



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Helgeson, Brown, Mital, Simpson and Carlson
FROM: Mike McCann, Electric Operations Manager, and Lisa McLaughlin, Environmental Supervisor
DATE: March 7, 2017
SUBJECT: Lower McKenzie River Water Temperature
OBJECTIVE: Information Only

Issue

This memo responds to a request from the Board for information relating to river temperatures on the lower McKenzie River in proximity to EWEB's Leaburg and Walterville hydroelectric projects.

Background

EWEB owns and operates the Leaburg and Walterville hydroelectric projects on the lower McKenzie River under a federal license issued by the Federal Energy Regulatory Commission (FERC) on April 27, 2000. The license term is 40 years.

EWEB's license terms do not specify a water temperature standard or monitoring requirement. However, EWEB is required to maintain minimum instream flows in the two bypassed reaches of the McKenzie River of no less than 1,000 cubic feet per second (cfs). Stream flow is related to temperature in that lower flows can result in reduced heat capacity, lower stream velocities, and increased travel time. The minimum instream flow was established by the FERC as part of the license proceedings based upon scientific studies conducted by EWEB's contractor during the licensing process. These studies included a temperature study. The FERC's instream flow requirement and other license conditions were challenged in court by the State of Oregon and others. The U.S. 9th Circuit Court of Appeals affirmed the FERC decision on instream flows in August 1999.

Unlike most hydroelectric projects licensed by the FERC, the Leaburg and Walterville Projects do not have a Clean Water Act Section 401 Certification from the State of Oregon. EWEB applied to the Oregon Department of Environmental Quality (DEQ) for a 401 Certification in 1991, but DEQ failed to act on the request for certification within the one year timeframe established in the regulations. The FERC subsequently determined that the need for certification was waived by Oregon. It is fairly typical for 401 Certifications to include references to a temperature standard and water quality monitoring requirements.

Discussion

Water Temperature

Since the mid-1990s, EWEB and the DEQ have attempted several times to quantify the temperature impacts of the flow diversions associated with the Leaburg and Walternville hydroelectric projects. In theory, when less water is present in the bypass reach(es), the incoming solar radiation could have more of a warming effect. A white paper, prepared by EWEB in 1995 as part of the license proceeding, found that there were no net changes in water temperature below the mixing zones at the tailraces resulting from the operation of the Leaburg and Walternville projects. More recently, however, the final Total Maximum Daily Load (TMDL), prepared by the DEQ in 2006, suggests that the potential temperature impacts of the two projects may differ. In the case of the Leaburg project, DEQ's modeling indicated that the canal serves to mitigate for warming in the bypass reach and water temperatures return to normal below the tailrace. However, in the case of the Walternville Project, DEQ's modeling indicated that EWEB's operations are a source of potential heating, with maximum modeled impacts approaching 4.5 degrees Fahrenheit in the bypassed reach. Furthermore, according to the DEQ's modeling analysis of the Walternville bypass reach, the canal water does not provide complete mitigation for the solar and air warming of the water below the bypass reach, as is seen with Leaburg. According to the DEQ's modeling, the median impact immediately downstream of the Walternville bypass reach is just over 1.0 degrees Fahrenheit. No more recent modeling results are available.

The TMDL, developed by the DEQ, assigned a thermal load allocation to the Walternville Project based on the modeled temperature impacts of the project on the bypass reach of the McKenzie and the river downstream of the bypass to the confluence of the Willamette River. EWEB contested both the technical analysis in DEQ's final TMDL and the designation of EWEB as a Designated Management Agency under the TMDL rules. An Implementation Order, signed by the DEQ's Director and the chair of the Environmental Quality Commission, found that by and through the measures undertaken by EWEB for the term of the existing FERC license, EWEB is meeting the obligation of the TMDL and no further measures or actions are required. In other words, the DEQ essentially said that EWEB's current actions are sufficiently mitigating for the temperature impacts of the project.

In addition, EWEB's Drinking Water Source Protection (DWSP) program invests in and works closely with local partners to restore and protect riparian forests in the McKenzie River basin that increases shade and lowers stream/river temperatures. This work also includes opening up side channels and allowing the river to meander. These actions increase hyporheic or shallow subsurface flow through gravels, which has been shown to reduce stream/river temperatures. The work conducted by the DWSP program over the last 15 years includes restoration/protection efforts through acquisitions with McKenzie River Trust and restrictions on privately owned property under conservation easements or long-term agreements.

Next Steps

Based on the lack of current data, staff recommend that EWEB initiate a water temperature monitoring program in order to better understand temperature dynamics and the potential effect of the Leaburg and Walternville hydroelectric projects. EWEB will deploy temperature monitoring equipment in late spring of 2017. From early May through October we will monitor temperatures

upstream and downstream of the project, in both bypass reaches, and in the canals. A summary report will be completed by first quarter of 2018.

Requested Board Action

None. This memorandum is provided for informational purposes only.