



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
Maine Field Office
17 Godfrey Drive, Suite 2
Orono, Maine 04473
207/866-3344 Fax: 207/866-3351

December 3, 2014

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

SUBMITTED ELECTRONICALLY

**RE: Additional information regarding Union River fish kills
Ellsworth Project - FERC No. 2727 - Hancock County, Maine**

Dear Secretary Bose:

The U.S. Fish and Wildlife Service (Service) is aware that many juvenile alewife and adult American eel (i.e., migrating silver eels) were found dead in the Union River at locations downstream of the Ellsworth Project powerhouse in late October and early November, 2014. These events were documented by Dwayne Shaw of the Downeast Salmon Federation (FERC filings dated Oct 30 and Nov 2, 2014) and the events were also reported in the local newspaper (<http://www.ellsworthamerican.com/maine-news/waterfront/feds-seek-answers-union-river-fish-kills/#>). The condition of some of the fish (e.g., severed in half) indicates that turbine-related mortality may account for their death.

The FERC requested more information regarding these fish kills from the Licensee, and a response was filed on 26 November last week. The Service would like to provide some comments on these events, as well as some information on flow conditions in the Union River at the time of the fish kills, and the likely timing of the fall migrations of the silver eels and juvenile alewife.

BACKGROUND

The Ellsworth Project includes dams at Ellsworth and Graham Lake. The Licensee constructed downstream fish passage facilities at the Ellsworth Dam in 1989 in conformance with Service downstream passage criteria that were in use at that time. Specific criteria included surface weirs passing 3.0 percent (current practice is 4.0-5.0 percent) of the maximum powerhouse discharge, one inch trashracks (or solid surface) to block entrainment near the surface, and safe conveyance to the tailrace. The Licensee negotiated the addition of a pump-back system to capture a portion

of the bypass water and reuse it for generation. Downstream passage at the Graham Lake Dam is provided by a surface weir, which was installed at the west end of the gate structure in 2003. Migrating alewife and eels can pass the Graham Lake dam via the discharge of bottom opening Taintor gates.

Pursuant to License Article 406, FERC required the Licensee to prepare a Plan to study the effectiveness of the downstream and upstream passage facilities. The Licensee prepared a Plan in consultation with the resource agencies and filed it with the FERC on May 4, 1992. However, FERC suspended review of the Plan (order dated Jan 5, 1996) due to ongoing litigation and a stay on the construction of a new upstream fishway. As a result of these proceedings, nearly two decades have passed and the downstream fishway still has not been evaluated to determine if it effectively collects downstream migrants and safely transports them to the tailrace.

UNION RIVER FLOW AND FISH MIGRATION

The migration of silver eels and juvenile alewife from Maine lakes and streams may occur any time from late summer to early November. Increased stream flows are an important migratory cue for both species. In 2014, prolonged dry weather in the summer and early fall did not provide the conditions that trigger migration and carry these fish to the sea. However, significant precipitation events occurred in mid to late October with 1.9 inches of rain falling on 16-17 October, followed by 2.8 inches of rain from 21 to 24 October (www.nws.noaa.gov, Bangor data). These precipitation events resulted in significant increases in Union River stream flows, as evidenced by gage data from local streams, particularly Bear Brook, which is adjacent to the Union River watershed. Bear Brook is small stream to the east of the Union River watershed. Bear Brook gage data show that these rain events produced peak flows at 9:45 on October 17 and again at 2:10 on October 24 (Figure 1). We conclude that the Union River migration peaked in late October and likely included millions of juvenile alewife and possibly thousands of mature silver eels.

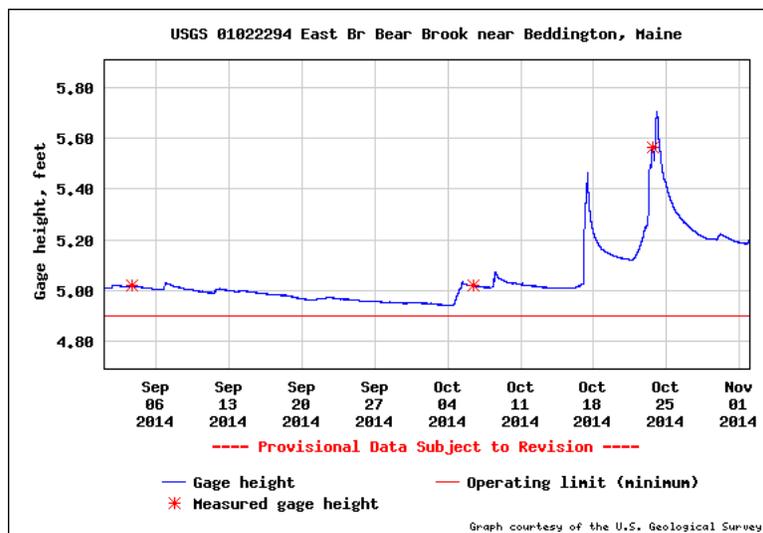


Figure 1 – Bear Brook gage height Sep-Nov 2014 (USGS preliminary data)

COMMENTS

The Licensee's 26 November filing references certain elements of the downstream fishway. These comments demonstrate that the downstream fishway certainly was not operating properly at the time of the fish kills, and casts some doubt on whether the downstream fishway has been operated properly in the past. Specifically, the Licensee states that there is, "...a recovery pump intended to pump water from the transport flume back into the headpond *which allows the transport pipe to pass less water...*", (emphasis added) and that this pump, "...was under repair during the period in question...". The purpose of the pump is not to control flow in the transport pipe, rather the pump provides the required 50 cfs of attraction flow into the two bypass weirs located at the main powerhouse intakes. These two weirs cannot operate properly based solely on gravity flow. Rather, the pump pulls attraction water into the weirs to the floor of the pump pit, where it is returned to the forebay. Flow in the transport pipe is simply controlled with stop logs at the exit of the pump pit. The fact that the pump was not operating indicates that adequate attraction flow was not provided to the weirs. The pump outage dates noted by the Licensee match the dates when dead migrants were observed.

The Licensee also noted that Ellsworth powerhouse flows generally were low, except following a rain event when flows peaked for approximately 11 hours from late on 23 October through the night and into the next day. This freshet is exactly when silver eels and juvenile alewife would have been migrating...at night during a freshet. And 24 October was the date that stakeholders happened to pass the site and observe dead fish in the tailrace.

Despite the absence of any information on the effectiveness of the downstream fishway, the Licensee stated (filing 26 Nov 2014, p. 2) that, "Large numbers (likely millions) of out migrating juvenile river herring have passed through the downstream fish passage system at Ellsworth in recent years." The Licensee provides no support for this statement and the Service believes it has no basis in fact. This statement points out the need to conduct studies of downstream passage of juvenile alewife, as well as adult American eel, and post-spawner alewife. Of course, federally listed Atlantic salmon are also present in the Union River and the same downstream passage facilities must provide safe, timely and effective passage for downstream migrating Atlantic salmon kelts and smolts.

SUMMARY AND RECOMMENDATIONS

On October 24, an observant stakeholder happened to pass over the Union River and see an unusual concentration of birds feeding upon fish downstream of the powerhouse. When he was able to return to the site later in the day, he was able to gain access to one side of the tailrace and found dead alewife along the exposed shoreline—an area that was underwater when the Ellsworth powerhouse was generating earlier in the day. Subsequent visits documented dead silver eels and additional dead alewife. Without a thorough investigation of submerged areas by divers, it is impossible to know how many fish died.

In their November 26 filing, the Licensee attributes the dead alewife to impingement on the intake screens of a four inch bearing cooling water intake. It seems unlikely that this small intake could account for the dead alewife observed on several days, not to mention the feeding birds observed downstream of the powerhouse. And the cooling water could hardly account for

the dead silver eels that were documented. Rather, it seems much more likely that the large volume of water passing through the turbines entrained migrating juvenile river herring and silver eels, and killed some portion of them.

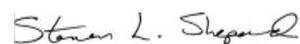
These events illustrate the importance of requiring the Licensee to conduct quantitative downstream passage studies. No party to this relicensing can hope to understand the impact of these fish kills without such studies. The FERC intended such studies be done as part of the previous relicensing (FERC docket P-2727-009, order of February 16, 1994, et seq.). The Licensee and the resource agencies negotiated the scope of these studies. Plans were made and filed with the FERC. A long series of contested court proceedings prevented the completion of these studies. With the current relicensing, the Service once again requested downstream passage studies for Atlantic salmon, alewife, and American eel (PAD comments and study request letter dated Feb 21, 2013).

Study Request—We reiterate our request that the FERC require the Licensee to conduct quantitative downstream passage studies of Atlantic salmon, alewife and American eel as part of the relicensing of the Ellsworth Project.

These events also point out the need for regular inspection and monitoring of these facilities. Questions about this fish kill remain unanswered despite the information supplied by the Licensee. Were the weirs operated correctly? When was the downstream pump operating? How much water was it pumping? Were the weirs operating at the correct depth? It is incumbent on the Licensee, as well as the resource agencies, to monitor fish passage facilities to ensure compliance with operating criteria.

If you have any questions regarding this information, please contact Steve Shepard by telephone at 207/866-3344 Extension 116, or by email at Steven_Shepard@fws.gov, or at the above address.

Sincerely,



for

Laury Zicari
Field Supervisor
Maine Field Office

cc: D. Shaw, DSF
S. McDermott, J. Murphy, and D. Dow, NOAA
B. Towler, RO/EN
K. Howatt, MDEP
O. Cox and G. Wippelhauser, MDMR
J. Perry and G. Burr, MDIFW
Reading File

ES: SShepard:7/08/2013:(207)866-3344