



**KLEINSCHMIDT ASSOCIATES,**  
Consulting Engineers, Scientists & Planners

FILED  
OFFICE OF SECRETARY

75 Main Street PO Box 576 • Pittsfield, Maine 04967 • Phone: 207-487-3328 • Fax: 207-487-3124 • www.KleinschmidtUSA.com

November 6, 2000

FEDERAL ENERGY  
REGULATORY  
COMMISSION

Mr. Caleb Slater  
Mass. Division of Fisheries and Wildlife  
Field Headquarters  
1 Rabbit Hill Rd.  
Westborough, MA 01581

Mr. John Warner  
U.S. Fish and Wildlife Service  
22 Bridge Street  
Unit #1  
Concord, NH 03301




Putts Bridge Hydroelectric Project  
(FERC No. 10677) Water Quality Study

Dear Sirs:

Enclosed for your use is the Putts Bridge Water Quality Monitoring Study Report for the Putts Bridge Hydroelectric Project located on the Chicopee River. The study was undertaken to confirm that the 25 cfs bypass flow requirement at the project provides sufficient flows to maintain suitable water quality for the bypass reach pool. The study results indicate that the current minimum flow release into the bypass reach meet or exceed the state water quality standards for the Chicopee River.

We trust this report addresses the aeration and circulation concerns stated in the November 6, 1998 U.S. Fish and Wildlife Service letter (copy in Report Appendix). Separate documents have been or will be supplied addressing other items listed in the November 1998 letter. If you have any questions or need additional information regarding this study or the results, please do not hesitate to contact me at 207-487-3328 (Email [AL.Nash@KleinschmidtUSA.com](mailto:AL.Nash@KleinschmidtUSA.com))

Sincerely,  
KLEINSCHMIDT ASSOCIATES

  
Alfred J. Nash, P.E.  
Project Engineer

0012220286-3

FERC - NYRO  
RECEIVED

NOV - 8 2000

NEW YORK, NY

FERC DOCKET#

NOV - 8 2000

AJN:mas  
Enclosure  
cc: John Labiak (CEEMI)  
Kim Marsili (CEEMI)  
FERC - NYRO (3 copies)

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**CONSOLIDATED EDISON ENERGY  
MASSACHUSETTS, INC.**  
*WEST SPRINGFIELD, MASSACHUSETTS*

**PUTTS BRIDGE HYDROELECTRIC PROJECT**  
**FERC NO. 10677**

**WATER QUALITY MONITORING STUDY REPORT**

*NOVEMBER 2000*

**FERC - NYRO  
RECEIVED**

**NOV - 8 2000  
NEW YORK, NY**

Prepared by:

***Kleinschmidt***  
*Energy & Water Resource Consultants*

**FERC DOCKETED  
NOV - 8 2000**

CONSOLIDATED EDISON ENERGY MASSACHUSETTS, INC.  
*WEST SPRINGFIELD, MASSACHUSETTS*

PUTTS BRIDGE HYDROELECTRIC PROJECT  
FERC NO. 10677

WATER QUALITY MONITORING STUDY REPORT

*NOVEMBER 2000*

Prepared by:

***Kleinschmidt***  
*Energy & Water Resource Consultants*

**CONSOLIDATED EDISON ENERGY MASSACHUSETTS, INC.  
WEST SPRINGFIELD, MASSACHUSETTS**

**PUTTS BRIDGE HYDROELECTRIC PROJECT  
FERC NO. 10677**

**WATER QUALITY MONITORING STUDY**

**DRAFT REPORT**

**1.0 INTRODUCTION**

The Putts Bridge Hydroelectric Project (FERC No. 10677) (Project) is a 4.7 MW hydroelectric facility located on the Chicopee River in the municipalities of Wilbraham, Ludlow and Springfield, Massachusetts. The Project is owned and operated by Consolidated Edison Energy Massachusetts, Inc. (Licensee), a wholly owned subsidiary of Consolidated Edison Development, Inc. The Project consists of a small impoundment, dam, buried water conduit, powerhouse containing two (2) active and two (2) inactive generating units, bypassed reach, and tailrace. In 1992, the Federal Energy Regulatory Commission (FERC) issued an order exempting the Project from licensing.

The original exemption terms and conditions required a continuous minimum flow release of 247 cfs or inflow, whichever is less, to the bypassed reach of the Project. After investigation, the resource agencies agreed that a minimum flow of 25 cfs in the bypassed reach would provide suitable flows to maintain habitat for the resident fish community.

The Project releases a 25 cfs minimum flow (or inflow, if less) from the existing skimmer gate located at the north end of the dam. The downward opening skimmer gate is 6 ft. wide and 8 ft. high and has a surface discharge. Impoundment fluctuations are limited to a 1-ft draw down below the flashboards (El. 205.3) from April 1 to June 30, and a 2-ft draw down below the flashboards from July 1 to March 30. The impoundment level indicator is located at the head gate structure adjacent to the skimmer gate. The skimmer gate is electronically operated, and controlled by a Programmable Logic Controller (PLC), which adjusts automatically with

fluctuating impoundment elevations to maintain a constant discharge through the gate. Strip charts continuously record impoundment elevation and gate position.

In a letter dated November 6, 1998 (Appendix A), the U. S. Fish and Wildlife Service (USFWS) expressed concerns about the potential effects of the 25 cfs minimum flow on dissolved oxygen (DO) concentrations and water temperatures in the bypassed reach. Specifically, the USFWS expressed interest in the ability of the proposed minimum flow to sufficiently aerate and maintain water quality in the large pool located at the downstream end of the bypassed reach, near the confluence of the tailrace. The USFWS recommended a study be undertaken during the summer (low flow periods) to document if the 25 cfs minimum flow released to the bypassed reach is sufficiently maintaining water quality in the pool.

In response to the USFWS' recommendation, a draft water quality monitoring plan was provided to the USFWS and Massachusetts Division of Fisheries and Wildlife (MDFW) for review and comment. Comments on the draft plan were received from the USFWS and MDFW by letters dated February 10, 2000 and February 15, 2000, respectively (Appendix A). All comments and recommendations received on the draft plan were incorporated into a final water quality monitoring plan.

## **2.0 METHODS AND MATERIALS**

Water quality monitoring consisted of in-situ measurements of DO and temperature collected from the bypassed reach. Sampling was performed at three locations including 1) the upper bypass reach immediately downstream of the spillway, 2) the lower bypass reach, and 3) just downstream of the confluence of the tailrace and bypassed reach. (Figure 1). Sampling was performed at the deepest portion of each sampling location. Each site were sampled twice each week from July 8 to September 6, 2000 (total of 8 weeks). Sampling did not commence during the first week of July due to river conditions at the site. In order to collect data for 8 consecutive weeks, sampling was continued through early September. Sampling events did not occur during consecutive days during the week. Each sampling event included diurnal collections (morning and evening). Morning samples were collected within approximately 2 hours after sunrise and evening sampling were conducted within approximately 2 hours before sunset. If depths within

the pools at the sampling locations were less than 2 meters deep, DO and temperature measurements were taken at mid-depth. Otherwise, measurements were made at vertical 1-meter increments.

Sampling was performed during periods of low flow (25 cfs) in the bypassed reach. To the extent possible, sampling did not occur immediately after precipitation events or during dam spillage (Table 1). Exceptions occurred during samples collected on July 29, August 6, and August 12, when the project either spilled one day prior to the sample or on the actual sample day. Never the less, data collected during the monitoring event should represent a "worst-case-scenario" of elevated temperatures and potentially reduced DO in the bypassed reach.

Ambient water temperature ( $^{\circ}\text{C}$ ) and dissolved oxygen concentrations ( $\text{mg/l}$ ) were recorded on standardized data sheets for each sampling station/event. Time and field conditions (bypass flow (cfs), weather, and air temperature) were also recorded during sampling. Information of bypass flow was obtained from the records of the bypass gate setting. All measurements (DO in  $\text{mg/L}$  and temperature in  $^{\circ}\text{C}$ ) were made using a calibrated, electronic, YSI Model 58 DO field meter. Immediately prior to and after each sampling event, the instrument was calibrated according to EPA approved manufacturer's recommendations.

### **3.0 RESULTS**

The results of the water quality monitoring study are presented in Table 2 separately for the upper, mid, and lower bypass sampling stations. D.O in the upper bypass station ranged from 7.88  $\text{mg/l}$  (89.1% saturation) to 9.2  $\text{mg/l}$  (98.9% saturation). Water temperatures in the upper bypass section ranged from a low of 18.6  $^{\circ}\text{C}$  to a high of 24.6  $^{\circ}\text{C}$ . D.O. in the mid bypass station ranged from 7.62  $\text{mg/L}$  (88.47% saturation) to 9.30  $\text{mg/l}$  (>100% saturation). Water temperatures in the mid bypass section ranged from 18.6  $^{\circ}\text{C}$  to 24.6  $^{\circ}\text{C}$ . D.O. in the lower bypass station ranged from 7.28  $\text{mg/L}$  (81.41% saturation) to 9.05  $\text{mg/L}$  (>100% saturation). Water temperatures in the lower bypass section ranged from 18.5  $^{\circ}\text{C}$  to 24.6  $^{\circ}\text{C}$ .

#### 4.0 DISCUSSION

According to the Massachusetts Department of Environmental Protection (MDEP), the Chicopee River is classified as a class B water and is listed as a warm water fishery<sup>1</sup>. This classification requires that dissolved oxygen levels shall not be less than 5.0 mg/L and that levels of dissolved oxygen shall not be lower than 60 percent in warm water fisheries. Water temperature shall also not exceed 28.3 °C in warm water fisheries.

Data collected during the water quality monitoring study indicate that D.O. concentrations and water temperatures in the Putts Bridge bypass reach exceed MDEP Class B water quality standards. As such, it can be concluded that the minimum flows as released by the electronically operated skimmer gate are sufficient for maintaining adequate water quality in the Putts Bridge bypass reach.

J:\803-001\2000 Water Quality Report .doc

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<sup>1</sup> Massachusetts Department of Environmental Protection. 1999. Massachusetts surface water quality standards. MDEP, Division of Water Pollution Control, Westborough, Massachusetts.

Table 1. ConEdison Energy Massachusetts, Inc. Summary of spillage conditions at the Project during water quality monitoring.

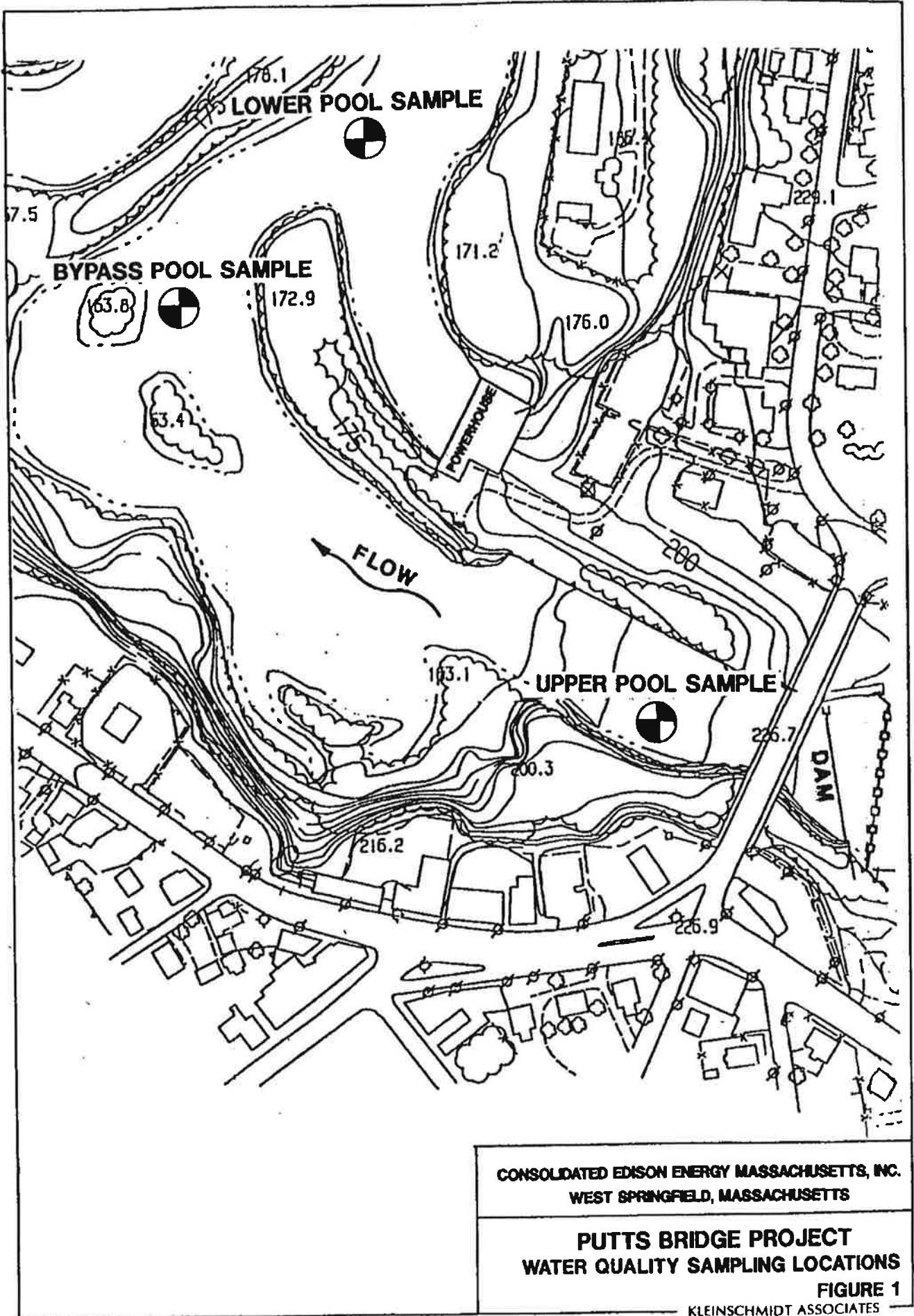
Date	Hours of Spill	Date	Hours of Spill
July 7, 2000	0	August 11, 2000	14
July 8, 2000	0	August 12, 2000	14
July 9, 2000	0	August 13, 2000	0
July 10, 2000	0	August 14, 2000	15
July 11, 2000	0	August 15, 2000	16
July 12, 2000	0	August 16, 2000	0
July 13, 2000	0	August 17, 2000	0
July 14, 2000	0	August 18, 2000	0
July 15, 2000	0	August 19, 2000	0
July 16, 2000	9	August 20, 2000	0
July 17, 2000	7	August 21, 2000	0
July 18, 2000	0	August 22, 2000	0
July 19, 2000	0	August 23, 2000	0
July 20, 2000	0	August 24, 2000	0
July 21, 2000	0	August 25, 2000	0
July 22, 2000	0	August 26, 2000	0
July 23, 2000	0	August 27, 2000	0
July 24, 2000	0	August 28, 2000	0
July 25, 2000	0	August 29, 2000	0
July 26, 2000	2	August 30, 2000	0
July 27, 2000	24	August 31, 2000	0
July 28, 2000	2	September 1, 2000	0
July 29, 2000	0	September 2, 2000	0
July 30, 2000	0	September 3, 2000	0
July 31, 2000	0	September 4, 2000	0
August 1, 2000	0	September 5, 2000	0
August 2, 2000	0	September 6, 2000	0
August 3, 2000	0		
August 4, 2000	6		
August 5, 2000	24		
August 6, 2000	1		
August 7, 2000	0		
August 8, 2000	0		
August 9, 2000	0		
August 10, 2000	0		



Table 2 ConEdison Energy Massachusetts, Inc. Summary of water quality monitoring at the Putts Bridge Project during summer, 2000.

Date	Upper Bypass Station			Mid Bypass Station			Lower Bypass Station							
	Time	Temp (C)	D.O. (mg/L)	Saturation	Date	Time	Temp (C)	D.O. (mg/L)	Saturation	Date	Time	Temp (C)	D.O. (mg/L)	Saturation
7/8/00	5:50-5:53 AM	21.20	8.15	89.45%	7/8/00	7:02-7:05 AM	21.20	7.80	87.32%	7/8/00	6:50-6:53 AM	21.30	7.28	81.41%
7/8/00	7:30-7:33 PM	23.40	8.10	94.04%	7/8/00	6:58-7:01 PM	23.40	8.40	97.53%	7/8/00	6:50-6:53 PM	23.60	8.91	103.23%
7/10/00	5:49-5:52 AM	21.40	8.48	95.82%	7/10/00	6:48-6:51 AM	21.40	8.00	90.40%	7/10/00	6:40-6:43 AM	21.40	7.43	83.95%
7/10/00	7:58-8:01 PM	23.30	8.11	94.26%	7/10/00	7:13-7:16 PM	23.30	8.41	97.75%	7/10/00	7:02-7:05 PM	23.30	8.95	104.02%
7/13/00	5:45-5:48 AM	22.30	8.30	91.86%	7/13/00	6:34-6:37 AM	22.10	8.20	85.26%	7/13/00	6:25-6:28 AM	22.60	8.05	90.55%
7/13/00	6:30-6:33 PM	24.50	8.30	98.11%	7/13/00	7:19-7:22 PM	24.40	8.50	100.57%	7/13/00	7:10-7:13 PM	24.20	8.72	103.38%
7/20/00	7:10-7:13 AM	21.30	8.42	94.16%	7/20/00	6:21-6:24 AM	21.30	8.00	89.47%	7/20/00	6:12-6:15 AM	21.50	7.35	82.03%
7/20/00	6:30-6:33 PM	23.80	8.48	98.06%	7/20/00	7:09-7:12 PM	23.70	8.75	101.28%	7/20/00	7:02-7:05 PM	24.00	9.05	107.51%
7/23/00	5:55-5:58 AM	21.40	8.38	94.69%	7/23/00	6:48-6:51 AM	21.40	7.92	89.49%	7/23/00	6:40-6:43 AM	21.30	7.35	82.20%
7/23/00	6:45-6:48 PM	23.50	7.90	91.63%	7/23/00	7:22-7:25 PM	23.50	8.03	93.13%	7/23/00	7:16-7:19 PM	23.40	8.35	96.95%
7/25/00	5:35-5:38 AM	22.30	8.21	90.87%	7/25/00	6:08-6:11 AM	22.30	8.02	88.77%	7/25/00	6:02-6:04 AM	22.30	7.59	84.01%
7/25/00	6:21-6:24 PM	23.50	8.30	96.27%	7/25/00	7:04-7:07 PM	23.50	8.34	96.73%	7/25/00	6:54-6:59 PM	23.50	8.38	97.19%
7/29/00	5:56-5:59 AM	18.60	9.00	94.50%	7/29/00	6:36-6:39 PM	18.60	8.19	85.99%	7/29/00	6:29-6:32 AM	18.60	7.58	79.59%
7/29/00	6:27-6:30 PM	19.90	9.07	96.91%	7/29/00	7:06-7:09 PM	20.50	9.30	101.77%	7/29/00	6:58-7:01 PM	19.80	8.64	92.41%
8/6/00 <sup>1</sup>	6:43-6:46 AM	21.20	8.35	93.47%	8/6/00	7:20-7:23 AM	21.00	8.16	91.53%	8/6/00	7:10-7:13 AM	21.20	7.83	87.65%
8/10/00	6:24-6:28 AM	23.40	8.10	94.04%	8/10/00	7:15-7:18 AM	23.40	7.62	88.47%	8/10/00	7:25-7:29 AM	23.40	7.38	85.68%
8/10/00	6:35-6:38 AM	24.60	8.02	94.70%	8/10/00	7:12-7:15 AM	24.60	7.62	89.98%	8/10/00	7:30-7:33 AM	24.60	7.42	87.61%
8/12/00	6:18-6:21 AM	21.00	8.22	92.20%	8/12/00	6:48-6:51 AM	21.00	7.82	87.72%	8/12/00	6:59-7:03	21.00	7.76	87.04%
8/12/00	6:35-6:39 PM	22.60	8.06	90.66%	8/12/00	6:55-6:59 PM	22.60	7.84	88.19%	8/12/00	7:15-7:18 PM	22.60	7.30	82.11%
8/17/00	6:35-6:38 AM	19.20	9.20	98.98%	8/17/00	6:55-6:58 AM	19.60	8.28	88.73%	8/17/00	7:20-7:23 AM	19.20	7.58	81.55%
8/17/00	6:20-6:23 PM	21.40	8.32	94.01%	8/17/00	7:00-7:03 PM	21.40	7.88	89.04%	8/17/00	7:20-7:23 AM	21.40	8.20	92.66%
8/19/00	6:26-6:29 AM	18.60	8.90	93.45%	8/19/00	6:50-6:53 AM	18.60	8.48	89.04%	8/19/00	7:12-7:14 AM	18.60	8.20	86.10%
8/19/00	6:35-6:38 PM	20.20	8.24	90.44%	8/19/00	6:59-7:02 PM	20.20	8.40	92.20%	8/19/00	7:20-7:23 PM	20.30	8.82	96.71%
8/24/00	6:35-6:38 AM	20.00	8.20	90.18%	8/24/00	7:20-7:23 AM	20.00	7.92	87.10%	8/24/00	7:40-7:43 AM	20.00	7.58	83.36%
8/24/00	6:35-6:38 PM	21.40	7.88	89.04%	8/24/00	6:58-7:02 PM	21.40	8.10	91.53%	8/24/00	7:25-7:28 PM	21.50	8.40	93.75%
8/30/00	6:50-6:53 AM	21.20	8.72	97.62%	8/30/00	7:25-7:28 AM	20.80	8.11	88.48%	8/30/00	7:37-7:40 AM	21.40	8.38	94.69%
8/30/00	6:30-6:33 PM	21.50	8.62	96.21%	8/30/00	7:08-7:11 PM	21.40	8.80	99.44%	8/30/00	7:34-7:37 PM	21.50	8.84	98.66%
9/1/00	6:30-6:34 AM	19.80	8.64	92.41%	9/1/00	7:00-7:03 AM	19.70	8.24	88.21%	9/1/00	7:14-7:17 AM	19.80	8.02	85.78%
9/1/00	6:10-6:13 PM	21.80	8.12	90.36%	9/1/00	6:30-6:34 pm	21.80	8.36	93.03%	9/1/00	6:48-6:51 PM	21.80	8.82	98.15%
9/3/00	6:20-6:23 AM	20.40	8.04	88.07%	9/3/00	6:57-7:00 AM	20.70	7.88	86.05%	9/3/00	7:18-7:21 AM	20.50	7.64	83.81%
9/3/00	6:15-6:18 PM	23.10	8.23	95.84%	9/3/00	6:40-6:43 PM	23.10	8.23	95.84%	9/3/00	7:10-7:13 PM	23.10	8.84	102.95%
9/6/00	6:35-6:38 AM	18.60	8.80	92.40%	9/6/00	7:12-7:15 AM	18.60	8.02	84.21%	9/6/00	7:29-7:31 AM	18.50	7.67	80.82%

<sup>1</sup> pm sample not collected due to rain



CONSOLIDATED EDISON ENERGY MASSACHUSETTS, INC.  
 WEST SPRINGFIELD, MASSACHUSETTS

**PUTTS BRIDGE PROJECT  
 WATER QUALITY SAMPLING LOCATIONS**

**FIGURE 1**

KLEINSCHMIDT ASSOCIATES

APPENDIX A

Commonwealth of Massachusetts



# Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

February 15, 2000

RE: Putts Bridge Project (FERC # 10677)  
Draft Water Quality Monitoring Plan

Alfred J. Nash, P.E.  
Kleinschmidt Associates  
75 Main Street  
PO Box 576  
Pittsfield, ME 04967

Dear Mr. Nash,

The Massachusetts Division of Fisheries and Wildlife (Division) is the state agency responsible for the protection and management of the fish and wildlife resources of the Commonwealth. As such, we have prepared the following comments in response to the draft Water Quality Monitoring Plan for the Putts Bridge Project (FERC # 10677) located on the Chicopee River.

Your proposal to sample the water temperature and dissolved oxygen twice daily during July and August at two locations in the bypass reach and at one location at the confluence of the tailrace is acceptable. We would recommend that the sampling occur at least twice a week in the period July through August, and that the sampling occur during normal summer low flow conditions. Please avoid sampling when the project is spilling into the bypass reach, and provide a summary of bypass reach flow data that corresponds to the water quality sample times.

Sincerely,

A handwritten signature in black ink, appearing to read "Caleb Slater".

Caleb Slater, PhD  
Anadromous Fish Project Leader

Division of Fisheries & Wildlife

Field Headquarters, One Rabbit Hill Road, Westboro, MA 01581 (508) 366-4470

An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Field Office  
22 Bridge Street, Unit #1  
Concord, New Hampshire 03301-4986

REF: FERC No. 10677

February 10, 2000

Alfred J. Nash, P.E.  
Kleinschmidt Associates  
75 Main Street, P.O. Box 576  
Pittsfield, ME 04967

Dear Mr. Nash:

This responds to your January 10, 2000 cover letter and accompanying draft Water Quality Monitoring Plan for the Putts Bridge Project, located on the Chicopee River in Massachusetts. We have reviewed the plan and offer the following comments.

You propose to monitor water quality in the Putts Bridge bypass reach to determine the adequacy of the interim 25 cfs discharge in maintaining water quality in the stretch of river between the dam and the tailrace. Each week from July through August you will collect dissolved oxygen and water temperature data twice daily (early morning and late afternoon). Samples will be collected from three locations; two in the bypass reach and one just below the confluence of the tailrace. At the end of monitoring the results will be compiled into a report for agency review and comment.

We have no objection to the proposed study protocol. However, the plan does not specify how many times each week samples will be collected. We recommend that monitoring take place a minimum of twice per week. Also, sampling should take place during the warmest, driest conditions possible (e.g., avoid sampling during or after precipitation events). If higher flows are evaluated, you will need to provide a calculation sheet that verifies how much flow was passed during that monitoring event.

Thank you for this opportunity to comment. If you have any questions, please contact Melissa Grader of this office at (603) 225-1411.

Sincerely,

William J. Neidermyer  
Acting Supervisor  
New England Field Office

cc: Caleb Slater, MA DFW  
John Labiak, CEEMI  
111 Broadway, 16<sup>th</sup> Floor  
New York, NY 10006  
Kim Marsili, CEEMI  
Reading File  
es: MGrader:2-7-00:(603)225-1411



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75 Main Street PO Box 576 • Pittsfield, Maine 04967 • Phone: 207-487-3328 • Fax: 207-487-3124 • [www.KAssociates.com](http://www.KAssociates.com)

January 10, 2000

Caleb Slater  
Mass. Division of Fisheries & Wildlife  
Field Headquarters  
1 Rabbit Hill Rd.  
Westborough, MA 01581

Dear Caleb:

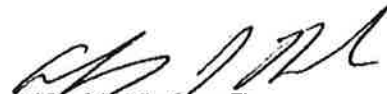
Enclosed for your review and comment is the Putts Bridge Water Quality Monitoring Plan, as discussed at Consolidated Edison Energy Massachusetts, Inc's (CEEMI) June 22, 1999 meeting in West Springfield, MA.

Although we don't intend to start the water quality monitoring until the summer of 2000, we would like to get your comments on this plan by March 1, 2000 so that we can distribute the final plan and be in the field in July 2000.

Thank you in advance for your timely review and comment. Please feel free to call me with your comments, in lieu of written comments, if you prefer. If you have any questions or need additional information, please do not hesitate to contact me at 207-487-3328 (Email [ALN@KAssociates.com](mailto:ALN@KAssociates.com))

Sincerely,

**KLEINSCHMIDT ASSOCIATES**



Alfred J. Nash, P.E.  
Project Engineer

AJN:mas  
Encl.

cc: John Labiak (CEEMI)  
Kim Marsili (CEEMI)  
Kelly Fargo (KA)

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Consulting Engineers & Scientists

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January 10, 2000

Mr. John Warner  
U.S. Fish and Wildlife Service  
22 Bridge Street  
Unit #1  
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Sincerely,

KLEINSCHMIDT ASSOCIATES

Alfred J. Nash, P.E.  
Project Engineer

AJN:mas  
Encl.

cc: John Labiak (CEEMI)  
Kim Marsili (CEEMI)  
Kelly Fargo (KA)

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Nov 17 98 10:22a

Fred Szufnarowski

860 526-2768

P. 2

11/17/98 TUE 10:08 FAX 9 2074876014

KLEINSCHMIDT ENG

+++ FRED SZUFNAROWSK 0002

NOV 17 '98 10:12 FR EARTH TECH

781 853 2926 TO 12074873124

P.02/04

NOV-12-98 THU 14:5W

FAX NO. 0032251467

P. 02/04



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

New England Field Office

22 Bridge Street, Unit #1

Concord, New Hampshire 03301-4986

REF: FERC Numbers: 11675 - Dwight  
11676 - Red Bridge  
11677 - Putts Bridge  
11678 - Indian Orchard

November 6, 1998

Howard E. Person  
Western Massachusetts Electric Co.  
P.O. Box 2010  
West Springfield, MA 01090-2010

Dear Mr. Person:

This is in response to your letter dated August 24, 1998 regarding the Chicopee River projects. In your letter, you cite the need to provide the FERC with a plan for increasing the installed capacity of the projects as required under the terms of the September 11, 1992 Order Granting Exemption From Licensing for each project. After a review of various alternatives to increase generating capacity, you propose to retrofit existing equipment rather than install minimum flow turbines as was originally proposed.

Article 2 of the project exemptions require compliance with the terms and conditions established by the state and federal fisheries agencies. For each project, the Service and Massachusetts Division of Fisheries and Wildlife required the release of minimum flows to the project bypass reaches. These flows equate to the median August flow; the summer low flow at each site.

The projects are currently operating under interim flow release plans as the originally-proposed minimum flow turbines have not been installed. At the Indian Orchard Project, the required flows (247 cfs) are being released through modified canal gates. At the Dwight and Red Bridge projects, a range of flows that bracket the required flows are being provided on an interim basis. At the Putts Bridge Project, a lower flow of 25 cfs has been released on an interim basis instead of the originally required 247 cfs, after re-assessment of habitat quality and quantity in the reach.

In your letter, you propose to make the present minimum flow release protocols permanent. We have reviewed these protocols and have the following comments and recommendations:

Dwight

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Our original terms and conditions for the Dwight Project required the continuous release of 258 cfs, or inflow to the project, whichever is less, to the 3,000 foot-long bypass reach. The current interim release protocol provides bypass flows that range between 140 cfs and 305 cfs, released from the canal drain gates and flows in the flashboards across the dam.

The current operation protocol was accepted as an interim measure, with the understanding that future construction of a minimum flow turbine would provide for a stabilized 258 cfs discharge. While we endorse the continuation of releasing bypass flows across the entire spillway crest, the nature of the current releases are not acceptable as a permanent measure. Project operations or release structures must be modified to provide a continuous discharge of 258 cfs rather than a range in flows well above and well below 258 cfs.

#### Red Bridge

The original terms and conditions for the Red Bridge project call for the continuous release to the 1,600 foot-long bypass reach of 237 cfs or inflow to the project, whichever is less. The interim release protocol provides flows over the spillway crest ranging from 140 cfs to 300 cfs.

As with the Dwight Project, the current flow release plan was accepted on an interim basis but is not acceptable as a permanent operational protocol. Bypass flows are currently discharged over the spillway crest and fluctuate between 140 cfs and 300 cfs. Due to the extensive spillway length, impoundment fluctuations of only two inches result in this wide range of bypass flows. Construction of a gate or notch in the spillway crest appear to be the most appropriate alternatives to provide more stable flows. Such a structure will allow for a deeper and narrower flow discharge so that minor pond level fluctuations have little effect on flow releases. WMECO should develop plans for such a structure or alternatives that will address this issue.

#### Potts Bridge

At Potts Bridge, the original exemption conditions required the continuous release of 247 cfs or inflow to the project, whichever was less. However, subsequent to the issuance of the Exemption from Licensing, WMECO conducted an assessment of bypass reach habitat and a flow release demonstration was undertaken. We have reviewed our notes on the flow demonstration. Based on this review, we can accept the 25 cfs minimum bypass release from a habitat standpoint.

However, at the September 9, 1993 meeting, we raised the issue of assuring that a minimum flow of 25 cfs would provide sufficient aeration and circulation to the large pool that lies at the downstream end the bypass reach, just upstream from the turbine discharge. We are unaware of any data that verifies that the water quality in the pool is protected under a 25 cfs discharge. Therefore, we recommend that a monitoring study be undertaken next summer to assess water quality in the pool in comparison to upstream and downstream water quality. A plan for such a study should be developed and distributed for agency comment. The study should target dissolved oxygen and temperature during the low flow summer period. Diurnal sampling and sampling at various depths and locations in the pool should be part of the plan.

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Fred Szufnarowski

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In addition, at meetings on September 9, 1993 and October 12, 1994, we had raised questions about the ability of WMECO to provide the required flows of 247 cfs at Indian Orchard given the low continuous bypass flows and store-and-release operations at Putts Bridge. According to the meeting notes for the October 12, 1994 meeting (copy attached), WMECO was to provide data to support the contention that the minimum flows from Indian Orchard would not be compromised by the proposed operations of Putts Bridge.

Our records do not indicate that we ever received this supportive data. Please provide data that demonstrates that the required bypass flow of 247 cfs (or inflow if inflow is less than 247 cfs) has been provided at Indian Orchard under current Putts Bridge operational protocols.

#### Indian Orchard

The current minimum bypass flow release protocol provides the 247 cfs flow release required by our original terms and conditions. As such, the current release protocol is an acceptable long term operation measure.

#### Conclusions

As discussed above, alternative flow release mechanism will be needed to stabilize releases to the Dwight and Red Bridge bypass channels. Additional operational and water quality data are needed before we can formally accept the proposed 25 cfs release to the Putts Bridge bypass. The current and proposed Indian Orchard release plan are acceptable.

Thank you for this opportunity to review...