

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION
104 FERC ¶ 62,177

Wisconsin Power and Light Company

Project No. 11162-010

ORDER APPROVING WATER QUALITY MONITORING
PLAN UNDER ARTICLE 404

(Issued September 11, 2003)

On March 27, 2003, Wisconsin Power and Light Company (licensee) filed its water quality monitoring plan under article 404 of the license for the Prairie du Sac Hydroelectric Project (FERC No. 11162). The project is located on the Wisconsin River in Sauk and Columbia Counties, about 90 miles upstream of the Mississippi River.

LICENSE REQUIREMENTS

In order to monitor and enhance dissolved oxygen (DO) concentrations immediately downstream of the project, article 404 requires the licensee to develop a DO monitoring and enhancement plan, in consultation with the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish and Wildlife Service (USFWS), for Commission approval. This plan must include, but is not limited to, an implementation schedule, provisions to monitor DO concentrations immediately downstream of the project, provisions for an evaluation of the vacuum breakers using air and/or oxygen injection to increase DO concentrations in the project discharge during low-flow high-temperature periods, such as may occur during June, July, and August, and a schedule to provide the WDNR and the USFWS DO monitoring results.

Upon completion of the vacuum breaker evaluation and according to the approved schedule in the plan, the licensee must file with the Commission the results of the vacuum breaker evaluation, including the licensee's recommendations for enhancing DO concentrations in the project discharge and the associated costs. Prior to filing the vacuum breaker evaluation with the Commission the licensee shall provide the evaluation to the WDNR and the USFWS requesting their comments and recommendations.

LICENSEE'S PLAN

Tailrace DO Monitoring

Continuous DO and temperature monitoring will be conducted during the critical summer months (mid-June through mid-September) by deploying two automated data loggers, one immediately upstream of the intake area midway between the bottom of the intake wall and the lake bottom (~ 20 feet from the surface) and one at a mid-depth in the

immediate tailrace. The data loggers will be programmed to record data at 15-minute intervals. Data will be retrieved (downloaded) and the data loggers will be serviced (probe cleaning, membrane replacement, routine diagnostic testing and recalibration) at least weekly during normal business hours (Monday through Friday). A calibration log will be maintained. In addition to the continuous monitoring, manual profiles of DO will be measured each business day (Monday through Friday) using a portable DO meter. These spot measurements will consist of recording a vertical upstream profile at the same location of the data logger at 1 meter intervals from the surface to the bottom and three vertical measurements in the tailrace (one at each end of the tailrace and one associated with the location of the data logger) with measurements taken at the surface, mid-depth and bottom. These profiles will be recorded in the morning to account for the diurnal occurrence of low DO levels. This additional effort will be used to validate DO measurements recorded by the data loggers.

Evaluate Vacuum Breakers for Oxygen Injection

The licensee proposes to evaluate using the vacuum breakers as a means of introducing oxygen into water being discharged to the tailrace. The evaluation will be accomplished by using the DO monitoring data loggers deployed just upstream of the intake and in the tailrace to obtain a baseline correlation between upstream and downstream DO levels. When continuous tailrace DO monitoring results indicate concentrations at a level of 5.5 mg/l or less the vacuum breakers will be adjusted (opened) for a period of three hours in an effort to introduce oxygen into the passing water. Provided that the necessary conditions occur, this procedure will be conducted on three occasions for the purpose of replication. The tailrace data logger will be positioned to detect any substantial changes in DO levels resulting from use of the vacuum breakers.

If the vacuum breaker study proves this method to be ineffective at increasing tailwater DO, the licensee will conduct a literature review for other methods of increasing tailwater DO at hydroelectric facilities. Based on the information collected, the licensee will assess the feasibility of testing and implementing such measures at the Prairie du Sac Project.

Implementation Schedule and Schedule to Provide DO Results

The licensee will implement the monitoring and evaluation plan the summer following Commission approval of its plan. The vacuum breaker test will occur on three separate occasions during the mid-June through mid-September monitoring period when continuous DO monitoring results indicate DO concentrations at a level of 5.5 mg/l or less. DO monitoring results will be provided to the appropriate resource agencies within 60 days following completion of each of the first three summer monitoring periods. Results from the vacuum breaker test will be provided to the appropriate resource

agencies electronically and in hardcopy form within 60 days following completion of the third test replication.

The licensee proposes to conduct the DO monitoring for a period of three years at which time the licensee will review the monitoring results with the appropriate agencies and determine if continuation of the monitoring effort is necessary or if the effort needs to be expanded further downstream.

AGENCY COMMENTS

By letters dated October 18, 2002, the licensee requested comments from the WDNR and USFWS on its water quality monitoring plan. In a letter dated February 14, 2003, the WDNR made recommendations which the licensee incorporated into its final plan. The USFWS deferred to the WDNR.

DISCUSSION

The licensing order noted that water quality monitoring conducted by the licensee indicated that DO concentration levels in summer months (primarily July and August) can be as low as 2 to 3 milligrams per liter (mg/l) at the intake and in the tailrace. The licensee investigated the use of the turbine vacuum breakers to raise DO concentrations in the turbine discharge. However, staff concluded that because the investigation was not rigorously controlled, the potential use of the vacuum breakers could not be ruled out as a potential method for increasing DO concentrations in the turbine discharge. Therefore, article 404 required the licensee to monitor DO concentrations during low flow and high temperatures periods, and to re-evaluate the use of the vacuum breakers to increase DO concentrations in the turbine discharge.

The licensee's plan contains all the provisions required under article 404 of the project license and should be adequate to measure the water quality of the Wisconsin River in the vicinity of the Prairie du Sac Project and should, therefore, be approved.

The Director orders:

(A) The water quality monitoring plan under article 404 of the license for the Prairie du Sac Hydroelectric Project (FERC No. 11162), filed on March 27, 2003, is approved.

(B) 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 CFR § 385.713.

Project No. 11162-0104

- 4 -

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and Compliance