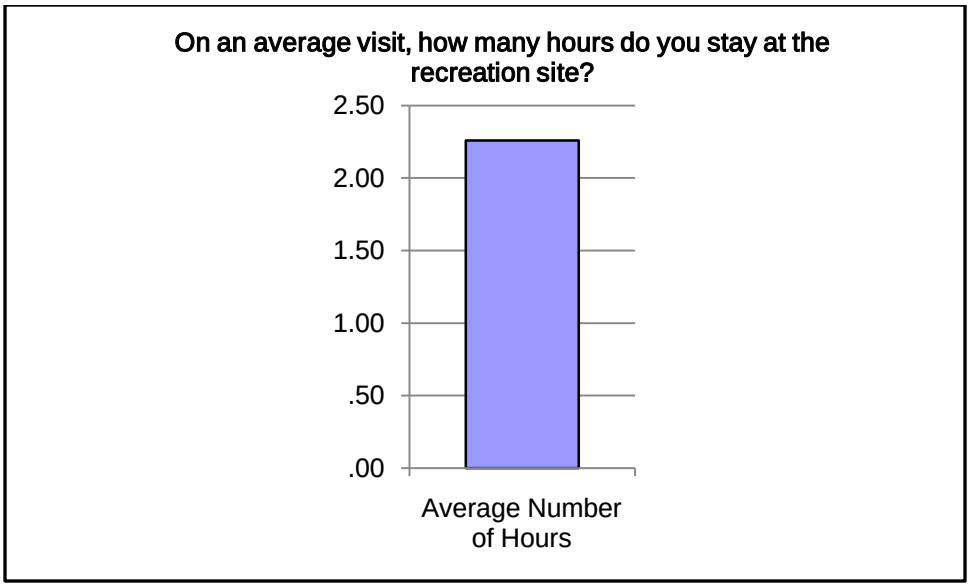


Figure 11.1 The average length of time that respondents stay at a recreation site is 2.26 hours.

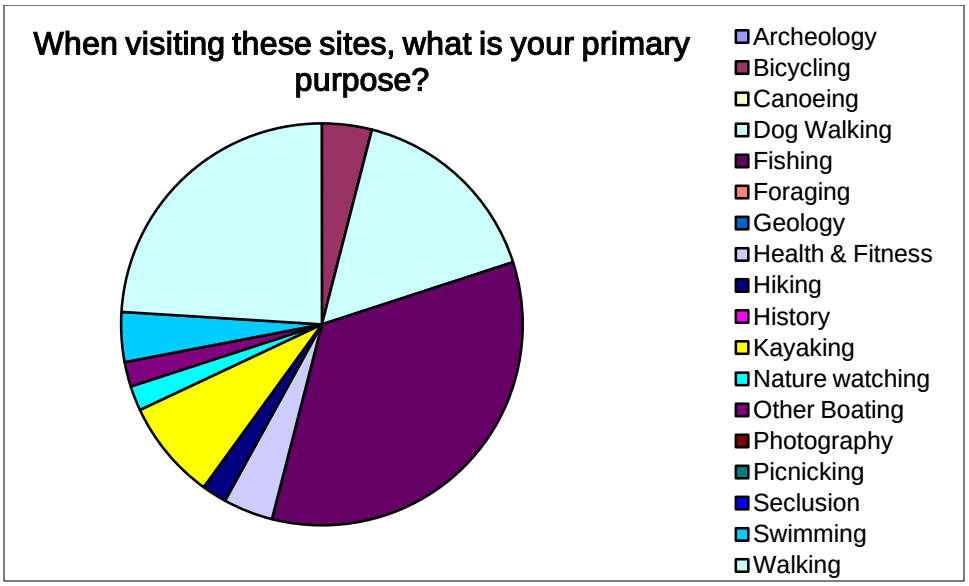


Figure 11.2 Fishing is the number one answer (34%) followed by walking (24%), then dog walking (16%) and boating (8%). All other activities listed are 2% or less.

Free Form Comments

Jul 1, 2014 5:04 PM	The sites are a great community assets!
Jun 28, 2014 1:32 AM	We want more recreational spots on the Presumpscot and other local rivers, lakes, and ponds with more trails connecting the all the spots within a location. Also, picnic tables and public permanent fixed charcoal grills. Some locations should also allow overnight parking and camping
Jun 23, 2014 8:17 PM	Thank-you for providing public access to the river, and caring about the public's opinion.
Jun 23, 2014 5:22 PM	Thank you for providing them to the public - and free of charge!
Jun 23, 2014 1:46 PM	Thank you for keeping these areas as accessible, useable, natural and beautiful as possible for our enjoyment.
Jun 22, 2014 2:31 AM	I love the Gambo site SO MUCH. Just went for my first swim of the year last week, and it made me so happy. I love that spot for swimming, and I love the nature all around. Sometimes I worry about what toxicants might be in the water. Is it tested? Are those results available? I do hope you are doing everything you can to keep it as clean as possible. That river is a real treasure.
Jun 21, 2014 8:21 PM	Thank you for your recent commitment to opening up the remaining dams to fish passage.
Jun 15, 2014 4:03 PM	I enjoy using these sites greatly. Perhaps signage reminding people to carry in and carry out trash would be helpful. Fish passage would be a huge plus.

Jun 14, 2014 6:22 PM	Thanks for letting the public utilize your properties
Jun 11, 2014 3:08 PM	I have been using this river area since the 1970's. I have canoed it,fished it; hunted along some areas on one side. love this river.
Jun 9, 2014 10:53 AM	Love the access, and hope to see the rails-to-trails paved all the way into Westbrook from Little Falls. Dog owners need desperately to clean up after their dogs.
May 30, 2014 6:58 PM	Though bags have been provided, dog owners are leaving their pets waste on walking paths. Perhaps a more pro-active approach to encourage individuals to clean up after their pets?
May 23, 2014 9:38 PM	great job making these sites available to the public. the access and parking is very good and the river is a treasure
May 9, 2014 10:43 PM	Thank you for providing and maintaining these sites for access to the Presumpscot River. This shows a good blend of recreation with clean renewable power generation.
Apr 30, 2014 9:00 PM	some of the area is degrading. The slope on Gambo to put in a canoe is steep and loose gravel is easy to fall. The pavement on Gambo, on the Gorham side is worn and uneven, either remove it to leave gravel, or level the asphalt, porta pottys would be a good addition, as well as a drinking fountain. better signage regarding leashed dogs would be good as well. better lit parking to deter vandals/or a camera system would be a benefit to all. and a tighter partnership with Mountain Division trail to coordinate efforts would lead to improvements all the way to Sebago lake...
Apr 26, 2014 6:57 PM	The sign at Gambo says no firearms. The Gorham maps show that Sappi only owns a small portion of land here. This is confusing to people, I would assume this only means the little section of land owned by Sappi? Not the rest of the land owned by the land trust and SB Inc.?? Please clarify the sign.
Apr 25, 2014 1:07 AM	Thank you for them. We needed this
Apr 24, 2014 5:05 PM	I love going to Gambo with my dogs and girlfriend. It's convenient, and there are plenty of activities we can partake in. However, the amount of dog feces is absurd! Sometimes I feel like I am walking thru a mine field.
Apr 23, 2014 7:01 PM	please add signs so people know they are allowed to go there or have open house days or fishing for kids especially in Little Falls neighborhood
Apr 22, 2014 3:15 PM	Of all the SAPPI facilities, what is most needed is designated portages and launches around Cumberland Mills Dam.
Apr 22, 2014 10:51 AM	Thank you for creating spaces for people to be outdoors! So valuable to the health of our community. I love the history signs at the Gambo site!

Apr 21, 2014 2:29 PM	I frequently use many of these sites and appreciate the increased signage and accessibility of many of the areas. It would be very helpful to have a map of the river with access points and portages, as sometimes it is unclear of where to park and put in, unless a prior visit to the site is made (a map would be helpful when planning a trip beforehand such a canoe trip that requires vehicles to be placed in different locations for pick-up purposes). I canoed most of the Presumpscot last summer but was not able to put in below Sappi in Westbrook…could a portage there be your next project? Shaw Park is an excellent place to visit on a regular basis…because it has seen an increase in popularity, especially with dog walkers, there has been an increase in trash/dog waste. It would be helpful to have a trashcan located at the parking lot where the basketball hoop is (the other parking lot does have a trashcan with dog waste bags). The take-out upriver at Dundee was scary because it's difficult to see when on paddling on the right side of the river. Better signage is needed there. Thank you for your efforts to help make the Presumpscot more accessible to the general public.
Apr 17, 2014 7:44 PM	The signage and downstream portage at the Gambo Dam area is a vast improvement. Before the stairs and bridge it was very difficult to portage around the dam.
Apr 16, 2014 8:01 PM	Living in White Rock and retired (from the Pulp/Paper industry), I probably use Dundee and Gambo as much as any. We are very fortunate to have these beautiful rec places. For the most part, users don't mess up too much, I try to remember to bring a trash bag. I serve as a volunteer steward for Lake Region Land Trust and make annual surveys of their properties adjacent to Dundee, Gambo and Little Falls. It gives me great pleasure to observe others also enjoying these sites. Thank You SAPPI
Apr 16, 2014 12:20 PM	Every rule on the posted sign is abused. It is shame what has happened to the Dundee Recreation area. Weekend parties are rampant with nighttime fires, drinking, bottles/cans thrown into fires or smashed and thrown into the woods or along the road. Nails are everywhere from the pallets they burn. It is a wonder that a forest fire has not occurred yet. The next day the fires are still smoldering. Saturday and Sunday afternoons seem to be target practice for hunters that find the Dundee area. We've even seen cars with NH plates there. Sometimes it's non-stop for hours. Gun shells and empty cartridges litter the area. This happens mostly when the Sappi Security company is not patrolling. And the parties seem to start late at night and run until 2:00 am. The Gorham police rarely patrol the area, although they are aware of the problems in the past. The security gate on Dundee Road should be locked at night as it was in the past. Most recreation areas are gated after hours. There is no need for anyone to go down to the recreation area after dark, as indicated on the sign.

Apr 15, 2014 11:46 PM	The Dundee Area has been opened and people are encouraged to visit but in most instances they pay no attention to the regulations posted. The area by the pond is a shooting range many times, creating a dangerous situation for visitors and residents. Parties are the norm late at night on weekends, creating havoc for the local residents. The area is constantly littered with alcoholic beverage containers and other trash. Whenever there is a party, there is a fire which is left burning upon departure, endangering the property of abutters. The gates should be closed at darkness and someone should follow-up to prevent the continuation of these practices. The security service used during the summer season seemed to have no effect on preventing violations of your rules and regulations.
Apr 15, 2014 4:19 PM	Really enjoy The Gambo Loop walk. Also enjoy walk along old Gunpowder factories along canal. I wish there was a way to avoid going through South Windham to loop back along Mtn Division trail back to Gambo. I'd love to be able to Bicycle from Otter Ponds to Westbrook along the river and RR tracks.
Apr 15, 2014 12:54 PM	Keep improving. Provide more walking trails
Apr 5, 2014 8:57 PM	People need to pickup after their dogs.

Table 7. The average instances of recreational uses observed on weekdays and weekend days are summed and multiplied by 68 and 28 respectively to calculate the estimated population visiting the Saccarappa site between Memorial Day and Labor Day.

Saccarappa							
Hour	**Average Instances of Boating Observed**	**Average Instances of Swimming Observed**	**Average Instances of Hiking/ walking Observed**	**Average Instances of Dog Walking Observed**	**Average Instances of Picnicking/ Sitting in Car Observed**		
Weekday							
06:00-010:00	0.00	0.00	0.00	0.00	0.00		
10:00-12:00	0.14	0.00	0.00	0.00	0.14		
12:00-14:00	0.22	0.00	0.00	0.00	0.07		
14:00-16:00	0.19	0.00	0.00	0.00	0.00		
16:00-18:00	0.00	0.00	0.00	0.00	0.00		
18:00-22:00	0.05	0.00	0.00	0.00	0.09		
Weekend							
06:00-010:00	0.00	0.00	0.00	0.00	0.00		
10:00-12:00	0.00	0.00	0.00	0.00	0.00		
12:00-14:00	0.40	0.00	0.00	0.00	0.00		
14:00-16:00	0.00	0.00	0.00	0.00	0.00		
16:00-18:00	0.00	0.00	0.00	0.00	0.00		
18:00-22:00	1.00	0.00	0.00	0.00	0.31		
Grand Total	2.00	0.00	0.00	0.00	0.61		
Weekday Total	0.60	0.00	0.00	0.00	0.31	**61.42**	(sum of weekday averages multiplied by 68)
Weekend Total	1.40	0.00	0.00	0.00	0.31	**47.69**	(sum of weekend averages multiplied by 28)
				Expected Population		**109**	
				Sample Size Needed		**85**	

Table 8. The average instances of recreational uses observed on weekdays and weekend days are summed and multiplied by 68 and 28 respectively to calculate the estimated population visiting the Mallison site between Memorial Day and Labor Day.

Mallison									
Hour	**Average Instances of Boating Observed**	**Average Instances of Angling on bypass/ tailrace Observed**	**Average Instances of Angling over pedestrian bridge Observed**	**Average Instances of Swimming Observed**	**Average Instances of Hiking/ walking Observed**	**Average Instances of Dog Walking Observed**	**Average Instances of Picnicking/ Sitting in Car Observed**		
Weekday									
06:00-010:00	0.00	0.17	0.00	0.00	0.00	0.00	0.00		
10:00-12:00	0.00	1.48	0.24	0.00	0.00	0.00	0.00		
12:00-14:00	0.15	1.80	0.18	0.00	0.00	0.00	0.15		
14:00-16:00	0.08	1.26	0.08	0.00	0.00	0.00	0.16		
16:00-18:00	0.00	1.76	0.05	0.00	0.00	0.20	0.19		
18:00-22:00	0.03	1.42	0.03	0.00	0.00	0.00	0.07		
Weekend									
06:00-010:00	0.00	1.40	0.20	0.00	0.00	0.00	0.40		
10:00-12:00	0.24	2.03	0.13	0.00	0.00	0.00	0.13		
12:00-14:00	1.98	0.67	0.00	0.00	0.00	0.00	0.00		
14:00-16:00	3.00	2.56	0.00	0.00	0.00	0.67	0.00		
16:00-18:00	0.00	2.91	0.00	0.00	0.00	0.00	0.09		
18:00-22:00	5.48	17.45	0.91	0.00	0.00	0.87	1.18		
Grand Total	10.95	34.89	1.82	0.00	0.00	1.73	2.37		
Weekday Total	0.26	7.89	0.58	0.00	0.00	0.20	0.57	**646.10**	(sum of weekday averages multiplied by 68)
Weekend Total	10.69	27.01	1.23	0.00	0.00	1.53	1.80	**1183.27**	(sum of weekend averages multiplied by 28)
							Expected Population	**1829**	
							Sample Size Needed	**318**	

Table 9. The average instances of recreational uses observed on weekdays and weekend days are summed and multiplied by 68 and 28 respectively to calculate the estimated population visiting the Little Falls site between Memorial Day and Labor Day.

Little Falls							
Hour	**Average Instances of Boating Observed**	**Average Instances of Swimming Observed**	**Average Instances of Hiking/ walking Observed**	**Average Instances of Dog Walking Observed**	**Average Instances of Picnicking/ Sitting in Car Observed**		
Weekday							
06:00-010:00	0.25	0.00	0.00	0.00	0.25		
10:00-12:00	0.54	0.00	0.00	0.00	0.40		
12:00-14:00	0.17	0.00	0.00	0.00	0.10		
14:00-16:00	0.16	0.00	0.00	0.00	0.10		
16:00-18:00	0.12	0.00	0.00	0.00	0.04		
18:00-22:00	0.00	0.00	0.00	0.00	0.02		
Weekend							
06:00-010:00	0.00	0.00	0.00	0.00	0.20		
10:00-12:00	0.00	0.00	0.00	0.00	0.00		
12:00-14:00	0.67	0.00	0.00	0.00	0.00		
14:00-16:00	0.00	0.00	0.00	0.00	0.00		
16:00-18:00	0.00	0.00	0.00	0.00	0.00		
18:00-22:00	0.00						
Grand Total	1.91	0.00	0.00	0.00	1.10		
Weekday Total	1.24	0.00	0.00	0.00	0.90	**145.25**	(sum of weekday averages multiplied by 68)
Weekend Total	0.67	0.00	0.00	0.00	0.20	**24.27**	(sum of weekend averages multiplied by 28)
				Expected Population		**170**	
				Sample Size Needed		**118**	

Table 10. The average instances of recreational uses observed on weekdays and weekend days are summed and multiplied by 68 and 28 respectively to calculate the estimated population visiting the Gambo site between Memorial Day and Labor Day.

Gambo								
Hour	**Average Instances of Boating Observed**	**Average Instances of Angling on bypass/ tailrace Observed**	**Average Instances of Swimming Observed**	**Average Instances of Hiking/ walking Observed**	**Average Instances of Dog Walking Observed**	**Average Instances of Picnicking/ Sitting in Car Observed**		
Weekday								
06:00-010:00	0.18	0.00	0.00	0.09	0.00	0.00		
10:00-12:00	1.13	0.72	0.11	0.50	0.24	0.00		
12:00-14:00	0.82	0.78	0.40	0.24	0.15	0.08		
14:00-16:00	0.67	0.47	4.13	1.17	0.13	0.10		
16:00-18:00	0.00	3.92	0.00	0.06	0.15	0.06		
18:00-22:00	0.00	0.19	0.04	0.13	0.02	0.00		
Weekend								
06:00-010:00	0.57	0.14	0.00	0.00	0.00	0.00		
10:00-12:00	0.44	1.33	0.00	1.37	0.22	0.00		
12:00-14:00	0.00	0.22	0.44	4.39	0.00	0.00		
14:00-16:00	0.36	0.09	0.36	0.45	0.00	0.00		
16:00-18:00	1.17	2.17	0.00	0.33	0.17	0.00		
18:00-22:00								
Grand Total	5.34	10.03	5.49	8.74	1.08	0.24		
Weekday Total	2.80	6.07	4.68	2.19	0.70	0.24	**1133.92**	(sum of weekday averages multiplied by 68)
Weekend Total	2.55	3.96	0.81	6.55	0.39	0.00	**398.99**	(sum of weekend averages multiplied by 28)
					Expected Population		**1533**	
					Sample Size Needed		**307**	

Table 11. The average instances of recreational uses observed on weekdays and weekend days are summed and multiplied by 68 and 28 respectively to calculate the estimated population visiting the Dundee site between Memorial Day and Labor Day

Dundee								
Hour	**Average Instances of Boating Observed**	**Average Instances of Angling on bypass/ tailrace Observed**	**Average Instances of Swimming Observed**	**Average Instances of Hiking/ walking Observed**	**Average Instances of Dog Walking Observed**	**Average Instances of Picnicking/ Sitting in Car Observed**		
Weekday								
06:00-010:00	0.11	1.00	0.00	0.00	0.00	0.11		
10:00-12:00	0.18	1.57	0.00	0.03	0.00	0.00		
12:00-14:00	0.30	1.61	0.00	0.08	0.00	0.75		
14:00-16:00	0.00	3.37	0.29	0.00	0.00	0.26		
16:00-18:00	1.50	1.18	0.00	0.00	0.00	0.03		
18:00-22:00	0.00	0.94	0.00	0.00	0.00	0.00		
Weekend								
06:00-010:00	0.36	0.73	0.00	0.00	0.00	0.00		
10:00-12:00	0.14	1.71	0.00	0.00	0.00	0.00		
12:00-14:00	4.53	5.40	0.20	0.00	0.00	0.00		
14:00-16:00	0.00	1.73	0.00	0.00	0.00	0.00		
16:00-18:00	0.25	1.63	0.00	0.00	0.00	0.00		
18:00-22:00								
Grand Total	7.38	20.88	0.49	0.12	0.00	1.14		
Weekday Total	2.09	9.68	0.29	0.12	0.00	1.14	**905.59**	(sum of weekday averages multiplied by 68)
Weekend Total	5.29	11.19	0.20	0.00	0.00	0.00	**467.14**	(sum of weekend averages multiplied by 28)
					Expected Population		**1373**	
					Sample Size Needed		**300**	

From: Howatt, Kathy
To: Goulet, Brad
Subject: Recreation Use Monitoring Report
Date: Monday, July 21, 2014 12:06:26 PM

Brad,
The Department doesn't have any problems with extending the deadline for the Recreation Use Montitoring Report filing at FERC.

Kathy Davis Howatt
Hydropower Coordinator, DLRR
Maine Department of Environmental Protection
207-446-2642
kathy.howatt@maine.gov

From:	Brautigam, Francis
To:	Goulet, Brad; Steve Shepard (steven_shepard@fws.gov); Wippelhauser, Gail; Howatt, Kathy; Bishop, Megan; Marvinney, Robert G.
Cc:	Perry, John
Subject:	RE: S.D. Warren Interim Recreation Monitoring Report
Date:	Wednesday, July 23, 2014 11:18:07 AM

Brad, The MDIFW has no concerns regarding the EOT request and acknowledges the need for more time for agency consultation. Francis

Francis Brautigam
Regional Fishery Biologist
Sebago Lake Region
358 Shaker Road
Gray, Maine 04039
207-657-2345, ext 112

From: Goulet, Brad [mailto:Brad.Goulet@sappi.com]
Sent: Wednesday, July 16, 2014 11:19 AM
To: Steve Shepard (steven_shepard@fws.gov); Wippelhauser, Gail; Howatt, Kathy; Bishop, Megan; Brautigam, Francis; Marvinney, Robert G.
Subject: FW: S.D. Warren Interim Recreation Monitoring Report
Importance: High

Kathy et al,

Attached is a copy of S.D. Warren's Extension of Time request to comply with a FERC interim report schedule ordered by FERC on March 11, 2014 for the 5 Presumpscot River Projects 2014 "Recreation Monitoring". Warren has requested a two week extension such that there is sufficient opportunity for your agencies to comment regarding the preliminary results and sampling methodology on the data collected through July 6.

Warren requests your agencies comments regarding the appropriateness of this EOT.

Brad Goulet
Hydro Manager/Utilities Engineer
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000 | Westbrook, ME | 04092
Tel +1 207 856 4083 **| Mobile** +1 207 229 2072 **| Fax** +1 207 856 4456
Brad.Goulet@sappi.com

Visit our texture library at **www.warrenreleasepapers.com**

This message may contain information which is private, privileged or confidential and is intended solely for the use of the individual or entity named in the message. If you are not the intended recipient of this message, please notify the sender thereof and destroy / delete the message. Neither the sender nor Sappi Limited (including its subsidiaries and associated companies) shall incur any liability resulting directly or indirectly from accessing any of the attached files which may contain a virus or the like.

From: Howatt, Kathy
To: Goulet, Brad
Subject: RE: S.D. Warren Interim Recreation Monitoring Report
Date: Thursday, July 24, 2014 1:28:38 PM

Brad,
Thank you for the opportunity to review the Interim Recreation Monitoring Report for the Gambo, Mallison Falls, Little Falls, Dundee and Saccarappa projects. I found the report to be thorough and presents the data collected clearly, both in text and graph form. Sappi's level of effort to collect recreational use data was substantial, and seems sufficient to document current use of project recreational facilities for a wide variety of uses.

Kathy Davis Howatt
Hydropower Coordinator, DLRR
Maine Department of Environmental Protection
207-446-2642
kathy.howatt@maine.gov

From: Goulet, Brad [mailto:Brad.Goulet@sappi.com]
Sent: Monday, July 21, 2014 3:56 PM
To: Steve Shepard (steven_shepard@fws.gov); Wippelhauser, Gail; Howatt, Kathy; Bishop, Megan; Brautigam, Francis; Marvinney, Robert G.
Cc: 'njskancke@njs-law.com'; O'Regan, Briana; Gregorich, Patrick
Subject: RE: S.D. Warren Interim Recreation Monitoring Report

Kathy et al,

Attached is a draft copy of S.D. Warren's "Interim Recreation Monitoring Report". This report is required under FERC Order dated March 11, 2014, "Modifying and Approving" Warren's "Recreation Use Monitoring Plan" for the 5 Presumpscot River Projects. The original due date for filing this report with the FERC was July 21, 2014. The current "New" filing date is August 4, 2014 subsequent to FERC granting S.D. Warren and Extension of Time.

Per the March 11, 2014 order ¶ (C): "The report shall contain at a minimum: (1) the number of responses received for each project identified in ordering paragraph (A); (2) an estimate of the annual visitation at each project identified in ordering paragraph (A); (3) identification of the confidence interval and margin of error deemed acceptable for this study; (4) the target number of responses for each project identified in ordering paragraph (A); (5) a discussion of the adequacy of the results; and (6) in the event that the results are inadequate, an alternative method for gathering recreation needs data. The licensee shall determine items (2) – (6) listed above in consultation with Maine Department of Conservation, the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Marine Resources, and the U.S. Fish and Wildlife Service. The licensee shall include with the status report documentation of consultation, copies of comments and recommendations on the status report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated in the status report. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons based on project-specific information. The Commission reserves the right to require changes to the methods for gathering recreation needs data."

Please review the attached report and respond with comments no later than Tuesday, July 29, 2014, such that Warren can respond to comments as needed and meet the extended filing date with the FERC of August 4, 2014.

Thank You

Brad Goulet
Hydro Manager/Utilities Engineer
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000 | Westbrook, ME | 04092
Tel +1 207 856 4083 **| Mobile** +1 207 229 2072 **| Fax** +1 207 856 4456
Brad.Goulet@sappi.com

Visit our texture library at **www.warrenreleasepapers.com**

This message may contain information which is private, privileged or confidential and is intended solely for the use of the individual or entity named in the message. If you are not the intended recipient of this message, please notify the sender thereof and destroy / delete the message. Neither the sender nor Sappi Limited (including its subsidiaries and associated companies) shall incur any liability resulting directly or indirectly from accessing any of the attached files which may contain a virus or the like.

From:	Shepard, Steven
To:	Goulet, Brad
Cc:	Gail Wippelhauser (gail.wippelhauser@maine.gov); Kathy Howatt (kathy.howatt@maine.gov); megan.bishop@maine.gov; Francis Brautigam (Francis.brautigam@maine.gov); Robert G. Marvinney (Robert.G.Marvinney@maine.gov)
Subject:	Re: FW: S.D. Warren Interim Recreation Monitoring Report
Date:	Thursday, July 24, 2014 9:18:56 AM

Brad

The Service does not object to the extension of time.

Our comments have been provided in the meeting of July 14 and in follow-up telephone calls. Our comments have focused on data analyses and reporting issues. Specifically, stratifying the data by weekend and weekday, and compiling "recreation days" as a statistic rather than estimating a "population" for each site. The latter issue was discussed at length as a means to satisfy concerns of the FERC regarding extrapolating from single on-line self surveys to counts that include multiple visits by individuals. The Service believes Sappi's counts were based on a high level of effort and FERC's concerns about extrapolation are unwarranted.

Steve

~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
Steven Shepard, C.F.P.
U.S. Fish & Wildlife Service
17 Godfrey Drive, Suite 2
Orono, Maine 04473
Voice: 207-866-3344 x116
Cell: 207-949-1288
steven_shepard@fws.gov
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~

On Wed, Jul 16, 2014 at 11:18 AM, Goulet, Brad <Brad.Goulet@sappi.com> wrote:

> Kathy et al,
>
> Attached is a copy of S.D. Warren's Extension of Time request to comply with a FERC interim report schedule ordered by FERC on March 11, 2014 for the 5 Presumpscot River Projects 2014 "Recreation Monitoring". Warren has requested a two week extension such that there is sufficient opportunity for your agencies to comment regarding the preliminary results and sampling methodology on the data collected through July 6.
>
> Warren requests your agencies comments regarding the appropriateness of this EOT.

From: Marvinney, Robert G.
To: Goulet, Brad
Subject: Interim recreational monitoring plan
Date: Wednesday, July 30, 2014 12:58:39 PM

Brad,

The Department of Agriculture, Conservation, and Forestry has no comments on SAPPI's interim recreational monitoring report.

Robert Marvinney
Maine Geological Survey

Maine Department of Inland
Fisheries and Wildlife
358 Shaker Road
Gray, Maine 04039

Telephone: 207-657-2345 ext.112
Fax: 207-657-2980
Email: francis.brautigam @maine.gov

Paul R. Lepage
Governor

Chandler E. Woodcock
Commissioner

August 1, 2014

Brad Goulet
Hydro Manager/Utilities Engineer
Sappi Fine Paper North America
89 Cumberland Street
PO Box 5000 | Westbrook, ME | 04092

RE: Interim Recreation Monitoring Report, Sappi

Brad,

In addition to our prior phone conversation I offer the following brief additional written comments in regards to the Interim Recreation Monitoring Report.

As reported by the USFWS, monitoring results reported to date reflect a relatively robust data set. While there are some shortcomings in the design of data collection the coverage provided combined with the high number of site visits offer a high level of confidence regarding findings related to project use. In particular, this information is useful in concluding that current levels of recreational use do not appear to be exceeding existing infrastructure capacity.

The following additional insight is offered regarding data collection and the written reports.

(Page 2): *"line crew makes daily visits to each site between the hours of 7:00 am and 4:00 pm on weekdays and 6:00 am to 2:00 pm on weekends….. Securitas performs roving patrols between the hours of 10:00 am and 10:00 pm, 7 days per week from Memorial Day May 26, 2014 to Labor Day, September 01 2014…. A voluntary web-based survey …. informational cards placed in covered holders strategically located at each site, informational cards left on vehicle windshields, personal invitation to those users encountered by Warren staff, and a link from the Warren's Presumpcot River Tumblr Blog…. In an effort to increase survey sample size, on July 18, 2014 Securitas began carry paper copies of the survey questions for face to face interviews with willing participants."* The data was collected by the different sources (security, line workers, survey) over different monitoring/survey time blocks and cannot be readily pooled to create a larger sample size that would support even more robust analysis. Because the

data collected from each source reflects different time blocks the summarized data is clearly biased and should be acknowledged as such in the report. For example, security staff did not provide early AM coverage, when angling is expected to occur, and a significantly higher percentage of coverage occurred for the latest PM time block. Since the data collection effort is not stratified to reflect higher use periods (which are not likely known) estimates of total use may be lower than actual levels. That said this bias given the robust sampling effort does not significantly undermine an assessment of capacity of the project infrastructure to support recreation.

P3: *"The estimated population (Population size= N) for each site was calculated by multiplying the sum of the weekday averages of recreational users observed from physical counts by 68 (the number of weekday between Memorial Day and Labor Day) and adding the product of the sum of the weekend day averages of recreational users observed from physical counts and 28 (the number of weekend days between Memorial Day and Labor Day)."* Ideally, the individual time block use counts wouldn't be averaged for weekday and weekend estimates of total use. Each use count by activity and time represents an instantaneous measure of use and only a percentage of that day's use for that activity. Unfortunately there is no understanding activity use patterns by time of day that could provide a basis for expanding the instantaneous hourly count data to generate an estimate of daily use by activity. For example, if you know that 50% of the daily angler use occurs at 8 AM, then any observations of angling made at 8 AM can be doubled to estimate total daily angler use. One way to develop recreation "use curves" (% of daily use by hour) is by collecting a large quantity of randomly collected count data by hour of the day over the entire time period that use is expected to occur. IFW has deployed self-operated angler survey kiosks at angler access sites (typically boat launches) and using randomly reported angler trip information from thousands of angler trips have developed single mode use curves for lake and pond fisheries. I realize this information is not available to support Sappi's assessment and offer simply to provide insight.

P4: *"The data indicates the Expected Recreation Visits (Table 2) DO NOT represent unique visits but rather include counting the same angler multiple times. The impact of including in the data all recreational visits as opposed to only unique recreational visits in determining population size misrepresents the survey sample size required when utilizing standard sample size methodology."* Perhaps, but other noted biases reported above may actually underestimate use.

Thanks for the opportunity to review.

Respectfully,

Francis

Francis Brautigam
Regional Fisheries Biologist
Sebago Lake Region

20140812-3064 FERC PDF (Unofficial) 08/12/2014

148 FERC ¶ 62,129
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

S.D. Warren Company — Project Nos. 2931-029, 2932-031, 2941-025, 2942-035, and 2897-029

ORDER APPROVING INTERIM RECREATION MONITORING REPORT

(Issued August 12, 2014)

1. On August 1, 2014, S.D. Warren Company (licensee) filed an interim recreation monitoring report (report) for the Gambo Project (FERC No. 2931), Mallison Falls Project (FERC No. 2932), Little Falls Project (FERC No. 2941), Dundee Project (FERC No. 2942), and Saccarappa Project (FERC No. 2897). The development of the report was required by ordering paragraph C of the Order Modifying and Approving Recreation Use Monitoring Plan issued March 11, 2014.[1] The projects are located on the Presumpscot River in Cumberland County, Maine.

2. The licensee's recreation use monitoring plan specified a detailed method for counting visitors at each of the five projects covered by the plan, as well as a voluntary web-based survey to gather recreation needs data as specified by the license articles which required the plan.[2] Since the majority of recreation use occurs between Memorial Day weekend and Labor Day weekend, there was concern that the voluntary survey might not yield enough responses to conduct statistical analyses and draw inferences from the data. In order to determine whether alternative methods of gathering recreation needs data should be adopted during the survey period, the licensee was required to file an interim recreation monitoring report. The report was required to include the following measures, at a minimum: (1) the number of responses received for each of the five

[1] 146 FERC ¶ 62,175

[2] Gambo Project, Order Issuing New License (105 FERC ¶ 61,010); Mallison Falls Project, Order Issuing Subsequent License (105 FERC ¶ 61,011); Little Falls Project, Order Issuing Subsequent License (105 FERC ¶ 61,012); Dundee Project, Order Issuing New License (105 FERC ¶ 61,009); and Saccarappa Project, Order Issuing Subsequent License (105 FERC ¶ 61,013), all issued October 2, 2003.

20140812-3064 FERC PDF (Unofficial) 08/12/2014

projects; (2) an estimate of the annual visitation at each project; (3) identification of the confidence interval and margin of error deemed acceptable for this study; and (4) the target number of responses for each project. Items (2) – (4) listed above were to be determined in consultation with the Maine Department of Conservation, Agriculture, and Forestry (Maine DCAF), the Maine Department of Inland Fisheries and Wildlife (Maine DIFW), the Maine Department of Marine Resources (Maine DMR), and the U.S. Fish and Wildlife Service (USFWS).

3. The licensee's report summarizes data collected April 25, 2014 through July 6, 2014. Licensee staff visited each project at least 300 times over the 10 week sampling period, except for the Saccarappa Project which was visited 237 times. The number of recreationists encountered at all projects during the sampling period is 1,565, with visitation documented by project as follows: Saccarappa (34); Little Falls (45); Gambo (292); Dundee (416); and Mallison (778). A total of 86 people responded to the voluntary online survey, with 9 indicating they visited the Saccarappa Project, 13 visited the Little Falls Project, 26 visited the Mallison Project, 47 visited the Gambo Project, and 54 visited the Dundee Project, thus a number of respondents visited multiple projects. The expected summer visitation and estimated sample size needed for each project (assuming 95% confidence level and 5% margin of error as agreed upon by the consulting parties) was included in the report. The licensee assumed that the vast majority of annual use would occur during the summer season.

4. By email dated July 21, 2014, the licensee provided its interim recreation monitoring report for review and comment to Maine DOC, Maine DIFW, Maine DMR, Maine Department of Environmental Protection (Maine DEP), and USFWS. Via emails dated July 24, 2014, Maine DEP provided support for the licensee's efforts to collect recreational use data and USFWS commented that FERC's concerns about extrapolating data are unwarranted. Via letter dated August 1, 2014, Maine DIFW provided comments regarding data reporting and analysis for the development of the final report. Maine CAF replied via email on July 30, 2014, with no concerns.

5. While there is a great diversity in the number of visitors documented at each project, the maximum number of people encountered during a site visit ranged from none at Saccarappa (between 6:00 am and 10:00 am) to a dozen at Gambo (between 4:00 pm and 6:00 pm), thus the physical capacity of each project is not likely to have been exceeded. Since the social capacity can only be determined by understanding visitor expectations and perceptions, it is important to obtain a statistically valid response rate for each project for the online survey. USFWS's comment regarding extrapolating data fails to recognize that the information being collected is for five distinct projects and that the licensee is responsible for documenting not only recreation use but also recreation needs at the project level. In order to represent the views of all users, including those visiting the projects outside of the high-use summer period, the licensee should continue efforts to gather online data as long as site monitoring occurs.

20140812-3064 FERC PDF (Unofficial) 08/12/2014

6. With the low visitation documented at Saccarappa and Little Falls, coupled with the high likelihood of repeat visitation, it may be difficult to obtain an adequate response rate to the online survey for these projects. As of July 18, 2014, licensee staff began to conduct onsite interviews in order to increase the survey sample size for all five projects. Since the Saccarappa project was visited the least number of times (237 site visits as compared to a minimum of 320 for the other four projects) the sampling frame may need to be modified to increase the frequency of visits to this project. Should the licensee's efforts to gather onsite surveys for these projects prove unsuccessful, the licensee may want to explore alternative options for gathering information from visitors such as using focus groups.

7. The report includes the information required by the order requiring it and the modifications to the visitor survey sampling protocol should enhance the response rate. Given the above information, the licensee's report should be approved.

The Director orders:

(A) S.D. Warren Company's interim recreation monitoring report filed pursuant to the Order Modifying and Approving Recreation Use Monitoring Plan on August 1, 2014, is approved.

(B) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the Federal Power Act, 16 U.S.C. § 825*l* (2012), and the Commission's regulations at 18 C.F.R. § 385.713 (2014). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

Robert J. Fletcher
Chief, Land Resources Branch
Division of Hydropower
Administration and Compliance

Document Content(s)

P-2931-029.DOC.....1-3