

95 FERC ¶ 62,225
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Consolidated Edison Energy
Massachusetts, Inc.

Project No. 2334-028

ORDER APPROVING FINAL DOWNSTREAM FISH PASSAGE
EFFECTIVENESS REPORT AND RECOMMENDED MODIFICATIONS

(Issued June 14, 2001)

Consolidated Edison Energy Massachusetts, Inc. (licensee), filed for Commission approval on April 2, 2001, a final downstream fish passage effectiveness report for the Gardners Falls Project. This report was required by ordering paragraph (B) of the Order Modifying and Approving One Year Extension of Fish Passage Effectiveness Monitoring Study, issued on March 3, 2000.¹ The project is located on the Deerfield River, in Buckland, Massachusetts, between Deerfield No. 3 and Deerfield No. 2 dams of the Deerfield Project (FERC No. 2323).

The approved downstream fish passage facility consists of a minimum flow/fish passage gate and a floating louver to guide downstream migrating fish to the gate. Fish are expected to pass through the gate into a plunge pool constructed at the south end of the dam.²

BACKGROUND

Article 404 of the project license required the licensee to develop a plan to monitor the effectiveness of the downstream fish passage facilities. This plan was filed with the Commission on April 6, 1998, and approved on May 4, 1998.³ As part of the approved plan, the licensee was required to radio tag Atlantic salmon smolts, release them upstream of the project, and evaluate passage routes around the dam. The licensee was to determine the downstream fish passage facility's effectiveness by dividing the total number of smolts passing downstream via the facility by the total number of smolts passing through the facility and the project canal.

¹90 FERC ¶ 62,155 (2000).

²See 81 FERC ¶ 62,130 (1997) and 83 FERC ¶ 62,099 (1998).

³83 FERC ¶ 62,101 (1998).

On December 16, 1999, the licensee filed a status report with the Commission which indicated flows were extremely low in 1999 when the effectiveness study was completed. Results of the 1999 study indicated that during low flow periods, the downstream fish passage facility had an overall effectiveness of 72 percent (overall project passage of 77 percent). The licensee proposed some minor modifications to the facility to improve passage and requested time to replicate the study under higher flows. These modifications and the licensee's request to extend the study were approved in the Commission's March 3, 2000 order.

LICENSEE'S REPORT

For the 2000 study, the licensee installed six monitoring stations around the dam, downstream fish passage facility, power canal, and tailrace. The objective for the 2000 study was to determine the effectiveness of the facility in passing salmon smolts when generating flows were greater than 800 cubic feet per second (cfs). The licensee released 54 radio tagged smolts in five separate groups between May 4-10, 2000. Fifty-one smolts were detected passing the project, with 13 (25 percent) passing via the downstream fish passage facility, 6 (12 percent) passing via spill over the dam, 31 (61 percent) passing via the power canal and through the powerhouse, and 1 (2 percent) passing via an unknown route.

Of the 13 smolts that used the downstream fish passage facility, only three passed when generating flows were greater than 800 cfs. Even though releases occurred when generating flows were above 800 cfs, most of the smolts using the fish passage facility appeared to linger in the project area and pass under lower flow conditions. Residence time increased from about 12 hours in 1999 to over 26 hours in 2000.

Additionally, 18 smolts released further upstream as part of the evaluation for the Deerfield Project (FERC No. 2323) were detected at the downstream Gardners Falls Project. Seventeen passed the project with five smolts using the downstream fish passage facility, six passing through the turbines, and four passing via spill over the dam. One fish did not pass and two were detected at the arrival point but could not be located again. Of the five smolts that used the fish passage facility, four did so when generating flows were greater than 800 cfs. The licensee speculated the reason for such a high percentage of fish passing via the facility during high flows (when compared to the fish released for the Gardners Falls study) may be due to the percent of bypass flow compared to turbine flow at the time of their passage. Three of the four salmon passed via the downstream fish passage facility when attraction flows to the fish passage facility were much greater (300 cfs) than the operational target flow of 150 cfs.

The licensee noted that in 2000, many of the salmon smolts detected approaching the project were not guided by the louver array, but came along the dam's face or swam under the array. Of the 51 smolts, 31 came in contact with the louver array with 14 guided to within three feet of the facility's entrance, but only seven actually exited via the facility. The remaining 17 fish either passed through or under the louver array or remained in the reservoir. Of the remaining smolts that were not guided by the array, eight smolts (that either came along the dam face or sounded under the louver array) were detected at the bypass entrance with six exiting through the bypass. The licensee noted that in 1999, the louver array was considered effective at turbine flows less than 600 cfs.

The licensee also tested the safe passage of smolts through the downstream fish passage facility. One test, performed on May 13 had to be aborted. A second test on May 17 was conducted in which 58 streamer tagged smolts were released directly into the bypass flow. A total of 51 smolts were recaptured (seven of which were from the first release on May 13). All of these fish were alert and none showed any major scale loss. After holding these fish for 72 hours, all smolts survived.

Combining the results from 1999 and 2000, along with smolts released in the Deerfield Project study, a total of 199 smolts were identified as passing the project by either the bypass, spill, or through the powerhouse. Of these, 109 (55 percent) used the downstream fish passage facility, 19 (9 percent) passed via the spillway, and 67 (34 percent) passed through the powerhouse. Contact was lost with four (two percent) smolts. Fifty-nine (88 percent) of the 67 smolts that passed through the powerhouse were detected at the downstream project.

The licensee concluded that the bypass facility was effective (greater than 70 percent passage) at turbine flows less than 600 cfs, but not effective at higher flows. The louver array did not guide fish to the bypass gate, rather smolts approached the facility either along the dam face or went under the louver array. Increasing flow through the facility (from 150 to over 300 cfs) did not improve the facility's effectiveness. Combining the survival estimate of the various passage routes, the licensee estimated the combined survival of fish passing through either the bypass, spill or the powerhouse, is estimated at approximately 94 percent.

The licensee proposed the following improvements to the downstream fish passage facility: (1) increase the louver depth; (2) provide a permanent support structure for the removable array panels; (3) add a maintenance walkway; (4) close the gap between the gate edge and pier face; (5) check and adjust, if necessary, the gate discharge program. The licensee does not propose any additional effectiveness studies. Upon

completion of the final design, the licensee plans to submit them to the Commission's New York Regional Office for approval.

AGENCY COMMENTS

On September 25, 2000, the licensee provided a copy of the report to the U.S. Fish and Wildlife Service (FWS) and the Massachusetts Division of Fish and Wildlife (MDFW). Subsequently, the licensee met with the FWS and MDFW to discuss the results of the study on November 20, 2000. At the meeting, the resource agencies requested additional information regarding estimates of turbine survival, wicket gate settings, and any proposed modifications to the facility, be included in the final report. The licensee included this information in the final report filed with the Commission.

In a letter dated January 24, 2001, the licensee requested comments from the FWS and MDFW. The MDFW and FWS responded by letters dated March 13 and 20, 2001, respectively. The MDFW concurred with the licensee's report and proposed modifications.

The FWS recommended the louver array extend to a depth of 10 feet below the dam crest (the current louver panels are 8 feet deep) and concurred with the licensee's proposed bypass gate modifications. The FWS requested that the filing to the Commission include a schedule for completing the modifications.

The FWS states the facility is reasonably efficient at low generation flows, but remains poor at higher flows. Although the FWS recommends no additional monitoring at this time, it did suggest that additional monitoring may be warranted in the future. The FWS states that the low efficiency of the bypass appears to be at least partially mitigated by the high survival rates of smolts passing via the powerhouse. The FWS suggests the licensee may want to consider using a flow inducer to create necessary attraction to the downstream fish passage facility.

Included with the plan was the licensee's response to the FWS's comments. The licensee agreed with the FWS's recommended louver depth and agreed to continue to consider ways to improve effectiveness, such as the use of a flow inducer. If the request for further testing arises, the licensee plans to discuss the specific needs for the testing at that time. In response to FWS's request for a proposed modification schedule, the licensee's states the modifications are planned for the 2001 construction season, after Commission approval.

DISCUSSION

Overall, the licensee found that the downstream fish passage facility was 72 percent effective at lower generating flows while at higher flows, the facility was only 26 percent effective [when combining the results from the Gardners Falls (13 out of 51 smolts) and Deerfield Projects (five out of 17 smolts)]. Overall effectiveness was determined to be 55 percent. To improve effectiveness, the licensee plans to increase the depth of the louver array and close the gap between the gate edge and pier face. The facility supports will be made permanent in 2001.

We find that the proposed modifications should among other things, minimize the potential for fish going under the louver array and entering the power canal. The MDFW and FWS agree with these modifications and do not recommend anything further, other than to consider the applicability of a flow inducer to improve the facility's effectiveness. The licensee agrees that in the event the resource agencies desire further testing, the need for, and details of any additional testing, will be discussed at that time. We agree with this approach. The Commission should reserve the right to require future testing should it be determined necessary. Although the effectiveness of the facility, particularly at high flows, is less than desirable, we do note the high percentage of survival via all passage routes around the project (94 percent).

The licensee plans to complete the proposed modifications in 2001. The licensee should coordinate any construction activities with the Commission's New York Regional Office as required by Part 12 of the Commission's regulations. The licensee's final report on the effectiveness of the downstream fish passage facility and its recommended modifications should be approved.

The Director orders:

(A) The licensee's final downstream fish passage effectiveness report and recommended modifications, filed on April 2, 2001, as modified in paragraph (B), is approved. Pursuant to 12.4, 12.11, and 12.40 of the Commission's regulations, the plans and specifications package and a quality control and inspection program for the modifications shall be submitted to the Regional Director. Authorization to start construction activities will be given by the Regional Director after all preconstruction requirements are satisfied.

(B) The Commission reserves the right to require additional monitoring of the effectiveness of the downstream fish passage facility.

(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 CFR § 385.713.

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