July 1, 2015

Michael J. Sale, PhD Executive Director Low Impact Hydropower Institute 704 Potters Falls Road Wartburg, TN 37887

RE: Certification Application for Comtu Falls: Supplemental Information

Dear Dr. Sale:

The previous owner of the Comtu Falls Corporation (CFC) originally submitted this application for the Comtu Falls Hydroelectric Project P-7888 (Project). Subsequent to the original application and LIHI's intake review, Gravity Renewables, Inc. (Gravity) acquired CFC and all its interests in the Project. A timeline of events is summarized below:

- January 2014: Original application submitted by previous Owner
- September 2014: Gravity acquires CFC and the project
- January 2015: CFC receives LIHI intake review comments (See attached TAB 10)
- March 2015: Gravity coordinates with Vermont Agency of Natural Resources (VT DEC) and voluntarily agrees to expand operational period of downstream fish passage facility
- June 2015: Gravity received final Letter from VT DEC
- June 2015: Gravity received email response from U.S. Fish and Wildlife Service (FWS) in support of VT DEC letter

Included in the package is the response to the LIHI questionnaire and all additional documentation.

Thank you in advance for your review, and please do not hesitate to contact me should you require additional information.

Sincerely,

Jonathan Miller Director of Financial Analysis and Regulatory Affairs Gravity Renewables, Inc.



LOW IMPACT HYDROPOWER INSTITUTE

Comtu Falls LIHI Certification Application: Supplemental Information

TABLE OF CONTENTS

- TAB 1 LIHI Certification Questionnaire Response
- TAB 2 Site Maps (4 map images)
- TAB 3 Initial Federal Energy Regulatory Commission (FERC) license documentation
 - 1. FERC Environmental Assessment 1986
 - 2. Agency Comments on Initial License (6 comment letters)
 - 3. FERC License Order 1986
- TAB 4 401 Water Quality Certification (WQC) 1989

TAB 5 FERC Amendments and Exemption

- 1. Fish Passage
 - 1.1. Draft Environmental Assessment 1995
 - 1.2. Agency Comments on Amendment (3 comment letters)
 - 1.3. FERC Final Environmental Assessment 1995
 - 1.4. FERC Order Amending License Fish Passage Construction 1995
 - 1.5. FERC Order Approving Fish Passage Design Drawings 1995
- 2. Capacity
 - 2.1. FERC License Amendment Capacity 1995
- 3. Form 80
 - 3.1. FERC Form 80 Exemption 1997 and Supporting Photos
- TAB 6Supporting info for Threatened and Endangered Species and Water Quality
 - 1. 2015 Letter from Department of Interior (DOI)
 - 2. Map from Vermont Agency of Natural Resources (VT ANR) BioFinder -Comtu site highlighted in blue
 - 3. Impaired Surface Waters 303(d) list 2012
- TAB 7Connecticut River Atlantic Salmon Restoration Program (CRASRP)
 - 1. Coordinator's Office Notice of Discontinuance of CRASRP support
 - 2. Commission's Meeting Minutes Discontinuance of support



TAB 8	Documentation of Compliance
	1. 2005 Vermont Agency of Natural Resources (VT ANR) Correspondence
	Vermont Department of Environmental Conservation (VT DEC)
	2.1. 2012 CFC Email Contacting VT DEC
	2.2. 2013 Initial Response Letter from VT DEC
	2.3. 2015 Updated Response Letter from VT DEC
	3. U.S. Fish and Wildlife Service (FWS)
	3.1. 2015 FWS Email Correspondence
	3.2. 2015 VT DEC Correspondence Referenced by FWS
TAB 9	Appendix D – Contact Form

TAB 10

LIHI's correspondence from CFC original application submittal



TAB 1

LIHI Certification Questionnaire Response



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APPENDIX B – QUESTIONNAIRE April 2014 REVISION

Back	around Information	
1)	Name of the Facility as used in the FERC license/exemption.	Comtu Falls Hydroelectric Project
2) Proje	Applicant's complete contact information (please use Appendix D, ct Contact Form)	See: TAB 9- Appendix D Contact Form
3) (b) th Facili (e) th the F	Location of Facility including (a) the state in which Facility is located; e river on which Facility is located; (c) the river-mile location of the ty dam; (d) the river's drainage area in square miles at the Facility intake; e location of other dams on the same river upstream and downstream of acility; and (f) the exact latitude and longitude of the Facility dam.	 a) Vermont b) Black River, Windsor County c) River Miles 4.4 d) 192 square miles e) 2 dams upstream 2 downstream e) 2 dams downstream within ½ mile: Slack (P-8014) and; Lovejoy (P- 9649). b. 4 dams upstream: Fellows 9648; Gilman 9650, Cavendish (P- 2489), and US Army Corps of Engineers North Springfield Lake Dam f) N 43° 17' 56.62657 W 72° 28' 56.81321 See: TAB 2 - maps
4)	Installed Capacity.	460 kW See: TAB 5 (2) – License Amendment for Capacity
5)	Average annual generation.	2,300 MWh
(9	Regulatory status.	Compliant See: TAB 8 (1-3) – Letters of Compliance

1401 Walnut St, Suite 220, Boulder, Colorado 80302 | office: 303.440.3378 fax: 720.420.9956 www.gravityrenewables.com



0.4 ac surface area; ~1 acre-foot volume	~2,500 square feet	~0.1 ac	~ 6 acs. Urban center of downtown Springfield, VT See: TAB 2 – site maps	 Eric Davis, VT DEC River Ecologist National Life Drive, Main 2 Montpelier, VT 05620 802-490-6180 eric.davis@state.vt.us melissa Grader, US FWS Fish and Wildlife Biologist U.S. Fish and Wildlife Service - New England Field Office 103 East Plumtree Rd. Sunderland, MA 01375 413-548-8002 x124 melissa_grader@fws.gov 	Operated in instantaneous run of river. The project is operated in instantaneous run-of-river mode maintaining a continuous downstream flow at the spillway of 0.5" over crest or inflow, whichever is less, during the year. A headpond pressure transducer that accurately regulates water intake to the turbine automatically controls minimum flow.
 Reservoir volume and surface area measured at the normal maximum operating level. 	 Area occupied by non-reservoir facilities (e.g., dam, penstocks, powerhouse). 	Number of acres inundated by the Facility.	10) Number of acres contained in a 200-foot zone extending around entire reservoir.	11) Contacts for Resource Agencies and non-governmental organizations	12) Description of the Facility, its mode of operation (i.e., peaking/run of river) and photographs, maps and diagrams.

5

When river flow drops below the minimum hy capacity plus minimum flow requirement (44 unit is automatically shut down and all river f passed over the dam. See: TAB 2 – site ma
lew" Facilities Only: J are applying for is "new" (i.e., an existing dam that added or r generation capacity after August of 1998) please answer the ons to determine eligibility for the program.
he dam associated with the Facility completed? N/A
ie added or increased generation first generate electricity? If N/A reased generation is not yet operational, please answer vell.
ed or increased power generation capacity require or include N/A other diversion structure?
ed or increased capacity include or require a change in water Acity that worsened conditions for fish, wildlife, or water and operations change from run-of-river to peaking)?
existing dam recommended for removal or decommissioning N/A ncies, or recommended for removal or decommissioning by a ation of interested persons and organizations in the local community prior to the added or increased capacity?
ered "yes" to question 17(a), the Facility is not eligible for ess you can show that the added or increased capacity fific measures to improve fish, wildlife, or water quality existing dam. If such measures were a result, please
ed or increased generation is not yet operational, has the N/A ded generation received regulatory authorization (e.g., Federal Energy Regulatory Commission)? If not, the facility is
existing dam. If such measures were a result, please ed or increased generation is not yet operational, has the federal Energy Regulatory Commission)? If not, the facility is

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not eligible for consideration; and (b) Are there any pending appeals or litigation regarding that authorization? If so, the facility is not eligible for consideration.		
A. Flows	PASS	FAIL
1) Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife	YES = Pass, Go to B See:	
protection, mitigation and enhancement (including in-stream flows, ramping	TAB 4 – 401 WQC, and	
and peaking rate conditions, and seasonal and episodic instream flow	TAB 8 (2.1-2.3) –VT DEC 401	
variations) for both the reach below the tailrace and all bypassed reaches?	Compliance Letter	
2) If there is no flow condition recommended by any Resource Agency for the Eacility or if the recommendation was issued prior to January 1, 1987 is the	N/A	
Facility in Compliance with a flow release schedule, both below the tailrace		
and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or "nood" habitat flow standards calculated using the Montana-		
Tennant method?		
3) If the Facility is unable to meet the flow standards in A.2., has the	N/A	
Applicant demonstrated, and obtained a letter from the relevant Resource		
Agency continuing that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water guality?		
B. Water Quality	PASS	FAIL
1) Is the Facility either:		
a) In Compliance with all conditions issued nursuant to a Clean Water Act	a) YES = Go to B2 See: TAB 8 (2 1-2 3) _ VT DEC 101	
Section 401 water quality certification issued for the Facility after December		
31, 1986? Or		
b) In Compliance with the quantitative water quality standards established	b) N/A	
D) ווו סטווטומווכב אוווו וווכ קטמווויומוועב אמוכו קטמוויט סומווטמועט כסימטווטויט וו		

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by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?		
2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?	YES = Pass See: TAB 6 (1-2) – Impairment downstream at River Mile 2.5 from Waste Water Treatment Facility (WWTF) discharge to mouth, Comtu is upstream of this at River Mile 4.4; a non- impaired reach (i.e., not listed on 303(d) list). Link to 303(d): http://ofmpub.epa.gov/tmdl_waters10/attai ns_waterbody.control?p_list_id=VT10- 11.01andp_state=VTandp_cycle=2012	
3) If the answer to question B.2 is yes, has there been a determination that the Facility does not cause, or contribute to, the violation?	N/A	
C. Fish Passage and Protection	PASS	FAIL
 Are anadromous and/or catadromous fish present in the Facility area or are they know to have been present historically? 	YES = Go to C2 See: TAB 5 (1.1-1.5)– 1995 FERC License Amendment	
2) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?	YES = Go to C6 See: TAB 8 (2.1-2.3)– VT DEC Compliance Letter	
 3) Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish no longer have a migratory run)? a) If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility? 	N/A Notes: Unclear, there appear to be differences in opinion on historic limit of upstream migration. Regardless of the history there are several downstream barriers to upstream migration of migratory species including barriers on the Connecticut River as well as the lower	

RENEWABLES	f the Black River. the Comtu Falls facility provides an fish pass for stocked Atlantic ee FERC License Amendment)). However, stocking efforts ntly been abandoned. As part of nation effort in preparing this o Gravity has voluntarily agreed the operational periods of the am passage facility to include: in 1 – June 15, and; optember 15-November 15 optember 15-November 15 beration: 2005 VT ANR and DEC requesting fall passage, DEC Letter stating CFC with assage, and 2015 FWS Emails	s, in response to agency st Comtu Falls installed and has ed downstream passage ss for Atlantic Salmon since Further, in 2015, Gravity has arily agreed to expand the ss operational period following sions with VT DEC. See above. A A 8 (2.3) – 2015 VT DEC Letter g voluntary extension of fish
	b) If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream downstream obstruction or the completion of a specified process), has the Facility – TAB 5(r have recerved) extension of a specified process), has the Facility – TAB 5(r have recerved) extension of a specified process), has the Facility – TAB 5(r have recerved) extension (some root and extension of a specified process), has the Facility – TAB 5(r have recerved) extension or the completion of a specified process), has the Facility – TAB 5(r have recerved) extension (some root and extension of a specified process), has the Facility – TAB 5(r have recerved) extension (some root and extension (some root and extension (some root and extension (some root and extension (some root extension	 4) If, since December 31, 1986: a) Y(a) The source Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or facilities downstream passage of anadromous or catadromous fish (including delayed volunt installation as described in C.3.a above), and b) The Resource Agencies declined to issue a Mandatory Fish Passage discus prescription, b) The Resource Agencies declined to issue a Mandatory Fish Passage discus Mandatory Fish Passage Prescription, c) W(b) W(c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage discus Mandatory Fish Passage Prescription,

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technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?	passage facility operational period	
5) If C4 was not applicable:	N/A	
a) Are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? Or		
b) If the Facility is unable to meet the fish passage standards in 5.a, has the Applicant either i) demonstrated, and obtained a letter from the U.S. Fish and Wildlife Service or National Marine Eisbaries Service confirming that		
demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource, or ii)		
committed to the provision of fish passage measures in the future and obtained a letter from the U.S. Fish and Wildlife Service or the National Marine		
Fisheries Service indicating that passage measures are not currently warranted?		
6) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions	YES = Go to C7	
for upstream and/or downstream passage of Riverine fish?	See: TAB 8 (2.3) – VT DEC Compliance Letter	
7) Is the Facility in Compliance with Resource Agency Recommendations for Riverine anadromous and catadromous fish entrainment protection such	YES = Pass, go to D See: TAB 8 (2 3) – VT DFC Compliance	
as tailrace barriers?	Letter and TAB 5 (1.3-1.5) – Angled	
	Trash Racks were installed as part of the	
	downstream fish passage facility	
	construction. This protection was	
	reviewed and approved by resource	
	agencies.	

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0. Watershed Protection	PASS	FAIL
) Is there a buffer zone dedicated for conservation purposes (to protect fish nd wildlife habitat, water quality, aesthetics and/or low-impact recreation) xtending 200 feet from the average annual high water line for at least 50% of ne shoreline, including all of the undeveloped shoreline?	Due to the surrounding development, topography and small size of the impoundment buffer zones would not be feasible at this facility. See: Tab 2 Maps and TAB 5 (3) FERC Form 80 exemptions, states no recreational use)	NO = Go to D2
Has the Facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1, and 2) has the igreement of appropriate stakeholders and state and federal resource igencies?	N/A	NO = Go to D3
3) Has the Facility owner/operator established through a settlement agreement with appropriate stakeholders, with state and federal resource agencies agreement, an appropriate shoreland buffer or equivalent watershed and protection plan for conservation purposes (to protect fish and wildlife nabitat, water quality, aesthetics and/or low impact recreation)?	N/A	NO = Go to D4
I) Is the facility in compliance with both state and federal resource agencies ecommendations in a license approved shoreland management plan egarding protection, mitigation or enhancement of shorelands surrounding he project?	N/A = Pass, go to E No impoundment to manage. See: Tab 2 Maps and TAB 5 (3) FERC Form 80 exemption (states no recreational use)	
 Threatened and Endangered Species Protection Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream each? 	PASS NO = Pass, go to F See: TAB 6 (2) – BioFinder Endangered Species Map	FAIL
2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the	N/A	

12



plan relevant to the Facility?		
3) If the Facility has received authorization to incidentally Take a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authorization pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authorization?	NA	
4) If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that:	N/A	
a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or		
b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or		
c) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or		
d) The recovery plan under active development will have no material effect on the Facility's operations?		
5) If E.2 and E.3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?	N/A	
F. Cultural Resource Protection	PASS	FAIL
1) If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in	YES = Pass, go to G	



smption?	ie:	
	AB 3 (2)- SHPO Compliance Letter, and AB 5 (1-2) - FERC License Amendment	
wmer/operator have in place ection, mitigation or	A	
approved by the relevant state a letter from a senior officer of		
ded because Cultural cility?		
	ISS	FAII
ice with the recreational	:S = Go to G3	
w releases) and facilities	e: TAB 5 (3) – 1997 Form 80 exception	
	ating there is no recreation use	
e recreational access,		
es) and facilities, as	٩	
gencies responsible for		
r and downstream reaches	ES = Pass, Go to H	
	ie: TAB 5 (3) –	
	omtu Reply Regarding Form 80	
	emption 2008" stating there is no	
	creation use	
	SS SS	FΑ
on for removal of the dam	D = Pass, Facility is Low Impact.	
	ot aware of any such recommendation.	



TAB 2

Site Maps

1. 4 map images

















TAB 3

Initial Federal Energy Regulatory Commission (FERC) license documentation

- 1. FERC Environmental Assessment 1986
- 2. Agency Comments on Initial License (6 comment letters)
- 3. FERC License 1986



ENVIRONMENTAL ASSESSMENT 1/ DIVISION OF ENVIRONMENTAL ANALYSIS, OFFICE OF HYDROPOMER LICENSING FEDERAL ENERGY REGULATORY COMMISSION	-2- 2. Applicant's Proposed Mitigative Measures
Date: 8 April 1986	a. Construction: None are proposed
Project Name: Comtu fails FERC No. 7888 - 001	
A. APPLICATION 1. Application Type: Minor License Date Filed: 2 / 7 /84	
2. Applicant: Comtu Falls Corporation and Comtu Associates	
3. Water Body: Black River Basin: Connecticut	
4. Nearest city or town: Springfield	b. Operation: The applicant proposes to pass 0.5 inch of water [4 cubic feet per
5. County: Windsor State: Vermont	when the inflow falls below the 44 cfs required for turbine operation.
 Federal Lands Affected (If yes, specify land management agency.) X NO Yes: (agency) RESOURCE DEVELOPMENT RESOURCE DEVELOPMENT Purpose: The purpose of the proposed project is to develop further the hydroelectric potential of the existing Cantu Falls Dam. 	
	3. Section 4(e) Conditions
3. Need for power: The project would provide a small portion of the resource requirements projected for the New England Power Pool (NEPOL) area. The staff's economic analyses snow 1 need for the project. From the time the project becomes operational with 1 it is needed to rest increased regional power needs, the proposed project would be available to lessen the use of existing fossil-fueled electric generating plants increated in the NEPOL area, thus conserving nonrenewable resources and reducing the increased in the NEPOL area.	Pursuant to Section 4(e) of the Federal Power Act, the Federal land management agency has provided terms and conditions by letter dated: / / (Attachment). Remarks:
 PROPOSED PRAJECT AND ALTERNATIVES Prescription of the proposed action: The run-of-river project would consist of: Prescripting 4-foot-high and 128-foot-long Comtu Falls Dam, owned by the applicant: 2-foot-high [Lashboards; (3) an intake structure at the west side of the dam; a 6-foot-high. 6-foot-high. and 65-foot-long reinforced constrate penstork. 	4. Alternatives to the Proposed Action a_{1} X No other reasonable action alternatives have been found.
(5) a powerhouse with an existing 250-kilowatt (kW) turbine-generator unit and a new 150-kW turbine-generator unit; (6) a 30-foot-long, 4-kilovolt transmission line; and (7) appurtenances.	Action alternative:
	b. Alternative of no action: No action would constitute a denial of license.

 $\underline{1/}$ Figures and attachments referenced in the text are unitted from this shoument due to reproduction requirements.

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None are proposed			
Construction:			
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D. AFFECTED ENVIRONMENT 1. Brief descriptions of the resources are given below.	q . Aucheological \underline{X} There are no known prehistoric sites in the project impact areas. \underline{X} There are no known prehistoric sites in the project impact areas.
a. Geology and Soils Significant features include: <u>Area bedrock consists of quartz and muscovite</u> schist of the Gile Mountain formation. Bedrock is exposed in areas along both sides of the river.	Renarks:
b. Streamflow low flow: 16 cfs; flow parameter: surmer, single occurence high flow: 900 cfs; flow parameter: spring, single occurence average flow: 345 cfs; Remarks: Surmer low flows are controlled by the North Springfield Flood Control Dam, upstream, which is operated by the U.S. Army, Corps of Engineers.	h. Historical There are no sites of historical significance in the project impact areas. $\frac{X}{X}$ The areas contain sites of historical significance. Description: The project is within the Springfield Historic District.
c. Water Quality The existing water quality conditions are: falls and rapids between Contu Dam and the upstream Gillman Dam create high dissolved oxygen (DD) levels in the river at the project site. D. levels upstream and downstream of Contu Dam exceed the state startard of 6 milligrams per liter.	The structures described above are: X listed on the National Register. eligible for listing. Remarks:
d. Fisheries Anadronous: X None Species include:	i. Visual Quality The significant visual features of the area include: the Springfield Historic District and water falling over the series of small dams on the Black River as it flows through downtown Springfield.
Resident: None X Species include: brown trout, smallmouth bass, rock bass, white sucker, common shiper, brown bullhead, and creek chub.	j. Recreation The existing recreational use(s) of the area include: limited fishing.
Significant features include: upstream fish passage is blocked by Lovejoy Dem, which is downstream from Comtu Demu. The Black River is part of the Connecticut River Fish Passage Action Plan, which may seek to restore anadronous fish passage within the next 15 years.	k. Land Use Land use in the project area includes: <u>urban development</u> . The site is within
e. Vegetation Cover Type Dominant Species urban-scrub staghorn sumec, elm, honeysuckle, and grasses	constant our our our versons.
Significant features include:	The economic and social well-being of the area is influenced by: industry and small retail businesses.
f. Wildlife Species inhabiting the project area include: <u>kingfisher, pigeon, house sparrow</u> . starling, muskrat, and white-footed mouse.	m. Ambient noise quality is: fair, the project is located in an urban setting. n. Ambient air quality is: fair, small industries and automobile traffic are sources of pollution in the immediate area.
Significant features include:	o. Other resources include:

-9-	-4-
CONSULTATION AND COMPLIANCE Fish and Wildlife Consultation (Fish & Wildlife Coordination Act) (a) Fish & Wildlife Service (FWS): X Yes No (b) State(s): X Yes No (c) National Marine Fisheries Service (NMS): X Yes No (d) Remarks:	 The following entities provided comments on the application in response to the public notice dated <u>11 / 28 / 84</u>. <u>Date of Letter</u>
<pre>2. Terms and Conditions for Exemptions from Licensing [18 CFR §4.106(b) or 4.94(b)] The agencies listed below have provided terms and conditions for the proposed project (Attachment 1.</pre>	State of Vermont Agency of Environmental Conservation State of Vermont Agency of Environmental Conservation Netional Marine Pisheries Service Anny Corps of Engineers Anny Corps of Engineers Environmental Protection Agency Exploremental Protection Agency Explorement of the Interior Department of the Interior Department of the Interior Exate of Vermont State of Vermont
 Section 7 Consultation (Endargered Species Act) (a) X. Listed Species: None 	 Indicates an intervention The Applicant responded to the comments by letter dated <u>3 / 26 / 85</u>. G. DISCUSSION OF EAVIRONMENTAL ISSUES
(b) X Not reputed. Required: completed (date): (c) Remarks: U.S. Fish and Wildlife Service states (letter from Gordon E. Beckett, Acting Area Manager, New England Area Office, Concord, New Hampshire, Sector 10 [981] that except for transients. no federally listed or proposed threatened or endangered species occur in the project area.	Mitigative measures recommended by Staff are in addition to those proposed by the applicant, Section C(2), and those conditions identified in Sections C(3) and E(2), as appropriate. There are 2 issues addressed below. I. Issue: Minimum flow requirement for the protection of aquatic resources.
11 Section 401 Certification (Clean Mater Act) Not Backing X Received Waived Requested: 10 / 04 /83 (date of letter) 11-04-81 Results Consultation (Historic Preservation Act) (a) Register status: None Potentially Englishe X Eligible of Listed	Comments: The Department of the Interior (Interior) and the State of Vermont P percy of Environmental Conservation (AEC) request an instantaneous minimum flow of 0.5 inch of water (4 dfs) to be passed over the crest of the spillway or inflow to the project, and to pass all flows over the spillway when inflow falls below 44 dfs.
<pre>(b) State Historic Preservation Officer (smoot, % %) (c) (attrional park Service (NPS)): X %es Completed (date): / / (d) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c</pre>	Applicant's Response: The applicant concurs.
5princtield Historic Character increase 7, 1983). Division of Historic Preservation. September 7, 1983). 6. Recreation Consultation (Federal Power Act, \$10(a)] (a) U.S. Owneds Yes X No (b) NPS: X Yes Yo (c) State(s): X Yes No (d) Remarks:	Conclusions and Recommendations: The minimum flow regime recommended by Interior and AEC would provide for adequate protection of aquatic resources below the project. dam and should be implemented.
7. Wild and Scenic Rivers (Wild and Scenic Rivers Act) (a) Status: X None. Listod. Determination completed: / / Administering atency: (b) Remarks:	

 Issue: Protection of any archeological and historical sites encountered during construction or affected by new project construction.

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Comments: The Vermont State Historic Preservation Officer indicates that the project is within the Springfield Domitown Historic District, which is listed on the National Beoister of Historic Places, but the proceed project would have ro affect on those properties. The Department of the Interior requests a license article be included to ensure the protection of cultural resources.

Applicant's Response: No response.

Conclusions and Reconvendations: Any sites encountered during construction or located in areas affected by any new construction could be eligible for listing on the National Register of Historic Places. Such eligible sites could be adversely affected by construction activities. The licensee should have construction persention affecting such activities. The licensee should have construction persentor affecting such activities. The licensee should have construction persentor affecting such activities of determine whether a potential exists for affecting such activities on activities on the vicinity of any arreelogical or historic sites encountered during construction or the undertaking of any new construction outside of the project area, the SHD should be consulted of any needed studies and measures for avoidance or mitigation.

3, Issuet

Contents: Applicant's Response: Conclusions and Reconnendations:

AMARY OF ENVIRONMENTAL IMPACTS

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 Assessment of adverse and beneficial impacts expected from the project as proposed by the Applicant (P): the proposed project with Staff's recommended mitigation (Ps) (Section G): and any other alternative considered (A).

a. Geo	Resource	D.	22	8	Renarks
	logy/Soils	0		-	
o. Str	eantlow	0		-	d
S. Wat	er quality:	0		_	(c) The State of Vermont (letter from Stephen B. Sease, Director of Planning, Agency of Environmental Conserva-
G	ssolved	0	-		tion, January 15, 1985) states that the addition of a second turbine is unlikely to reduce dissolved oxygen
	webidity and	TAS		-	to substandard levels. Installation of a new turbine and desilting processes would temporarily increase
5	her :			-	stream turbidity.
d. Fis	sheries:	0			(d) Fish mortality would increase to a minor degree due to the addition of a second turbine and operation at
Re	sident	IAL		_	lower flows.
e. Vec	petation	0			
E. Wi	Idlife	0	_	-	
g. Ar	cheological	0	_	-	
h. Hi:	storical	0	-	-	
i. Vi	sual quality	0	_	-	
J. Re	creation	0	-	-	
k. La	nd use	0	-	-	
1. 50	cioeconomice	0	-	-	
a. No	ise quality	IN	10	-	(m,n) Installation of the new turning would result in a minor, temporary increase in exaust emissions, dust,
n. Al	r quality	1M	10	-	and noise.
			-	-	
			-	-	

For licenses, the assessment reflects the adoption of any Federal land management agency 4(e) conditions, in addition to the Applicant's proposed mitigation. For examplions, the assessments reflect any terms and conditions set by the agencies, in addition to the Applicant's proposed mitigation. Assessment symbols indicate the following impact levels:

0 = No impact; l = Minor impact; 2 = Substantial impact; 3 = Major impact; A = Adverse; B = Beneficial; L = Long-term impact; S = Short-term impact.

(e.g., 18L = Minor, beneficial, long-term impact)

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Attachment A

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Cumulative Empact Analysis for FERC Project No. 7888

Black River Watershed i.

No action

Recommended Alternative (including proposed, required, and recommended mitigative

Alternative action

project would generate electricity from a renewable resource without

Reason(s) for the Selection of the Preferred Alternative

X Proposed Project

measures):

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creating significant environmental impacts.

The proposed

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area of about 195 square miles. The Black River originates in the town of Plymouth, Vermont and flows for some 39 miles through largely-forested lands to its confluence with the Connecticut River near Springfield, Vermont. The Black River watershed is located in southeastern Vermont with a maximum width of 12 miles and encompasses a drainage and forms a portion of the much larger Connecticut River Basin (Figure 1). The watershed is about 22 miles long,

for hydropower production. As such, there is concern that multiple hydropower development within the Connecticut River important environmental resources identified for the basin. Thus, staff has analyzed the potential for the Comtu Falls Project, located on the Black River, to contribute to Basin will potentially cause cumulative adverse impacts on cumulative adverse impacts in the Connecticut River Basin. A large number of existing dams on the Connecticut River and its tributaries are being retrofitted or reactivated

I. Existing and Proposed Hydropower Development

At present, there is one existing licensed project, Cavendish Station (FERC No. 2489), and one project exempted from licensing, Slack Dam (FERC No. 8014), located on the Black River (Figure 1). Proposed projects, other than the Comtu Falls Project, include Lovejoy Dam (FERC NO. 9649), Fellows Dam (FERC NO. 9648), Gillam Dam (FERC NO. 9650), all located at existing dams in the Town of Springfield, Vermont, and Tolles Hill Dam (FERC No. 7932), located a muss upstream of the Corps of Engineers' North Springfield flood control dam (Figure 1).

Target Resources ċ

obtained from existing hydropower projects constructed in the Connecticut River Basin and their related resources; (2) anadro-A target resource is defined as an important resource that could be adversely affected by two or more proposed hydro-electric projects. Atlantic salmon were identified by staff The identification of the (3) comments recoived by federal and state natural resource agencies and the public concerning proposed projects within the basin. A discussion of the importance of the target resource feallows. mous figh restoration plans for the Connecticut River; and as the target resource for the Connecticut River Basin and target resource was developed from a review of: (1) data potentially for the project area.

SUMMARY OF UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS AND BENEFICIAL IMPACTS

The proposed addition of a second turbine-generator to operate at low flows would increase turbine related fish mortality to a minor degree. The installation of the new turbine would create minor, short-term increases in stream turbidity and noise.

J. CONCLUSION

- X Finding of No Significant Impact. Approval of the recommended alternative [H[3]] would not constitute a major Pederal action significantly affecting the quality of the human environment; therefore, an Environmental Impact Statement (SIS) will not be prepared.
- Intent to Prepare an EIS. Approval of the recommended alternative [H(3)] would constitute a major Federal action significantly affecting the quality of the Numan environment; therefore, an Environmental Lenger Statement will be prepared. Approval of the recommended alternative [H(3)] would

K. LIST OF PREPARERS

Position Title	Ecologist (Coordinator)	Entineer	Fisherles Biologist			
Martin	James J. Keany Ec.	Robert A. Crowley En	Robert Grieve			

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2. Impacts of the No-action Alternative

No action would result in the continuance of existing environmental conditions. Electrical power that would be generated by the proposed project would have to be produced by coal, gas, oil, or nuclear fueled generating facilities.

In recent years, the coordinated state-federal-private efforts of stocking hatchery-reared Atlantic salmon into the Connecticut River Basin to restore historic runs have begun to show signs of success. The Atlantic salmon restoration plan (Stolte, 1982), which outlines the restoration brogram, has identified stream reaches within the basin suitable for wild smolt production and stream reaches that could be utilize as rearing habitat for introduced fry. The plan also identifies obstructions where fish where passage facilities would be deferred until such time as they are warranted, depending on the success of the restoration effort. The Black River is one such tributary where, according for the present.

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D. Cumulative Impacts to Target Resources

Eurrently, Atlantic salmon do not have access to the Black River. There are no plans to construct fish passage facilities at any dam on the Black River or to utilize the river for rearing of fry or smolt at this time. Of 34 tributaries in the Connecticut Siver Basin given consideration for restoration, the Black River is not a high priority river in the restoration program (Letter from Mr. Stephen B. Saase, Director of Planning, Vermont Agency of Environmental Conservation, Montpelier, Vermont, Pebruary 5, the restoration potential for the Black River.

The Atlantic salmon restoration plan for the Connecticut River states that there is the possibility that stream reaches not considered critical to the restoration program may never receive restoration consideration. The possibility remains, however, that the restoration efforts could be targeted for future success. Thus, the Black River could be targeted for Atlantic salmon restoration efforts and fish passage facilities might be required at project dams. The installation of fish passage facilities would not be precluded by the proposed passis as mutually agreed upon by the resource agencies implementing the program and should not be precluded by the proposed project. Therefore, any license issued for upstream fish passage facilities as determined by resource agencies, the passage to prevent entrainment and impingement of downstream migrants, and for changes in project operation or facilities to protect project should be conditioned to provide for upstream fish passage to prevent entrainment and impingement of downstream migrants, and for changes in project operation or facilities to protect project should stlantic salmon when needed. Commission orders issuing such licenses contain adequate authority to require such fish protection measures.

Based on the information provided above, staff concludes that the Comtu Falls Project would have no potential for causing cumulative adverse impacts to Atlantic salmon in the project area nor for the Connecticut River Basin.

LITERATURE CITED

Scolte, L.W. 1982. A stratedic plan for the restoration of Atlantic salmon to the Connecticut River Basin (revised September, 1982). U.S. Fish and Wildlife Service, Laconia, New Hampshire.

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Form L-15 (October, 1975)

FEDERAL POWER COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED MINOR PROJECT AFFECTING THE INTERESTS OF INTERSTATE OR FOREIGN COMMERCE Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

the maps, plans, specifications, and statements described and designated as whibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Cormission iprovided, however. That if the Licensee or the Commission iprovided, to rany of them, be changed, there shall be submitted to the Commission for additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission a part of the license and shall supersede in whole or in part, such the license a part of the license as may be specified by the Commission. Article 3. The project works shall be constructed 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 ance with the provisions of said article. Except when the provisions of said article. Except when an or other project of the commission any substantial alteration prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project lands and waters not authorized herein; and any emergency alteration, or use scantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to addition, or use from such approved exhibits may direct. Minor changes in project more such approved exhibits may be made if such changes will not result in a decrease in efficiency. In a material increase the general scheme of development; but any of such minor changes

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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.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the project works as actually constructed when compared with the area and boundary shown and the works described in the licensee or in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or altherations shall be subject to the inspection as upervision of the Region wherein the project is located, commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the fully with said representative and shall furnish him a fully with said representative and for any subsequent provide for an adequate and qualified inspection force for construction of the project. Construction of the project works or any feature or alteration thereof shall not be initiated until the project. Construction of the project works or any such feature theread has been approved by require construction, of the drow which work will begin, as far in advance thereof as shall not be infituated until the project, and for any subsequent and representative such further information as he may require construction, operation thereof, and shall notify him of the drow which work will begin, as far in advance thereof as said representative may reasonably specify, and of any alteration thereof, and shall notify him of the drow which work will begin, as far in advance thereof as said representative may reasonably specify, and of work for a period of more than one week, and of work for a period of

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 for the protection of life, health, or property. <u>Article 5</u>. The License, within five years from the date of issuance of the license, shall acquire title in fee or the United States, necessary or alphopriate for than lands of the United States, necessary or appropriate for the and soft and maintenance, and operation of the project. The Licensee or its successors and assigns shall, during 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 of occupancy and use; and none of such abandoned, or otherwise disposed of without the project that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission written abandonment or the retirement from service of structures, equipment, or other project works in connection with regulations of the then current regulations of the Commission with the equipment, or other project works in connection with reglacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortyage or trust deeds or judicial sales made thereunder, the meaning of this article.

Article 6. 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 storated, the amount of water held 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 project works. The number, character, and location 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 satis-

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 supervision, or cooperation for such setted states Geological Survey the amount of funds astimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient of the Commission, and shall make return of such records anually a such time and in such form as the Commission may prescribe.

Article 7. 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 8. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order. Article 9. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license whall stall times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, practicable conservation and utilization 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 ouble feet per second, or such volume in sore-feet per specified period of time, as the Commission may prescribe for the purposes heationed.

Article 10. On the application of any person. Article 10. On the application of any person association. Corporation. Federal agency. State or municipality, the Licensee shall permit such reasonable municipality, the Licensee shall permit such reasonable works, lands and water rights, or parts thereof, as may works, lands and water rights, or parts thereof, as may be ordered by the interests of comprehensive development for heaving in the interests of comprehensive development for heaving in the interests of comprehensive development for heaving or for the water resources of the region for and utilization of the water resources of the region for irrigation, industrial, municipal or similar uses. The irrigation industrial, municipal or similar uses. The irrigation industrial municipal or similar uses. The interest of for such project properties or parts of its reservoir or other project properties or parts of its reservoir or other project the rest full thereof for such purposes, to include at least full informensation shall be fixed by the Commission either between the Licensee to incur. Any such by approval of an agreement between the Licensee and the party of an agreement between the Licensee and by approval of an agreement between the Licensee and the party of the proposed use, including satisfactory understanding of the proposed use, including satisfactory information in sufficient detail to afford a full information in sufficient detail to afford a full information in sufficient detail to afford a full information is sufficient detail to afford a full information in sufficient detail point at a statement such with

Article 11. 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 for hearing.

Article 12. Whenever the United States shall desire, th connection with the project, to construct fish and wildlife facilities of 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 threat. In addition, after notice and opportunity for hearing, the License shall modify the project operation as may be reasonably prescribed by the project operation as may be reasonably prescribed by the project operation as may be reasonably prescribed by the project operation as may be reasonably prescribed by the project operation as may be reasonably prescribed by the project operation as may be reasonably prescribed by the project operation 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 to rot or relieve the Licensee of any obligation under this license.

Article 13. 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 wurpose 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. operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil crossion 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 15. The licensee shall consult with the appropriate State and Federal agencies and within one year of the date of issuance of this license, shall aubmit for Cormission approval a plan for tlearing the reservoir area. Further, 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, coject which results from the clearing of lands of the project which results from the clearing of lands of the maintenance or alteration of the project works. In addition,

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all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan 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 16. 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 malled to the record address of the Licensee or its agent, the Commission will deam it to be the intent of the Licensee to surrender the licensee. The commission malled to the record address of the Licensee 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 United States agency having jurisdiction over its lands or the Commission's authorized representative, sappropriatue, 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, the the intent of the surrender of the license when the commission. for the resons recited herein, deems it to be the intent of the Licensee to surrender the license.

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Article 17. 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 License 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 18. 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.

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State of Vermont



AGENCY OF ENVIRONMENTAL CONSERVATION

Montpelier, Vermont 05602 OFFICE OF THE SECRETARY

Ocpartment of Eish and Game Department of Eocesis, Parks, and Rees above Department of Water Resonances and Eavosones of Eavosones State Geobard Natural Resonances (Sansersonian Council

January 7, 1985

Mr. Kenneth F. Plumb. Secretary Federal Energy Regulatory Commission 825 North Capitol Street, N.E. Washington, D.C. 20426

RE: Comtu Falls Corporation and Comtu Falls Associates Comtu Falls Project No. 7888-001

COMMENTS

Dear Mr. Plumb:

This is in response to the Notice of Application for License for Comtu Falls No. 7888-001.

As you are aware, this project is already in operation and has been awarded a Certificate of Public Good under 30 V.S.A. §248 and a Water Quality Certificate pursuant to Section 401 of P.L. 92-500.

As the fish and wildlife agency for the State of Vermout, we request the following conditions:

- 1. An instantaneous stream flow of no less than 0.5 inches of water shall be discharged over the full length of the dam crest at all times when available from inflow to the impoundment. When instantaneous inflows fall below 109 cfs, all inflows to the impoundment shall be passed over the dam. The facility shall be operated in a strict run-of-the-river mode, with instantaneous outflows equalling instantaneous inflows. (This will insure adequate dissolved oxygen for fish.)
- 2. The applicant shall not discharge petro chemicals, wet concrete, or debris to state waters during construction or operation of the facility. Any debris removed from the spillway or trash racks shall be properly disposed of off site. (This will insure protection against toxics and debris.)
- 3. Any significant changes to the project must be submitted to the Department of Water Resources and Environmental Engineering for prior review and approval.
- 4. Any impoundment desilting shall be carried out in accordance with the Agency of Environmental Conservation Desilting Policy.

Mr. Kenneth F. Plumb January 7, 1985 Page 2

A copy of the Water Quality Certificate is enclosed.

Access. Reasonable access for fishing at the site should be allowed by the applicant.

Aesthetics. Aesthetics is not a major issue at this site. However, the project should be operated in a manner that keeps the site as aesthetically pleasing and neat as is reasonably possible.

Recreation is not a concern at this site. Recreation.

Summary. In summary, this project is operating in a satisfactory manner. An exemption, if issued, should be conditioned in a manner that will ensure satisfactory operation continues.

Yours very truly,

urs very truty, Stephen B. Sease Director of Planning

SBS/tc Enclosure

Original and 14 copies

cc: Comtu Falls Corporation and Comtu Falls Associates Fred E. Springer Elizabeth Higgins William P. Patterson Gordon E. Beckett Town of Springfield Southern Windsor Regional Planning Commission

State of Armont



AGENCY OF ENVIRONMENTAL CONSERVATION

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Montpelier, Vermont 05602 OFFICE OF THE SECRETARY

Department of Fish and Game Department of Founds, Parks, and Racis Department of Water Research and Found State Geologies Natural Resonages Conservation Cremin $\hat{\boldsymbol{B}} \tilde{\boldsymbol{E}}(\boldsymbol{r}_{s})^{T} \boldsymbol{\mu}^{T} \boldsymbol{\mu}^{T} \boldsymbol{\mu}^{T} \tilde{\boldsymbol{E}}^{T} \tilde{\boldsymbol{E}}^{T} \boldsymbol{\mu}^{T} \boldsymbol$

January 15, 1985

Mr. Kenneth F. Plumb. Secretary Federal Energy Regulatory Commission 825 North Capitol Street, N.E. Washington, D.C. 20426

RE: Comtu Falls Corporation and Comtu Falls Associates Comtu Falls Project FERC No. 7888-001

ADDITIONAL COMMENTS

Dear Mr. Plumb:

This is a follow up to our letter under date of January 7, 1985, in respnse to the Notice of Application for License for Comtu Falls project No. 7888-001.

The Vermont Department of Water Resources and Environmental Engineering has issued an Amended Water Quality Certificate for this project. The amended certificate allows a minimum flow of 44 cfs, down from 109 cfs. Please make this change in your records. A copy of the Amended Water Quality Certificate is enclosed.

We apologize for any inconvenience this may have caused.

Yours very truly.

Stephen B. Sease Director of Planning

SBS/tc Enclosure

Original and 14 Copies

cc: Comtu Falls Corporation and Comtu Falls Associates Fred E. Springer Elizabeth Higgins William P. Patterson Gordon E. Beckett Town of Springfield Southern Windsor Regional Planning Commission




UNITED STATES ENVIRONMENTAL P Ch AGENCY

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RECEIVED

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FEDERAL ENERGY REGULATORY COMMISSION

COMMENTS

January 11, 1985

Kenneth F. Plumb, Secretary Federal Energy Regulatory Commission 825 North Capitol Street, N.E. Washington, D.C. 20426

RE: Application For License Comtu Falls FERC No. 7888

Dear Mr. Plumb:

We have reviewed your Notice of Application and the Application for Minor License (Under 5 MW) by Comtu Falls Corporation and Comtu Falls Associates for the Comtu Falls Project located on the Black River in Windsor County, Vermont.

We do not object to issuance of the FERC License.

Should you have any questions, please contact Donald Cooke of my staff at 617/223-1739.

Sincerely yours,

Elizabeth A. Higgins, Assistant Director for Environmental Review Office of Government Relations & Environmental Review (RGR)

cc: Fred E. Springer, Director FERC, Project Management Bob Scheirer, USFWS, Concord, NH Jeffrey A. Wallin, President Comtu Falls Corporation





DEPARTMENT OF THE ARMY NEW ENGLAND DIVISION, CORPS OF ENGINEERS 424 TRAPELO ROAD WALTHAM, MASSACHUSETTS 02254

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SUBJECT: COMMENTS, Project No. 7888-001

Mr. Kenneth F. Plumb, Secretary Federal Energy Regulatory Commission 325 North Capitol Street, N.S. Washington, D.C. 20426

Dear Mr. Plumb:

HYDROPUNCR This is in reply to the Commission's notice of November 23. 1984 concerning the application for a license (under 5 IM) filed by Comtu Falls Corporation and Comtu Falls Associates for the proposed hydroelectric generating facility to be known as the Comtu Falls Project, FERC No. 7888-001, located on the Black NG River in the Town of Springfield in Windsor County, Vermont.

The proposed project will not involve any Federally-owned land utilized for water resource purposes under Corps jurisdiction. The Comtu Falls project (4-foot high dam with 2 feet of flashboards) will not adversely impact on flood control procedures at the Corps' North Springfield project located upstream in the Black River.

The Black River has been declared to be a navigable water of the United States, however, since this project is at an existing dam, the impacts to navigation are not considered to be significant. If this project will involve the discharge of dredged or fill material, either permanent or temporary into waters of the United States, a permit will be required under Section 404 of the Clean Water Act. The New England Division has issued Regional General Permit No. 38, which authorizes the discharge of fill materials for fills associated with the development or expansion of hydroelectric facilities at existing dams or at new or existing run-of-the-river projects. It appears that this proposed project would meet the criteria established under this permit. The applicant should contact the Regulatory Branch of the New England Division concerning the Section 404 permit. The toll free telephone number is 1-800-348-4789.

Subject to the above comments, the U.S. Army Corps of Engineers has no objection to the issuance of a license (5 MW or less) for the proposed project.

If you have any questions regarding this response, please feel free to contact me at (617) 647-8508. Mr. Michael Keegan of my staff coordinated this reply. He can be reached at (617) 647-8241.

Sincerely, Joseph L. Ignazio Chief, Planning Div

Copies Furnished:

Mr. Fred E. Springer, Deputy Director Division of Project Management Branch Office of Hydropower Licensing Federal Energy Regulatory Commission Room 208RE 825 North Capitol Street, N.E. Washington, DC 20426

Commander U.S. Army Corps of Engineers ATTN: DAEN-CWH-Y Washington, DC 20314

Mr. Jeffrey A. Wallin, President Comtu Falls Corporation P.O. Box 466 Cavendish, Vermont 05142





UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE

Services Division Habitat Protection Branch 14 Elm Street Gloucester, MA 01930

January 28, 1985

Mr. Lawrence Anderson, Director Office of Electric Power Regulation Federal Energy Regulatory Commission 825 N. Capitol Street, N.W. Washington, D.C. 20426

Dear Mr. Anderson:

The National Marine Fisheries Service (NMFS) has reviewed the Federal Energy Regulatory Commission's notice of an Application for a License for the Comtu Falls Project (FERC #7888) on the Black River, in Windsor County, Vermont.

The enhancement of commercially valuable anadromous fish stocks is an important goal of the NMFS. The NMFS is a member of the Policy and Technical Committees for Fisheries Management of the Connecticut River. The Fish Passage Action Plan established by the Committees has presently deferred the requirements for such facilities on the Black River. However, we recommend that terms and conditions be included in the License that require the construction of adequate fish passage facilities as specified by members of the Policy and Technical Committees for Fisheries Management of the Connecticut River should fish passage facilities at this project be required in future.

If there are any questions or comments regarding the contents of this letter, you may contact Tracey McKenzie of my staff at (617)281-3600, ext. 239.

Sincerely,

Thomas C. Bugford

Thomas E. Bigford Branch Chief RECEIVED 1985 FEB -5 MI II: 50

HYDROPOVIER LICENSING







United States Department of the Interior

OFFICE OF THE SECRETARY Office of Environmental Project Review 1500 Custom House 165 State Street Boston Massachusetts 02109 No la Server

1995 FEB -8 MI 11: 00

HAMISSION

February 5, 1985

IN REFLY REF. H. TO

ER 85/15 FERC No. 7880

Mr. Kenneth F. Plumb, Secretary Federal Energy Regulatory Commission 825 North Capitol Street, N.E. Washington, D.C. 20426

Dear Mr. Plumb:

This responds to your public notice dated November 28, 1934, congraining the application for license (under 5 mw) for the Comtu Falls Project, accated on the Black River in Windsor County, Vermont.

Fish and Wildlife Rescurces

This existing 250 kw facility is proposed to be expanded by the addition of a 150 kw generating unit. The project will continue to be operated run-ofriver, which we define as outflow equals inflow instantaneously. Fishery rescurces downstream of the project will be conserved by a minimum release of 58 cfs (historical median daily August flow) or inflow to the project, whichever is less. For water quality protection, a flow of 48 ofs or inflow, if less, should be released over the dam. The 43 ofs release can be utilized to meet the 58 cfs minimum flow recommendation, and could be modified, subject to a showing by the Licensee that water quality will be protected at a different flow. These flow recommendations are also consistent with our recommendations for the Black River Project. Fish passage facilities are not necessary at this time, but may be needed in the future. The Licensee should provide a means of verifying compliance with any required minimum flow releases. This could be accomplished by installing calibrated marks upstream and downstream of the project, and the procedure is described in U.S. Geological Survey publicaation TWI 3-A8.

Thus, to conserve and protect fish and wildlife resources, we recommend the following conditions be included as Articles in any license issued:

- 1. The Licensee shall provide fish passage facilities at this project when prescribed by the Secretary of the Interior under Section 18 of the Federal Power Act.
- The Licensee shall provide a minimum instantaneous release below the project of 58 cfs or inflow, whichever is less, to conserve downstream aquatic resources.



- 3. The Licensee shall provide a minimum instantaneous release of 48 ofs over the dam, or inflow, whichever is less, to protect water quality.
- 4. The Licensee shall provide a means of verifying compliance with required minimum flow releases.

Cultural Resources

The applicant has consulted with the State Historic Preservation Officer (SHPO) and is aware that the project is located within the Springfield Downtown Historic District which is listed in the National Register of Historic Places. According to the SHPO, the Comtu Falls hydroelectric project will have no effect on the cultural values of the historic district. We concur with this finding.

To insure that the requirements of the National Historic Preservation Act of 1966 and Executive Order 11593 are met, we recommend that any license issued for the Comtu Falls hydroelectric project include provisions requiring the applicant to continue to consult closely with the SHPO and local cultural resource interests during all phases of project development and take measures necessary to preserve and/or enhance all identified cultural resources within the project area.

Recreational Resources

The information reviewed did not indicate any significant or outstanding opportunities for the development of public outdoor recreational facilities within project boundaries. The standard licensing article requiring free public access to project lands and waters should be adequate to provide for informal utilization for recreational purposes.

We appreciate the opportunity to comment on this application.

Sincerely yours,

William Patterscn Regional Environmental Officer



United States Department of the Interior

OFFICE OF THE SECRETARY Office of Environmental Project Review 1500 Custom House 165 State Subject Beston Massaclaseus (2)(10)

Maria Maria Maria ER 35/15 FERC No. 7833

April 10, 1985

Hr. Kerreth F. Plumb, Scoretary Federal Energy Regulatory Commin for S25 North Capitol Street, U.F. Washington, D.C. 20426

Dear ifr. Plumb:

This is in regard to the application for the Comtu Falls Project, located on the Black River in Mindson Courty, Vermort, and supplements Department of Interior comments of Flatury 5, 1025.

In the Department's letter to you of February 5, 1985, we made a recommendation for a minimum flow over the project dam of 48 efs or inflow, if less, to protect water quality. Based on or April 3, 1985 meeting between the tich and Wildlife Service (FWC), the Vermont Agercy of Environmental Conservation (VTAEC), and the Applicant, we we revising that recommendation to read as follows:

The Liernson shall at all times discharge a minimum instantaneous flow over the full length of the dam crest of no less than 0.5 inches of water when available from inflow. When instantaneous inflows fall below 44 efs, all inflow shall be passed over the dam.

This revision is basid or our unterstanding that this project and the compating black River Project (FIRC No. 7993) are mutually exclusive.

Sirencly yours,

Hilliam Catterion

William Pattorsor Regional Fryingmental Officer



STATE OF VERMONT



AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

MONTPELIER, VERMONT 05602

OFFICE OF THE SECRETARY (802) 828-3211

ELBERT G. MOULTON, SECRETARY

November 17, 1988

Jeffrey Wallin Comtu Falls Corporation RR2 Box 2436 Brandon, VT 05733 DEPARTMENTS OF:

Economic Development 828-3221 Housing & Community Affairs 828-3217 Solid Waste Management 828-3245

DIVISIONS OF:

Administration 828-3231 Historic Preservation 828-3226 Vermont Travel Division 828-3236 Film Bureau 828-3236 Vermont Life Magazine 828-3241

Re: Comtu Falls Hydro Project, Springfield, VT. FERC # 7888. Replacement of turbine.

Dear Mr. Wallin:

Thank you for the opportunity to comment on the abovereferenced project.

The Division for Historic Preservation has reviewed this undertaking according to the standards set forth in 36 C.F.R. 800, regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act.

On October 11, 1988 we received your request for review of your plans to replace the existing Francis turbine with a single Kaplan tube-type unit.

We have determined that this course of action will not affect any properties of historic, architectural or archeological significance that are listed on or eligible for inclusion in the National Register of Historic Places.

Sincerely,

DIVISION FOR HISTORIC PRESERVATION

Eric Gilbertson

Director/ State Histor Preservation Officer EG/DC



	1	- 2
UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION	The Director, Office of Hydr and project would not conflict wi develorment, and would be hest ac	it th
Comtu Falls Corporation and Comtu Project	The Director orders:	i a l
ORDER ISSUING LICENSE	Comtu Palls Associates is issued comtu Palls Associates (licensee) effective the first day of the mo	1 to (onth
(Issued July 18, 1986)	issued, to construct, operate, at Project. This license is subject the and union in formersed by	tr to
Lontur Falls Corporation and Comtu Falls Associates have filed a joint Vicense application under Part I of the Federal Power Act	license, and subject to the regulation of the provisions of the Act.	1 at 1
rect to construct, operate, and maintain the comtu falls Project, located in Windsor County, Vermont, on the Black River. The project would affect the interests of interstate or foreign	(8) The project consists of	žť.
commerce.	(i) All lands, to the exter those lands, enclosed by the pro-	ant of
Notice of the application has been published. The motions to intervene that have been granted and the comments filed by	Exhibit G-	7885

considered in determining to intervene that have been granted and the comment agencies and individuals have been fully considered whether to issue this license, as discussed below. Notice of

Summary of Findings

The proposed project would consist of an existing concrete dam, a concrete penstock and an existing reinforced concrete powerknuse containing one existing generating unit and one new generaling unit.

The project would have an installed capacity of 400 kW and would generate an estimated 1,300,000 kWh annually. A proposed project is potentially feasible so long as its projected levelized cost is less than the long-term levelized incremental energy cost of any utility in the genometer lavelized incremental energy cost the staff has identified projected incremental energy costs in the region as high as 63.7 mills/kWh. Since the levelized cost of energy from the project is estimated to be 53.0 mills/kWh, the staff is reasonably confident that there will be a market for the project power at a price sufficient to support the project's construction and operation.

The dam is safe and adequate for continued operation. The Commission's New York Regional Office staff inspected the project on March 29, 1984, and did not observe any matters requiring Commission action. The dam is classified as low hazard.

An Environmental Assessment (EA) was issued for this project. Background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment are contained in the EA and/or federal this order. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

Wer Licensing, concludes that any planned or authorized ed to comprehensive developpublic uses.

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36 FERC 1 62,046

the terms and conditions of ference as part of this ons the Commission issues Comtu Falls Corporation and r a period of 40 years, in which this order is sintain the Comtu Falls

the licensee's interests in boundary shown by Exhibit G:

Showing	Location Map	Project Map	
FERC No. 7888-	5	9	
Exhibit G-	1	~	

(2) Project works consisting of: (a) the 4-foot-high, 128-foot-long concrete gravity Comtu Falls Dam with a crest eleva-tion of 392 feet mean sea level; (b) 2-foot-high flashboards; (c) a small impoundment; (d) an intake structure at the west side of the dam; (e) a 6-foot by 6-foot, 65-foot-long reinforced concrete penstock; (f) a powerhouse with a 250-kW and a 150-kW turbine-generator units; (g) the 600-volt induction generator turbine-generator units; (g) the 600-volt induction generator backs, a 20-40-volt, 300-kVA transformer bank, a 2,400-voltformer bank, a 20-foot-long, 4,160-volt transmission line; and (h) other appurtenances.

The project works generally described above are more speci-fically shown and described by the following portions of Exhibits A and P:

Showing	Plan View	Existing Power Station	Proposed Powerhouse Addition	Dam Cross Section
FERC No. 7888-	1	2	m	4
Exhibit F	15	2	æ	•7

Exhibit A. Page 4 (vii) of the application filed on February 7. 1984.

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain 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, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibit C described above and those sections of Exhibits A and F in paragraph B above are approved and made part of the license. (D) The following sections of the Act 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 und to the acceptance and expression in the license of terms and conditions of the Act 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; 23; and 22.

(E) This license is subject to the articles set forth in form L-15, (October 1975), entitled "Terms and Conditions of License for Unconstructed Minor Project Affecting the Interests of Interstate or Furetyn Commerce", except Article 15. The license is also subject to the fullowing additional articles:

Article 201. The licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part 1 of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 530 horsepower. Article 202. The licensee shall clear and keep clear to an adequate width all 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 result from maintenance, operation, or alteration of the project works. In addition, all trees along the project shall be removed.

All clearing of lands and disposal of unnocessary material shall be done with due diligence to the satisfaction of the authorized representative of the Commission and in accordance with appropriate federal, state, and local statutes and regulations.

Article 301. The licensee shall commence construction of project works within two years from the issuance date of the license and shall complete construction of the project within four years from the issuance date of the license.

Article 302. The licensee shall file one copy with the Commission's Regional Director and two copies with the Director, Division of Inspections, of the final contract drawings and specifications for pertinent features of the project, such as such as structures, at least to days prior to start of construction. The Director, Division of Inspections, may require changes in the plans and specifications to assure a safe and adequate project.

Article 303. The licensee shall review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction and shall ensure that construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days prior to start of construction of the design. At least 30 days prior to start of construction of the design. At least 30 days prior of inspections, needed proved cofferdam construction of the proved cofferdam construction drawings and specifications and a copy of the letter(s) of approval.

Article 304. The licensee shall within 90 days of completion of construction file for approval by the Director, Division of Project Management, revised Exhibits A. F. and G to describe and show the project as-built.

Article 401. The licensee shall discharge from the Comtu Falls Project, a continuous minimum flow of 4 cubic feet per second (cfs) over the dam spillway, or inflow to the project, whichever is less. When the flow of the Black River, as measured whichever is less. When the flow of the Black River, as measured immediately upstream of the project dam, is less than 44 cfs, the immediately upstream of the project dam spillway. These flows licensee must pass all flow over the dam spillway. These flows any be temporarily modified if required by operating emergencies heyond the licensee, the Vermont Agency of Environmental Conservation, and the U.S. Fish and Wildlife Service.

Article 402. Prior to any future construction at the project, the licensee shall consult with the Vermont State Historic Preservation Officer (SHPO) about the need for cultural resources studies or a management plan. Documentation of the nature and extent of consultation, including a cultural resources management

plan, a schedule to conduct any necessary investigations before construction, and a copy of a letter from the SHD accepting the construction activity. The licensee shall make funds available in a reasonable amount for any required work. If any previously unrecorded archeological or historic properties are encountered during construction or development of any project works or other facilities at the project, construction activities in the vicinity shall be halfed, a qualified archeologist shall be consulted to determine the eligibility of the properties for listing on the not untigation. If the licensee and the SHPO cannot ayree on the on mitigation. If the licensee and the SHPO cannot ayree on the amount of money to be expended for specific project archeological or historical purposes, the Commission reserves the right to require the licensee to conduct, at the license's own expense, any such work found necessary.

ronmental values of the project. For those purposes, the licenses shall also have continuing responsibility to supervise and control the uses. An occupancies for which it jrants prinision, and to monitor the use of, and ensure compliance with the covenants of the instrument of converance for, any interests that it has conveyed under this article. If a permitted use and occupancy violates any the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, certain other types of use and occupancy, without prior Commission proposed use and occupancy is consistent with the purposes of protecting and embanding the scenic, recrestional, and other envithe licensee shall have the authority to grant permission cettain types of use and occupancy of project lands and waters if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-com-In accordance with the provisions of this lic esee for protection and enhancement of the project's scenic, condition of this article or any other condition imposed by the and to convey certain interests in project lands and waters for approval. The licensee may exercise the authority only if the plying structures and facilities. Article 403. (a) article, for.

(b) The types 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) noncommercial 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 singlefamily type dwellings; and (3) embankments, bulkheads, retaining

walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other text and enhance the project's accent, require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which th 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 valls, the licensee shall: (1) inspect the site of the proposed valls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation of the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and vould not change the basic contour of the reservoir shoreline. To would not change the basic contour of the reservoir shoreline. To would not change the basic contour of the reserver shoreline. To would not change the basic contour of the reserver shoreline. To would not change the basic contour of the reserver shoreline. To would not change the basic contour of the reserver shoreline. To would not change the basic contour of the reserver the stablish 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 use and not require the licensee to fils a description reserves the right to require the licensee to fils a description for the standards, pudelines, 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 fort (1) replacement, expansion, realignment, or maintenance of briddes and roads for which 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 structures within the project boundary; (7) submarine, overhead distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor distribution lines (69-kV or less); and (8) water intake or pumphor facilities that do not extract more than Januery Ji of each year; the licensee shall file three copies of a report briefly year; the use for which the interest was 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 of 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) sever or effluent lines that discharge into project waters, for which all necessary federal and state water quality certificates or permits have been obtained;

- 5 -

- 9 -

(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 election of support structures that a proved support structures that can approve the project bave boundary. For which all necessary federal and structures approved necessary for an interessary federal and structures (5) rescretational development consistent with an approved for a marina: (6) rescretational development of support structures of and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acress or reast (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project rest of project and (7) on any calendar development to the project project rest in project and (11) no ancre than 50 total acres of project lands for aching for a structure at least 75 feet, measured horizontally, from the edge of the project the project lands for aching for a structure at least 75 feet, measured horizontally, from the edge of the project the project lands for aching for a first and the project lands for a structure at least 75 feet, measured and interest in project and (11) no ancre than 50 total acres of project lands for aching for a structure at least 45 days before conveying any interest in project and the project lands for ach project lands for a structure and restructure and briefly describing to the project lands may be used by the project lands for a structure any federal or state approved to find date. For any convey the interest and briefly describing the project stands may be used interest and briefly describing to the interest and briefly describing the project stands for a state approved to the proposed use. Unless the lifentity of any federal or state approval, the interest the identity of any federal or state approved to the proposed use. Unless the lifentity describing the standary for the proposed use. The state approves the identity of any federal or state approves t

(e) The following additional conditions apply to any intended conveyance under paragraphs (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 vesources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (1) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (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. (4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands (project boundary maps) reflecting excluded from the project only conveyed under this article will be excluded from the project only purposes, such as obstation and maintenance, flowage, recreation, purposes, such as obstation and maintenance. Absent extraordinary control, including shoreline aesthetic values. Absent extraordinary exticle 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.

(F) This order is issued under authority delegated to the Director and is final unless appealed under Rule 1902 to the Commission by any party within 30 days from the issuance date of this order. Filing an appeal does not stay the effective date of this order or any date specified in this order unless otherwise ordered by the Commission. The licensee's failure to appeal this order shall constitute acceptance of the license.

Hydropower Licensing Richard T. Hunt Director, Office of

- 1 -



TAB 4

401 Water Quality Certification (WQC) 1989

WATER QUALITY CERTIFICATION AMENDMENT

(P.L. 92-500, Section 401)

In the matter of:	Comtu Falls Corporation RR 2 Box 2436
	Application for Amendment to Comtu
	Falls Hydroelectric Facility Water
	Quality Certification

The Water Quality Division of the Vermont Department of Environmental Conservation (the Department) has reviewed a request for amendment filed by letter dated December 1, 1988 from Comtu Falls Corporation (the applicant) and finds:

- The applicant proposes to replace the existing 250 kw turbine/generator unit with a 400 kw unit. The second smaller 150 kw unit approved in a certification amendment issued October 11, 1983 will not be installed.
- 2. The existing Francis unit has a hydraulic capacity of 105 cfs to over 200 cfs. The new Kaplan unit has a capacity of 188 cfs at 30 feet of head and 83% efficiency and can operate with flows as low as 40 cfs. Flows will, therefore, have to exceed 44 cfs (turbine capacity plus spillage) in order for the system to be on line. The project reconfiguration with the smaller 150 kw unit was to have been able to generate down to 44 cfs also.

3. The only exterior work contemplated is the replacement of the existing draft tube with an elbow draft tube.

CONDITIONS

Based on its review and findings, the Department hereby amends the Comtu Falls Hydroelectric Facility Water Quality Certification by adding Conditions F and G and reaffirming the operative conditions of the original certification and the certification amendment of October 11, 1983:

- A. An instantaneous streamflow of no less than 0.5 inch of water shall be discharged over the full length of the dam crest at all times when available from inflow to the impoundment. When instantaneous inflows fall below 44 cfs, all inflows to the impoundment shall be passed over the dam. The facility shall be operated in a strict run-of-the-river mode, with instantaneous outflows equaling instananeous inflows.
- B. The applicant shall not discharge petro chemicals, wet concrete, or debris to State waters during construction or operation of the facility. Any debris removed from the spillway or trash racks shall be properly disposed of off-site.

- 3 -

- C. Any significant changes to the project must be submitted to the Department of Environmental Conservation for prior review and approval.
- D. Any impoundment desilting shall be carried out in accordance with the Agency of Natural Resources Desilting Policy.
- E. If, at any time in the future, the Department finds that operation of this facility causes substandard water quality in the Black River, the Department may require changes to the operational procedure as necessary in order to insure that the standards are not violated.
- F. When requested by the Department of Fish and Wildlife as part of plans for the restoration of Atlantic salmon to the Connecticut River watershed, the applicant shall submit a plan for downstream passage of Atlantic salmon to the Department of Fish and Wildlife for approval. This plan shall include the design of the screens, trashracks or other such devices and the means for providing downstream

- 4 -

passage of fish at the dam. The project shall be modified and operated consistent with the approved passage plan within one year of the Department of Fish and Wildlife's request. The applicant shall file a copy of the approval letter and approved plan with the Department within two weeks of the Department of Fish and Wildlife's approval.

G. A waiver of Condition A is allowed where the applicant must draw the pond to perform flashboards repair. Under such circumstances, the drawdown is not to exceed 6 inches below the dam crest, and the project must release a minimum instantaneous flow of 95 cfs (0.5 cfs/sq. mi.) during the refill period. No other type of drawdown is to occur without prior approval by the Department.

Dated at Waterbury, Vermont this 12 day of Kunuary, 1989.

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Patrick Parenteau, Commissioner Department of Environmental Conservation

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TAB 5

FERC Amendments and Exemptions

- 1. Fish Passage
 - 1.1. Draft Environmental Assessment 1995
 - 1.2. Agency Comments on Amendment (3 comment letters)
 - 1.3. FERC Final Environmental Assessment 1995
 - 1.4. FERC Order Amending License Fish Passage Construction 1995
 - 1.5. FERC Order Approving Fish Passage Design Drawings
- 2. Capacity
 - 2.1. FERC License Amendment Capacity 1995
- 3. Form 80
 - 3.1. FERC Form 80 Exemption 1997 and Supporting Photos

UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Comtu Falls Associates

Project No. 7888-906 Vermont NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL ASSESSMENT

(January 20, 1995)

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission's (Commission's) regulations, 18 CFR Part 380 (Order 486, 52 F.R. 47897), the Office of Hydropower Licensing has reviewed the down stream fish passage plan for the Comtu Falls Project, located on the Black River, in Windsor County, Vermont, and has prepared a stream fish passage plan for the Comtu Falls Project, located on the Black River, in Windsor County, Vermont, and has prepared a staff annityzed the potential impacts and benefits from the staff annityzed the potential impacts and benefits from the and a Commission staff alternative. The Commission staff's alternative would provide the intended benefits to the fish resources of the Black Hver, with the Commission staff's plan being less costly. The Commission staff concluded that approval being less costly. The Commission staff concluded that approval being less costly. The Commission staff concluded that approval being less costly. The Commission staff concluded that approval being less costly in the Dassage plan would not constitute a human environment.

Copies of the DEA are available for review in the Public Reference Branch, Room 3104, of the Commission's offices at 941 North Capitol Street, N.E. Washington, D.C. 20426. Please submit any comments within 30 days from the date of this notice. Any comments, conclusions, or recommendations that draw upon studies, reports, or other working papers of substance should be supported by appropriate documentation. Comments should be addressed to Lois D. Cashell, Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E. Washington, D.C. 20426. Please affix Project No. 7888-006 to all comments. For further information, please contact Robert Grieve at (202) 219-2655.

Lois D. Cashell Secretary

FEDERAL ENERGY REGULATORY COMMISSION WASHINGTON D.C. MILLS

To the Agency/Party Addressed:

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission's regulations, 18 CFR Part 380 (Order No. 486, 52 F.R. 47897), the Office of Hydropower Licensing staff reviewed the proposed fish passage Plan, and propered the attached Draft Environmental Assessment (DEA). The DEA contains staff's analysis of the onvironmental impacts of the propensi and concludes that approval would not constitute a major federal action significantly affecting the quality of the human environment. Flease submit any comments within 30 days of the date of this letter. Comments should be addressed to Lois D. Cashell, Secretary, Federal Energy Regulatory Commission, 825 No. Capitol Street, N.E., Washington, D.C. 20426. Please affix the project number to all comments.

sincerely. \langle Z

J. Mark Robinson Director, Division of Project Compliance and Administration

Enclosure: Draft Environmental Assessment

DC--A--40

APPLICATION TO INSTALL DOWNSTREAM FISH PASSAGE FACILITIES AT THE COMPU FALLS PROJECT

COMTU FALLS PROJECT

FERC Project No. 7888-006 Vermont

TABLE OF CONTENTS

Sec	ction Pa	apr
Α.	APPLICATION	12
â	PURPOSE AND NEED FOR ACTION	_
ċ	PROPOSED ACTION AND ALTERNATIVES	
ò	CONSULTATION,	
ei.	AFFECTED ENVIRONMENT	
ş	ENVIRONMENTAL IMPACTS5	
ΰ	ISSUES AND RECOMMENDATIONS7	10
Н.	CONCLUSTIONS	
ţ.	LITERATURE CITED11	
÷.	LIST OF PREPARERS11	
	LIST OF FIGURES	
0 4	jure 1. Licensee's proposed downstream fish passage3 facility	

Federal Energy Regulatory Commission Office of Hydropower Licensing Division of Project Compliance and Administration

January 18, 1995

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DRAFT ENVIRONMENTAL ASSESSMENT

FEDERAL ENERGY REGULATORY CONHIGHEON OFFICE OF HYDROEOFER LICENGING DIVISION OF PROJECT COMPLIANCE AND ADMINISTRATION

Project Mame: Comtu Falls Project

FERC No. 7888-006

A. APPLICATION

- 1. Application type: Proposed downstream fish passage plan
- Z. Date filed: October 25, 1994
- 3. Applicant: Comtu Falls Corporation
- 4. Water body: Black River
- 5. County and state: Windsor County, Vermont

B. PURPOSE AND NEED FOR ACTION

The licensee was required by Commission order issued September 22, 1994, to file a plan and schedule, for Commission approval, for installation of a downstream fish passage facility at the Comtu Falls Project. A downstream fish passage facility was deemed necessary to provide for safer downstream passage of outmigrating samon smolts stocked as fry upstream of the project.

The September 22, 1994, Commission order resulted from a November 5, 1993 letter from the U.S. Fish and Wildlife Service (FWS) that notified the Commission of the iry planting and passage measures at the project by spring 1995.

The Commission initiated this proceeding pursuant to its authority to require the licenses to provide a fish passage plan under standard article 11 of the project license. Article 11 states that the licenses mail. For the conservation and operate, development of fish resources, construct, maintain and operate, and comply with such reasonable modifications of 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, after notice and opportunity for hearing.

C. PROPOSED PROJECT AND ALTERNATIVES

1. Description of the proposed action.

The Comtu Falls Project includes a nowerhouse, an intake

with trashrack having 1.5-inch clear bar spacing and set at a 45 degree angle to the intake, and a dam approximately 128 feet long with 2-foot-high flathboards, situated on the top of a natural fails. The dam tapers from 5.5 feet high at its vestern end to nothing with irregular bedrock comprising the last 17 or 18 feet as it extends across the river from the intake to the east shore. The dam is classified low-hazard. The licensee proposes to replace about 33 feet of the 2foot-high flashboards adjacent to the proposed discharge weir with a 2-foot-high fixed concrete crest. A 2.5-foot-wide by 2.0foot-high discharge weir would be opened in the concrete cap at the west autment of the dam and trashrack to produce a 20-cubicfoot-per-second (cfs) flow to attract/convey outmigrating salmon smolts safely past the project (figure 1). The flow would bedrock falls below the discharge. No changes to the trashrack are proposed.

To further ensure efficient operation of the passage facility, the licensee proposes to cap 18 feet of the east edge of the dam to the height of the flashboards to cover the exposed bedrock. The remaining 74 feet of the dam would retain the 2on a straight, smooth surface, repair the would be reduced, alding in operation of the fish passage facility. The licenses further states that the additional concrete capping would allow for the future installation of a pneumatically operated rubber dam to replace the remaining flashboards

The downstream fish passage facility would be operated annually from April 1 through June 15.

S100,000.

2. Alternatives to the proposed action include the noaction alternative and the installation of a more elementary facility. No-action alternative: The no-action alternative vould require no physical changes to the project. Outmigrating salmon smolts would either traverse the project dam via any available openings from collapsed flashboard sections or would be subject to entrainment and the attendant mortality. Alternative facility design: The staff proposes a design to include an 18- to 24-inch-diameter PVC pipe that would be fitted into the flashboard section nearest the trashtack or into a collection box constructed in the same location to convey outmigrating salmon smolts to the tailwater pool. The facility would be designed to operate with a flow of at least 20 cfs. No





Stor.

changes or additions to the trashrack or remaining flashboard sections would be required.

Estimated cost of this alternative would be less than \$10,000.

D. COMBULTATION

By letter dated october 24, 1994, the licensee stated that it met at the project site with personnel from the FWS and the Vermont Department of Fish and Widdlife to review its conceptual visions for the passage facility. The licensee reports that the plan was wall received by the agencies and that the FWS stated the present intake design with angled transford was ideal for passing smolts through a with transford with 2-inch bar FWS stated similar designs with transfork with 2-inch bar spacing operated similar designs with transfork with 2-inch bar recommend that spacing on the racks be reduced to 1 inch.

Additional comments and recommendations from the requisite state and federal resource agencies will be requested on this draft environmental assessment (EA). Further, the Commission staff will contact the Vermont State Mistoric Freservation officer pursuant to Section 106 of the National Mistoric Preservation Act for concurrence with staff s conclusions regarding effects of the passage fealities on the area's historic structures. Agency comments will be reviewed prior to issuance of the final EA and final Commission action.

E. AFFECTED ENVIRONMENT

The Comtu Falls Project is located at a matural falls at river mile 4.3 on the Black River, a tributary to the Connecticut River, in Springfield, Vermont. The Comtu Falls Dam traverses the river in a v-shape and is located a short distance upstream of a highway bridge.

The project has an installed capacity of 400 kilowatts (kW) with average generation setimated at 1.300,000 kHh annually. When the project was licensed in 1986, it was estimated to have potential gross revenues of \$83,000.

Hydroelectric projects upstream from Comtu Falls and below the U.S. Army Corps of Engineers' North Springfield Dam include Gilman Dam (FERC No. 9650) and Fellows (FERC No. 9648). Projects located downstream from Comtu Falls include Slack Dam (FERC No. 8014) and Lovejoy (FERC No. 9649). Springfield, Vermont, is a small industrial town, with the Black River bordered by commercial buildings that house a bowling alley, light industry, as well as office space. Land use in the

project vicinity primarily includes urban development of the town. Recreational use is described as limited fishing. The economy of the area is influenced by light industry and small retail businesses.

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The project is located within the Springfield Downtown Historic District. The Comtu Falls Dam is historically significant bacause it is a contributing element to the District. The Historic District is listed on the Mational Register of Historic Places because of the significance to the town in the industrial development of the region. The Comtu Falls Dam is also listed an the National Register of Historic Places, with its setting and age as its contributing elements. There are no known prehistoric sites in the area.

Significant viaual features of the area include the Historic District and water falling over a series of small dama as it flows through downtown Springfield.

The Black River is classified as a class B coldwater habitat stream and supports an assemblage of warm and coldwater fish species such as stocked and wild populations of brown and brook trout, stocked rainbow trout, smallmouth bass, rock bass, suckers and various minnow species.

Since 1967, there has been a cooperative federal-rate undertaking to restore Atlantic saimon to the connecticut River and selected tributaries. As part of that endewor, the Black River has been targeted as a tributary of the connecticut River with suitable nursery habitat, which could be used to produce non-natel salmon smolts through a fry-release program. By letter for some section and cover a static transformer and selecter intervet and for an a contract through a fry-release program. By letter non-natel salmon fry were stocked in a 4.5-mile reach of the Black Atlantic salmon fry were stocked in a 4.5-mile reach of the intervete and federal program to restore Atlantic salmon to the from ention the North Springfield Dam and Fellowe, and 12,533 were stocked formy in the Black River is superted to the the stocking of fry in the Black River is superted to the the stocking of fry in the Black River is superted to the the stocking of fry in the Black River is superted to the the stocking of fry in the Black River is superted to the 1993 fry stocking of fry in the salmon restoration effort. Smolt from the 1993 fry stocking of 1995.

T. ENVIRONMENTAL IMPACTS

 Licensee's proposed facility: Construction of the licensee's proposed facility would require drawdown of the impoundment and precautions taken to ensure that no concrete is allowed to enter project waters. Construction activities vould increase noise levels and air-borne marticulate matter in the -

immediate project area. The 4-cfs minimum flow, released as a 0.5-inch sheet flow over the dam, would be stopped or rerouted during the estimated 3-month construction pariod, creating an adverse effect on the eachtetics of the fails. These impacts would be short term and minor.

Operation of the licensee's proposed downstream fish passage facility would not result in advarge environmental impacts to fish, wildlife, or water quality in the Black River and would facilitate the migration of salmon smolts past the project area. Entrainment and any resultant turbine mortality would be largely eliminsted would allow for more efficient operation of the facility and flashboard maintenance. Since the project dam is on the National Register of Historic Places, the proposed facility's effect on the listed property must be considered. The licensee's proposal to physically alter the dam, specifically by constructing a 2-foothigh by 33-foot-long concrete cap on the west and of the dam, may have a similar cap 18 feet long on the east end of the dam, may have an impact on the historic and aesthetic resources by introducing an intrusive alement into the setting. These impacts could be mitigated through careful design of the cap to ensure that it blends, as much as practical, with the surrounding atructures. Diends, as much as practical, with the surrounding atructures. The this case the licensee is required to meintain a 4 cfa minum flow over the dat op protect the water quality and aesthetic estimate of the site, including the falls at the base of the dam is flow over the date vould be covered by this veil of water. Because the concrete cap would be covered by this veil of water. The licensee's proposal also requires construction of a plunge pool on the bedrock below the bottom of the dam. While this pool would not impact directly on historic structures, it may impact on the aesthetic resources. The plunge pool would be a concrete-walled pool which would be constructed less than 4 feat from the base of the dam on the west eide. The pool would be filled to a 3-foot dapth with the 20 cfe conveyance flow during operation, proximity to the bridge at the corner of the dam, and the configuration of the bridge at the corner of the dam, and the configuration of the bridge at the corner of the dam, and the configuration of the bridge at the corner of the dam, and the configuration of the bridge at the corner of the dam, and the configuration of the bridge structure. The pool would be readily visible from the bridge structure. The pool would also not adversely affect the waterfall below the dam, which is a major aethetic element of the Mistoric District, because opsration of the plunge pool will not alter the flow or veil of water being passed over the dam.

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2. Alternative design: construction of the staff's alternative design would not require the extensive concrete work as that of the licensee's with the attendant precautions required. The impoundment would likely have to be lowered to allow workers to construct the antrance and secure the pipe to noise levels, but they would be of short duration and end with completion of construction.

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As would be the case for the licensee's proposal, implementation of staff's alternative would also introduce an intrustve element to the environmental setting. The downstream passage pipe, however, would be located at the extreme end of the dam and fails and, therefore, would not detract from the setthetic and historic value of the setting if the structure were colored to blend with the surrounding structures. The pipe would also not adversely effect the waterfall below the dam, which, as steed previously, is a major assthetic element of the Wiltoric bistrict, because the flow or well of water being passed over the dam would not be altored.

Since no material changes to the use of flashboards would occur under this alternative, no additional upstresm effects during high flow events are anticipated. 3. No-action alternative: The no-action alternative would have no effect on the current historic or visual properties associated with the project. No impacts to project flows or water quality would occur. However, this alternative would provide no protection to migrating smalls.

G. ISSUES AND RECORDENDATIONS

1. Permanent Downstream fish passage facility

By letter dated becember 10, 1993, we notified the licensee of the FWS's request for downstream fish passage facilities and requested its cooperation in providing a plan for such or reasons for disagreement. We noted in our letter that downstream fish passage facilities would be needed to protect the malmon smolts from the potential effects of entrainment and that typical inch clear specing between bars, and a byges soluce to convey smolts to a plunge pool below a project dam. We further noted that facility design is highly site-specific and would require consultation with state and federal fishery agencies.

Subsequent to our December 10, 1993 letter, the licensee expressed opposition to installing a facility as we requested. In a December 31, 1993 response, the licensee stated it believes the state and rederal cooperative effort to restore Atlantic salmon to the Connectiont River basin has been a failure to date

present management actions do not follow the 1982 strategic plan for restoration of Atlantic salmon to the Connecticut River basin (stoller, 1982) or the Atlantic Salmon Restoration in New England Final Environmental Impact Statement 1989-2021 (PwS, 1999); and fry stocking appears to be inconsistent, with no apparent biological reasons for stocking rates or distribution between wild and non-matal streams (i.e., Black River).

By letter dated January 24, 1994, the FWS provided the rationale for salmon stocking in the Black River, the conclusion of Which is the Black River is now a component of the salmon restoration affort and would continue to be stocked annually with successful salmon restoration in the Connecticut River basin, produce smolts and future returns; that the Black River basin, produce smolts and future returns; that the Black River above salmon fry had recently become available in sufficient quantities to stock additional tributaries. The licensee apparently does not object to the Commission's September 22, 1994 order where we find that a fish passage downstream from above Comtu Palla. The licensee objects to the facility is needed for the salmon sholts to migrate safely downstream from above comtu Palla. The licensee objects to the restoration of fort that the licensee considers imprudent or ineffective. As the Commission has stated, it is not the Commission's function to determine the overall appropriate for us to determine whether a connection exists between the interstate and federal program to restore Atlantic salmon to the connectiont River basin and the planting of salmon upstream of have adverse effects that outweigh the benefit to the fishery in question.

The Connecticut River Atlantic Salmon Commission has been pursuing increasing its egg supplies and incubation capabilities so that a sufficient supply of fry is available for stocking all the identified salmon habitat in the connecticut River basin in its attempt to increase adult returns. Fry stocking in the Black River is a component of that effort. Thus, we find that installation of downstream fish passage facilities at projects along the river is appropriate and warranted to minimize that fraction of mortality over which we exercise some control. While a licensee may groue that adult returns that can be offer the rowerli restored in the Black River would play a minor of eggs from returning adults.

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With respect to the licensee's proposed downstream fish passage plan, we find it adequate and, even without complying with FWS's trashrack bar specing policy, fully capable of providing increased survival of migrating smolts. The dar would be nodified to permit more afficient maintenance of finshboards and control of operation of the passage facility. We also note here that the design, while providing an apparently efficient facility, would also provide for the future addition of an inflatable dam section for the remaining flashboards, inflatable dam section to replace the remaining flashboards, Staff's proposed facility would be a less extensive facility, described under Section C as a collection facility attached to an 18- to 24-inch-diameter PV pipe at the flashboard section nearest the traihrack to convey outmigrating salmon suchts to the tallwater pool, thereby eliminating most concrete work. Existing flashboard repair procedures, which could affect the efficiency of the facility, would not be altered. This simplified facility would provide reasonable protection at significantly less cost to the licensee as outlined below.

2. Dam safety and economics

With respect to effects of the proposed facility on dam safety, the length of spillway controlled by flashboards would be reduced. As flashboards are designed to fail under cartain high inferred that the replacement of 51 feet of flashboards with permanent concrete capping, under extreme flow conditions the dam is steep with a fails or cascade not far upstream and is bordeared by industrial buildings. Thus, under this alternative with at least 74 feet of flashboards not far upstream and is with at least 174 feet of flashboards moder the stream and is bordeared by industrial buildings. Thus, under this alternative increases in upriver effects during high flow events are not

With respect to the cost of the facility in relation to the project benefits, the licensee's proposed facility would result in a levelized cost of from 57,900 to 510,500 per year for the remaining term of the license. Given that staff setimates that the operation and maintenance upsts for the hydroelectric facility to be approximately \$9,300, the cost of the licensee's licensee's operating expenses. Operation and maintenance the of the fish passage facility would essentially double the licensee's operating yearses. Under the staff's alternative, no material changes to the use of flashboards would occur and, therefore, no additional upstream effects during high flow events are anticipated. The staff's alternative would result in a levelized cost of \$1060 per year for the remaining term of the license, with minimal operation costs. Maintenance costs are also expected to be low.

but could be more than with the licensee's proposal as the pipe and its connecting facility would be affected more by ice and

1. Interim downstream fish passage facility

Naither the licensee's proposed facility nor that of staff would be completed until after the 1995 spring amout augration, as conditions conducive to constructing the facility will not occur until after river river submide. Thus, the licensee should be prepared to institute interim measures to provide some protection to the smolt expected to angrate past the project in minimum, of removal of a 2.5-foot section of flashboard at the wast end of the dam. While we do not aver that this action would provide a measure of protection for this first planting of fish provide a measure of protection for this first planting of fish provide a measure of protection for this first planting of fish provide the project, and provide the licensee sufficient time to propare for the installation of a permanent facility.

F. CONCLUSIONS

The license was issued for the Comtu Falls Projact on the premise that the project would not have an adverse impact to the Connecticut River basin interstate-federal Atlantic salmon restoration program. Provision were included in the license instrument to ensure such. The Commission used those provisions by initiating this proceeding to ascertain whether the license should provide a domatress fish passage focility at the project. Of the current submon restoration effort as it exists in the Black River drainage. He reviewed the licensee's proposed facility and find that It would more than adequately protect outmigrating salmon. Staff's facility would be less sophisticated, while offering the requisite protection to the fishery at less cost to the licensee. Distoric integrity of the Springfield bomtown Historic District because construction of either facility would not change to Register. Assthetic impacts can be mitigated through careful design, including the cap or the PVC pipe to the surrounding environment. Until either facility can be constructed, we conclude that interim measures should be effectuated. We further conclude that construction and operation of either of the downstream fish pessage facilities discussed herein vould not constitute a major federal action significantly affecting the quality of the human environment.

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LITERATURE CITED

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Stolts, L.W. 1982. A strategic plan for the restoration of Atlantic salmon to the Connecticut River, revised 1982. U.S. Fish and Wildlife Service, Department of the Interior, Laconia, New Hampshire.

U.S. Fish and Wildlife Service. 1989. Final environmental impact statement: Restoration of Atlantic salmon to New England rivers. Region 5, Newton Corner, Massachusetts.

J. LIGT OF PREPARENS

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United States Department of the Interior

FISH AND WILDLIFE SERVICE New England Field Offices 35 FEB 21 AM 10: 52 22 Bridge Street, Unit #1 Concord, New Hampshire 03301-4986 DERAL ENERGY

REF: FERC No. 7888-00 Comtu Falls Corporation

February 14, 1995

Ms. Lois D. Cashell, Secretary Federal Energy Regulatory Commission 825 North Capitol Street, N.E. Washington, DC 20426

PROPERTY OF THE PUBLIC REFERENCE ROOM DO NOT REMOVE

Dear Ms. Cashell:

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This is in response to the Commission's Order on Rehearing, Establishing Additional Hearing Procedures, and Extending Deadline, dated January 18, 1995, and the Notice of Availability of Draft Environmental Assessment and the letter from the Director, Division of Project Compliance and Administration (DPCA), both dated January 20, 1995. These documents requested comments on the DPCA's Draft Environmental Assessment (EA) and any other comments on the need for downstream fish passage at the Comtu Falls Hydroelectric Project, located on the Black River in Windsor County, Vermont.

NEED FOR DOWNSTREAM PASSAGE

In the order, the Commission states that it will entertain further comments and recommendations regarding the need for downstream fish passage at the project. We concur with the January 18, 1995 Order that it is not the Commission's place to analyze the ments of or management decisions made as part of the restoration program. We have already provided the basis and justification of downstream passage needs at the project in previous correspondence that was cited in the Draft EA. There has been no new information or change in the facts of this case to warrant substantial additional response on the need for passage at the site. The following facts remain:

- Atlantic salmon fry have been stocked by the Vermont Department of Fish and Wildlife into the Black River upstream from Comtu Falls as part of the salmon restoration program for the Connecticut River Basin.
- o Fry were also stocked in 1994 and will be again this year and in subsequent years.
- From one to three years after stocking, salmon smolts will emigrate from the Black River to the ocean.

- Smolts must pass safely through numerous hydro projects including the Comtu Falls Project. Therefore, safe passage of smolts at each facility is critical to reaching the ocean.
- The Comtu Falls Project does not have any downstream passage devices in place.
 Without such devices, turbine passage is likely, resulting in unacceptable injury and mortality.
- All other hydro projects on the Black River and on the Connecticut River downstream from its confluence have downstream passage in place or are involved in developing * passage measures.
- o The Commission has consistently supported implementing downstream fish passage as part of original licenses, relicenses, and post-license actions at projects on Connecticut River tributaries including the relicensing of the Cavendish Project (Project No. 2489) on the Black River upstream form the project, and projects on the Passumpsic (Project Nos. 2396, 2397, 2399, 2400) and Sugar (Project No. 9088) rivers.

DRAFT ENVIRONMENTAL ASSESSMENT

The Draft EA assesses the need for downstream passage at the site to protect emigrating Atlantic salmon smolts, and evaluates the downstream passage design submitted by the licensee and the Commission staff's alternative design.

Licensee's Proposal

The Commission reviewed the proposal submitted by the licensee prior to receipt of our comments and recommendations on these designs.

We agree that the proposed facility would be "capable of providing increased survival of migrating smolts" as stated in the Draft EA. We cannot, however, fully concur with the conclusion that entrainment and turbine mortality would be "largely eliminated" since the designs do not incorporate all the components that we would normally recommend for such facilities.

Although the design proposed by the licensee incorporates many of the standard provisions we recommend for these facilities, such as a surface bypass weir passing 2-foot depth of flow and angled trashracks, the trashrack spacing of 1.5 inches and the inability of the facility to operate without flashboards in place do not correspond to criteria we would normally recommend for such projects. In addition, although we can accept the proposed 2.5-foot-wide bypass weir, we would normally prefer a 3-foot wide opening to minimize boundary effects and vena contracta that effectively reduce clear bypass opening by 6 inches on each side.

We note that the Draft EA considers all the cost of the licensee's proposal as part of the passage facility. The modifications to the spillway, though helpful in facilitating more rapid flashboard installation beneficial to bypass operations will also assist the licensee in all flashboard installation procedures, thereby improving project operations. Therefore, some of the costs of the licensee's proposal is passage facility should be applied to operations and maintenance improvements to the project.

The proposed facilities would not be operable at low headpond levels that result after flashboard failure and prior to flashboard reinstallation. The licensee proposes modifications to the spillway in order to simplify flashboard installation procedures. This would reduce the time when the bypass would be rendered less effective or completely ineffective due to low headpond. An alternative that was not analyzed is the notching of the existing dam structure to a depth of 18 inches to 2 feet, and installation of removable stoplogs, that would allow for bypass depth adjustments as headpond levels change. The final EA should assess the time that the project would operate under low headpond levels with or without the licensee's proposed spillway modifications and should assess the notch alternative if extended periods of operation with a low headpond would occur.

Staff's Proposal

We have considered the proposal by staff for a more modest downstream passage facility that replaces the plunge pool and conveyance over the dam face with a bypass structure that transitions to a pipe discharging at the base of the falls.

We do not oppose the concept of using a pipe to convey fish to the base of the falls. However the Draft EA provided no design details or drawings, so it is impossible to fully critique this alternative.

Based on our understanding of this alternative we have some concerns. As discussed above, the licensee's proposed modifications at the spillway are designed to allow for more rapid reinstallation of flashboards and recovery of impoundment levels. In order for the bypass to adequately attract smolts from the turbine intakes, the impoundment level must be at or near the top of the flashboards. An assessment of the additional time that the project would be operated during the passage season without a full impoundment under staff's proposal versus under the licensee's proposal should be undertaken before this alternative is approved. In addition, we are concerned about the durability of the pipe system to damage by ice and debris. This issue also needs to be addressed more fully through actual designs.

Salmon Stocking

The Draft EA references numbers of salmon fry and part stocked into the Black River in 1993, but not subsequent years. In 1994, a total of 5,979,000 salmon fry were stocked throughout the Connecticut River Basin, with 209,200 of these stocked into the Black River. Assuming no unforescen problems, greater numbers of fry are expected to be stocked in 1995.

We note that a revised Strategic Plan for the Connecticut River salmon restoration program is being drafted. Although not yet fully completed and approved, the plan is expected to codify the current management practice of expanded fry stocking and stocking of the Black River upstream from the project.
Conclusions

We concur with the conclusions in the EA that installation of fish passage facilities at the project is appropriate and warranted, and that interim facilities are need in 1995. We also concur with the proposed interim measure to remove a flashboard section adjacent to the intake. We encourage the Commission to expedite approval of and order the implementation of interim passage measures by April 1.

Given possible alternative designs and design details, the Commission should require the development of design drawings of permanent facilities in consultation with this office. Depending upon final designs, monitoring of the effectiveness of the facilities may be needed to determine bypass efficiency and/or safety and survival of fish that use the facility.

Thank you for this opportunity to comment. If you have any questions regarding these comments please contact John Warner at (603)225-1411.

Sincerely yours,

William & Heidermyer

William J. Neidermyer Acting Supervisor New England Field Offices

cc: Director, DPCA, FERC RO/Engineering - Orvis VDFW - Wentworth VDFW/Springfield - Cox/McMenemy CRASC Conte Refuge Planning Team ES: JWarner:2-14-95:(603)225-1411





State of Vermont

Department of Fish and Wildlife Department of Forests, Parks and Recreation Department of Environmental Conservation State Geologist Natural Resources Conservation Council AGENCY OF NATURAL RESOURCES OFFICE OF THE SECRETARY 103 South Main Street Center Building Waterbury, Vermont 05671-0301

February 15, 1995

COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT

FERC Project No. 7888-006 Comtu Falls Project, Comtu Falls Corporation Black River, Vermont

Ms. Lois D. Cashell, Secretary Federal Energy Regulatory commission Mail Stop: DPCA, HL-21.1 825 North Capitol Street, N.E. Washington, DC 20426

Dear Ms. Cashell:

This letter is in response to the Commission's Notice of Availability of Draft Environmental Assessment (draft EA), and the letter from the Director of Division of Project Compliance and Administration, both dated January 20, 1995, requesting comments on the draft EA for the Comtu Falls Project, located on the Black River in Windsor County, Vermont.

Section C. 2.: Alternatives to the proposed action - Alternative facility design

In this section, the draft EA outlines the alternative actions investigated for downstream fish passage at Comtu Falls. Alternative designs to that proposed by the applicant that could be effective for downstream fish passage may include the use of a pipe conveyance structure, but also include a notch in the dam below the dam crest and near the intake. (The needed dimensions of such a notch are defined by the US Fisb and Wildlife Service).. The installation of removable stoplogs at this notch could provide effective

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Secretary Cashell February 15, 1995 Page 2

passage even if the flashboards were not in place. Spring flows on the Black River will likely take out the flashboards and the effectiveness of passage during the spring passage period (or any passage period when the boards are out) could be compromised. The final EA should assess the notch alternative.

The FERC proposed alternative of a pipe conveyance did not include detailed designs or diagrams and therefore it is difficult to assess the proposed alternative's potential effectiveness. This proposed alternative may provide effective passage, but it is not clear how the pipe conveyance will operate when the flashboards are out, if debris gets lodged in the pipe, or if the pipe sustains damage due to ice and river debris

Section F.: Environmental Impacts

In this section, the draft EA evaluates that the applicant's proposal and the alternative facility would not affect the aesthetic element of the Historic District, because the flow or veil of water being passed over the dam would not be altered. The final EA should address whether or not the 0.5 inch spill would be maintained during the passage period with the additional passage flow requirements.

Section G. 2 .: Dam safety and economics

In this section, the draft EA discusses the levelized costs of the licensee's proposed fish passage facility. The licensee has proposed to construct downstream fish passage consisting of a 2.5 foot by 2 foot opening in the flashboards at the corner of the dam near the trashrack allowing for an attraction/conveyance flow of 20 cubic feet per second and a plunge pool constructed on the natural bedrock falls. The licensee's design plans also include a 33-foot-long concrete cap for the west end of the dam permanently replacing flashboards in this area, a 18-foot-long concrete cap on the east end of the dam permanently replacing flashboards, and additional construction to the remaining 74 feet of dam crest to create a smoother surface upon which the flashboards are affixed. The applicant sent a letter to FERC dated October 24, 1995 which described this construction intimating that this construction would make flashboard reinstallation easier on the remaining 74-foot-long dam section and was preliminary preparation for future installation of a pneumatically operated rubber dam. The proposal by the applicant appears to be including the first phase of project upgrade (either the potential addition of a rubber dam or the decreased incidence of flashboard loss). FERC has computed the levelized costs for this construction as essentially doubling the licensee's operating expenses and FERC has attributed all these costs in the draft EA to fish passage alone.

The Vermont Agency of Natural Resources (VANR) disagrees that all levelized costs associated with this proposal should he attributed to fish passage. The construction Secretary Cashell February 15, 1995 Page 3

upgrades proposed by the applicant will benefit the project efficiency and therefore some of the costs should be attributed to operations and maintenance improvements to the project. These upgrades will assist in the efficiency of fish passage on the occasions when flashboard replacement and the fish passage period coincide.

General comments

The VANR concurs with the conclusions in the draft EA that the installation of fish passage facilities at Comtu Falls is appropriate and warranted. The VANR also concurs that interim downstream fish passage is needed in the spring of 1995 and that the removal of a section of flashboard at the west end of the dam and adjacent to the intake is a reasonable interim proposal.

The final EA should address the alternative designs referred to in this letter and FERC should require the development of the design drawings of permanent facilities to occur with consultation from the New England Field Offices of the US Fish and Wildlife Service. Monitoring of the effectiveness of the passage facilities may be needed.

Additional comment on installation of permanent fish passage

This comment relates to a statement made in the FERC order dated January 18, 1995 on establishing additional hearing procedures and extending the deadline for installation of a permanent fish passage facility at Comtu Falls. In the discussion section, FERC comments that the Commission is "aware of the fact that the Comtu Falls has historically blocked upstream migration of Atlantic salmon ...". There is no specific evidence that Comtu Falls was a bistoric natural barrier to Atlantic salmon migrating up the Black River. The Agency expects that salmon may bave been able to ascend these falls under conducive flow conditions. The Agency understands that the issue of natural passage does not bear on the passage decision, but wisbes to clarify the record on this matter.

Secretary Cashell Pebruary 15, 1995 Page 4

Thank you for this opportunity to comment on the draft environmental assessment of downstream fish passage at Comtu Falls. If you have any questions regarding these comments please contact Cheryl Kieffer at (802) 241-3700.

Sincerely,

Stephen B. Sease Planning Director

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STATE OF VERMONT AGENCY OF DEVELOPMENT AND COMMUNITY AFFAIRS

DIVISION FOR HISTORIC PRESERVATION Preserving Vermont's historic, architectural and archeological resources

March 21, 1995

Mr. J. Mark Robinson Federal Energy Regulatory Commission Washington D.C. 20426

RE: Comtu Falls Project, Vermont. FERC No. 7888-006.

Dear Mr. Robinson:

Thank you for your letter regarding the Comtu Falls project, Springfield, Vermont. The letter is undated but it was received by the Division on January 23, 1995. The letter requests the Division's comments pursuant to Section 106 of the National Historic Preservation Act.

The Division has reviewed your finding of "No Effect" pursuant to 36 CFR 800. 5 (b) and does not agree with this finding. As Giovanna Peebles, on my staff, has discussed with Ms. Heather Campbell, on your staff, in detail, the project will alter a dam listed as a contributing historic structure within the Springfield Historic District. After applying the criteria of effect under 36 CFR 800.9, the Division concludes that altering the historic dam will result in an effect but that the effect will not be adverse, as long as certain conditions are met. Such conditions include (1) documentation of the dam prior to project implementation, as outlined below, and (2) ensuring that rehabilitation and alterations to the property meet the Secretary of the Interior's Standards.

Documentation Requirements for the Dam:

1) 10-12 (8" X 10") archival quality photographs of the structure, including setting, site context, principal elevations, details; all photos will be labeled on the back in pencil with relevant descriptive information;

2) Copies of historic views, if available;

3) Written report that includes historic information about the dam (including date built and dates of any previous alterations); narrative description of the dam (size, form, materials, details); and detailed description of proposed project; and

Mr. Robinson March 21, 1995 Page 2

4) Site Plan.

5) Original photographic negatives will be submitted to the Division. Duplicate packages of the above information (including original 8 X 10 photographs, but excluding the negatives) will be submitted to the Vermont Historical Society Library (Montpelier) and the Springfield Historical Society..

Based on Ms. Peebles' phone conversation with Ms. Campbell, FERC does not object to the Division's determination of No Adverse Effect and the need for documentation prior to commencing the project.

To assist the Licensee, enclosed is a list of qualified consultants who can prepare the documentation.

The Division commends Ms.Campbell for her diligence in ensuring FERC's compliance with Section 106 and her continued cooperation during project reviews.

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Sincerely,

Eric Gilbertson Director/Deputy State Historic Preservation Officer

AGENCY OF DEVELOPMENT and COMMUNITY AFFAIRS



DIVISION FOR HISTORIC PRESERVATION Preserving Vermont's historic, architectural, and archeological resources

STATE OF VERMONT

October 18, 1995

Jeff Wallin Comtu Falls Corp. RR 2 Box 2436 Brandon, VT 05733

RE: Comtu Falls Hydroelectric Project, Springfield, VT.

Dear Mr. Wallin:

Thank you for submitting the pre-construction photo documentation of the Comtu Falls Dam on October 14, 1995. This documentation was required by the Federal Energy Regulatory Commission pursuant to Section 106 of the National Historic Preservation Act prior to changes to this historic dam.

The documentation package was reviewed by Elsa Gilbertson, National Register specialist on our staff. She found the documentation package complete and excellent. The Division accepts this documentation.

Many thanks for your cooperation and effort during this process.

Sincerely, DIVISION FOR HISTORIC PRESERVATION

Giovanna Peebles State Archeologist

cc: Heather Campbell, FERC



TABLE OF CONTENTS

11.17 9 4 AFFECTED ENVIRONMENT. 0 LITERATORE CITED......18 61..... PROPOSED ACTION AND ALTERNATIVES...... PURPOSE AND NEED FOR ACTION. FINDING OF NO SIGNIFICANT IMPACT..... I.IST OF PREPARERS LIST OF FIGURES CONSULTATION/COMMENTS CONCLUSIONS AND RECOMMENDATIONS. A. APPLICATION..... ENVIRONMENTAL IMPACTS

Licensee's proposed downstream fish passage

Figure 1.

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FERC Project No. 7888

Vermont

COMTU FALLS PROJECT

(Issued June 1, 1995)

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Federal Energy Regulatory Commission Office of Hydropower Licensing Division of Project Compliance and Administration

FINAL ENVIRONMENTAL ASSESSMENT

APPLICATION TO INSTALL DOWNSTREAM FISH PASSAGE FACILITIES AT THE CONTU PALLS PROJECT

Section

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Page Page

FINAL ENVIRONMENTAL ASSESSMENT

FEDERAL ENERGY REGULATORY COMMISSION OFFICE OF HYDROPOWER LICENSING DIVISION OF PROJECT COMPLIANCE AND ADMINISTRATION

Project Name: Contu Falls Project

FERC No. 7698

A. APPLICATION

- 1 Application type: Proposed downstream fish passage plan
- 2. Date filed: October 24, 1994
- 3. Applicant: Comtu Falls Corporation
- 4. Water body: Black River
- 5. County and state: Windsor County, Vermont

B. PURPOSE AND NEED FOR ACTION

The licensee was required by Commission order issued September 22, 1994, to file a plan and schedule, for Commission approval, for installation of a downstream fish passage facility at the Comtu Falls Project. A downstream passage of facility was deemed necessary to provide for downstream passage of emigrating salmon smolte stocked as fry upstream of the project.

The September 22, 1994, Commission order resulted from a November 5, 1993 letter from the U.S. Fish and Wildlife Service (FWS) that notified the Commission of the fry planting and requested assistance in the implementation of downstream fish passage measures at the project by Spring 1995. The Commission initiated this proceeding pursuant to its authority to require the licensee to provide a fish passage plan under standard article 11 of the project license. Article 11 states that the licensee shall, for the conservation and development of fish resources, construct, maintain and operate, and comply with such reasonable modifications of project attructures and operation as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior, after notice and opportunity for hearing.

On January 20, 1995, a draft environmental assessment (FA) was issued, with comments requested. The draft EA has been modified as appropriate based on comments received. On March 25, 1995, the Commíssion issued an order requiring the licensec to implement interim downstream fish passage measures by April 1, 1995, or as soon as practical thereafter. Interim facilities were installed on April 12, 1995.

C. PROPOSED PROJECT AND ALTERNATIVES

1. Description of the proposed action.

The Comtu Falls Project includes a powerhouse with a single vertical Kaplan turbine and a generator rated at 460 kilowatts, an intake with trashrack having 1.5 inch clear bar spacing and set at a 45 degree angle to the intake, and a dam approximately 128 feet long with 2-foot-high flashboards, situated on the top of a natural falls. The dam tapers from 5.5 feet high at its western end to nothing with irregular bedrock comprising the last the east shore. As part of incorporating changes at the project to provide downstream fish passage, the licensee proposes to replace about 33 feet of the 2-foot-high flashboards adjacent to the proposed discharge weir with a 2-foot-high fixed concrete crest. Downstream fish passage would occur through an opening creating by a 2.5 foot wide by 2.0 foot high discharge wein in the concrete or at the west abutment of the dam and trashrack. This size opening would produce a 20-cubic-foot-per-second (cfs) flow to attract/convey emigrating salmon smolts past the project [Figure 1.). To ensure safe transit for the smolts over the bedrock affort the dam is sits, the flow would discharge into affortage pool to be constructed below the bypass discharge. No changes to the trashrack are proposed. The licensee also proposes to cap 18 feet of the cast edge of the dam the height of the flashboards to cover the exposed bedrock. The remaining 74 feet of the dam would retain the 2 foot-high flashboards. The licensee avers that, with flashboards on a straight smooth surface, repair time would be reduced to about one hour, aiding in operation of the fish passage facility The licensee further states that the additional converte capping would allow for the future installation of a pneumatically operated rubber dam to roplace the remaining flashboards The downstream fish passage facility would be operated annually from April 1 through June 15, to encompass the period when smolt emigration occurs.

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Figure at page 3 in hard copy

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reported that the FWS stated that similar designs with trashracks with 2-inch bar spacing operated efficiently, although it to FWS policy to recommend that spacing on the racks be reduced to 1 inch.	The following entities provided comments on the draft RA issued on January 20, 1995:	U.S. Fish and Wildlife Service 2/14/95 Vermont Agency of Natural Resources 2/15/95	Adde Historic Freeservation Officer 3/21/95 The licensee commented on the draft EA and responded to agency comments in letters dated 2/21/95, 4/17/95, and 5/26/95	The Comtu Falls Project is located at a matural falls at river mile 4.3 on the Black River, a tributary to the Connecticut River, in Springfield, Vermont. The Comtu Falls Dam traverses the river in a v-snape and is located a short distance upstream of a highway bridge.	The project has a single vertical Kaplan turbine and an installed capacity of 450 kilowatts (Kw). Average generation lestimated at 2,367,700 kilowatt hours (Kwh) annually. The project operates at flows between 40 and 202 cfs.	Hydroelectric projects upstream from Comtu Falls and below the U.S. Army Corps of Engineers' (Corps) North Springfield Dam include Gilman Dam (FERC No. 9650) and Fellows (FERC No. 9648). Frojects located downstream from Comtu Falls include Slack Dam (FERC No. 8014) and Lovejoy (FERC No. 9648). The Cavendish Project (FERC No. 2489) is located upstream of the Corps' North	Springfield, Vermont, is a small industrial town, with the Black River bordered by commercial buildings that house a bowling alley, light industry, so well as office space. Land use in the	project vicinity primarily includes urban development of the town. Recreational use is described as limited fishing. The economy of the area is influenced by light industry and small retail businesses.	The project is located within the Springfield Downtown Historic District. The Comtu Falls dam is historically significant because its age and setting and is a contributing
Estimated cost of the facility ranges from \$75,000 to \$100,000. 2. Alternatives to the proposed action include the no-	rection alternative: The no action alternative passage schemes. No-action alternative: The no action alternative would require no physical changes to the project. Emigrating salmon	smotts would either traverse the project dam via spill, if sufficient flow exists, any available openings from collapsed flashboard sections, or would be subject to entrainment and the attendant mortality.	Alternative facility designs. The staff proposes a design to include an 18 to 24 inch-diameter PVC pipe that would be fitted into the flashboard section nearest the trashrack or into a collection box constructed in the same location and secured to the bedrock to convev emigration and secured to	pool. With this design, the smolts would pass downstream through the pipe in lieu of passing through the weir opening and into a plunge pool as proposed by the licensee. The facility would be designed to operate with a flow of at least 20 cfs. No changes or additions to the trashrack or remaining flashboard sections would be required.	Estimated cost of this alternative would be less than \$10,000. A second alternative dosign, requested to be considered by the 17.8 Fish and wildlife continue theory.	notch approximately 18 inches to 2 feet deep by 3 feet wide, with removable stoploge that would allow for bypass depth adjustments as headpond levels change. While the FWS provided no drawings of their design, we assume that it would also require the construction of a plunge pool constructed on the bedrock falls below the bypass discharge.	The estimated cost of this alternative would be less than the licensee's proposed plan as the concrete cap would not be required, but would be replaced by the notch at an assumed cost of \$4,000.	D. CONSULTATION/COMMENTS By letter dated October 24, 1994, the licensee stated that	Vermont Department of Fish and Wildlife (VDFW) to review its Conceptual plans for the passage facility. The licensee reported that the plan was well received by the agencies and that the FWS

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element to the District.14/ The Historic District is listed on the National Register of Historic Places because of the significance to the town in the industrial development of the region. There are no known prehistoric sites in the area. Significant visual features of the area include the Historic District and water falling over a series of small dams as it flows through downtown Springfield.

The Black River is classified as a class B coldwater habitat stream and supports an assemblage of warm and coldwater fish mpecies such as stocked and wild populations of brown and brook trout, stocked rainbow trout, smallmouth bass, rock bass, suckers and various minnow species. since 1967, there has been a cooperative federal-state undertaking to restore Atlantic salmon to the Connecticut River and selected tributaries. As part of that endeavor, the Black Niver has been targeted as a tributary of the Connecticut River with guitable nursery habitat, which could be used to produce non-natal salmon under through a fry-release program By letter dated November 5, 1993, the FWS reported that in 1993, 23,124 Aliantic salmon fry were stocked in a 4.6-mile reach of the Black River between Ludicw and Cavendish, Vermont as part of this interstate and federal program to restore Atlantic salmon to the connecticut River basin. Additionally, 67,757 age 8+ corked between Cavendish and the North Springfield Dam, 12,000 were stocked in the fail of 1993. Of those, 43,204 were stocked between the North Springfield Dam and Fellows, and 12,533 for stocked to be stocked in 1995, that in 1994, 200 salmon fry were stocked in the Black River, with greater number9

Most juvenile salmon spend two years in fresh water before emigrating to the ocean during April through June. Thus, smolts from the 1993 fry stocking can be expected to migrate to the ocean primarily in the spring of 1995. Adult salmon from the 1993 fry stocking are expected to return after two winters in the North Atlantic Ocean. Currently at the Comtu Falls Project, interim fish passage measures are operating until permanent facilities are approved and constructed. These facilities consist of the existing angled trashrack and a section of flashboard removed at the juncture of

14/ The significance of the Comtu Falls dam as a contributing element to the District is an issue of dispute and is further discussed in section G.

the dam and intake. The interim facility began operation on April 12, 1995.

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P. ENVIRONMENTAL IMPACTS

1. Licensee's proposed facility: Construction of the licensee's proposed facility would require drawdown of the impoundment and precautions taken to ensure that no concrete is allowed to enter project waters. Construction activities would increase noise levels and air borne particulate matter in the immediate project area. The 4-cfs minimum flow, released as a 0.5-inch sheet flow over the dam would be stopped or rerouted during the estimated 2-month construction period, creating an adverse effect on the aesthetics of the falls. These impacts

Operation of the licensee's proposed downstream fish passage facility would not effect water quality of the Black River or wildlife resources. The facility would, though, benefit the federal-state Atlantic salmon restoration effort by decreasing entrainment and attendant mortality of emigrating smolts. The facility would provide emigrating smolts a safe egress past the project's intake. Further, the addition of the concrete cap to the facility and flashboard maintenance. Since the project dam is a contributing element to the springfield Historic District, which is listed on the National Register of Historic District, which is listed on the National the listed property must be considered. The licensee's proposal cophysically atter the dam, specifically by constructing a 2 foot-high by 31-test-long concrete cap on the weat and of the dam, would have an impact on the historic and aesthetic resources by introducing an intrusive showent into the setting. In templouse to our letter requesting comments under section 166 of the National Historic Preservation Act, the State Historic Preservation Officer (SHPD) found the licensee's proposed passage plan would result in an effect, but that the effect would not be adverse, as long as certain conditions are met. These conditions include documentation of the dam project phylementation (primarily ten to twelve 8-inch-by-10-inch photographs of the structure and a witten and alterations to the property meet the Secretary of Interior's standards.

With respect to aesthetic resources, the licensee is required, vis article 401 of the project license, to maincain a cfs minum flow over the dam to project the water quality and aesthetic climete of the site, including the falls at the base of the dam. This requirement would not change during the 2.5-month

-9-

operation period of the fish passage facility. Review of flow conditions at the project site indicates that during the downstream smolt migration, flow would exceed the maximum required for generation, fish passage, and to provide this well of water over the dam creek more than 95 percent of the time in April, about 80 percent of the time in May and more than 35 percent of the time in June. Flows of 24 cfs (fish passage flow plus 4 cfs aesthetic flow) are exceeded over 99 percent of the plus 4 cfs aesthetic flow) are exceeded over 99 percent of the visual character of the project site is expected during operation of the fish passage facility. The licensee's proposal also requires construction of a plunge pool on the bedrock below the bottom of the dam, to to the pool below the discharged through the bypass weir to the pool below here dam and fails. While this pool would not lampact directly on historic structures, it may impact on the sesthetic resources. The plunge pool would be a concrete-walled pool which would be constructed less than 4 feet from the base of the dam on the west side. The pool would be filled to a 3 foot depth with the 20 cfs flow discharged through the bypass weir. The pool, due to its location, proximity to the bypass weir. The pool, due to its location of the intake and powerhouse, would not be readily visible from the bridge at the pool would not be readily visible from the bridge in addition, from which is a major setthetic element of the Historic District which is a major setthetic element of the Historic District which is a major setthetic element of the Historic District which is a major setthetic element of the Historic District bypass and release over the dam for most if not all of the bypass and release over the dam for most if not all of the portiod when the passage facility would be overting.

2. Staff's alternative design: Staff's design would consist of a collection device integrated into the flashboards and a transport pipe. Consequently, construction of the staff's alternative would not require the extensive concrete work as that of the licensee's with the attendant precautions required. The impoundment would have to be lowered to creat level or slightly below to allow workers to construct the entrance and secure the increase noise lawards, nould be of short duration and of the construction. In regards to aesthetic concerns. as would be the case for the licensee's proposal, implementation of staff's alternative would also introduce an intrusive element to the environmental setting. The downstream passage pipe, however, would be located at the extreme end of the dam and falls and, therefore, would not significantly detract from the aesthetic and historic value of the setting if the structure was colored to blend with the

surrounding structures. The pipe would also not advarsely affect the waterfall below the dam, which, as stated proviously, is a major sestheric element of the Historic District, because, during the period when the passage facility is operating, sufficient flows should be available to operate the facility and provide for project operation and a minimum flow along the dam crest.

3. FWS alternative design: The FWS alternative would consist of a bypass weir notched in the existing dam creat. Construction of the FWS alternative would also not require the concrete cap on either and of the dam, estimated to entail abour 9.4 cubic yards of material. The FWS alternative would operate with or without flathbourds erected. The Impoundment would, boweret have to be lowered to allow workers to remove the concrete to create the notch in the dam and install the tracks for the stoplogs. Since this alternative would also physically alter the project dam, the facility's effect on the Bistoric District and the dam itself must be considered. Although the magnitude of the change to the dam would be less extensive than that of the endine to the setting. However, staff expects the FWS proposal would be the setting. However, staff expects the FWS proposal would be the setting. However, staff expects the FWS proposal would be the setting. However, staff expects the FWS proposal would be the setting. However, staff expects the FWS proposal would be the setting to the ano adverse effect decision on the dam. SN Normally, the licensee would be required to document the dam prior to project implementation and ensure that rehabilitation sand alterations to the property meet the Sceretary of Interior's family and alterations for the licensee disputes the finding that the dam is a contributing element.

4. No-action alternative: The no-action alternative would have no effect on the current historic or visual properties associated with the project. No impacts to project flows or water quality would occur. However, this alternative would provide no protection to emigrating smolts. Mortality of fish entrained could be expected to range from 7.6 to 13 percent (EPRI, 1992).

G. ISSUES

1. Need for permanent downstream fish passage facility

With respect to the need for a fish passage facility as a mitigative measure for project ampacts, the facility's purpose is

15/ In a conversation between the SHPO and Commission staff on March 21, 1995, the SHPO stated that the FWS' proposal would alwo have a no adverse effect, provided documentation is completed prior to any construction activity.

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to reduce entrainment and any attendant mortality to emigrating smolts, not as a mitigation measure for the construction of the dam itself. Epsi (1922) reports that, for the restriction of the type turbine installed at Comtu Falls, entrainment mortality of juvenile fish may range from 7.6 to 13 percent, averaging 11 percent. Since emigrating smolts must pass numerous dams in the Black River and the Connecticut River, downstream fish passage facilities are needed to ensure maximum survival of smolts. Therefore installation of downstream fish passage of fish through the furbines at hydropower projects is appropriate and warranted in order to minimize smolt mortality. Since 1987, the Connecticut River Atlantic Salmon Commission has been pursuing increasing its egg supples and incubation capabilities so that a sufficient supply of fry is available for stocking all the identified salmon habitat in the Connecticut River basin in its attempt to increase adult returns. The restoration effort is increasing its focus on expanding fry providing and stream-reared smolts because bream-reared smolts than hatchery reared smolts because bream-reared smolts than hatchery reared smolts stored in the same tributary (Meyers, 1994). By increasing exploitation of available rearing and restoration effort for the Connecticut River basin should follow. Returning adult salmon would contribute to the salmon restoration effort for the Connecticut River basin should follow. Returning adult salmon would contribute to restoration goals by providing a source of eggs and contribute to important to ensure maximum survival of emigrating smolts by providing safe passage from rearing habitat to downstream of the contu Falls project as well as the other hydrorlectric projects facilities at the Comut Falls dam should be required to facilities at the Comut Falls dam should be required to

flashboards.

2. Relative effectiveness of the fish passage plans

Licensee's proposed plan:

The FWS agreed that the licensee's proposed facility would be capable of providing increased survival of migrating smolts as we stated in our draft EA, but did not fully agree that entrainment mortality would be largely eliminated as we suggested since the licensee's design does not incorporate all the components that the FWS would normally recommend for such a spacing. The FWS would prefer trashracks with 1-inch bar appacing, a wider bypass weir and greater ability of the facility to function when the flashboardm are down and the headpond is lower.

The licensee requested that, if the Commission requires the construction of a downstream tish passage facility at the that FWS engineers advised that the layout of the project's intake presented an ideal situation for passing smolts, that similarly designed projects with 2-inch bar spacing operate at bigh efficiency, and that the existing flow parallel to the bypass welk in place. The license says that replacement of the bypass welk in place. The license says that replacement of the existing trashrack with 1.5-inch bar spacing with a trashrack of the resented to 117 kw. Further, reconstructing the reashrack of a void result in substantial even without the reduced to 117 kw. Further, reconstructing the reashrack to inch bar spacing would could in substantial head loss and is restricted through the penstock, power production would be headpond maintenance, the licensee's design would add to maintenance costs to keep the trashrack clean of debris. For headpond maintenance, the licensee's design would allow for repair of the flashbards within as little as one hour's time, currently it takes two persons 8 hours to replace the

The licensee's downstream fish passage facility incorporates the preferred angled trashrack and bypass weir recommended by While the trashrack spacies for improved passage of salmon smolts. While the trashrack spacies for improved passage of salmon smolts. recommended by the FWS, we conclude that the premise of the facility design is that by having the bypass weir rather than through the trashrack set at an angle through the trashrack set at an angle wettles and Gloss (1987) found that perstock set at an angle wettles and Gloss (1987) found that perstock entrainment occurred when 85 percent of the flow passed the purbine with a sugged trashrack was in place. The facility even with slightly they found all the sample fiel bypassed the pendock when an angled trashrack was in place. The facility even with slightly towards the bypass veir and, thus, facilitate downstream pasnage of emigrating smolts in the Black River.

In regards to the expansion of the weir width from 2.5 feet to 3 feet as favored by the FWS, we note that the wider weir would increase the discharge through the weir from 20 ofs to 2, cfs. Increased flow would likely provide somewhat greater efficiency of the bypass but its significance is unknown. The width of the weir should be considered during consultation with the resource agencies prior to preparation of functional design drawings.

Staff's alternative:

Staff's alternative facility would be a less extensive facility, described as a collection facility autached to an 14

to 24-inch-diameter PVC pipe at the flashboard section nearest the trashrack to convey emigrating salmon smolts to the tailwater pool, thereby eliminating most concrete work. Existing flashboard repair procedures, which could effect the efficiency of the facility, would not be altered. In the draft EA, we concluded that the simplified facility would provide reasonable protection at significantly less cost to the licensee.

The FWS and the VDFW stated that, without design drawings, it is not fully possible to critique this alternative, but they did not actively oppose the concept of using a pipe to convey fish to the base of Comtu Falls. The agencies did note that this facility would not function when the flashboards failed and the durability of the facility given the potential for ice damage is highly questionable.

The licensee also expressed concern that winter ice buildup would likely destroy the pipe associated with this alternative. Additional costs related to reinstallation and repair would be incurred annually. While its initial costs appear less than other alternatives considered, it is likely that the bypass entrance and sections of the conveyance pipe would require annual replacement because of ice damage. Further, as this alternative would not include modifications to the dam creat to facilitate rapid flashboard replacement, the facility may not operate for extended periods after flashboard failure. This is because the PVC pipe and the replaced because of facility would be attached may need to be replaced because of fee damage and/or flashboard failure caused by high flows. This type facility would also be prone to clogging with debris, requiring added maintenance.

FWS alternative plan:

The FWS offered its plan as an alternative that would function with or without the flashboards in place. This alternative would obviate the need to modify the dam creat for more efficient flashboard installation for fish passage purposes. Although the FWS provided no drawings of its alternative, we presume that this alternative design would also require construction of a plunge pool similar to the licenses a plan, with similar effects. Further, because the top of the penutock is located above to be modified as the notch would extend below the top of the penutock, potentially affecting project operation construction activities would create increased noise levels and would extend over several months if modifications to the intake were found necessary.

The FWS and the VDFW request that, should we find that extended periods of operation with a low headpond would occur with the licensee's or staff's proposed plan, we should consider the FWS' plan. The licensee commented that the FWS alternative would essentially preclude project operation. The licensee reports that the top of the pensiock lies 2 inches above the level of the dam creat. Submergence only occurs when the flashboards are in place; thus, the project cannot operate without flashboards. Removal of stoplogs in the norch would reduce the pond level. The FWS alternative would operate regardless of whether flashboards were erect and would not require the dam modifications required by the licensee's proposed plan. This alternative would be less affected by ice damage both in operation and maintenance than the staff's design. A plunge pool would still be required below the notch to safely pass fish to the pool below the fails. However, with the elevation of the Lop of the penstock higher than the staff's design. A plunge pool adm, we have reservation about the utility of this design because the bottom of the notch in the dam would extend below the could develop that would effect project operation, but more important, the efficiency of fish passage facility. Depending on the problems encountered, modifications to the intake may be required, the extent of which would be unknown until the fish passage is constructed and operated under varioun flow conditions.

Comparison of alternatives:

The downstream passage designs reviewed are based on the existing angled trashrack guiding emigrating salmon smolts to a new bypass. There are, however, advantages and disadvantages associated with each alternative. The licensee's proposed design is substantial and would withstand the rigors of ice floes, which can be severe. Further, the facility would require little maintenance outside of flashboard installation. However, the ability of the flashboards to maintain adequate headpond levels for operation of the bypass during the smolt emigration period has been questioned. The facility would be affected if the flashboards failed and the headpond was lowered. The license, though, would effectuate immediate installation of the flashboards after failure. Further, flashboards typically fail under very high flow through turbine penstocks was related to the percentage of riven flow diverted to the turbines. Under the high flow conditions.

that would cause the failure of flashboards at the Comtu Falls Project, most emigrating fish would still pass downstream over the dam as opposed to through the project's turbine. The staff's alternative would not operate under conditions when flashboards failed, would require more time to install flashboards and has the potential to require constant maintenance from ice damage and debris clogging. During the potentially protracted periods requiring repairs for this alternative design, downstream emigrating salmon would be more susceptible to entrainment and mortality due to passage through the turbine. We conclude that this alternative is the least alternative design, for ensuring the safe downstream passage of further. Therefore, we will not consider this alternative further. The FWS' alternative design would be a low maintenance facility, unlike staff's alternative and would operate under all headpond levels. However, the effects of the depth of the notch in relation to the top of the penstock on project operation and intake flow patterns are largely unknown and may require future modifications to the intake. In comparing the licengee's proposal and the FWS' alternative design, both designs are principally the same, that is they both would utilize an angled trashrack to guide emigrating smolts to a bypase. Passage efficiency with flashboards erect would be similar. Under the licensee's proposed design, fish would continue to be passed downstream even if the flashboards should fail (flow and fish would spill over the flashboards should fail (flow and fish passage bypass weir). However, once flows recede to a level to allow flashboard reinstallation, a period of about 1 hour would be needed to replace the flashboards. Under the FWS' alternative design, the bypass weir would be operative respardless of the state of the linterfere with project operation, especially at lower pond levels when there is less difference between the pond's surface elevation and the project operation, especially at lower pond levels that the licensee construct its proposed facility.

3. Historical and visual resources

Melther of the proposals would have a significant effect on the aesthetic climate of the site as the minimum flow of 4 cfs would continue to be passed along the top of the dam during operation of the passage facilities.

As discussed in the draft EA and the environmental impacts section, the Commission staff consulted with the SHPO.

Initially, the Commission staff concluded that the installation of the facilities would have no impact on historic resources. This determination was because the Comtu Falls Dam was a contributing element to the Springfield Historic District and was not listed or eligible for listing on the Register itself. The SHOO disagreed with this determination and stated that the proposal would have no adverse effect provided documentation of the dambe done prior to project implementation of that the babilitation and alterations to the property meet the Generaty of Interior 5 standarde.

In response to the SHPO's recommendation, the licensee suggests that the SHPO's recommendation of the licensee justification for inclusion of the commendation of the dam National Register before it recommended documentation of the dam The licensee cites a April 21, 1986 letter from the SHPO which states the dam was included in the Springfield Historic District. The SHPO's justification was based on a report written in 1984 which states that the 'dam and powerhouse were not included in the District because they were not old enough to be eligible the District because they were not old enough to be eligible the District because they were not old enough to be eligible archeological values. However, it is an important element of visual landscape of the town of Springfield and lies within the visual landscape of the town of Springfield and lies within the district since it contributes to the architectural and visual character of this industrial community. The Summary and except for the dam' should be added to the contributing structures to the Springfield Historic District." The licensee cites this apparent conflict between the SHPU's conclusions and the text of the report as reason enough for the SHPO to recvaluate it's recommendation for documenting the cont Falls dam. The licensee turther objects to the expense of the documentation, estimated to be \$3,200. In conversations butwen the SHPO and the licensee, the licensee reports that the SHPO had agreed to undertake additional reviews of the issue. Lastly, the licensee questions whether the Commission has the authority to require the licensee to undertake the necessary documentation. In regards to the licensee's concern with respect to Commission authority to require the licensee to undertake mitigative action to protect cultural resources, staff notes that article 402 of the project sultense requires such action. Specifically, article 402 requires that "prior to any future construction at the project, the licensee shall consult with the strond about the need for cultural resource studies or a management amount for any required mork."

In the event the Commission requires the construction of a fish passage facility, staff recommends the licensee undertake addition consultation with the SHPO in determining if any mitigative measures would be appropriate to minimize impacts to cultural resources

4. Water surface elevations

The project dam averages 4 feet high without flashboards and impounds 1.8 acre feet of water. The recervoir has a surface area of approximately 0.1 acres and extends less than 300 feet upetream of the dam. Due to the small storage, low height of the dam, and absence of downstream development in the hypothesized flood plain, the project is classified as low hazard. The increase the gross storage, result in additional downstream impacte, nor effect the hazard classification.

Operation of the project with the licensee's proposed downstream fish passage facility would, by reducing flashboard length, affect the impoundment surface elevation during high flow length, affect the impoundment surface elevation during high flow under certain high flow conditions, it could be inferred that the replacement of 51 feet of flashboards with permanent concrete capping would, under extreme conditions, increase the impoundment relationship shows that the licensee's proposal would result in less than a foot increase in impoundment elevation under high flow conditions. Because the river approaching the dam is steep with a fails or castocate not flashboards that under this alternative with a fails or castocate not far upstream and is bordered by industrial buildings, we conclude that, under this alternative with a flext of flashboards remaining, no significant adverse effects with respect to this increase would occur.

5. Economic analysis

The bulk of the costs to the project would result from construction of the fish passage facilities as well as operation costs. These costs would obviously vary depending on the selected alternative.

Construction costs would be minimal for staff's recommended alternative, estimated to be \$10,000. Construction costs associated with the licenses's preferred design would range from \$75,000 to \$100,000. Although the FWS proposal incorporates the plunge pool facility that is also part of the licenses's proposal, no extensive concrete work would be proposed for the dam creat. As a result, construction of the FWS proposed facilities would cost less.

The costs associated with operation of the facilities would result from the loss of power generation associated with the diversion of between 20 and 25 cfs of flow through the fish passage facility. This flow represents approximately 10 percent of the plant's capacity The reduction in power generation would occur when the flows of the river are less than the fish passage flow (20 to 25 cfs), winnum flow (4 cfs) and the hydraulic capacity of the plant 1002 cfs of This would docur less than the film (20 to 25 cfs), winnum flow (4 cfs) and the hydraulic respect of the the m part. For May, the fish passage flow would reduce power generation by 10 percent about 10 percent of the time. Finally, for the first two weeks in June, power production would be reduced less that 70 percent of the time. Although the setimates of the loss in power production are unavailable, the licensee states that the power losses associated with operation of the interim facility, which should be remained to the interim facility, which should be alternative designs, was 60,000 Kwh. This loss represents the project.

6. Final design drawings and monitoring

The FWS requests that, given possible alternative designs and design details, the Commission require development of final design drawings in consultation with the FWS. The FWS further notes that, depending on the final design, monitoring of the effectiveness of the facilities may be needed to determine bypass facility. The fish passage facilities discussed herein are based on an angled trachrack diverting fish to a bypass. The FWS has recommended similar facilities at numerous Commission licensed un this type of facility, we conclude that post operational monitoring is not warranted. However, the licensee should be required to consult on the functional design drawings with the FWS, to finalize specifics with respect to weir width.

IL CONCLUSIONS and RECOMMENDATIONS

The license was issued for the Comtu Falls Project on the premise that the project would not have an adverse impact to the Connecticut River basin interstate federal Atlantic salmon restoration program. Provisions were included in the license instrument to ensure such. The Commission has used those provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating this proceeding to ascertain whether the provisions by initiating the provision by initiating the provisi



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FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Elizabeth Anne Moler, Chair; Vicky A. Balley, James J. Noecker, William L. Massey, and Donald F. Santa, Jr

William L. Massey, and Donald F

Comtu Falls Corporation

Project No. 7888-010

ORDER AMENDING LICENSE

(Issued June 1, 1995)

On September 22, 1994, the Commission issued an order invoking its reserved authority to require Comtu Falls Corporation (Corporation) to file a downstream fish passage plan and Wildlife (Service (FWS) and the Vermont Department of Fish and Wildlife (Vermont). J The Corporation filed such a plan on October 25, 1994. On January 20, 1995, a notice was issued of the plan filed by the Corporation, as well as an alternative design proposed and recommental Assessment (draft gA) of the plan filed by the Commission's staff. The State Historic Preservation Officer, and the Corporation. The State Historic Preservation Officer, and the Corporation. The Comments on the daraft BA were submitted by the FWS, Vermont, the state Historic Preservation Officer, and the Corporation. The Orthor 29, 1995, the Commented by the Corporation file installation of interim fish passage measures, pending completion of a final EA that would address which of several possible adverse effects on the endity of that design in view of possible adverse effects on the environment, economics, safety, historic, or aesthetic resources of the project. 2/

The final Environmental Assessment (EA), issued as an appendix to this order, concludes that the planting of salmon in the Black River upstream of the project is beneficial to the Atlantic salmon restoration effort for the Connecticut River Basin, and that downstream fish passage facilities are needed at the Comtu Falls Project to provide for downstream migration of juventie salmon smolts. 3/ Furthermore, the EA approves the

1/ 68 FERC [61, 356.

2/ 70 FERC \$ 61,354.

3/ During their earliest life stage, one to two weeks old, ealmon are called "fry." Thereafter, until they begin active migration to the sea, they are called "parr." During their period of downstream migration, they are called "smotts" or juvenile salmon.

Project No. 7988.010

Corporation's design for such facilities and concludes that their installation and operation would have no significant adverse effects on the environment, the economics or safety of the project, or its aesthetic or historic resources. The Commission concurs in the conclusions of the EA and will amend the Corporation's license to require the installation and operation of the fishway facility with the design proposed by the Corporation.

BACKGROUND

The Comtu Fails Project is situated on the Black River in Springfield, Vermont. The 460-kilowatt project includes a powerhouse, an intake with trashrack having 1.5-inch clear bar spacing and set at a 45 degree angle to the intake, and a dam approximately 1.28 feet long with 2-foot-high flashboards, and situated on the top of a natural falls. The dam tapers from 5.5 feet high at its western and to nothing with irregular bedrock comprising the last 17 or 18 feet as it extends across the river from the intake to the east shore. Average generation is estimated at 2,357,700 Kwh annually.

The history of this proceeding has been described in detail in the Commission's orders of September 22, 1994, January 18, 1995, 4/ and Warch 29, 1995. The September 22 order was issued under the authority of Article 11 of the Corporation's license 5/ because the licensee did not agree voluntarily to install downstream fish passage facilities as requested by the FWS and the Commission's staff. The Corporation has presented numerous arguments in the requested facilities. We have dealt with

4/ 70 FERC \$ 61,031.

5/ Article 11 of the Comtu Falls Project License provides:

The Licensee shall, for the conservation and development of fish and wildlike resources, construct, maintain, and operate ... 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 ... is located, after notice and opportunity for hearing. 36 FERC at p. 63,125, ordering paragraph (E), incorporating by reference the standard articles in Form L-15, 54 FPC 1883, 1886 (1975).

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Project No. 7888-010

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these arguments in the previous orders. The questions remaining, as we said in the January 18 order, are whether the planting of salmon in the Black River upstream of the project was beneficial to the restoration effort, β / what would be the best design for a downstream passage facility, and whether the best designed fishway would have detrimental effects that might outweigh the benefit to the fishery environment. 2/

The March 29 order required the Corporation to install interim fish passage measures at the Comtu Falls Project by removing a section of the project's flashboard for a two and one-half month period beginning April 1, 1995, or as soon as the removal could be practically effectuated. The Corporation filed a letter on April 24, 1995, indicating that the interim fish passage measures were in operation by April 12, 1995. g/

19

1. The Corporation also asserts that downstream passage facilities at some of the other dams above and below Comtu Falls had not yet been installed, or at least were not visible in photographs taken by the Corporation on April 14, 1995. The Cavendish Project (FERC No. 2489) has interim facilities operating and has plans and construction schedules for permanent facilities approved. The licensees of Fellows Dam (FERC No. 9648), Lovejoy Dam (FERC No. 9649) and Gilman Dam (FERC No. 9650), depicted in the Corporation's photographs, have all been trequested by the Commission's staff to provide plans for interim measures for downstream passage to be intlifted this year, and the recommendations of the FWS for permanent facilities. The licensees have indicated that the (1995) will be spoilage at these projects in the interim none of these projects have operable flashboards.

At Slack Dam, the other project depicted in the Corporation's photographs, an exempted project, mandatory {continued...}

Project No. 7888-010

DISCUSSION

The final EA concludes that the stocking of Atlantic salmon fry in the reaches of the Black River above Comtu Falls will be beneficial to the efforts to restore Atlantic salmon to the Connecticut River Basin, and that the Installation, operation, and maintenance of the downstream fish passage facilities at the Comtu Falls Project is necessary for the salmons' safe downstream migration. The FWS has stated that, in order to achieve successful salmon restoration in the Connecticut River Basin. salmon habitat in the basin must be used to the fullest to produce smolts and future returns; that the Black River above comtu Falls has been identified as suitable in sufficient quantities to stock more tributaries than those originally designated for the try release program.

In early 1993, 23,124 Atlantic salmon fry were stocked in the Black River between Ludlow and Cavendish, Vermont, above Comtu Falls. In 1994, 209,200 salmon fry were stocked, and according to the FWS, greater numbers are expected to be stocked in 1995. 10/ Mortality rates for entrained juvenile fish at the Comtu Falls Project may range from 7.6 to 13 percent, averaging it percent. 11/ Smolte mayrating downstream on the Black River pass numerous dams, and fish passage facilities at these dams are needed to ensure maximum survival. Returning adult to the restoration program by providing a source of eggs for fry production from Connecticut River stock. 12/ The EA also concludes that the design for permanent fish passage facilities submitted by the Corporation in October 24, 1994, is superior to alternative designs proposed by the Commission's staff in the draft EA and the FWS in its comments on the draft EA. The Corporation proposes replacing 33 feet of the

- 2/ 0. parr are salmon between two weeks and one year of age.
- 10/ Final EA, attached to this order, at 6.
- 11/ These mortality rates are based on studies of Kaplan turbines, the type used at the Comtu Falls Project.
- 12/ Final EA at 10.

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In the March 29, 1995 order requiring interim fish passage measures, we reached the tentative conclusion, on the basis of information in the draft BA and other record evidence, that using the Black River above comtu Falls as nursery habitat for samon fry would help to achieve the goals of Atlantic samon restoration in the Connecticut River Basin. 70 FBRC \$61,354 at p. 62,042. In this order we make a definitive finding that such stocking is beneficial to the restoration effort on the basis of the final BA issued with this order.

^{2/ 70} PERC at p. 61,104.

^{8/(...}continued)

conditions require the licensee to provide fish passage facilities when prescribed. According to the FWS, the facilities have been installed and the exemptee is prepared to operate the facility upon FWS' request.

Project No. 7888-010

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2.foot-high flaamboards adjacent to the proposed discharge weir with a 2.foot.high fixed concrete treat. A 2.5 foot wide by 2.0 foot high discharge weir would be opened in this concrete cap at the west abutment of the dam and trashrack to produce a 20-tubic feet per second flow to attract/convey emigrating smolts. The flow would discharge into a 3.foot deep plunge pool to be constructed on the bedrock fails below the discharge. The constructed on the bedrock fails below the discharge. The dam to the height of the flashboards to cover the est edge of the bedrock. The remaining 74 feet of the dam would retain the 2. foot high flashboards. 100,000. In the draft EA, the staff proposed a downstream passage facility consisting of an 18 to 24-inch diameter PVC pipe that would be fitted into the flashboard section nearest the trashrack convey emigrating salmon smolter to the tailwater pool. The estimated convey emigrating salmon smolte to the tailwater pool. The staff convey emigrating salmon smolter to the tailwater pool. The staff convey emigrating salmon smolte to the tailwater pool. The staff convey emigrating salmon smolte to the tailwater pool. The staff convey emigrating salmon smolte to the tailwater pool. The staff convey emigrating salmon smolte to the tailwater pool. The staff convey emigrating salmon smolte to the tailwater pool. The staff concluded that the bypass entrance and section of the staff conveyance pipe would probably have to be replaced every year, debrie.

The FWS proposed a passage facility consisting of a notch approximately 18-inches to two-feet deep, and 3 feet wide, with removable stoplogs that would allow for bypass depth adjustments as headpond levels change. The FWS proposal would include the plunge pool as proposed by the Corporation. The advantage of the FWS proposal is that it would provide for attraction/conveyance flows even when the flashboards might be washed out by flooding of damaged by ite. However, the staff concluded that, with the elevation of the top of the pensock higher than the elevation of the crest of the dam, flow patterns could develop that would affect project operation, but more importantly, the efficiency of the fish passage facility. Operation of the PWS alternative during low headpond levels with the guidance efficiency of the trashrack as well as project operation. Such problems could require modifications to the intake with the fish passage that the function of the project of the such as eddies and vortices, in front of the project of the trashrack as well as project operation. Such problems could require modifications to the intake, with the result being that operation of the FWS alternative could be substantially more expensive than the Corporation's proposed design.

Finally, the EA concludes that the installation, operation, and maintenance of the fish passage facilities proposed by the Corporation will have no significant adverse effects on the environment, or the economics, gafety, or aesthetic and historic character of the project.

Project No. 7888-010

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Operation and maintenance costs would be negligible. The visual character of the project site will not be significantly affected, because the licensee must maintain the minimum flow of 4 cfs over the creat of the dam, which is sufficient to maintain an attractive veil of water over the falls. Furthermore, the plunge pool would not be readily visible from the bridge where the falls are usually seen, and would not affect the veil of water passing over the dam's crest. Ae discussed in the EA, the project dam was considered to be a contributing element to the Springfield Historic District (District). After consultation with the Vermont State Historic Preservation Officer (SHO) pursuant to Section 106 of the National Historic Preservation Act, the SHPO recommended that the project dam, because of its contribution to the District, be documented prior to construction of any fish passage facility. The Corporation, blatter to the SHPO dated My 24. 1995, disputed the fact that the SHPO agreed to reevaluate its recommendation to require documentation. In order to allow the Corporation and the SHPO agreed to reevaluate its Corporation and the SHPO to attempt to resolve this matter' the Corporation and the SHPO to attempt to resolve this matter' the Corporation will be provided additional time to consult with the SHPO. After the licensee has completed its consultation, the Commission will determine what. if any, mitigation measures may be appropriate. The Commission concurs in the conclusions of the RA, for the reasons expressed in the EA, and accordingly, we will exercise our authority under Article 11 of the Corporation's license to amend the license to provide for the installation, operation, and maintenance of the downstream fish passage facilities proposed by the Corporation, with the facility to be operational by April 1, 1996. $\underline{13}/$

In connection with construction of the permanent passage facilities, the Corporation should consult with the resource agencies in developing functional design drawings to be filed for Commission approval. Further, the Corporation must provide final contract drawings and specifications for the pertinent features of the revised project to the Commission's New York Regional Office (NYRO) and the Director, Division of Dam Safety and

^{11.} In comments on the EA, the Corporation requests that we review the salmon restoration program in the year 2001 and facility if the FWS has not met its goal of returning adult Atlantic salmon to the Connecticut River as stated in the FWS' 1989 EIS on salmon restoration. At any time, the licensee may file a request for Commission approval to stop operation of the dwnstream fish passage facility, after consultation with the appropriate resource agencies.

Project no. /898-010

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Inspections (Director), for review prior to start of construction. Furthermore, the Corporation must submit to the NYRO and to the Director copies of any approved cofferdam construction drawings and specifications and a copy of the letter(s) of approval by the licensee of any contractor-designed cofferdams and deep excavations prior to the start of construction to ensure that construction of any cofferdams and deep excavations are with the approved designs. Finally, the Corporation must submit "drawings after the proposed installations are completed.

The Commission orders:

(A) The licensee's fish passage proposal filed on October 25, 1994, is approved. (B) Within 30 days of issuance of this order, the licensee shall file for Commission approval, detailed functional design drawings of the downstream fish passage proposal approved herein, after consultation with the U.S. Fish and Wildlife Service and the Vermont Department of Fish and Wildlife. The Commission reserves the right to require changes to the facility's design.

(C) The licensee shall complete construction of the downstream fish passage facility by April 1, 1996.

(D) The downstream fish passage facility shall be operated annually from April 1 through June 15. Operation of the facility may be temporarily modified if required by operating emergencies beyond the control of the licensee and upon mutual agreement among the licensee, the Vermont Agency of Environmental Conservation, and the U.S. Fish and Wildlife Service. (E) The licensee, at least 60 days prior to the start of construction, shall submit one copy to the Commission's New York Regional Director and two copies to the Director, Division of Dam Safety and Inspections, of the final contract drawings and specifications for the pertinent features of the project. The Director, Division of Dam Safety and Inspections, may require changes to the plans and specifications in order to assure a safe and adequate project.

(F) The licensee shall review and approve contractordesigned cofferdams and deep excavations prior to the start of construction and shall ensure that construction of the cofferdams and deep excavations is consistent with the approved design. At least 30 days prior to start of construction of the cofferdam, the licensee shall submit to the Commission's New York Regional Director and to the Director, Division of Dam Safety and Inspections, one copy of the approved cofferdam construction approval.

Project No. 7888-010

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(G) Within 90 days of completion of the modifications to the spillway and fishway, the licensee must file, for Commission approval, revised exhibit drawings to describe and show the modifications as built. (H) The licensee shall consult with the Vermont State Historic Preservation Officer (SHPO) to reevaluate the SHPO's recommendation to require documentation of the Comtu Falls Dam. The licensee shall file, within 20 days from the date of this order, the results of the consultation and, if available, comments from the SHPO. If the licensee does not agree with the SHPO's final recommundations regarding documentation of the dam, it must provide the reasons for its disagreement. The Commission multigative measures necessary to ensure protection of cultural reserves thall not undertake any construction of the Comtural itsensee shall not undertake any construction activity until notified by the Commission that construction can proceed. (1) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. §385.711.

By the Commission.

(SEAL)

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Lois D. Cashell, Secretary.



UNITED GTATES OF AMERICA FEDERAL BRENCY ESCULATORY COMMISSION

Comtu Falls Corp.

Project No. 7888-012 Verront

ORDER APPROVING FUNCTIONAL DESIGN DRAWINGS (Issued July 13, 1995)

On June 12, 1995, Comtu Falls Corp. (licensee) filed functional design drawings for a downstream fish passage facility, pursuant to ordering paragraph B of the Order Amending License for the Comtu Falls Project, issued June 1, 1995. The project is located on the Black River in Windsor County, Vermont.

Ordering paragraph B required the filing of functional design dravings of the licensee's proposed downstream fish passage facility, to include comments on the dravings from the of Fish and Wildlife Service (FWS) and the Vermont Department of Fish and Wildlife (VFW), within 30 days of issuance of the commission's June 1, 1995 order. Additionally, the Commission reserved the right to require changes to the facility's design.

Functional design drawings

The functional design drawings of the downstream fish passage facility show the licensee's proposed facility. essentially unchanged from that approved in the commission's June essentially unchanged from that approved in the commission's June i, 1995 order. The facility would consist a new 33-foot-long fixed concrete creat 2 feet high on the vest and of the project dam. A 2.5-foot-wide by 2.0-foot-high discharge weir would be opened in this concrete cap at the vest abitment of the dam and attract/convey emigrating Atlantic galmon smolts safely past the project. The flow would discharge into a 3-foot-deep plunge pool to be constructed on the bedrock falls below the discharge. The east edge of the dam would also be capped with concrete the height of the flashboards to cover the exposed bedrock. The remaining 74 feet of the dam would retain the 2-foot-high

Agency comments

The FWS, by letter dated July 5, 1995, stated that it generally concurred with the proposed structures, but, as in their comments of February 14, 1995, remain concorned that the 2.5-foot-wide weir would not meet their design standards. The ¹ By letter dated February 14, 1995, the FWS stated that "although we can accept the proposed 2.5-foot-wide-bypass weir, we would normally prefer a 3-foot wide opening to minimize boundary effects and vena contracta that effectively reduce clear

FWS states that boundary effects and vena contracta may reduce the effective width of the bypass by as much as six inches on each side. Since the Commission, in its June 1, 1995 order, did proposed fishway and the tranhracks exceed the FWS' 1-inch spacing criteria, the FWS recommends that the weir be widened to 3 feet.

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Conclusions and recommendations

The licensee's functional design drawings for construction of the downstream fish passage facility generally meet the requirements of ordering paragraph B of the Order Amending License for the Comtu Falls Project, jusued June 1, 1995, and should be approved as filed. With respect to weir width, end effects of flow through the weir reduce the clear flow width and reduce the true volume of flow through the rectangular weir proposed by the licensee. However, these effects may not be as great as the FWS avers and appear to be somewhat conservative. Further, widening the weir to three feet would require additional flow of up to 5 cubic feet per second during operation. After review of available information, we conclude that maintaíning the weir width at 2.5 feet would provide an adequate bypass for emigrating salmon smolts.

The Director orders:

(A) The functional design drawings for the downstream fish passage facility filed on June 12, 1995, pursuant to ordering paragraph B of the Order Amending License for the Comtu Falls Project, issued June 1, 1995, are approved.

(B) Within 90 days of completion of the fishway, the licensee must file, for Commission approval, revised exhibit drawings to describe and show the modifications as built. (C) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 19 C-F-R 5385 713.

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VJ. Mark Robinson Director, Division of Project Compliance and Administration

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UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Comtu Falls Corporation

Project No. 7888-015 Vermont

ORDER APPROVING AS-BUILT DRAWINGS

(Issued February 20, 1996)

On October 27, 1995, Comtu Falls Corporation (licensee) filed, for Commission approval, the as-built exhibit F showing the installation of a downstream fish passage facility at the Comtu Falls Project. The facility became operational in September 1995 and consists of an angled trashrack, a weir and plunge pool.

The exhibit F, showing the installation of the fish passage facility conforms to the Commission's rules and regulations and should be approved.

The Director orders:

(A) The following exhibit F drawing is approved and made a part of the license:

Exhibit FERC No. Title

F-8 7888-8-1 Downstream Fish Passage

(B) Within 90 days of the date of issuance of this order, the licensee shall file an original of the approved exhibit F drawing reproduced on silver or gelatin 35mm microfilm mounted on a Type D (3 1/4" x 7 3/8") aperture card. In addition, the licensee shall file two Diazo-type duplicate aperture cards. The original card and one duplicate should be filed with the Secretary of the Commission. The remaining card should be filed with the Commission's New York Regional Office. The FERC drawing number (7888-8-1) shall be shown in the margin below the title block of the microfilmed drawing and also in the upper right corner of each aperture card. The top line of the aperture card shall show the FERC exhibit (i.e., F-1, F-2), Project Number, Drawing Title, and date of this order.

(C) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. § 385.713.

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J. Mark Robinson Diractor, Division of Project Compliance and Administration



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FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D. C. 20426 Project No. 7888-019--Vermont Comtu Falls Project Comtu Falls Corporation

Mr. Jeffrey Wallin Comtu Falls Corporation RR 2 Box 2436 Brandon, VT 05733

Dear Mr. Wallin:

This is in reply to your letter dated December 13, 1996, requesting an exemption from further filing of the FERC Form No. 80 (Form 80) for the Comtu Falls Project.

Available information indicates there is no potential for recreational use at the project. Therefore, in accordance with section 8.11(c) of the Commission's regulations, you are exempted from further filing of the Form 80 for the above-cited project until further order of the Commission.

Thank you for your cooperation. If you have any questions, please contact Heather Campbell at (202) 219-3097.

Sincerely,

J. Mark Robinson Director, Division of Licensing and Compliance







Upstream view of impoundment - note lack of option for safe public access



View of tailrace – note lack of option for safe public access



TAB 6

Supporting info for Threatened & Endangered Species and Water Qaulity

- 1. 2015 Letter from Department of Interior (DOI)
- 2. Map from Vermont Agency of Natural Resources (VT ANR) BioFinder - Comtu site highlighted in blue
- 3. Impaired Surface Waters 303(d) list


United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301-5087 http://www.fws.gov/newengland



January 7, 2015

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm (accessed January 2015)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Maria Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours

Thomas R. Chapman Supervisor New England Field Office









http://ofmpub.epa.gov/waters10/attains_impaired_waters.impaired_waters_list?p_state=VT&p_cycle=2012 Last updated on 6/26/2015 Watershed Assessment, Tracking & Environmental ResultS

You are here: EPA Home Water WATERS Water Quality Assessment and TMDL Information 303(d) Listed Waters

Vermont 303(d) Listed Waters for Reporting Year 2012

List Status

Approved by EPA on May 14, 2012.

Description of this table

NOTE: Click on the underlined "Waterbody Name" to view the Waterbody report. Click on the underlined TMDL Date to see a detailed TMDL report.

<u>Waterbody</u> <u>Name</u>	Waterbody ID	<u>Map</u>	Location	Cause of Impairment	<u>Cycles</u> Listed	Latest TMDL Date
ADAMS (WOODFD)	VT12-04L01	Waterbody <u>Map</u>	Adams Reservoir (Woodford)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>
ARROWHEAD MOUNTAIN	VT07-03L03_01	Waterbody <u>Map</u>	Arrowhead Mountian Lake (Milton)	Mercury in Fish Tissue		
ARROWHEAD MOUNTAIN	VT07-03L03_02	<u>Waterbody</u> <u>Map</u>	Arrowhead Mountian Lake (Milton)	Mercury in Fish Tissue		
<u>Allen Brook</u>	VT08-02.01	Data Unavailable	Allen Brook from rm 2.4 to rm 5.0	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Allen Brook</u>	VT08-02.01	Data Unavailable	Allen Brook from rm 2.4 to rm 5.0	Stormwater	2004, 2006, 2008	
BEEBE (SUNDLD)	VT01-06L02	<u>Waterbody</u> <u>Map</u>	Beebe Pond (Sunderland)	рН	1996, 1998, 2000, 2002, 2004	<u>Sep-20-2004</u>
BIG MUD	VT03-18L03	<u>Waterbody</u> <u>Map</u>	Big Mud (Mount Tabor)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
BOURN	VT01-05L01	<u>Waterbody</u> <u>Map</u>	Bourn Pond (Sunderland)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>BRANCH</u>	VT01-06L01	<u>Waterbody</u> <u>Map</u>	Branch Pond (Sunderland)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>Ball Mountain</u> Brook	VT11-15.03	Data Unavailable	Ball Mountain Brook above North Branch confluence	pH, Low	1996, 1998, 2000, 2002, 2006, 2008, 2010, 2012	
Barney Brook section	VT01-03.01	Data Unavailable	Barney Brook mouth to rm 1.5	Iron	2010, 2012	

Barney Brook section	VT01-03.01	Data Unavailable	Barney Brook mouth to rm 1.5	Sedimentation/Siltation	2010, 2012	
<u>Bartlett Brook</u>	VT05-11.02	Data Unavailable	Bartlett Brook from mouth upstream 0.7 miles	Stormwater		
<u>Bear Creek Brook</u> segment	VT11-15.04	Data Unavailable	Bear Creek Brook from rm 0.7 to headwaters	pH, Low	2008, 2010, 2012	
Berry Brook	VT06-04.01	Data Unavailable	Berry Brook from its mouth up to and including North Trib	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Berry Brook</u>	VT06-04.01	Data Unavailable	Berry Brook from its mouth up to and including North Trib	Nutrients	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Berry Brook	VT06-04.01	Data Unavailable	Berry Brook from its mouth up to and including North Trib	Sedimentation/Siltation	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Big Spruce Brook	VT08-12.03	Data Unavailable	Big Spruce Brook from rm 0.3 upstream	Iron		
Big Spruce Brook	VT08-12.03	Data Unavailable	Big Spruce Brook from rm 0.3 upstream	Sedimentation/Siltation		
Branch Pond Brook	VT01-06.01	Data Unavailable	Branch Pond Brook from Branch Pond down to the Roaring Branch of the Batten Kill	pH, Low	2010, 2012	
<u>Burgess Brook</u>	VT06-08.05	Data Unavailable	Burgress Broom from rm 4.9 to 5.4	Asbestos	2012	
Burgess Brook	VT06-08.05	Data Unavailable	Burgress Broom from rm 4.9 to 5.4	Sedimentation/Siltation	2008, 2010, 2012	
<u>Burgess Brook</u> Tributary 11	VT06-08.06	Data Unavailable	Burgess Brook Trib 11 from mouth upstream 0.5 miles	Asbestos	2012	
<u>Burgess Brook</u> Tributary 11	VT06-08.06	Data Unavailable	Burgess Brook Trib 11 from mouth upstream 0.5 miles	Sedimentation/Siltation	2008, 2010, 2012	
<u>CARMI</u>	VT05-02L01_01	<u>Waterbody</u> <u>Map</u>	Lake Carmi (Franklin)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006,	

					2008
<u>CARMI</u>	VT05-02L01_02	<u>Waterbody</u> <u>Map</u>	Lake Carmin (Franklin)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006, 2008
<u>CARMI</u>	VT05-02L01_03	<u>Waterbody</u> <u>Map</u>	Lake Carmin (Franklin)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006, 2008
<u>CARMI</u>	VT05-02L01_04	<u>Waterbody</u> <u>Map</u>	Lake Carmin (Franklin)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006, 2008
<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_01	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	Mercury in Fish Tissue	
CHAMP- BURLINGTON BAY	VT05-10L01_01	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012
<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_02	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	Mercury in Fish Tissue	
<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_02	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012
<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_03	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	Mercury in Fish Tissue	
<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_03	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin (Burlington)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012
CHAMP- BURLINGTON BAY	VT05-10L01_04	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin Pine Street Barge Canal	Mercury in Fish Tissue	
CHAMP- BURLINGTON BAY	VT05-10L01_04	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin Pine Street Barge Canal	Toluene	2010

<u>CHAMP-</u> BURLINGTON BAY	VT05-10L01_04	<u>Waterbody</u> <u>Map</u>	Burlington Bay - Lake Champlalin Pine Street Barge Canal	Xylenes - Total, Mixed		
<u>CHAMP-ISLE LA</u> MOTTE	VT05-04L02_01	<u>Waterbody</u> <u>Map</u>	Isle La Motte - Lake Champlalin (Alburg)	Mercury in Fish Tissue		
<u>CHAMP-ISLE LA</u> MOTTE	VT05-04L02_01	<u>Waterbody</u> <u>Map</u>	Isle La Motte - Lake Champlalin (Alburg)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-ISLE LA</u> MOTTE	VT05-04L02_02	<u>Waterbody</u> <u>Map</u>	Isle La Motte - Lake Champlalin (Alburg)	Mercury in Fish Tissue		
<u>CHAMP-ISLE LA</u> MOTTE	VT05-04L02_02	<u>Waterbody</u> <u>Map</u>	Isle La Motte - Lake Champlalin (Alburg)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-MAIN</u> LAKE	VT05-10L02_01	Data Unavailable	Main Section - Lake Champlain (South Hero)	Mercury in Fish Tissue		
<u>CHAMP-MAIN LAKE</u>	VT05-10L02_01	Data Unavailable	Main Section - Lake Champlain (South Hero)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-MAIN</u> LAKE	VT05-10L02_01	Data Unavailable	Main Section - Lake Champlain (South Hero)	Phosphorus, Total		
<u>CHAMP-MAIN LAKE</u>	VT05-10L02_02	Data Unavailable	Main Section - Lake Champlain (South Hero)	Mercury in Fish Tissue		
<u>CHAMP-MAIN LAKE</u>	VT05-10L02_02	Data Unavailable	Main Section - Lake Champlain (South Hero)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-MAIN</u> LAKE	VT05-10L02_02	Data Unavailable	Main Section - Lake Champlain (South Hero)	Phosphorus, Total		
<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_01	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	Mercury in Fish Tissue		
<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_01	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	PCB(s) in Fish Tissue	1996, 2000, 2002, 2004, 2006, 2008, 2010, 2012	

<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_02	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	Mercury in Fish Tissue		
<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_02	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	PCB(s) in Fish Tissue	1996, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_03	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	Mercury in Fish Tissue		
<u>CHAMP-</u> MALLETTS BAY	VT05-09L01_03	<u>Waterbody</u> <u>Map</u>	Malletts Bay - Lake Champlain (Colchester)	PCB(s) in Fish Tissue	1996, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> MISSISQUOI BAY	VT05-01L01_01	<u>Waterbody</u> <u>Map</u>	Missisquoi Bay - Lake Champlain (Alburg)	Mercury in Fish Tissue		
<u>CHAMP-</u> MISSISQUOI BAY	VT05-01L01_01	<u>Waterbody</u> <u>Map</u>	Missisquoi Bay - Lake Champlain (Alburg)	Phosphorus, Total		
<u>CHAMP-</u> MISSISQUOI BAY	VT05-01L01_02	<u>Waterbody</u> <u>Map</u>	Missisquoi Bay - Lake Champlain (Alburg)	Mercury in Fish Tissue		
<u>CHAMP-</u> MISSISQUOI BAY	VT05-01L01_02	<u>Waterbody</u> <u>Map</u>	Missisquoi Bay - Lake Champlain (Alburg)	Phosphorus, Total		
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_01	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Mercury in Fish Tissue		
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_01	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	PCB(s) in Fish Tissue	1996, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_01	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Phosphorus, Total		
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_02	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Mercury in Fish Tissue		
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_02	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	PCB(s) in Fish Tissue	1996, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_02	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Phosphorus, Total		
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_03	Waterbody <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Mercury in Fish Tissue		

<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_03	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	PCB(s) in Fish Tissue	1996, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> NORTHEAST ARM	VT05-04L01_03	<u>Waterbody</u> <u>Map</u>	Northeast Arm - Lake Champlain (Swanton)	Phosphorus, Total		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_01	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_01	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2008, 2010, 2012	
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_01	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_02	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_02	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2008, 2010, 2012	
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_02	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_03	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_03	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2008, 2010, 2012	
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_03	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_04	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-OTTER</u> CREEK	VT04-01L01_04	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2002, 2008, 2010, 2012	

<u>CHAMP-OTTER</u> <u>CREEK</u>	VT04-01L01_04	<u>Waterbody</u> <u>Map</u>	Otter Creek Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_01	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_01	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2000, 2002, 2008, 2010, 2012	
<u>CHAMP-PORT</u> HENRY	VT04-01L02_01	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_02	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_02	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2000, 2002, 2008, 2010, 2012	
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_02	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_03	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Mercury in Fish Tissue		
<u>CHAMP-PORT</u> HENRY	VT04-01L02_03	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	PCB(s) in Fish Tissue	1996, 1998, 2000, 2002, 2008, 2010, 2012	
<u>CHAMP-PORT</u> <u>HENRY</u>	VT04-01L02_03	<u>Waterbody</u> <u>Map</u>	Port Henry Section - Lake Champlain (Ferrisburgh)	Phosphorus, Total		
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_01	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Mercury in Fish Tissue		
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_01	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	PCB(s) in Fish Tissue	2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_01	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Phosphorus, Total		
CHAMP- SHELBURNE BAY	VT05-11L01_02	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Mercury in Fish Tissue		

<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_02	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	PCB(s) in Fish Tissue	2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_02	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Phosphorus, Total		
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_03	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Mercury in Fish Tissue		
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_03	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	PCB(s) in Fish Tissue	2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-</u> SHELBURNE BAY	VT05-11L01_03	<u>Waterbody</u> <u>Map</u>	Shelburne Bay - Lake Champlain (Shelburne)	Phosphorus, Total		
<u>CHAMP-SOUTH</u> LAKE	VT04-02L01_01	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	Mercury in Fish Tissue		
<u>CHAMP-SOUTH LAKE</u>	VT04-02L01_01	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-SOUTH</u> LAKE	VT04-02L01_01	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	Phosphorus, Total		
<u>CHAMP-SOUTH</u> LAKE	VT04-02L01_02	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	Mercury in Fish Tissue		
<u>CHAMP-SOUTH LAKE</u>	VT04-02L01_02	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>CHAMP-SOUTH</u> LAKE	VT04-02L01_02	<u>Waterbody</u> <u>Map</u>	Southern Section - Lake Champlain (Bridport)	Phosphorus, Total		
<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_01	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	Mercury in Fish Tissue		
<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_01	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	PCB(s) in Fish Tissue	2010, 2012	
<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_01	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	Phosphorus, Total		
<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_02	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	Mercury in Fish Tissue		
<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_02	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	PCB(s) in Fish Tissue	2010, 2012	

<u>CHAMP-ST.</u> ALBANS BAY	VT05-07L01_02	<u>Waterbody</u> <u>Map</u>	St. Albans Bay - Lake Champlain (St. Albans Town)	Phosphorus, Total		
<u>CHITTENDEN</u>	VT03-14L03	<u>Waterbody</u> <u>Map</u>	Chittenden Reservoir (Chittenden)	Mercury in Fish Tissue		
<u>COMERFORD</u>	VT16-05L01	<u>Waterbody</u> <u>Map</u>	Comerford Reservoir (Barnet)	Mercury in Fish Tissue	2002, 2004, 2006	Dec-20-2007
<u>Castleton River</u> segment	VT02-03.01	Data Unavailable	Castleton River segment below WWTF pump station	Escherichia Coli (E. Coli)	2010, 2012	
<u>Centennial Brook</u>	VT08-02.05	Data Unavailable	Centennial Brook from its mouth to rm 1.2	Stormwater	2008	
<u>Chester Brook</u>	VT06-05.01	Data Unavailable	Chester Brook from its mouth upstream 2.5 miles	Nutrients	1998, 2000, 2002, 2008, 2010, 2012	
<u>Chester Brook</u>	VT06-05.01	Data Unavailable	Chester Brook from its mouth upstream 2.5 miles	Sedimentation/Siltation	1998, 2000, 2002, 2008, 2010, 2012	
<u>Clay Brook</u>	VT08-20.01	Data Unavailable	Clay Brook from above Inferno Road down to rm 1.8	Iron	2008, 2010, 2012	
<u>Clay Brook</u>	VT08-20.01	Data Unavailable	Clay Brook from above Inferno Road down to rm 1.8	Stormwater	2008, 2010, 2012	
<u>Coburn Brook</u>	VT06-08.04	Data Unavailable	Coburn Brook from its mouth upstream 0.2 miles	Nutrients	2004, 2006, 2008, 2010, 2012	
<u>Commissary</u> Brook tributary	VT13-10.01	Data Unavailable	Commissary Brook tributary near the Connecticut River	Sedimentation/Siltation	2010, 2012	
<u>Cookville Brook</u> <u>tributary</u>	VT14-06.01	Data Unavailable	Cookville Brook tributary #4 rm 1.0 to rm 1.7	Metals, Acid - Mining	2010, 2012	
<u>Copperas Brook</u>	VT14-02.02	Data Unavailable	Copperas Brook	Metals, Acid - Mining	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Crosby Brook</u>	VT13-13.01	Data Unavailable	Crsoby Brook mouth to rm 0.7	Sedimentation/Siltation	2006, 2008, 2010, 2012	
DUCK (HOLLND)	VT17-02L06	<u>Waterbody</u> <u>Map</u>	Duck (Holland)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>

Dead Creek lower section	VT03-09.01	Data Unavailable	Dead Creek from mouth to headwaters and tributaries	Mercury in Fish Tissue		
Deer Brook	VT07-03.01	Data Unavailable	Deer Brook from mouth upstream 2.5 miles	Sedimentation/Siltation	2008, 2010, 2012	
<u>East Branch</u> Deerfield River	VT12-03.01	Data Unavailable	East Branch Deerfield River below Somerset dam	Mercury in Fish Tissue		
<u>East Branch</u> Deerfield River	VT12-03.01	Data Unavailable	East Branch Deerfield River below Somerset dam	pH, Low	2008, 2010, 2012	
<u>East Branch</u> Roaring Brook segment	VT10-06.02	Data Unavailable	East Branch Roaring Brook from rm 0.1 to rm 0.6	Iron	2008, 2010, 2012	
<u>East Branch</u> Roaring Brook segment	VT10-06.02	Data Unavailable	East Branch Roaring Brook from rm 0.1 to rm 0.6	Stormwater	2008, 2010, 2012	
East Creek lowest section	VT03-14.01	Data Unavailable	East Creek from its mouth to 0.2 miles upstream	Escherichia Coli (E. Coli)	2004, 2006, 2008, 2010, 2012	
<u>East Creek lowest</u> section	VT03-14.01	Data Unavailable	East Creek from its mouth to 0.2 miles upstream	Organic Enrichment (Sewage) Biological Indicators	2012	
Englesby Brook	VT05-10.01	Data Unavailable	Englesby Brook from its mouth upstream	Escherichia Coli (E. Coli)	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
Englesby Brook	VT05-10.01	Data Unavailable	Englesby Brook from its mouth upstream	Stormwater	2004, 2006, 2008	
FORESTER	VT11-15L01	<u>Waterbody</u> <u>Map</u>	Forester Pond (Jamaica)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
Fayville Branch	VT01-06.02	Data Unavailable	Fayville Branch - trib to the Roaring Branch that is trib to the Batten Kill	pH, Low	2010, 2012	
<u>Flower Brook,</u> Trib to Mettawee <u>River</u>	VT02-05.03	Data Unavailable	Flower Brook from mouth upstream 0.5 miles	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
GILMORE	VT03-11L02	<u>Waterbody</u> <u>Map</u>	Gilmore (Bristol)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>
<u>GRIFFITH</u>	VT03-18L02	<u>Waterbody</u> <u>Map</u>	Griffith (Peru)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>GROUT</u>	VT12-03L01	Waterbody <u>Map</u>	Grout Pond (Stratton)	Mercury in Fish Tissue		

<u>GROUT</u>	VT12-03L01	Waterbody Map	Grout Pond (Stratton)	рН	1996	
<u>Godin Brook</u>	VT06-04.02	Data Unavailable	Godin Brook from its mouth upstream 1 mile	Escherichia Coli (E. Coli)	2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Godin Brook</u>	VT06-04.02	Data Unavailable	Godin Brook from its mouth upstream 1 mile	Nutrients	2004, 2006, 2008, 2010, 2012	
<u>Godin Brook</u>	VT06-04.02	Data Unavailable	Godin Brook from its mouth upstream 1 mile	Sedimentation/Siltation	2004, 2006, 2008, 2010, 2012	
<u>Gunner Brook</u>	VT08-16.01	Data Unavailable	Gunner Brook below the Farwell Street Dump	Sedimentation/Siltation	2006, 2012	
<u>Gunner Brook</u>	VT08-16.01	Data Unavailable	Gunner Brook below the Farwell Street Dump	Toxics	2008, 2010, 2012	
HALFWAY	VT17-03L03	<u>Waterbody</u> <u>Map</u>	Halfway (Norton)	рН		
HARDWOOD	VT08-13L01	Waterbody Map	Hardwood Pond (Elmore)	рН		
<u>HARRIMAN</u> (WHITHM)	VT12-01L01	<u>Waterbody</u> <u>Map</u>	Harriman Reservoir (Whitingham)	Mercury in Fish Tissue		
<u>HARRIMAN</u> (WHITHM)	VT12-01L01	<u>Waterbody</u> <u>Map</u>	Harriman Reservoir (Whitingham)	рН	1998, 2000, 2002, 2004	
<u>HAYSTACK</u>	VT12-05L01	<u>Waterbody</u> <u>Map</u>	Haystack Pond (Wilmington)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
HOWE	VT12-02L02	<u>Waterbody</u> <u>Map</u>	Howe Pond (Readsboro)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>Halnon Brook Trib</u> <u>1</u>	VT03-12.02	Data Unavailable	Tributary 1 to Halnon Brook below fish hatchery	Nutrients	2012	
<u>Hoosic River</u> mainstem	VT01-02.01	Data Unavailable	Hoosic River mainstem through Vermont from Mass to NY border	PCB(s) in Fish Tissue	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Huntington River	VT08-10.01	Data Unavailable	Huntington River below Bridge Street	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
Hutchins Brook	VT07-15.01	Data Unavailable	Hutchins Brook from rm 2.0 to 3.0	Asbestos	2008, 2010, 2012	
Hutchins Brook	VT07-15.01	Data Unavailable	Hutchins Brook from rm 2.0 to 3.0	Sedimentation/Siltation	2008, 2010, 2012	

<u>Hutchins Brook</u> Tributary <u>4</u>	VT07-15.02	Data Unavailable	Hutchins Brook Trib 4 from mouth to rm 0.3	Asbestos	2008, 2010, 2012	
<u>Hutchins Brook</u> Tributary 4	VT07-15.02	Data Unavailable	Hutchins Brook Trib 4 from mouth to rm 0.3	Sedimentation/Siltation	2008, 2010, 2012	
<u>Indian Brook</u> segment	VT05-09.01	Data Unavailable	Indian Brook from rm 5.8 to rm 9.8	Stormwater	2008	
<u>Inn Brook</u>	VT08-12.01	Data Unavailable	Inn Brook from rm 0.3 to rm 0.6	Iron	2008, 2010, 2012	
<u>Iron Stream Trib</u> to Tannery Brook	VT12-05.03	Data Unavailable	Iron Stream Trib to Tannery Brook	Iron	2008, 2010, 2012	
Jay Branch	VT06-08.01	Data Unavailable	Jay Branch from rm 8.3 upstream 1.9 miles	Sedimentation/Siltation		
Jay Branch Trib 9	VT06-08.02	Data Unavailable	Jay Branch Tributary # 9	Sedimentation/Siltation		
<u>Jewett Brook</u>	VT05-07.03	Data Unavailable	Jewett Brook from mouth upstream 3.5 miles	Escherichia Coli (E. Coli)	2008, 2010, 2012	
<u>Jewett Brook</u>	VT05-07.03	Data Unavailable	Jewett Brook from mouth upstream 3.5 miles	Sedimentation/Siltation	2008, 2010, 2012	
KINGS HILL	VT06-06L01	<u>Waterbody</u> <u>Map</u>	Kings Hill (Bakersfield)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>
Kidder Brook	VT11-15.05	Data Unavailable	Kidder Brook from confluence of Sun Bowl Brook to headwaters	pH, Low	2006, 2008, 2010, 2012	
LAKE-OF- THE-CLOUDS	VT07-13L02	<u>Waterbody</u> <u>Map</u>	Lake-of- the-Clouds (Cambridge)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
LEVI	VT14-07L01	<u>Waterbody</u> <u>Map</u>	Levi (Groton)	рН	1996, 1998, 2000, 2002, 2004	<u>Sep-20-2004</u>
LILY (LONDRY)	VT11-18L03	Waterbody Map	Lily Pond (Londonderry)	рН	2010, 2012	<u>Sep-27-2012</u>
LILY (VERNON)	VT13-16L01	Waterbody Map	Lily Pond (Vernon)	рН	2010, 2012	<u>Sep-27-2012</u>
LITTLE (WINHLL)	VT11-15L02	<u>Waterbody</u> <u>Map</u>	Little Pond (Winhall)	рН	1998, 2000, 2002, 2004	<u>Sep-20-2004</u>
<u>LITTLE</u> (WOODFD)	VT12-04L04	<u>Waterbody</u> <u>Map</u>	Little Pond (Woodford)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
LITTLE MUD (MTTABR)	VT03-18L07	<u>Waterbody</u> <u>Map</u>	Little Mud Pond (Mount Tabor)	рН	1998, 2000, 2002	Sep-20-2004
LITTLE MUD (WINHLL)	VT01-05L10	Waterbody <u>Map</u>	Little Mud Pond (Winhall)	рН		

LONG HOLE	VT03-18L06	<u>Waterbody</u> <u>Map</u>	Long Hole (Mt. Tabor)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>
LOST (GLASBY)	VT12-04L02	<u>Waterbody</u> <u>Map</u>	Lost Pond (Glastenbury)	рН	1998, 2000, 2002, 2004	<u>Sep-20-2004</u>
LYE BROOK-N;	VT01-05L11	<u>Waterbody</u> <u>Map</u>	Lye Brook Pond (N) (Sunderland)	рН	1998, 2000, 2002, 2008, 2010, 2012	<u>Sep-30-2003</u>
LYE BROOK-S;	VT01-05L12	<u>Waterbody</u> <u>Map</u>	Lye Brook Pond (S) (Sunderland)	рН	1998, 2000, 2002, 2008, 2010, 2012	<u>Sep-30-2003</u>
LaPlatte River	VT05-11.04	Data Unavailable	LaPlatte River from mouth up to Hinesburg	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
Ladd Brook	VT01-02.02	Data Unavailable	A tributary of the Hoosic River mainstem from the Massachusetts border downstream through Vermont to the New York border (mainstem segmented off)	Sedimentation/Siltation	2010, 2012	
<u>Lewis Creek from</u> lower section	VT03-08.01	Data Unavailable	Lewis Creek from the lower covered bridge upstream to the footbridge	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
Little Otter Creek from rm 15.4 to 16.4	VT03-07.02	Data Unavailable	Little Otter Creek from rm 15.4 to 16.4	Nutrients	2008, 2010, 2012	
<u>Little Otter Creek</u> from rm 15.4 to 16.4	VT03-07.02	Data Unavailable	Little Otter Creek from rm 15.4 to 16.4	Sedimentation/Siltation	2008, 2010, 2012	
Little Otter Creek lower section	VT03-07.01	Data Unavailable	Little Otter Creek from mouth upstream 7.8 miles	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
Little Otter Creek lower section	VT03-07.01	Data Unavailable	Little Otter Creek from mouth upstream 7.8 miles	Mercury in Fish Tissue		
Lords Brook	VT14-02.03	Data Unavailable	Lords Brook from 0.5 miles above mouth to rm 3.3	Metals, Acid - Mining	2010, 2012	
Lower Black River	VT10-11.01	Data Unavailable	Black River mainstem from mouth upstream about 2.5 miles	Escherichia Coli (E. Coli)	2008, 2010, 2012	
<u>Lower Deerfield</u> River	VT12-01.01	Data Unavailable	Lower Deerfield River below Harriman	Temperature, Water		

			Reservoir			
Lower Lamoille mainstem mercury segment (rest of)	VT07-01.02	Data Unavailable	Lower Lamoille mainstem from the Route 2 bridge down to the mouth	Mercury in Fish Tissue		
Lower Lamoille mainstem mercury segment plus hydro DO impact	VT07-01.01	Data Unavailable	Lower Lamoille mainstem from Clarks Falls dam down to the Route 2 bridge	Dissolved Oxygen Saturation		
Lower Lamoille mainstem mercury segment plus hydro DO impact	VT07-01.01	Data Unavailable	Lower Lamoille mainstem from Clarks Falls dam down to the Route 2 bridge	Mercury in Fish Tissue		
Lower Missisquoi River segment	VT06-01.01	Data Unavailable	Missisquoi River mainstem from the mouth to Swanton dam	Mercury in Fish Tissue		
<u>Lower Otter</u> <u>Creek below</u> Vergennes	VT03-01.02	Data Unavailable	Otter Creek mainstem below the Vergennes WWTF - mercury segment and E. coli segment both	Escherichia Coli (E. Coli)	2010, 2012	
<u>Lower Otter</u> <u>Creek below</u> Vergennes	VT03-01.02	Data Unavailable	Otter Creek mainstem below the Vergennes WWTF - mercury segment and E. coli segment both	Mercury in Fish Tissue		
Lower Winooski River mercury segment	VT08-01.01	Data Unavailable	Winooski River mainstem from its mouth at Lake Champlain up to the Winooski Dam	Mercury in Fish Tissue		
<u>Lye Brook</u>	VT01-05.01	Data Unavailable	Lye Brook, tributary to the Battenkill	pH, Low	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
MEMPHREMAGOG	VT17-01L01_01	<u>Waterbody</u> <u>Map</u>	Memphremagog (Newport)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
MEMPHREMAGOG	VT17-01L01_02	<u>Waterbody</u> <u>Map</u>	Memphremagog (Newport)	Phosphorus, Total	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	

MOORE	VT16-04L01	<u>Waterbody</u> <u>Map</u>	Moore Reservoir (Waterford)	Mercury in Fish Tissue	2002, 2004, 2006	Dec-20-2007
MOSES	VT11-18L06	<u>Waterbody</u> <u>Map</u>	Moses Pond (Weston)	рН	1998, 2000, 2002	Sep-30-2003
<u>Mad River</u>	VT08-18.01	Data Unavailable	Mad River mainstem from its mouth to Ward Clapboard Mill	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Mid-West River</u> segment	VT11-10.01	Data Unavailable	West River mainstem from the Ball Mountain dam to the Townshend dam	Temperature, Water	2004, 2006, 2008, 2010, 2012	
<u>Middlebury River</u> lower section	VT03-12.01	Data Unavailable	Middlebury River from the mouth upstream 2 miles	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Mill Brook</u> Tributary <u>6</u>	VT11-16.01	Data Unavailable	Mill Brook Tributary 6 from rm 1.9 up to rm 2.9	Sedimentation/Siltation	2012	
<u>Mill Brook</u> Tributary <u>6</u>	VT11-16.01	Data Unavailable	Mill Brook Tributary 6 from rm 1.9 up to rm 2.9	Stormwater	2010, 2012	
Mill River section	VT05-07.04	Data Unavailable	Mill River from St Albans Bay upstream 1.8 miles	Nutrients	2008, 2010, 2012	
Mill River section	VT05-07.04	Data Unavailable	Mill River from St Albans Bay upstream 1.8 miles	Sedimentation/Siltation	2008, 2010, 2012	
<u>Moon Brook</u> section	VT03-06.01	Data Unavailable	Moon Brook from the mouth upstream	Stormwater	2004, 2006, 2008	Feb-19-2009
<u>Morehouse Brook</u>	VT08-02.06	Data Unavailable	Morehouse Brook from mouth upstream to rm 0.6	Stormwater	2008	
<u>Mud Creek</u>	VT06-08.03	Data Unavailable	Mud Creek from Quebec/Vermont border upstream to rm 6.5	Ag Runoff	2008, 2010, 2012	
Mud Creek	VT06-08.03	Data Unavailable	Mud Creek from Quebec/Vermont border upstream to rm 6.5	Nutrients	2000, 2002, 2012	
Mud Creek	VT06-08.03	Data Unavailable	Mud Creek from Quebec/Vermont border upstream to rm 6.5	Sedimentation/Siltation	2000, 2002, 2012	
Mud Hollow Brook	VT05-11.05	Data Unavailable	Mud Hollow Brook from mouth upstream 3 miles	Escherichia Coli (E. Coli)	2008, 2010	Sep-30-2011

<u>Muddy Brook</u>	VT08-02.02	Data Unavailable	Muddy Brook from its mouth upstream 1.2 miles	Nutrients	2008, 2010, 2012	
<u>Muddy Brook</u>	VT08-02.02	Data Unavailable	Muddy Brook from its mouth upstream 1.2 miles	Temperature, Water	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Muddy Brook	VT08-08.01	Data Unavailable	Tributary draining into the Upper Winooski by CV Landfill called Muddy Brook	Iron		
<u>Munroe Brook</u>	VT05-11.01	Data Unavailable	Munroe Brook from mouth to rm 2.8	Sedimentation/Siltation	2008	
NORTH (BRISTL)	VT03-11L01	Waterbody <u>Map</u>	North Pond (Bristol)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>Newton Brook</u>	VT13-16.01	Data Unavailable	Newton Brook from mouth upstream 2 miles	Sedimentation/Siltation	2002, 2004, 2006, 2008, 2010, 2012	
<u>North Branch Ball</u> Mountain Brook	VT11-15.06	Data Unavailable	North Branch Ball Mountain Brook from Stratton Golf Course Pond down a half mile	Manganese		
North Branch Deerfield River	VT12-05.01	Data Unavailable	North Branch Deerfield River from Tannery Brook Road to above Snow Lake 0.2 miles	Sedimentation/Siltation	2012	
North Branch Deerfield River	VT12-05.01	Data Unavailable	North Branch Deerfield River from Tannery Brook Road to above Snow Lake 0.2 miles	Stormwater	2008, 2010, 2012	
North Branch Deerfield River	VT12-05.02	Data Unavailable	North Branch Deerfield River in the vicinity of West Dover	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
<u>North Branch</u> Winooski River	VT08-13.01	Data Unavailable	North Branch Winooski River Iowest 1 mile	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Ompompanoosuc River	VT14-03.01	Data Unavailable	Ompompanoosuc River from Brimstone Corners down to ACOE swimming hole area	Escherichia Coli (E. Coli)	2008, 2010	Sep-30-2011

Otter Creek below Rutland CSO	VT03-05.01	Data Unavailable	Otter Creek downstream from the Rutland City WWTF CSO	Escherichia Coli (E. Coli)	2008, 2010, 2012	
Otter Creek below Rutland CSO	VT03-05.01	Data Unavailable	Otter Creek downstream from the Rutland City WWTF CSO	Organic Enrichment (Sewage) Biological Indicators	2012	
Otter Creek from Middlebury River down to Pulp Mill Bridge	VT03-01.01	Data Unavailable	Otter Creek from the Middlebury River down to the Pulp Mill Bridge	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
Passumpsic Main Stem	VT15-01.01	Data Unavailable	Passumpsic River mainstem from Pierce Mills dam downstream 5 miles	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Pike Hill Brook	VT14-05.01	Data Unavailable	Pike Hill Brook from mouth upstream 4 miles	Metals, Acid - Mining	2000, 2002, 2004, 2006, 2008, 2010, 2012	
Pond Brook	VT03-08.02	Data Unavailable	Pond Brook from its mouth at Lewis Creek upstream for 1.5 miles	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
Potash Brook	VT05-11.03	Data Unavailable	Potash Brook from mouth upstream 5.2 miles	Escherichia Coli (E. Coli)	2008, 2010	Sep-30-2011
Potash Brook	VT05-11.03	Data Unavailable	Potash Brook from mouth upstream 5.2 miles	Stormwater		
Poultney Mainstem mercury segment	VT02-01.01	Data Unavailable	Poultney River mainstem from the mouth to Carvers Falls segment	Mercury in Fish Tissue		
<u>Roaring Brook</u> segment	VT10-06.01	Data Unavailable	Roaring Brook from rm 3.5 to rm 4.2	Stormwater	2008, 2010, 2012	
<u>Rock River -</u> lowest segment	VT05-01.01	Data Unavailable	Rock River from its mouth upstream to Canada/US Border	Nutrients	2000, 2002, 2008, 2010, 2012	
Rock River - lowest segment	VT05-01.01	Data Unavailable	Rock River from its mouth upstream to Canada/US Border	Sedimentation/Siltation	2000, 2002, 2008, 2010, 2012	
<u>Rock River up</u> from Canadian border	VT05-01.02	Data Unavailable	Rock River from Canadian border upstream 13 miles	Nutrients	2008, 2010, 2012	

<u>Rock River up</u> from Canadian border	VT05-01.02	Data Unavailable	Rock River from Canadian border upstream 13 miles	Sedimentation/Siltation	2008, 2010, 2012	
<u>Rodman Brook</u>	VT07-08.01	Data Unavailable	Rodman Brook, a tributary to the Lamoille in Morristown	Iron	2010, 2012	
Rugg Brook from rm 3.1 upstream 1.6 miles	VT05-07.02	Data Unavailable	Rugg Brook from rm 3.1 upstream 1.6 miles	Stormwater	2008	Feb-19-2009
<u>Rugg Brook</u> segment 1	VT05-07.01	Data Unavailable	Rugg Brook from mouth upstream about 3.1 miles	Escherichia Coli (E. Coli)	2008, 2010, 2012	
<u>Rugg Brook</u> segment 1	VT05-07.01	Data Unavailable	Rugg Brook from mouth upstream about 3.1 miles	Nutrients	2008, 2010, 2012	
<u>Rugg Brook</u> segment 1	VT05-07.01	Data Unavailable	Rugg Brook from mouth upstream about 3.1 miles	Sedimentation/Siltation	2008, 2010, 2012	
SALEM	VT17-04L04_01	Waterbody <u>Map</u>	Lake Salem (Derby)	Mercury in Fish Tissue		
<u>SALEM</u>	VT17-04L04_02	Waterbody Map	Lake Salem (Derby)	Mercury in Fish Tissue		
SALEM	VT17-04L04_03	Waterbody Map	Lake Salem (Derby)	Mercury in Fish Tissue		
SEARSBURG	VT12-04L05	<u>Waterbody</u> <u>Map</u>	Searsburg Reservoir (Searsburg)	Mercury in Fish Tissue		
<u>SHELBURNE</u>	VT08-02L01	<u>Waterbody</u> <u>Map</u>	Shelburne Pond (Shelburne)	Phosphorus, Total	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>SHERMAN</u>	VT12-01L04	<u>Waterbody</u> <u>Map</u>	Sherman Reservoir (Whitingham)	Mercury in Fish Tissue		
<u>SKYLIGHT</u>	VT09-07L01	<u>Waterbody</u> <u>Map</u>	Skylight (Ripton)	рН	1998, 2000, 2002, 2004	<u>Sep-20-2004</u>
SOMERSET	VT12-03L02	<u>Waterbody</u> <u>Map</u>	Somerset Reservoir (Somerset)	Mercury in Fish Tissue		
SOMERSET	VT12-03L02	<u>Waterbody</u> <u>Map</u>	Somerset Reservoir (Somerset)	рН		
<u>SOUTH (MARLBR)</u>	VT12-07L01	<u>Waterbody</u> <u>Map</u>	South Pond (Marlboro)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
STAMFORD	VT12-02L03	<u>Waterbody</u> <u>Map</u>	Stamford Pond (Stamford)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
STRATTON	VT11-16L01	<u>Waterbody</u> <u>Map</u>	Stratton Pond (Stratton)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>

<u>SUNSET</u> (MARLBR)	VT11-08L01	<u>Waterbody</u> <u>Map</u>	Sunset Lake (Marlboro)	рН	1998, 2000, 2002	Sep-30-2003
<u>Samsonville</u> Brook	VT06-04.03	Data Unavailable	Samonsville Brook from its mouth upstream for 2 miles	Escherichia Coli (E. Coli)	2004, 2006, 2008, 2010	<u>Sep-30-2011</u>
<u>Samsonville</u> <u>Brook</u>	VT06-04.03	Data Unavailable	Samonsville Brook from its mouth upstream for 2 miles	Nutrients	2004, 2006, 2008, 2010, 2012	
<u>Samsonville</u> Brook	VT06-04.03	Data Unavailable	Samonsville Brook from its mouth upstream for 2 miles	Sedimentation/Siltation	2004, 2006, 2008, 2010, 2012	
Saxe Brook from mouth upstream 1 mile	VT05-01.03	Data Unavailable	Mouth upstream to Canada/US Saxe Brook from mouth upstream 1 mile	Nutrients	2008, 2010, 2012	
<u>Schoolhouse</u> Brook	VT14-03.03	Data Unavailable	Schoolhouse Brook (formerly called Ely Brook) - trib to West Branch Ompom plus a trib	Metals, Acid - Mining	2008, 2010, 2012	
<u>Sleepers River</u>	VT15-04.01	Data Unavailable	Sleepers River from mouth upstream	Escherichia Coli (E. Coli)	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Small brooks to</u> Malletts Bay	VT05-09.02	Data Unavailable	Two Small Streams flowing into Malletts Bay	Escherichia Coli (E. Coli)	2008, 2010	Sep-30-2011
<u>Smith Brook</u>	VT09-06.01	Data Unavailable	Smith Brook from its mouth upstream 0.3 miles	Iron	2004, 2006, 2008, 2010, 2012	
Stearns Brook	VT17-02.01	Data Unavailable	Stearns Brook	Ag Runoff	2008, 2010, 2012	
<u>Stevens Brook</u> lowest segment	VT05-07.05	Data Unavailable	Stevens Brook from mouth upstream 6.8 miles	Escherichia Coli (E. Coli)	2008, 2010, 2012	
<u>Stevens Brook</u> lowest segment	VT05-07.05	Data Unavailable	Stevens Brook from mouth upstream 6.8 miles	Nutrients	2008, 2010, 2012	
Stevens Brook lowest segment	VT05-07.05	Data Unavailable	Stevens Brook from mouth upstream 6.8 miles	Sedimentation/Siltation	1998, 2000, 2002, 2008, 2010, 2012	
<u>Stevens Brook</u> middle segment	VT05-07.06	Data Unavailable	Stevens Brook from a mile below Central Vermont	Toxics	2008, 2010, 2012	

			RR yard upstream to the yard			
<u>Stevens Brook</u> upper segment	VT05-07.07	Data Unavailable	Stevens Brook from Pearl Street (rm6.8) to rm 9.3	Stormwater	2008	Feb-19-2009
<u>Styles Brook</u>	VT11-15.02	Data Unavailable	Styles Brook	Sedimentation/Siltation		
Sunderland Brook	VT08-02.04	Data Unavailable	Sunderland Brook from Route 7 (rm 3.5) to rm 5.3	Stormwater	2008	
TICKLENAKED	VT14-07L02	<u>Waterbody</u> <u>Map</u>	Ticklenaked Pond (Ryegate)	Phosphorus, Total	1996, 2002, 2004, 2006, 2008	
TURTLE	VT17-02L02	<u>Waterbody</u> <u>Map</u>	Turtle (Holland)	рН	1998, 2000, 2002	<u>Sep-30-2003</u>
<u>Trib 23 to</u> Stevens Branch	VT08-16.02	Data Unavailable	Trib23 to Stevens Branch below Williamstown WWTF	Nutrients		
<u>Trib to Brewster</u> <u>River</u>	VT07-13.01	Data Unavailable	Tributary to Brewster River	Iron	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
Tributary No. 1 to North Branch Ball Mountain Brook	VT11-15.01	Data Unavailable	Tributary No. 1 to North Branch Ball Mountain Brook above the Stratton golf course pond	Sedimentation/Siltation		
<u>Tributary to</u> Mid-Ottauquechee River	VT10-04.01	Data Unavailable	Tributary draining to the Mid-Ottauquechee River below Bridgewater Landfill	Iron	2000, 2002, 2004, 2006, 2008, 2010, 2012	
Tributary to Tabor Branch	VT14-05.02	Data Unavailable	Tributary to Tabor Branch from upstream	Ag Runoff	2008, 2010, 2012	
<u>Tributary to Trib</u> #4, Muddy Brook	VT08-02.03	Data Unavailable	Tributary to Muddy Brook below Alling Industrial Park	Toxics	2008, 2010, 2012	
<u>Trout Brook</u>	VT06-04.04	Data Unavailable	Trout Brook from upstream for 2.3 miles	Nutrients	1998, 2000, 2002, 2008, 2010, 2012	
<u>UNKNOWN</u> (AVYGOR)	VT16-11L01	<u>Waterbody</u> <u>Map</u>	Unknown (Avery's Gore)	рН	1996, 1998, 2000, 2002	<u>Sep-30-2003</u>
<u>Unnamed</u> tributary to Hubbardton River	VT02-02.01	Data Unavailable	Unnamed trib to Hubbardton River below Benson WWTF	Escherichia Coli (E. Coli)	2000, 2002, 2004, 2006,	

					2008, 2010, 2012	
<u>Unnamed</u> tributary to Hubbardton River	VT02-02.01	Data Unavailable	Unnamed trib to Hubbardton River below Benson WWTF	Nutrients	2000, 2002, 2004, 2006, 2012	
<u>Unnamed</u> tributary to Hubbardton River	VT02-02.01	Data Unavailable	Unnamed trib to Hubbardton River below Benson WWTF	Temperature, Water	2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Unnamed</u> tributary to Lower Winooski River	VT08-02.07	Data Unavailable	Unnamed tributary re-located around South Burlington landfill	Arsenic		
<u>Unnamed</u> tributary to Lower Winooski River	VT08-02.07	Data Unavailable	Unnamed tributary re-located around South Burlington landfill	Iron		
<u>Unnamed</u> tributary to Lower Winooski River	VT08-02.07	Data Unavailable	Unnamed tributary re-located around South Burlington landfill	Toxics		
<u>Unnamed</u> tributary to Mettawee River	VT02-05.02	Data Unavailable	Unnamed tributary to Mettawee River below Pawlet landfill	Iron	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Unnamed</u> <u>tributary to</u> <u>Mettawee River</u>	VT02-05.02	Data Unavailable	Unnamed tributary to Mettawee River below Pawlet landfill	Zinc	1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Upper Deerfield</u> River	VT12-04.01	Data Unavailable	Upper Deerfield River below Searsburg Dam	Mercury in Fish Tissue		
<u>Upper Deerfield</u> <u>River</u>	VT12-04.01	Data Unavailable	Upper Deerfield River below Searsburg Dam	pH, Low	2004, 2006, 2008, 2010, 2012	
Upper Mid-Winooski River	VT08-05.01	Data Unavailable	Upper Mid-Winooski River below the Montpelier CSOs	Escherichia Coli (E. Coli)	2008, 2010, 2012	
<u>Upper West</u> Branch	VT08-12.04	Data Unavailable	West Branch from rm 7.5 up to rm 8.0	Sedimentation/Siltation		
<u>Upper West</u> Branch	VT08-12.04	Data Unavailable	West Branch from rm 7.5 up to rm 8.0	Stormwater		

<u>Upper West</u> Branch	VT08-12.04	Data Unavailable	West Branch from rm 7.5 up to rm 8.0	Turbidity		
Upper West River	VT11-17.01	Data Unavailable	West River mainstem from about 1 mile below to about 0.5 miles above South Londonderry	Escherichia Coli (E. Coli)	2008, 2010	<u>Sep-30-2011</u>
<u>WATERBURY</u>	VT08-11L02_02	<u>Waterbody</u> <u>Map</u>	Waterbury Reservoir (Waterbury)	Sedimentation/Siltation	1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012	
<u>Wanzer Brook</u>	VT06-05.02	Data Unavailable	Wanzer Brook from its mouth upstream 3.2 miles	Nutrients	2008, 2010, 2012	
Wanzer Brook	VT06-05.02	Data Unavailable	Wanzer Brook from its mouth upstream 3.2 miles	Sedimentation/Siltation	2008, 2010, 2012	
West Branch Ompompanoosuc River	VT14-02.01	Data Unavailable	West Branch Ompompanoosuc River from Copperas Brook confluence to the Ompompanoosuc River	Metals, Acid - Mining	2008, 2010, 2012	
Whetstone Brook	VT13-14.01	Data Unavailable	Whetstone Brook from its mouth to Living Memorial Park	Escherichia Coli (E. Coli)	2000, 2002, 2004, 2006, 2008, 2010	<u>Sep-30-2011</u>



TAB 7

Connecticut River Atlantic Salmon Restoration Program (CRASRP)

- 1. Coordinator's Office Notice of Discontinuance of CRASRP support
- 2. Commission's Meeting Minutes Discontinuance of support



Connecticut River Coordinator's Office

103 East Plumtree Road Sunderland, MA 01375 (413) 548-9138

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Site Map

Atlantic Salmon Management

The Connecticut River stock of Atlantic salmon disappeared from the Connecticut River just after the turn of the 19th century. The loss was recognized by the public and there was a subsequent attempt to restore the population in the 1860s. The project was abandoned after a couple of decades. In 1967 the basin's natural resource management agencies tried again to restore salmon to the basin.



Photo of an Atlantic salmon held in human hands. Credit: USFWS

The second attempt to restore Atlantic salmon to the Connecticut River basin was supported by State and Federal legislation. This mandate created the Connecticut River Atlantic Salmon Commission. Member agencies agreed to work together and ceded authority for the management of salmon to this multi-agency, interstate Commission. The Commission guided a cooperative salmon restoration effort which includesd habitat protection, fisheries management, research, regulation, hatchery production and stocking.

The long-term efforts of this cooperative partnership resulted in an **annual return of adult Atlantic salmon** to a river from which the native interjurisdictional stock had been extirpated. The restoration efforts throughout the watershed helped local economies as observed on the Farmington River as well as social benefits for thousands of school children who have had the hands-on opportunity to **raise salmon in the classroom** and release their fish in the streams that flow through their communities.

Due to low adult returns and the science supporting salmon restoration, the U.S. Fish and Wildlife Service decided to discontinue culturing salmon for restoration in the Connecticut River Basin in 2012. The Service continues to monitor, assess, and research Atlantic Salmon and improve habitat for the species. The salmon in the classroom project will also continue.





Connecticut River Atlantic Salmon Commission Turners Falls, Massachusetts Meeting Minntes July 10, 2012

Agenda Items:

1. Determination of Quorum. Approval of Today's Agenda & Minutes of the November 10, 2011 Meeting.

Chair Mr. Bill Hyatt called the meeting to order at 10:10 a.m. and adjourned at 12:15 p.m.

Mr. Hyatt opened the meeting, and the Commissioners introduce themselves followed by the general audience

No changes to the agenda were made, and the minutes of the last CRASC meeting on November 10, 2011 were reviewed. A motion to accept the minutes from that meeting was made by Mr. Jones, seconded Mr. Palmer, all were in favor.

2. Report of the Executive Assistant

Mr. Sprankle provided a handout and reviewed his report, refer to attachment for details. Highlights of the report include a review of basin facility fishway and trap counts for 2012 to this date. It was noted that passage count totals for American shad were up dramatically compared to the recent years (500.900). At lantic salmon facility counts were at low levels (50) documented, blueback herring counts at Hofyoke remain very low, and sea lamprey counts at Hofyoke were very low, although within the range of normal variation. It was noted that the 10.295 American shad counted on the Westfield River was a record, doubling 2011 (also a record year). He noted that Hofyoke Fish Lift had the fifth highest shad passage count in its time series (490.431). It was noted that Vernon Dam ladder, following study telemetry by Conte Lab with funding from TransCanada and inspections work by Conte and USFWS staff, resulted in ladder fixes prior to 2012 season. Over 10,000 shad have passed this year compared with 46 in 2011.

Mr. Sprankle continued with updates on regional fish passage updates from the Northeast which generally indicate continued low counts for many anadromous fish species where monitoring is in place. United States Atlantic salmon return numbers were reviewed also and were also substantially reduced from 2011 numbers at this time. A summary of fish count data for select species was reviewed in figures with river discharge, turbidity and water temperature figures also reviewed for 2011 and 2012. The spring of 2012 was noted as having extremely low flows in early spring and greatly elevated temperatures, before "normalizing" for the month of May.

Mr. Sprankle reviewed the American shad Movement and Survival study (year 2) undertaken by USGS Conte Lab (Dr. Castro-Santos) and his office, begun in 2011 with funding support in year 2 (National Fish and Wildlife Foundation Grant, USFWS Grant, TransCanada, FirstLight Power) and in partnership with Holyoke Gas and Electric as well. A total of 16 receivers were set up downstream of Tunners Falls Dam 5 new sites between Holyoke and TF. The TF Canal System had the standard extensive telemetry array. Another 9 receivers were set up from TF to Vernon Dam, with 3 new sites. All dam's fishways had PIT antennas in place. In the lower river a total of 39 fish were radio/PIT tagged (double tagged) and another 56 PIT only tagged. At Holyoke, 76 shad were double tagged and another 53 PIT only tagged. At Cabot Ladder exit, 120 shad CRASC Minutes

RASC Minutes July 10, 2012 Page 1 of 10 were double tagged with another 120 PTT only tagged. No results are available at this time. Data collection is going very well and will run through early August.

Shad transfers occurred in May and early June at HFL. CTDEEP, NHFG, and RIDFW all obtained shad for restoration programs in and out-of basin. Data are still not final on numbers. Conte Lab also obtained fish for paired releases (tagging study) at Cabot.

The relatively large shad run was not expected and other systems remain at low levels of abundance. The provenile index survey from CTDEEP did not indicate and large year-classes having been produced 3- 6 years prior.

Mr. Hyatt asked if there was a motion to accept the report, which was made by Mr. Palmer, seconded, and all were in favor

3. Report of the Technical Committee Chair and Subcommittee Reports

Dr. Slater provided a handout report that provided a summary of the lune 26, 2012 Technical Committee meeting. The report provides updates for each agenda item and will be summarized here. The report provided in the meeting packets contain detailed information summarized below and in some cases inserted below:

Assignments for Chairs of the nine updated Subcommittees were reviewed. These groups will start meeting soon to address a diversity of diadromous species and habitat concerns.

CRASC Tech Subcommittee	Chair and Vice Chair	Agency
Salmon	Steve Gephard & Vice Lenny Gerardi	CTDEEP & VTDFW
Shad	Ken Sprankle	USFWS
River Herring	Steve Gephard	CTDEEP
Sturgeon	Micah Kieffer	USGS
American Eel	Tim Wildman	CTDEEP
Sea Lamprey	Melissa Grader	USFWS
Fish Culture	Dan Marchant	MADFW
Fish Passage	John Warner	USFWS
Habitat	Steve Gephard & Vice Matt Carpenter	CTDEEP & NHFG

Table 1. CRASC Tech Subcommittees and chairs (as of June 26, 2012).

Salmon Subcommittee

There was a discussion about the radio tracking of tagged salmon released at Holyoke given Jay McMenemy's retirement as he used to coordinate the tracking of these fish. Mr. Cox stated that monitoring will be reduced from the past but Melissa Belcher will be conducting some tracking. The upper main stem ladders will identify passage of these fish by digital monitoring.

Mr. Gephard gave a report on the 2012 U.S. Atlantic Salmon Assessment Committee Meeting.

CRASC Minutes July 10, 2012 Page 2 of 10 which was held at the Conte Lab in Turners Falls. March 5-8. This working meeting is held each year to produce a report that summarizes activities undertaken the previous year in the U.S. relative to Atlantic salmon restoration and recovery. It covers descriptions of adult returns, fisheries, stock assessments, program summaries (e.g. the Connecticit program the Merrimack program etc.), fish health updates, etc Report No. 24 covering 2011 activities is now posted on a NOAA website:

<u>www.nefsc.noaa.gov/USASAC</u>. It is 185 pages long with 39 tables and figures and 20 appendices. It is not appropriate to summarize its contents now since it focuses on 2011 returns and our focus has already shifted to the 2012 returns. However, this is a valuable reference document that can provide long-term information on Atlantic salmon in New England. The 2012 Report will be generated at the March 2013 meeting, expected to take place in Old Lynne, CT.

Eish Culture Subcommittee

Mr. Dan Marchant provided a handout on fish culture activities. Highlights of the report include the best current data on fry stocked in the basin this spring which was a total of 2.2 million fry, which came from 4.94 million eggs taken in fall 2011.

RCNSS

Stocked approximately 82.000 feeding fiv.

DDENFH

Released 82,400 smolts this spring and 11,900 pair last fall. For 2013 release there are over 95,000 salmon, some of which will be available for fall release.

BNTH

Released 4,200 pair last fall and 3,800 smolts this spring For 2013 release there are approximately 9,000 salmon

KSFH

Released 416,600 fry during spring distribution. Survival from egg to fry was again less than historic average. An investigation to improve survival through the eyed egg stage is ongoing. As part of this process, pipelines have been disinfected and a treatment regime is planned to improve egg eye-up.

Brood fish on site are expected to produce 2.5 to 3.0 million eggs in fall 2012.

RRSH

Released approximately 1.57 million fly basin-wide. These fly originated from eggs produced at RRSH and WRNFH.

Brood fish on site are expected to produce 1.5 million eggs in 2012

RAFCS

Released approximately 162,000 fiv to VT waters. These fish originated from eggs provided by Kensington SFH.

The facility is in the process of engineering for re-building after the damage from flooding 2011. The outdoor rearing area will be re-built. The indoor rearing and incubation area is intact and capable of supporting egg incubation in the fall, provided construction activities don't interfere

WRNFH

WRNFH staff transported fiv from RNFCS and RRSH to VT waters.

Mr. Novak reported that Cromin National Salmon Station has 40 adult returns on station, all of which are multi-sea winter fish. There have been no grilse captured or observed. Only one of the adult fish has an

CRASC Minutes July 10, 2012 Page 3 of 10 adipose chip (smolt origin)

Fish Passage Subcommittee

Mr. John Warner provided a handout and described two meetings held by the CRASC affiliated Fish and Wildlife agencies last winter to address the pending relicensing of five large CT river hydroelectric projects (Turners Falls Dam Northfield Mtn Pump Storage, Vernon dam Bellows Falls Dam and Wilder Dam). The meetings were centered on 1) fish passage (up and downstream issues). 2) fish population impacts (e.g., shortnose sturgeon), and 3) environmental conditions (spill flows, operational flows, bypassed river reaches). This fall the Preliminary Application Documents will be due and time lines for actions by FERC will begin as the reficensing process takes five and a half years.

Dr Brett Towler was asked to review preseason fishway inspections which were instituted following an agency meeting last fall where concerns about fishway operations relative to design plans and agreed-to modifications were discussed. Holyoke, Turners Falls and Vernon Dam were inspected using a new systematic form created with input from Dr. Alex Haro and others. Serious issues at Vernon Dam were identified and promptly addressed by Trans Canada. As noted earlier, shad passed at Vernon in 2011 totaled 46 and is over 10.000 this year. In season monitoring has continued and brought emerging issues quickly to light. In all cases necessary fixes were quickly made by either TransCanada or First Light Power

Mr. Len Gerardi asked if we could include a requirement for this type of monitoring in the new FERC licenses discussed earlier. Mr. Warner stated yes. It will be important to ensure these elements are included in those discussions.

Holyoke - Connecticut River

- Consulting parties (FWS, NOAA, MDFW, TU, CRWC) have agreed on the new design for the downstream passage system at Hadley Falls Station
- HG&E proceeding with construction drawings
- We will need to review construction schedule and implications for operating upstream fish
 passage facilities during construction

Turners Falls - Connecticut River

2012 Gatehouse shad passage evaluations by Conte Lab - Haro Castros-Santos - ongoing

Vernon -- Connecticut River

- Ladder problems noted last year were corrected reports suggest generally good operating conditions
- Ongoing shad migration study could shed light on overall passage success

Connecticut River Relicensings (Tumers Falls Northfield Mountain, Vernon, Bellows Falls and Wilder projects - Licenses expire in 2018)

- Preliminary Application Document (PAD) for each project will be prepared and distributed in October 2013.
- Public meetings to follow PAD opportunity to raise issues/ identify study needs.
- · Potential for meetings with owners prior to PAD but not required.
- Preliminary data collection on mussels, flows, river temperatures etc ongoing.

Fifteen Mile Falls - Connecticut River

- Moore dam sampler operated without flow inducers in 2012.
- Captured smolts were transported below Vernon Damrather than below McIndoes. As of June 18, 1.375 were captured (approx same as 2011)

Gilman Dam - Connecticut River

Guidance screen and new bypass completed and operated

CRASC Minutes July 10, 2012 Page 4 of 10

Fiske Mill - Ashuelot R.

- Fish lift operational in mid-May after gliches worked out but high river flows and no taikace barrier may have affected passage numbers
- 2 sea lampreys, and a number of trout, suckers and smallmouth bass lifted. One large salmonid lifted
- Tailrace barrier to be installed for 2013.

New Hydro Proposals at Corps Dams - West, Black and Westfield Rivers

- Licenses issued for Ball Mtn and Townshend dans
- FERC will not require specific downstream passage and entrainment measures since Corps has final say on anything built at their dans.
- Start of construction uncertain

Mr. Gephard gave updates on non-FERC jurisdiction projects in CT which included plans to build a fishway on the dam at Rogers Lake (a lower main stem trib), the Eightmile River, the Ed Bills Pond Dam removal. Mattabasett River fishway (will open 60 miles of habitat), and movement on getting a design for a replacement of the Rainbow Dam fish ladder, in addition the breached Spoonville Dam which is believed to present a fish passage barrier will be fully removed.

Shad Subcommittee

Mr. Sprankle provided a handout

River Herring

Mr. Gephard started by noting that NOAA is holding three meetings on river herring associated with their review of the potential listing of these species under the ESA. He attended the first meeting which focused on stock structure: the others will cover risk of extinction and potential impacts of climate change. There has been progress made with the NE Fish Mangt Council and Mid Atlantic Fish Mingt Council on the monitoring, of by each which may impact river herring and shad. The by each may occur in the Atlantic Herring fishery and other small mesh mid-water trawl fisheries (squid, butterfish). Data is lacking.

4. Salmon Update

- Genetic Marking Study Jason Coombs stated Dr. Letcher was unable to attend the
 meeting and he could only report that they did not have any results ready for this
 meeting. He further stated they are close to being able to provide results and those
 should be available in one month
- NASCO update Mr. Gephard provided a handout. He noted his attendance at the June NASCO meeting and the fact that the expired Greenland catch agreement was reset without any issues. Greenland will not be exporting any catch. Other agreements were also made for smaller fisheries
 - Karl Meyer asked if climate change was discussed. Mr. Gephard noted not at this meeting but at the SALSEA meeting he attended in the fall and he commented that shifts in prey and predators have been observed in a northward direction.
- USFWS Ms. Weber stated that USFWS values the partnership of the CRASC and its
 role in restoring migratory fishes and habitat in the basin. She noted USFWS believes
 this Commission is important to achieving these goals but noted that the salmon program
 has been performing very poorly for over two decades in terms of adult returns (tied to
 greatly reduced marine survival rates since 1992) which coupled with fiscal challenges
 and shifting priorities, such as the ESA Maine Salmon, make it necessary for USFWS to

CRASC Minutes July 10, 2012 Page 5 of 10 no longer produce any salmon in culture facilities for this restoration program. This change means White River National Fish Hatchery and Dwight D Eisenhower (following 2013 smolt stock out) will no longer culture salmon for the CT River Program. The Service will monitor other salmon rivers and if any significant improvements are observed in remaining U.S. rivers that can be raised for discussion.

- Mr. Hyatt asked what this meant for Cronin Station
- Ms. Weber stated Service will be considering its options for Cronin
- Mr. Hyatt stated that CT will keep Kensington State Fish Hatchery in operation and its primary purpose will be to raise broodstock Atlantic salmon which have become popular fisheries in designated rivers outside of CT basin. As a by-product of this program eggs can be obtained, producing -400,000 per year which they would stock into target habitat reaches. This would also serve as a potential genetic bank, keeping the strain we have in hand alive. It is nuclear if this design would be able to maintain a genetically viable strain as intended, and that will need to be examined more closely. With this move and USFWS position, he recommended tasking the Tech with how to move forward, address genetic questions, and where to stock, what are the options and best information on this. He also noted an intention to continue to provide salmon eggs for class room programs.
 - o Mr. Palmer commented VT would be interested in staying involved in a stream stocking program. He stated VT could receive eggs for incubation (several hundred thousand) and stock them as five but would not maintain any broodfish. He believes there is value to having salmon present in the state's streams even if the possibility of restoration (self-sustaining) is not likely.
 - Mr. MacCallum stated we have a Strategic Plan that we have not fully implemented, calls for 10 million fry to be stocked out, we have been stocking --6M in recent years. This past year it was -2M. USFWS has stated that they will no longer culture fish and that results in a production loss of -60% -70% of fry and the smolts --we must have the Tech Committee respond back to us on what this means relative to the Strategic Plan. He noted we are not here to operate a broodstock fishery program. What are the resources left to work with? The status of Cronin is unclear. Staff support is nuclear. We must understand what the resources are and what logical options are.
 - Mr Hyatt concurred and asked what kind of timing for Tech feedback on this charge?
 - Mr. MacCallium stated early October
 - Ms. Weber asked Mr. MacCallum to clarify his charge.
 - Mr. MacCallium stated an example would be do we focus on the Farmington River, when fish come back what do we do with them he needs to have this information to bring before his Fish and Wildlife Board and for CRASC to determine best course forward
 - Mr. Hyatt agreed, and stated there were three charges to the Tech Committee: 1) given the remaining resources of the Program, what are the best options to continue forward (based on existing Strategic Plan), 2) what are the likely ontcomes of those options, and 3) what are implications to maintaining desired genetic diversity, existing strain, characteristics, under these options. Fourth added below:
 - Mr. Palmer noted that the Strategic Plan was more specifically designed to address implementation of the Restoration Program and has goals such as stock 10 million fiy, etc., and does not go into specifics on adult return number goals. He stated that the over-arching goal of restoring a self-sustaining, is that realistic, given what we have seen to date and limitations we now face? We can revisit

CRASC Minutes July 10, 2012 Page 6 of 10 that goal after the Tech reports back in October.

- Ms. Weber stated we should revisit expectations based upon existing levels of resources and known performance.
- Dr. Slater stated we will need to discuss if restoration is possible under a "new" (reduced program) scenario.
- Ms. Weber commented was it ever possible even before this point.
- Mr. Archambault stated Service can have Northeast Fisheries Center, population dynamics staff run models on adult returns given reduced stocking and other scenarios – work that has been developed already and reported on in past.
- Dr. Slater stated that would be helpful to the Tech, and we will use all available resources to address the charges of the CRASC when meeting.
- Mr. MacCallum restated that he would like to have the CRASC next meet in first two weeks of October, or earlier and it was agreed that the Tech could have the necessary report ready by that time window.
- Mr. Hyatt directed Dr. Slater to have the Tech report back on those charges and noted that NOAA Fisheries scientists had provided a letter supporting any plans to keep the existing population (southern most extent) in existence (e.g., respect to climate charge and region-wide salmon management).
- Mr. Jones consumed that there are two main stem fishways (Bellows Falls and Wikler Dam) that were initially, principally designed/intended for salmon passage. It is important that we also think about the implications of program changes for these facilities and their operations.
- o Mr. Hyatt noted that this is also an important question that must be considered.
- Mr. Jones stated what do we tell these owner/operators?
- Mr. Hyatt stated that this will also be charged to the Tech for them to address Charge #4 – What are recommendations for upper main stem and fishways (up/down) by passes and salmon program.
- Mr Palmer noted that any modeling exercise as we have seen in the past will provide results we can reasonable expect – given continued low marine survival rates. Given the continued low marine survival rates, we were not going to achieve a self-sustaining population.
- Mr. Hyatt stated we still have year classes in the basin and out at sea and things nay change.
- Mr. Meyer asked is what CTDEEP proposing for their facility a put-and-take fishery?
- Mr. Hyatt stated that this transition period and KSFH's role is driven by CTDEEP anglers which value the broodstock fishery. It's extremely popular and their maybe other changes at that facility to increase trout production.
- Mr. Meyer questioned "is this no longer a restoration program?"
- Mr. Hyatt answered we have to see what our options are from the Technical Committee.
- Mr. Hyatt continued on the topic of Salmon in the Schools and stated CTDEEP will be able to support it for the next two years wherever it currently exists.
- Ms. Weber stated the USFWS supports classroom work with children too.
- Mr. Jim Carroll stated it is important to have this discussion as there are new schools interested in this program we must be able to explain the future outlook, and this information is helpful
- Mr. Gephard stated there should be no new schools added, effectively capping matubers

 Mr. Archandbault stated that there could also be a shift to brook trout in the class CRASC Minutes July 10, 2012 Page 7 of 10
room instead.

5. Discussion of CRASC Mission

Mr. Andy French was introduced to talk about the DOI Blueways Initiative. He provided a handout that included the legislative mandates of the Conte Refuge and potential benefits of the Blueways initiative. He described the criteria development and the fact the Blueways is designed to improve federal agency cooperation to address recreation educational and conservation concerns. The CT River is one of only a few pilot areas. He further continued that the Conte Refuge has a Friends Group that has been extremely successful in competing for national competitive funds for many projects. This group's new Stewardship Committee is intended to partially address conservation issues, and he stated, that the CRASC's interests should be the Conte Refuge's interests relative to aquatic resources and habitats. Mr. French noted that Mr. Sprankle was directed at Tech Meeting to represent CRASC on this Committee which he agreed to. Mr. Sprankle asked the Commissioners to verbally concur with his representation of CRASC on that Committee which they did.

Mr. Hyatt stated prior to CRASC (1983) shad, river herring were very important species, these and others will be increasing in CRASC's mission, many new subcommittees as noted earlier.

Mr. Meyer asked if any states move out of the program would we consider changing the name of the Commission?

Mr. Hyatt stated no, not at this time.

Mr. Meyer noted that this will likely present some confusion to the public over time.

6 Development of Standardized Fish Metrics for 401 Water Quality Certification

Mr. Andy Fisk was introduced and described how CRASC and CRWC have similar goals and have and will continue to work collaboratively on these. He noted that he had presented this same information at the January Techwere the Tech endorsed his premise and he was asked to come before the Commission. Mr. Fisk's goal is to work on developing a consistent standards in biological criteria for using the State's DEP and Fisheries agency staff. He noted some states are making progress with these two branches working together but can be improved. He noted Clean Water Act is power tool, using biological criteria (alga, bugs, fish) that can be placed in model to change current slide into weakening and degradation of water quality under current government approach. He would like to use existing data from the EPA survey, state agency staff, and a consultant to develop criteria, this will require staff meeting time, which the consultant would use to develop a model and the CRWC could then handle the public involvement which is an important component He would like to create a biological condition gradient (like an IBI). uses range of conditions. We can then work towards having target fish communities. With upcoming relicensing of 5 mainstem hydro power projects this would be a helpful tool. He would like to use the Tech Committee in that process - limited time commitment - meeting or two - develop consistent standards to help prevent erosion of water quality standards.

. Vermont Yankee, expired permits and CRASC letter

Mr. Sprankle directed Commissioners to a letter written by him as a Service Biologist to address a charge by the VT Agency of Natura I Resources to the Committee (VY Advisory) he serves on regarding the operation of that power station (with other state and federal biologists), operated by CRASC Minutes July 10, 2012

Page 8 of 10

the State of Vermont. The charge was to address the NPDES 316 A permit which specifically addresses the discharge of heated water by the plant (not the intake which are the issues of organism impingement and entrainment). The letter was written using available published research. USFWS independently gather temperature monitoring data, and recent research findings from the shad movement study covered earlier. The letter points to serious concerns and questions regarding potential impacts to the restoration goals for Atlantic salmon. American shad, blueback herring and also federally endangered shortnose sturgeon. The year-round release of heated water coincides with critical periods for migratory fish which are known to be delayed in and around dams/fishways, both for upstream and downstream movements. The VY plant discharges heated water immediately upstream of Vernon Dam – impacts to CRASC priority fish species have not been adequately studied and thus the letter states as the EPA guidance directs cumulative effects must be considered. Simply stated, there are important biologically based concerns (as outlined and supported in the letter in detail) related to VY's thermal discharge that strongly suggests potential hegative effects occurring on restoration species (adults and juveniles) for most if not the entire year.

As a further example. American shad passage numbers have improved in 2012 at Vernon Dam, this does not change the fact that these fish are spending extended periods of time in river water artificially heated by a VY water discharge. Due to compliance being determined further downstream (0.4 miles below dam) using a model, and the thermal discharge/mixing still occurring in the dam's forebay and tailrace of Vernon Dam, the habitats adjacent and downstream of the discharge and in the tailrace are subject to more extreme temperature variations (higher values occur more frequently in greater magnitude). At this life-stage and time frame, fish are on the verge of spawning due to river temps being in the upper 60s to low 70sF and energy expenditures following costs associated with passing three fishways to reach the base of Vernon Dam (river mile 141) have a lready required significant physiological costs. This situation can logically be reasoned to cause a reduction in shad passing upstream of Vernon Dam – directly due to exposure to heated water – it is basic fish biology, physiology, published in the literature and logically reasoned to impact restoration goals relative to adult shad numbers above this dam Please refer to the letter for more details.

- Mr. MacCallumnoted he viewed the letter as well done and since it came from the Coordinator that should imply CRASC endorsement, given states help fund his office.
- Some discussion followed that the letter was written as a technical review of important concerns raised by the USFWS – does not reflect any other agency/organization endorsement.
- o Mr Hyatt asked the Commission do we want to endorse this letter?
- All Commissioners stated they support a letter which reiterates the Service's concerns' as the Commission's concerns
- Mr. Hyatt put the matter to a vote following a motion and seconding, allwere in favor with one recusal (Mr. Eric Palmer).
- Mr. Hyatt stated a draft letter will be drafted and circulated among the Commissioners before final signature under his name.
- Mr. Palmer requested that the draft letter circulation not go to VIDFW (his Director or himself)
- There was a motion, seconded to adjourn, all were in favor.

Meeting adjourned at 12:24 p.m.

CRASC Minutes July 10, 2012 Page 9 of 10

ATTENDANCE

Name

Bill Hyatt Wayne MacCallum Stephen Gephard Ken Sprankle Mark Tisa Eric Palmer Peter Basta Robert A. Jones Joe McKeon Len Gerardi David Detnold Karl Meyer Melissa Grader Caleb Slater Glenn Normandean Wendi Weber Bill Archanbault Catherine Hibbard Bob Stina Jim Caroll Dick Bell Andy French Andrew Fisk Elizabeth Kendall Dan McKinley Steve Roy Jason Coombs Bill Ardren Daren Desmarais Darleen Cutting

Affiliation

CIDEEP/BNR. MA-DFW **CTDEEP/Inland Fisheries** USFWS/CTRC MA/DFW VTFW VT Public Sector CT Public Sector USFWS VIEW Montague Reporter Journalist USEWS MADEW NHFGD USFW USFWS USEWS FLPR/GDF SUEZ CRSA CRSA Conte NFWR CRWC Capitol Region Education Council USFS USES USFS USEWS USEWS USEWS

> CRASC Minutes July 10, 2012 Page 10 of 10



TAB 8

Documentation of Compliance

- 1. 2005 Vermont Agency of Natural Resources (VT ANR) Correspondence
- 2. Vermont Department of Environmental Conservation (VT DEC)
 - 2.1. 2012 CFC Email Contacting VT DEC
 - 2.2. 2013 Initial Response Letter from VT DEC
 - 2.3. 2015 Updated Response Letter from VT DEC
- 3. U.S. Fish and Wildlife Service (FWS)
 - 3.1. 2015 FWS Email Correspondence
 - 3.2. 2015 VT DEC Correspondence Referenced by FWS





Department of Fish and Wildlife Department of Forests, Parks, and Recreation Department of Environmental Conservation State Geologist RELAY SERVICE FOR THE HEARING IMPAIRED 1-800-253-0191 TDD>Voice 1-800-253-0195 Voice>TDD AGENCY OF NATURAL RESOURCES Department of Fish and Wildlife 103 South Main Street Waterbury, VT 05671-0401

September 6, 2005

Jeffrey A. Wallin Multiple Resource Management 113 Stonebrook Road Leicester, VT 05733

Re: Comtu Falls, Black River; FERC #7888

Dear Mr. Wallin:

I am writing concerning the operation of the downstream fish passage facilities at your hydropower project on the Black River. As you know, Atlantic salmon have been stocked upstream of these projects for more than 10 years now. Salmon smolts migrate downstream during the spring. Prior to emigrating from the rivers during the spring, salmon "pre-smolts" typically initiate their downstream movements during the preceding fall. In addition, downstream movements of other fishes such as trout also occur during the fall.

FERC mandated¹ operation of your downstream fish passage facilities during the period April 1 – June 15 but for whatever reason did not include the fall period as it did for the Cavendish project. Other Black River projects are providing downstream fish passage during the fall period based on a Section 18 prescription by the US Fish and Wildlife Service and/or state water quality certificate conditions. To provide for downstream fish passage in the Black River, it is necessary that all the Black River dams including Comtu Falls operate their passage facilities during the fall, September 15 – November 15.

I ask that you respond to this letter and confirm that you will operate these facilities beginning September 15. Thank you for your cooperation and compliance.

Sincerely,

approve

Rod Wentworth, Fisheries Scientist

Cc: Jay McMenemy, VDFW Jeffrey Cueto, VDEC Melissa Grader, USFWS

¹ Order Amending License, issued June 1, 1995. Page 7.



COMTU FALLS CORPORATION

113 STONEBROKE ROAD, LEICESTER, VT 05733

PHONE/FAX 802-247-3468

September 15, 2005

Mr. Rod Wentworth VT Department of Fish & Wildlife 103 South Main Street Waterbury, VT 05671-0401

RE: Comtu Falls, Black River; FERC # 7888

Dear Rod:

When FERC mandated the operation of downstream fish passage at Comtu Falls, exclusion of fall operation was not an oversight but rather a deliberate decision based on lengthy discussion on-site during the planning and design phase of the project with US Fish & Wildlife Service personnel. Nothing has changed (including lack of success of the program) to warrant any change in the operating dates of the downstream fish passage.

To my knowledge, the only study documenting downstream movement in the fall by "pre-smolts" shows that it is not an out-migration but rather movement into deeper water for over-wintering. There are three large impoundments upstream of Comtu Falls between our project and release sites of salmon fry and none downstream of Comtu Falls. Consequently, the only habitat to accommodate this behavior is upstream of our project.

We operate our project in an environmentally sound fashion and will continue to abide by our FERC license. Should the Atlantic salmon recovery program ever show signs of promise, we would be happy to discuss what, if any, additional measures could be undertaken at Comtu Falls to ensure continued progress with the recovery program.

Sincerely,

Jeffrey A. Wallin, President

SPRINGFIELD, VT

PLANT PHONE 802-885-4658





COMTU FALLS CORPORATION

241 STONE MILL DAM ROAD, BRANDON, VT 05733

PHONE 802-247-3468

November 30, 2012

Mr. Brian Fitzgerald Stream Flow Protection Coordinator VT Dept. Environmental Conservation 1 National Life Dr., Main 2 Montpelier, VT 05620-3522

RE: Low Impact Hydropower Institute Certification

Dear Mr. Fitzgerald:

Comtu Falls Corporation (FERC LP #7888) is preparing its application for the above mentioned certification. As you are aware, the application process requires confirmation from the VT Agency of Natural Resources that the project has operated in conformance with conditions outlined in its 401 Water Quality Certificate issued January 12, 1989.

Comtu Falls is located on the Black River in Springfield at river-mile 4.4 from the confluence with the Connecticut River. A review of the State of Vermont 303(d) List of Impaired Surface Waters (EPA approved June, 2011) shows that the Black River is considered impaired waters from the mouth of the river to the municipal sewer plant 2.5 miles upstream.

At your earliest convenience, would you please provide a letter acknowledging our compliance with the conditions of our 401 WQC and that our project is upstream of the classified impaired waters. Thank you.

Sincerely,

Jeffrey Wallin, President



VERMONT

Vermont Department of Environmental Conservation

Watershed Management Dr. iston 1 National Life Drive, Main 2 Montpelier, VI 050200, 6322 http://www.vtwaterquality.org

802-828-1543 802-828-1543

DISTRIBUTED ELECTRONICALLY

March 1, 2013

Mr. Jeffrey Wallin Comtu Falls Corporation 241 Stone Mill Dam Rd Brandon, VT 05733

RE: Comtu Falls Hydroelectric Project (FERC No. 7888) Comments on low impact hydro certification

Dear Mr. Wallin

Thank you for this opportunity to comment on Comtu Falls Corporation application to the Low Impact Hydropower Institute (LIHI) for certification of the Comtu Falls Hydroelectric Project as a low impact hydroelectric project.

The Contti Falls Hydroelectric Project was originally certified in 1982 by the Department of Water Resources and Environmental Engineering (now the Department of Environmental Conservation – herein the Department). In 1983 the certification was amended to authorize the project to install an additional generator and turbine to operate at minimum flows. In 1989 an amendment to the certification was issued to reflect the project would install a single generator with a higher producing capacity than originally proposed. Conformance with the conditions of the certification and amendment would assume that the project does not violate Vermont Water Quality Standards. At this time the Department does not have any information suggesting that the project is not operating in full compliance with the conditions in its water quality certification.

Linder Condition F of the water quality certification, the project was required to provide downstream fish passage for Atlantic salmon. Currently, Comtu Falls Corporation operates the downstream fish passage only in the spring. In 2005, the Vermont Department of Fish and Wildlife requested that Comtu Falls Corporation operate the fish passage during the fall period. [September 15 - November 15] similar to other hydroelectric projects located both upstream and downstream, based on Section 18 prescriptions by the US Fish and Wildlife Service and water quality certification requirements. Comtu Falls Corporation has declined this request.

The fail is an important period for downstream movement for fish as salmon "pre-smolts" typically initiate their downstream movements during the preceding fail, and other fishes such as trout also move during this period. Additionally, the project is certified to spill only 4 cfs over the dam which will not provide adequate conditions for safe fish passage. Furthermore the

In Fact, and the Southeast of

icitrey Wallin March 1, 2013

> amount of suitable over wintering habitat for salmonids between the Comtu Falls impoundment and the dam for the upstream hydroelectric project (approximately 1400 ft) is not known. These factors should be considered when determining if the project is "low impact"

The Department does not have any other information regarding compliance of the Comtu Falls Bydroelectric Project

Sincerely yours,

Jeff Crocker River Ecologist

Attachment

Rod Wentworth, VT DFW Laef Will, VT DFW Ken Cox, VT DFW Kann Warner, USFWS Mellissa Grader, USFWS Caleb Stater, IMA (2FW

the state of the second st





Vermont Department of Environmental Conservation

Watershed Management Division 1 National Life Drive, Main 2 Montpelier, VT 05620-3522 http://www.vtwaterquality.org

[phone] 802-828-1535 [fax] 802-828-1544 Agency of Natural Resources

DISTRIBUTED ELECTRONICALLY

June 1, 2015

Mark Boumansour Gravity Renewables Inc. 1401 Walnut Street, Suite 220 Boulder, Colorado 80302

RE: Comtu Falls Hydroelectric Project (FERC No. 7888) Comments on Low Impact Certification

Dear Mr. Boumansour:

Thank you for this opportunity to comment on Gravity Renewables Inc.'s application to the Low Impact Hydropower Institute (LIHI) for certification of the Comtu Falls Hydroelectric Project as a low impact hydroelectric project.

The Comtu Falls Hydroelectric Project originally received a water quality certification from the Department of Water Resources and Environmental Engineering (now the Department of Environmental Conservation – herein the Department) in 1982. In 1983, the certification was amended to authorize the project to install an additional generator and turbine to operate at minimum flows. In 1989, a second certification amendment was issued to reflect the project would install a single generator with a higher producing capacity than originally proposed. Conformance with the conditions of the certification and amendment would assure that the project does not violate Vermont Water Quality Standards. At this time, the Department does not have any information suggesting that the project is not operating in compliance with the conditions in its water quality certification.

Fish passage has been a longstanding issue at the Comtu Falls project. Pursuant to Condition F of the Comtu Falls water quality certification, the project is required to provide downstream fish passage for Atlantic salmon for the Connecticut River restoration effort. The previous owner of the project, the Comtu Falls Corporation, historically operated the downstream fish passage only during the spring season. The fall is an important period of downstream movement for fish. Salmon "pre-smolts" typically initiate their downstream movements during the preceding fall. In 2005, the Vermont Department of Fish and Wildlife requested that Comtu Falls Corporation operate the fish passage during the fall period (September 15 – November 15) similar to other hydroelectric projects located both upstream and downstream. The Comtu Falls Corporation had declined this request.

The new owner of the Comtu Falls Corporation, Gravity Renewables, has engaged the Department in productive discussions regarding fish passage needs at the project and expressed a willingness to work in collaboration with the Agency of Natural Resources (Agency) to meet its management objectives. While federal support for Atlantic salmon restoration program has ended, salmon were stocked through 2013 and will require downstream passage to be provided through at least 2016. However, passage needs could persist longer depending upon state management decisions. In light of

Mark Boumansour June 1, 2015 Page 2

the passage needs for Atlantic salmon, Gravity Renewables has committed to operating passage facilities in both the spring and fall, as necessary to support restoration efforts.

While the water quality certification issued for the Comtu Falls project focused on passage for Atlantic salmon, maintaining passage from April 1 through June 15 and from September 15 through November 15 each year will also benefit other riverine species. Resident salmonids have the propensity to actively migrate throughout the year for a multitude of purposes; be it for spawning and rearing in the spring, to seek overwintering habitat in the fall, or in search of cold water refugia in the summer. The Agency recognizes the value of maintaining connectivity as it allows fish to seek the best available habitat and food resources, avoid predator interactions, and promotes genetic diversity. The Vermont trout management plan, further underlines the importance of habitat connectivity by stating, "the ability of trout to migrate within their environment is at a minimum important to their survival, and at most, essential to it".¹ Additionally, the water quality management plan for the Ottauquechee and Black River basin recognizes the impacts associated with dams, and specifically cites blocking aquatic organism passage, as a stress on rivers and streams.² After discussions with the Agency, the applicant has agreed to operate fish passage for riverine species during both the spring and fall, if passage is no longer required for Atlantic salmon. This agreement supports the Agency's management objective, to provide a recreational trout fishery in this reach, and is consistent with statewide and basin specific comprehensive plans.

Given Gravity Renewables commitment to provide passage for both Atlantic salmon and resident species through both the spring and fall, the Department believes that the Comtu Falls hydroelectric project meets the intent of the LIHI's criteria for certification as a low impact project. If the project is certified by LIHI, any certification should include a condition that states "the applicant shall operate downstream fish passage facilities from April 1 through June 15 and from September 15 through November 15" to reflect the agreement reached between the Agency and the applicant.

Sincerely yours,

Jeff Crocker River Ecologist

> c: Rod Wentworth, VT DFW Lael Will, VT DFW Ken Cox, VT DFW John Warner, USFWS Melissa Grader, USFWS

¹ The Vermont Department of Fish and Wildlife. 1993. The Vermont Management Plan for Brook, Brown and Rainbow Trout. Waterbury, Vermont.

² The Vermont Agency of Natural Resources. 2012. Basin 10 Water Quality Management Plan. Montpelier, Vermont.

To preserve, enhance, restore, and conserve Vermont's natural resources, and protect human health, for the benefit of this and future generations.





Brittany Hinz <brittany@gravityrenewables.com>

Comtu Falls: LIHI Follow-Up

Jon Petrillo <jon@gravityrenewables.com> To: "Grader, Melissa" <melissa_grader@fws.gov> Tue, Jun 30, 2015 at 9:15 AM

Cc: Brittany Hinz <brittany@gravityrenewables.com>, Eric Davis <Eric.Davis@state.vt.us>, "Crocker, Jeff" <Jeff.Crocker@state.vt.us>

Hi Melissa,

Wanted to let you know that we're just about ready to send in the updated LIHI application for Comtu Falls (today or tomorrow).

We can use the e-mails (below) as the Service's response but thought I would check in to see if you wanted to provide feedback in an alternative format.

Let me know if you have any Qs.

Be well.

Jon

From: Jon Petrillo [mailto:jon@gravityrenewables.com] Sent: Wednesday, June 10, 2015 3:42 PM To: 'Grader, Melissa' Cc: 'Brittany Hinz'; 'Eric Davis'; 'Crocker, Jeff' Subject: RE: FW: Comtu Falls: LIHI Follow-Up

Hi Melissa,

Following up on my VM. We appreciate the feedback and information on eel management activities. As it turns out LIHI is not quite ready to implement the PLUS criteria in their process so we will not be able to request the additional certification term. Considering this there would not appear to be an overlap in a standard LIHI term and the timeframes you suggest for potential eel management actions at Comtu Falls. However, when downstream barriers are removed Gravity will work collaboratively with the resource agencies to understand and support management goals.

In light of the above, can you please provide an updated response addressing the Service's position on the project's compliance with existing regulatory requirements that we can include in our LIHI application?

Happy to discuss more with you at your convenience.

Many thanks,

Jon

From: Grader, Melissa [mailto:melissa_grader@fws.gov]
Sent: Friday, June 05, 2015 10:45 AM
To: Jon Petrillo
Cc: Brittany Hinz; Eric Davis; Crocker, Jeff
Subject: Re: FW: Comtu Falls: LIHI Follow-Up

Hi Jon,

Looking through the email chain and letter from ANR, I think the Service is fine with that particular issue (operating the d/s bypass in spring and fall for riverine species). However, if Gravity will be seeking PLUS certification, the extended timeframe for certification raises the issue of eel passage. As you probably know, TransCanada's CT River mainstem projects (Vernon, Bellows Falls and Wilder) are undergoing relicensing. We anticipate that eel passage will be a requirement of any new licenses issued for those projects.

As the Black River enters the CT River upstream of the Bellows Falls Project, and there is only one other obstruction between BF and Comtu Falls, it is likely that the agencies will be seeking eel passage at Black River projects within the next 5 to 10 years. Therefore, in order for FWS to support extended "PLUS" LIHI certification, we would want assurances that Gravity will agree to implement eel passage measures when requested by the agencies. Given that you will be operating the bypass in the fall anyway for riverine species, any requests likely will focus on upstream passage measures.

We'd be more than happy to discuss this issue further with you if needed.

Regards,

Melissa Grader

Fish and Wildlife Biologist

U.S. Fish and Wildlife Service - New England Field Office

103 East Plumtree Road

Sunderland, MA 01375

413-548-8002 x124

melissa_grader@fws.gov

On Wed, Jun 3, 2015 at 12:40 PM, Jon Petrillo <jon@gravityrenewables.com> wrote:

Hi Melissa,

As a follow up to our conversation I am forwarding along the correspondence and comment letter from the VT ANR on our application for LIHI certification for the Comtu Falls project on the Black R., in Springfield, VT (P-7888).

We will be re-submitting our application to LIHI next week and will include the response from VT and what you put together from the Service as part of the package. As we discussed, e-mail is fine.

Give me a call if you have any questions.

Thanks in advance,

Jon

GRAVITY	Jonathan Petrillo Director of Regional Business Development Gravity Renewables Inc. 360 Thames St., Suite 4A Newport, Rhode Island 02840 Mobile: 203.623.4637 Direct: 303.615.3099 Fax: 720.420.9956 www.gravityrenewables.com			
From: Davis, Eric [mailto:Eric.Davis@state.vt.us] Sent: Saturday, May 30, 2015 3:50 PM To: 'Jon Petrillo'; 'Mark Boumansour'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up				
Hi Jon,				
Great.				
I don't think the Age	ncy needs any more information to finalize the comments. I think this should	l do it.		
Thanks, Eric				
Eric Davis, <i>River Ec</i> 1 National Life Drive,	ologist Main 2			
Montpelier, VT 0562	0-3522			
802-490-6180 / eric.c	lavis@state.vt.us management.vt.gov/rivers			
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION WATERSHED MANAGEMENT DIVISION RIVERS PROGRAM				
See what we're up	to on our Blog, Flow.			
From: Jon Petrillo [mailto:jon@gravityrenewables.com] Sent: Wednesday, May 20, 2015 4:01 PM To: Davis, Eric; 'Mark Boumansour'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up				
Hi Eric,				

Your proposed alternative sounds fine.
We can move forward using the language in your last draft for the application. I know LIHI follows-up with the resource agencies as part of their review process, so supporting our request for PLUS certification at that time makes sense.
Do you need to do anything to finalize the last letter (update the date, etc.)?
Be well. Jon
From: Davis, Eric [mailto:Eric.Davis@state.vt.us] Sent: Wednesday, May 20, 2015 3:09 PM To: 'Jon Petrillo'; 'Mark Boumansour'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up
Hi Jon,
Apologies for the delayed response. I'd like to propose an alternative to the addition of explicit language supporting PLUS in this letter. I view this letter as a project review letter that precedes the LIHI application. I'd argue that it sets the stage for Gravity to request the PLUS criteria certification (i.e. Gravity Renewables has committed to operating passage facilities in both the spring and fall, as necessary to support Atlantic Salmon restoration efforts & This agreementis consistent with statewide and basin specific comprehensive plans)
Rather than modifying this pre-application letter, would it be acceptable to Gravity, that after your application to LIHI and your request for PLUS certification, we file a letter concurring with your request and references our review letter?
Please let me know your thoughts,
Eric
Eric Davis, River Ecologist 1 National Life Drive, Main 2
Montpelier, VT 05620-3522
http://www.watershedmanagement.vt.gov/rivers
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION WATERSHED MANAGEMENT DIVISION RIVERS PROGRAM
See what we're up to on our Blog, Flow.
From: Jon Petrillo [mailto:jon@gravityrenewables.com] Sent: Monday, May 04, 2015 11:42 AM To: Davis, Eric; 'Mark Boumansour'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up

Hi Eric,
Thanks for the chance to review the ANR's LIHI letter for Comtu Falls.
A couple of observations/requests:
Pg. 1 para. 3 & 4: Comtu Falls Corporation is still the owner of the project, however the Corporation is now owned by Gravity.
(kare species)? Descriptions of those criteria are provided in a previous message on this chain. Happy to discuss more if desired.
Thanks,
JOH
From: Davis, Eric [mailto:Eric.Davis@state.vt.us] Sent: Friday, April 24, 2015 3:54 PM To: 'Mark Boumansour'; 'Jon Petrillo'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up
Good afternoon,
Please find a draft of the Agency's comments on LIHI certification for the Comtu Falls project attached. We included language that describes how the provision downstream passage will benefit both Atlantic salmon and resident species, especially within the context of the new LIHI criteria. Please let us know your thoughts.
Thank you,
Eric
Eric Davis, River Ecologist 1 National Life Drive, Main 2
Montpelier, VT 05620-3522
802-490-6180 / eric.davis@state.vt.us http://www.watershedmanagement.vt.gov/rivers
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION WATERSHED MANAGEMENT DIVISION RIVERS PROGRAM
See what we're up to on our Blog, Flow.
From: Davis, Eric Sent: Friday, April 17, 2015 10:29 AM

5 of 8

To: 'Jon Petrillo'; Crocker, Jeff Cc: 'Mark Boumansour'; 'Brittany Hinz'; 'Jonathan Miller' Subject: RE: Comtu Falls: LIHI Follow-Up
Good morning,
It has taken a little longer than anticipated to provide you with comments on the Comtu Falls project, so I wanted to let everyone know where the comments stand at the moment. DEC has drafted a comment letter and shared it with colleagues in Fish and Wildlife. We hope to have something to you next week.
Thanks,
Eric
Eric Davis, River Ecologist
1 National Life Drive, Main 2
Montpener, v1 05020-3522
http://www.watershedmanagement.vt.gov/rivers
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION WATERSHED MANAGEMENT DIVISION RIVERS PROGRAM
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From: Jon Petrillo [mailto:jon@gravityrenewables.com] Sent: Thursday, March 19, 2015 12:54 PM To: Davis, Eric; Crocker, Jeff Cc: 'Mark Boumansour'; 'Brittany Hinz'; 'Jonathan Miller' Subject: RE: Comtu Falls: LIHI Follow-Up
Thank-you Eric.
Please let us know if there is anything that you need from us.
Best,
Jon
From: Davis, Eric [mailto:Eric.Davis@state.vt.us] Sent: Thursday, March 19, 2015 10:22 AM To: 'Jon Petrillo'; Crocker, Jeff Cc: 'Mark Boumansour'; 'Brittany Hinz' Subject: RE: Comtu Falls: LIHI Follow-Up
Good morning Jon and Mark,

Thanks for making the trip up to Montpelier last week. It was good to meet you as well and the discussion was productive.
We appreciate your willingness to engage with the Agency, collaborate to help meet management objectives, and ultimately help steward the river resource. Given our productive discussion, the Agency is supportive of the project qualifying under the 'PLUS' standard for the fish passage and rare and threatened species criteria. While the decision will ultimately be LIHI's, we will work on language to include in our letter that supports qualification under the 'PLUS' standard. We hope to share something with you over the next week or so.
Thanks,
Eric
Eric Davis, River Ecologist 1 National Life Drive, Main 2
Montpelier, VT 05620-3522
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See what we're up to on our Blog, Flow.
From: Jon Petrillo [mailto:jon@gravityrenewables.com] Sent: Tuesday, March 17, 2015 7:52 AM To: Davis, Eric; Crocker, Jeff Cc: 'Mark Boumansour'; 'Brittany Hinz' Subject: Comtu Falls: LIHI Follow-Up
Eric and Jeff,
Good to meet you last week. We appreciate the time spent.
I wanted to follow-up on the "PLUS" certification period for LIHI that we discussed. Below are 2 criteria we feel make us eligible for up to 5 additional years of LIHI certification. There are no guarantees on the LIHI decision, but support from the ANR would certainly help strengthen our application.
LIHI Criteria D – Downstream Fish Passage and Protection: (p. 8)
Qualifying Criteria:
D3. In the absence of <u>sciencebased</u> resource agency downstream fish passage or protection recommendations, the Facility includes welldesigned, welloperated downstream fish passage technologies that are appropriate for the migratory species that occur in the area affected by the Facility, and technologies that minimize loss of riverine species. Operating plans for such fish passage technologies must include provisions for ongoing monitoring and effectiveness determinations; or
Bonus Criteria: operation of the d/s facility during fall migration period would primarily benefit resident spp. and is consistent with basin-wide (and statewide) mgt. efforts of the ANR

DPLUS: In <u>technolog</u> of riverine the conte	addition to satisfying one of the standards above, the Facility has deployed an <u>advanced</u> <u>y</u> the primary purpose of which is to improve downstream fish passage or reduce the losses a fish, or is part of a <u>basinscale redevelopment strategy</u> and is evaluating the technology in xt of an <u>adaptive management</u> program.
LIHI Criteria F – R	are & Threatened Spp. (p. 10)
Qualifying Criteria:	
F1. There a not resp	are no <i>Listed Species</i> present in the Facility area and/or downstream reach, and the Facility is onsible for the extirpation of them if they were previously there; or
Bonus Criteria: Foc	cus on collaboration with ANR's mgt. goals for rare Atl. salmon
F PLUS: Thendemic which ar a species Attached is the full	he Facility is working with resource agencies to operate the Facility in support of rare and species, is implementing proactive measures to substantively minimize impacts on species e at risk of becoming Listed Species in the future, or the Facility is a significant participant in s recovery effort.
digest.	
Thanks,	
Jon	
	Jonathan Petrillo Director of Regional Business Development
	Gravity Renewables Inc.
	360 Thames St., Suite 4A Newport, Rhode Island 02840
1	Mobile: 203.623.4637 Direct: 303.615.3099 Fax: 720.420.9956





3.2. 2015 VT DEC Correspondence Referenced by FWS Emails



Brittany Hinz <brittany@gravityrenewables.com>

Comtu Falls: LIHI Follow-Up

Jon Petrillo <jon@gravityrenewables.com>

Mon, Jun 1, 2015 at 8:26 AM To: "Davis, Eric" < Eric.Davis@state.vt.us>, Mark Boumansour <mark@gravityrenewables.com>, Jonathan Miller <jonathan@gravityrenewables.com>, Brittany Hinz <brittany@gravityrenewables.com> Cc: "Crocker, Jeff" <Jeff.Crocker@state.vt.us>

Thanks Eric, this is helpful.

We're updating our application to LIHI and will include your letter in the package.

Be well.

Jon

From: Davis, Eric [mailto:Eric.Davis@state.vt.us] Sent: Saturday, May 30, 2015 3:50 PM To: 'Jon Petrillo'; 'Mark Boumansour'; 'Jonathan Miller'; 'Brittany Hinz' Cc: Crocker, Jeff Subject: RE: Comtu Falls: LIHI Follow-Up

Hi Jon,

Great.

I don't think the Agency needs any more information to finalize the comments. I think this should do it.

Thanks,

Eric

Eric Davis, River Ecologist 1 National Life Drive, Main 2

Montpelier, VT 05620-3522

802-490-6180 / eric.davis@state.vt.us http://www.watershedmanagement.vt.gov/rivers



See what we're up to on our Blog, Flow.

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A couple of observations/requests:

Pg. 1 para. 3 & 4: Comtu Falls Corporation is still the owner of the project, however the Corporation is now owned by Gravity.

• Can you add more explicit language supporting our request for PLUS criteria certification as it relates to LIHI Condition D (Fish Passage) and F (Rare Species)? Descriptions of those criteria are provided in a previous message on this chain.

Happy to discuss more if desired.

Thanks,

Jon

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Eric Davis, *River Ecologist* 1 National Life Drive, Main 2

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Montpelier, VT 05620-3522

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Montpelier, VT 05620-3522

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LIHI Criteria D – Downstream Fish Passage and Protection: (p. 8)

Qualifying Criteria:

D---3. In the absence of <u>science---based</u> resource agency downstream fish passage or protection recommendations, the Facility includes well---designed, well---operated downstream fish passage technologies that are appropriate for the migratory species that occur in the area affected by the Facility, and technologies that minimize loss of riverine species. Operating plans for such fish passage technologies must include provisions for ongoing monitoring and effectiveness determinations; or

Bonus Criteria: operation of the d/s facility during fall migration period would primarily benefit resident spp. and is consistent with basin-wide (and statewide) mgt. efforts of the ANR

D---PLUS: In addition to satisfying one of the standards above, the Facility has deployed an <u>advanced</u> <u>technology</u> the primary purpose of which is to improve downstream fish passage or reduce the losses of riverine fish, or is part of a <u>basin---scale redevelopment strategy</u> and is evaluating the technology in the context of an <u>adaptive management</u> program.

LIHI Criteria F – Rare & Threatened Spp. (p. 10)

Qualifying Criteria:

F---1. There are no <u>Listed Species</u> present in the Facility area and/or downstream reach, and the Facility is not responsible for the extirpation of them if they were previously there; or

Bonus Criteria: Focus on collaboration with ANR's mgt. goals for rare Atl. salmon

F--- PLUS: The Facility is working with resource agencies to operate the Facility in support of rare and endemic species, is implementing proactive measures to substantively minimize impacts on species which are at risk of becoming Listed Species in the future, or the Facility is a significant participant in a species recovery effort.

Attached is the full document outlining the new LIHI certification criteria for your reference. Let us know what you think after you've had a chance to digest.

Thanks,

Jon





TAB 9

Appendix D – Contact Form



APPENDIX D – PROJECT CONTACT FORM

Project Name: Comtu Falls Hydroelectric Project P-7888 (please provide name used in FERC license if applicable)

Project Owner/Operator:

Name and Title: Mark J. Boumansour, Chief Operating Officer Company: Comtu Falls Corporation c/o Gravity Renewables Inc. Phone: 303.615.3101 Email address: mark@gravityrenewables.com Mailing Address: 1401 Walnut Street, Suite 220, Boulder, Colorado 80302

Consulting firm that manages LIHI program participation (if applicable):

Name N/A	
Company	
Phone	
Email address	
Mailing Address	

Party responsible for compliance with LIHI program requirements:

Name and Title: Jonathan Miller, Director of Financial Analysis and Regulatory Affairs Company: Gravity Renewables Inc. Phone: 303.615.3102 Email address: jonathan@gravityrenewables.com Mailing Address: 1401 Walnut Street, Suite 220, Boulder, Colorado 80302

Party responsible for accounts payable:

Name and Title: Juan Luna, Financial Controller Company: Gravity Renewables Inc. Phone: 303.615.3103 Email address: juan@gravityrenewables.com Mailing Address: 1401 Walnut Street, Suite 220, Boulder, Colorado 80302

6-26-15

Project Owner/Operator Signature

Date



TAB 10

LIHI's correspondence from CFC original application submittal

MPACT HYDROPOWER INTAKE REVIEW

MPACT HYDROPOWER INTAKE REVIEW
Business Confidential
Name of Project: Comut Falls Hydrolectric Project
Date submitted to LIHI: January 15, 2014
Name of Person Conducting Intake Review: Michael J. Sale
Date Intake Review Completed: November 11, 2014
Form version: April 2014
L & CACCEDOLIND INFORMATION DEVIEW.

I. BACKGROUND INFORMATION REVIEW:

Note: Italicized text is based on or excerpted from the line-by-line instructions found in LIHI's h	anabook, Part VI	I, section D.
Information	Complete? Y/N	MISSING INFORMATION
 Name of the Facility, as used in FERC proceedings. 	Y	None.
 Applicant's name, contact information and relationship to the Facility. 	N	Please update the LIHI application with the current owner name and address, since Gravity Renewables, Inc. has purchased this project.
3) Location of Facility including (a) the state in which Facility is located; (b) the river on which Facility is located; (c) the river-mile location of the Facility dam; (d) the river's drainage area in square miles at the Facility intake; (e) the location of other dams on the same river upstream and downstream of the Facility; and (f) the exact latitude and longitude of the Facility dam.	Y	None.
4) Installed capacity.	Y	None.
Information	Complete? Y/N	MISSING INFORMATION
5) Average annual generation.	Y	None.
6) Regulatory status.	Y	None.
 Reservoir volume and surface area measured at the normal maximum operating level. 	Y	None.
 Area occupied by non-reservoir facilities (e.g., dam, penstocks, powerhouse). 	Y	None.
Number of acres inundated by the Facility.	Y	None.
10) Number of acres contained in a 200-foot zone extending around entire reservoir.	Y	None.
11) Contacts for Resource Agencies and non-governmental organizations	N?	Please update contact information, if there have been any recent retirements of resource agency staff.
12) Description of the Facility, its mode of operation (<i>i.e.</i> , peaking/run of river) and photographs, maps and diagrams.	Y	Please explain more about the current mode of operation and how the facility satisfies the minimum flow and spillage requirements, including flow and pool elevation monitoring.
Questions for "New" Facilities Only: For Facilities that are considered "new" (i.e., an existing dam that added or increased power generation capacity after August of 1998).		N/A
13) When was the dam associated with the Facility completed?		N/A
[14] When did the added or increased generation first generate electricity? If the added or increased generation is not yet operational, please answer question 18 as well.		N/A
15) Did the added or increased power generation capacity require or include any new dam or other diversion structure?		N/A
16) Did the added or increased capacity include or require a change in water flow through the facility that worsened conditions for fish, wildlife, or water quality (for example, did operations change from run-of-river to peaking)?		N/A
Information	Complete? Y/N	MISSING INFORMATION
17 (a) Was the existing dam recommended for removal or decommissioning by resource agencies, or recommended for removal or decommissioning by a broad representation of interested persons and organizations in the local and/or regional community prior to the added or increased capacity? (b) If you answered "yes" to question 17(a), the Facility is not eligible for certification, unless you can show that the added or increased capacity resulted in specific measures to improve fish, wildlife, or water quality protection at the existing dam. If such measures were a result, please explain. 18 (a) If the added or increased generation is not yet operational, has the increased or added generation received regulatory autonization (c.g., approval by the Federal Energy Regulatory Commission)? If not, the facility is not eligible for consideration, and (b) Are there any pending appeals or litigation regarding that authorization? If so, the facility is not eligible for consideration.		N/A N/A
L	*****	
II. CRITERIA INFORMATION REVIEW:

Note: Italicized text is based on or excerpted from line-by-line instructions found in LIHI's Handbook, Part VII, section D. INFO

A. Flows LOCATION IN APPLICATION MISSING INFORMATION

INITIAL ISSUE IDENTIFICATION

 INTERCETION

 IN the Bealing in Compliance with Resource

 Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailnce and all bypassed reaches?

 Tab 3 and 8.
 Most recent 401 Certificate, including any amendments. Documentation of project's current mode of operation that ensures Run-of-River conditions, including compliance with minimum flows referred to in DOI letters, there are references to a 401 certificate and at least one amendment, but no complete copies of that document are provided. Please provide a copy or URL address where it can be accessed. Also, it would be helpful to have current communications from foedral resource agencies on flows - agency letters provided are inconsistent on minimum flows, even though project appears to have very limited ability to control flows.

 2) If there is no flow condition recommended by my Resource Agency for the Facility, or for the Facility or for flows.
 The facility in the Facility in Compliance with a flow release schedule, both below the tailance and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or "good" habitat flow standards calculated using the Montana-Tennan tenhod?

 N/A
 None, so nog as ROR operation is verified.

3) If the Facility is unable to meet the flow A.2., has the Applicant demonstrated, and obtained a letter from the relevant Resource Agency confirming that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water quality?
NA None. None.

B. Water Quality	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
I. Is the Facility either: I.a) In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or	For B.1.a, Tab 8	Most recent 401 WQ Certificate, as amended.	Provide a current copy or URL address where it can be accessed – this is referenced in VAEC letter, but not provided.
1.b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?	N/A	N/A	N/A
2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including marrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?	Tab 6	N/A	River reaches starting at RM 2.5 are on the 303(d) list, but from the information provided, it appears that waters immediately above and below the dam are not on this list – please confirm that fact.
3) If the answer to question B.2 is yes, has there been a determination that the Facility does not cause, or contribute to, the violation?	Missing	Documentation that a determination has been made that the facility "does not cause or contribute."	Provide a letter from VDEC stating that the facility is not the cause of 303(d) listing.
C. Fish Passage and Protection	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
 Are anadromous and/or catadromous fish present in the Facility area or are they known to have been present historically? 	Tab 7 on Atlantic salmon	Any additional, independent documentation of historical fish distributions.	Can historical fish distributions be documented to support the applicant's position? For example, river basin conservation groups (e.g., TNC) have a major data collection effort underway related to river connectivity.
2) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?	Tab 5, 1995 NEPA documents	Current position of resource agencies on operation of fishway at the facility.	Provide more current communications on the performance of the downstream fish passage facility.
b) Are there historic necords of anadomunus and/or catadromous find movement through the Facility area, but anadomous and/or catadromous finds do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish no longer have a migratory mn)?	No documentation.	See C.1 issues.	See C.1 issues. Are other migratory species at issue here, aside from Atlantic salmon (e.g., American eel)?
3.a. If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility?	N/A?		It would be useful to have an agency letter to this effect.
3.b. If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream obstruction or the completion of a specified process), has the Facility owner/operator made a legally enforceable commitment to provide such passage?	N/A		Document if possible, with information more current than the original NEPA documents.
4) If, since December 31, 1986: a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation)	N/A		
as described in C2a above), and b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription, () Was Presson for the for func dependent declining to issue a Mandatory Fish () Was Presson for the for func dependent declining to issue a Mandatory Fish () Was Presson for the for func dependent declining to issue a Mandatory Fish () Was Presson for the for function of the facility and the set in part to immulation by the Facility importantment, or (3) the mandromous or calculatoroous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?			
5) If C4 was not applicable: 5 a. Are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology?	N/A		
5.b. If the Facility is unable to meet the fish passage standards in 5.a, has the Applicant either i) demonstrated, and obtained a letter from the U.S. Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource, or ii) committed to the provision of fish passage measures in the future and obtained a letter from the U.S. Fish and Wildlife Service or the Mational Marine Fisheries Service indicating that passage measures are not currently warranted?	N/A		
6) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of <i>Riverine</i> fish?	N/A, but references to Tabs 4 and 5.		Reference to the state 401 WQ certificate is useful but not sufficient, because federal resource agencies can also make mandatory fish passage prescriptions. Apparently they have not, but it would be good to have a current letter to that effect,
			or at least a statement that their only fish passage concerns at the facility is still downetream passage for Atlantic column
7) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?	No documentation.	N/A?	It does not appear that specific agency recommendations were made – please confirm this.

D. Watershed Protection	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
 Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feer from the average annual high water the state of the line for at least 50% of the shoreline, including all of the undeveloped shoreline? 	Maps in Tab 2.	None.	None. Buffer zones would not be feasible at this type of facility.
2) Has the Facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of I and protection in D.1.and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?	N/A	None.	None.
3) Has the Facility owner/operator established through a settlement agreement with appropriate stacholders, with state and federal resource agencies agreement, an appropriate shoreland buffer or equivalent waterable land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation)?	N/A	None.	None.
4) Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project?	N/A?	Documentation or statement(s) that no such management plans have been required for this facility.	It appears that no such recommendations have been made, so this criterion is not applicable – document that this assumption is correct. Annotations in questionnaire are not sufficient.
E. Threatened and Endangered Species Protection	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
 Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach? 	No documentation.	Any evidence of agency concurrence that there are no listed species at the Facility.	Usually the applicant provides copies of consultation with agencies to support their position that no listed species are present – has this been attempted?
2) If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?	No documentation.	Unclear, but it appears there are none required.	See E.1 issue.
3) If the Facility has received authorization to incidentally Take a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10, or (iii) For species listed by a state and not by the federal government, obtaining authorization pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authorization?	N/A	None, as long as there are no listed species in the area.	N/A
4) If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that: a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or c) There is no recovery plan for the threatened	N/A	None, as long as there are no listed species in the area.	N/A
or endangered species under active development by the relevant Resource Agency? Or d) The recovery plan under active development will have no material effect on the Facility's operations?			
5) If E.2 and E.3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?	N/A	N/A	N/A, but it would be very helpful if the applicant can provide up-to-date communication with agencies to confirm
F. Cultural Resource Protection	INFO LOCATION IN AP	MISSING INFORMATION	that no listed species are present. INITIAL ISSUE IDENTIFICATION
 If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption? 	Tabs 3 and 5.	None.	None.
2) If not FERC-regulated, does the Facility owner/operator have in place (and is in Compliance with) a plan for the protection, mitigation or enhancement of impacts to Clutteral Resources approved by the relevant state or federal agency or <i>Native American Tribe</i> , or a letter from a senior officer of the relevant agency or <i>Thibe</i> that no plan is needed because Cultural Resources are not negatively affected by the Facility?	N/A	NA	N/A
G. Recreation	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
 If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption? 	No documentation other than the original NEPA documents.	Recent letters from state or local authorities to confirm that facility accommodates whatever recreational uses that are relevant to it.	Because the NEPA documents are so dated, it would be very helpful for the applicant to obtain current letters from relevant autorities, at a minimum stating that the facility supports recreation, or that there are no recreational demands on the facility.
2) If not FERC-regulated, does the Facility provide recreational access, accommodation (including recreational flow releases) and facilities, as Recommended by Resource Agencies or other agencies responsible for recreation?	N/A	N/A	N/A
3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?	No documentation.	Access restrictions by FERC?	Provide documentation that FERC prohibits recreational access as stated, and define the limits to that restriction
H. Facilities Recommended for Removal	INFO LOCATION IN AP	MISSING INFORMATION	INITIAL ISSUE IDENTIFICATION
 Is there a Resource Agency Recommendation for removal of the dam associated with the Facility? 	No documentation.	Agency letters confirming that there has been no recommendations for removal.	If possible, provide documentation.

III. SUMMARY OF MISSING INFORMATION AND INITIAL ISSUES IDENTIFIED DURING COMPLETENESS

Note: Numbers in "Reference" column are cross-referenced to corresponding numbers above, where a complete description of the missing

information or an apparent issue is provided.				
ITEM	REFERENCE (enter applicable Background Information number and Criteria Information subsections (e.g., A.1)) AND BRIEF DESCRIPTION			
Missing Information	Although the Questionnaire was complete and a well-organized, hardcopy binder was provided, it would be very helpful if a narrative explanation of how each of the criteria are passed could be provided in the final application. The answers inserted into the Questionnaire are too terse in some cases to be a sufficient explanation for a reviewer. Also, more current letters or e-mail communications from state and federal resource agencies would be very helpful to understand their current recommenations.			
Initial Issues	Although the LIHI application is well organized and thorough, and the facility design, location, and operation appear to be well-suited for LIHI certification, much of the documentation dates back to the 1980s and 1990s – these should be updated wherever possible (e.g., DOI references to minimum flows) with current communications with the state and federal resource agencies. ROR operation should be better documented, including an explanation of how it is verified, as required in the earlier agency recommendations. The applicant has used an out-dated version of the LIHI Questionnaire – the current version can be downloaded from the LIHI web site, at http://www.lowimpacthydro.org/certification-program.html – use the newer version in the final application package.			