SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

CASE NO. EL05-022

IN THE MATTER OF THE APPLICATION BY OTTER TAIL POWER COMPANY

ON BEHALF OF THE BIG STONE II CO-OWNERS

FOR AN ENERGY CONVERSION FACILITY SITING PERMIT FOR THE

CONSTRUCTION OF THE BIG STONE II PROJECT

PREFILED REBUTTAL TESTIMONY

OF

JOHN T. LEE

VICE PRESIDENT

BARR ENGINEERING COMPANY

JUNE 9, 2006

PREFILED REBUTTAL TESTIMONY OF JOHN T. LEE

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BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

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I. INTRODUCTION

Q: Please state your name and business address.

A: John T. Lee, 4700 West 77th St., Suite 200, Minneapolis, MN 55435-4803.

Q: By whom are you employed and in what capacity?

A: I am employed as Vice President at Barr Engineering Co. ("Barr").

Q: Did you provide any direct testimony in this proceeding?

A: Yes. My direct testimony is marked as Applicants' Exhibit 18.

Q: What is the purpose of your rebuttal testimony?

A: The purpose of this testimony is to update certain exhibits in Sections 4 and 5 of the Application and to update my Prefiled Direct Testimony with respect to additional analysis of the Project's water use.

II. REVISED EXHIBITS TO SECTIONS 4 AND 5 OF THE APPLICATION

Q: What exhibits from Sections 4 and 5 of the Application have you revised?

A: Applicants' Exhibits 36 A-L attached to this testimony are intended to replace the following exhibits in the Application:

- Applicants' Exhibit 36-A replaces Exhibit 4-1 in the Application;
- Applicants' Exhibit 36-B replaces Exhibit 4-4 in the Application;
- Applicants' Exhibit 36-C replaces Exhibit 4-5 in the Application;
- Applicants' Exhibit 36-D replaces Exhibit 4-6 in the Application;
- Applicants' Exhibit 36-E replaces Exhibit 4-7 in the Application;
- Applicants' Exhibit 36-F replaces Exhibit 4-8 in the Application;
- Applicants' Exhibit 36-G replaces Exhibit 4-9 in the Application;
- Applicants' Exhibit 36-H replaces Exhibit 4-10 in the Application;
- Applicants' Exhibit 36-I replaces Exhibit 4-11 in the Application;

- Applicants' Exhibit 36-J replaces Exhibit 4-12 in the Application;
- Applicants' Exhibit 36-K replaces Exhibit 5-4 in the Application; and
- Applicants' Exhibit 36-L replaces Exhibit 5-5 in the Application.

Q: Why have the exhibits been revised?

A: Since the Application was filed almost one year ago, there have been minor changes in the design of the plant and surrounding infrastructure, which are generally described in the Prefiled Rebuttal Testimony of Mark Rolfes. The specific revisions contained in Applicants' Exhibits 36 A-L include the location of the water supply pipeline and the expanded area for the construction lay down.

III. WATER USE AND WATER SOURCES

Q: Has there been additional analysis done on the Project's water use and water sources?

A: Yes. Barr has completed additional analysis of the Project's potential impact to Big Stone Lake levels and the Minnesota River flows. This analysis was conducted in conjunction with preparing the Application for Permit to Appropriate Water within the State of South Dakota for the Project, submitted to the South Dakota Department of Environment and Natural Resources in March 2006. The proposed water appropriation is to provide cooling and process makeup water for the existing Big Stone Unit I and the proposed Big Stone Unit II.

Q: Do these new analyses materially change the conclusions in the Application and in your Prefiled Direct Testimony regarding the Project's potential impacts from the additional water appropriation?

A: No. While some of the details of the most recent analysis are different from the previous analyses, the recent analysis still shows that incremental impacts to Big Stone Lake levels and

Minnesota River flows from the additional water appropriation will be small. Water levels on Big Stone Lake are modeled to average about 2-1/2 inches lower over the 70-year model period than they would be without the additional appropriations. The models show that Minnesota River flows downstream of Big Stone Lake during critical low-flow periods will be significantly less than the flows that would occur without the additional appropriations only about 1.4 percent of the time. The limited impact from the additional water appropriation is primarily due to the fact that the water diversion restrictions currently in place for the Big Stone Plant are tied to Big Stone Lake water levels, and these restrictions will remain unchanged under the proposed operating plan for both units.

Q: Please describe further the expected impacts to Big Stone Lake water levels.

A: The water use model used for the Project takes 70 years of historical climate and lake level data (1930 through 1999), superimposes the proposed water appropriation needs of the combined Big Stone Unit I and Big Stone Unit II, and predicts the Big Stone Lake level over 70 years. The modeled lake levels with and without the additional Big Stone Unit II appropriations are illustrated in Figure A below.

Figure A - Modeled Big Stone Lake Water Levels

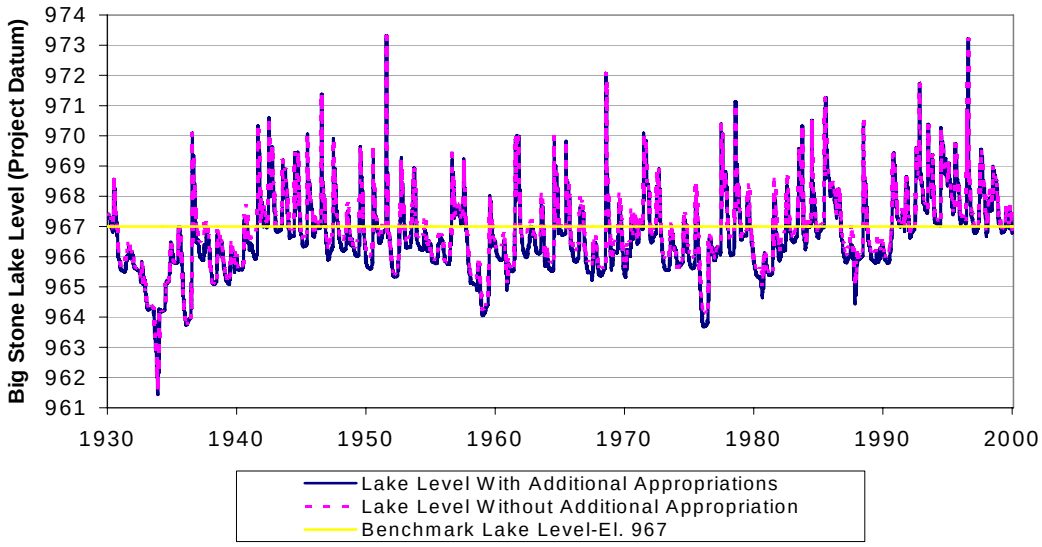
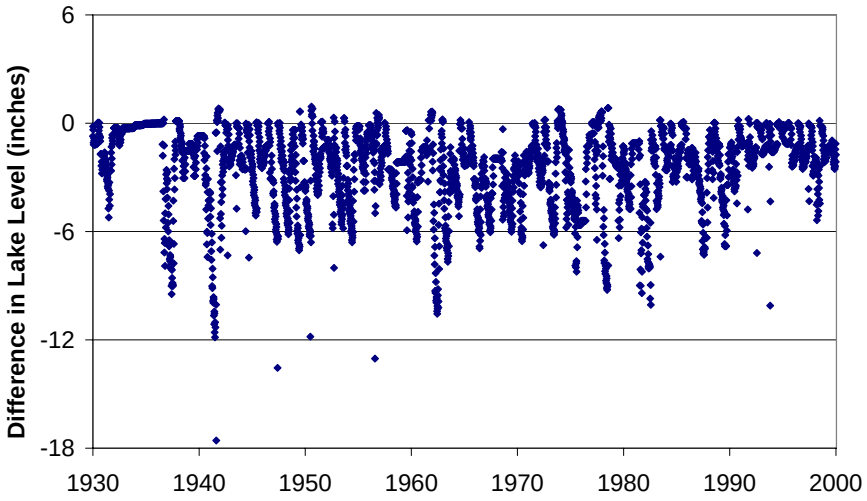


Figure B below illustrates the modeled incremental change in lake water levels over the same 70-year model period resulting from the additional Big Stone II water appropriations. As can be seen in Figure B, lake level reductions generally are modeled at less than 6 inches and only a handful of times are lake level reductions modeled to be greater than 12 inches.

Figure B – Modeled Incremental Change in Big Stone Lake Level

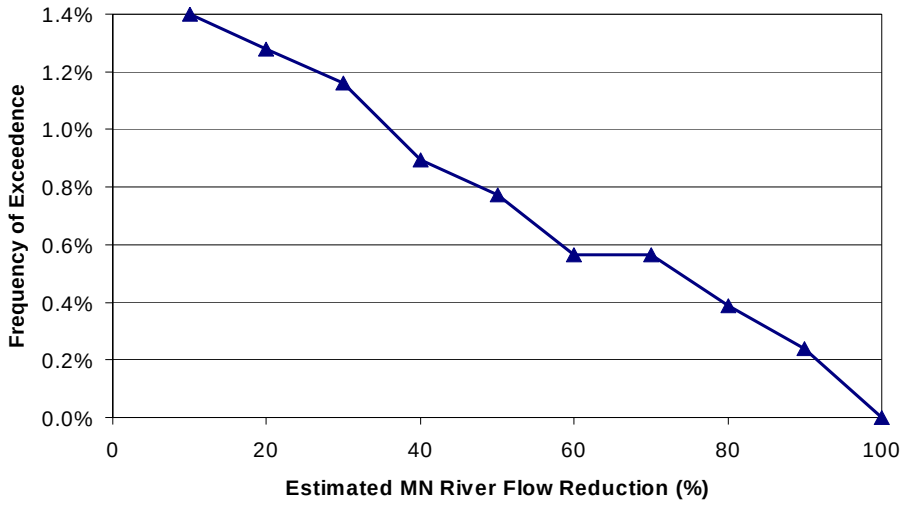


Q: Please describe further the expected impacts to Minnesota River flows.

A: The proposed increase in lake water usage from the Project (approximately 7,500 acre-feet per year) represents less than ten percent of the average annual outflow from Big Stone Lake. The occurrence of a noticeable flow reduction would depend on the interaction of a number of variables, including the timing and volume of plant withdrawals, seasonal and shorter-term runoff conditions, and other influences on lake levels such as temperature and solar radiation. The overall storage capacity of the Project (18,900 acre-feet) allows some flexibility in the timing and volume of withdrawals, such that their effects could be minimized. Modeling indicates that additional lake withdrawals would have little or no effect on an average annual basis or over most flow intervals. Using 2004 as an example, withdrawals for the existing plant were made in May, June, July, and November, with most withdrawals made in May. All of these months, except November, are relatively high flow months on the upper Minnesota River, and withdrawals are expected to have minimal effect.

Examination of flow impacts on the Minnesota River downstream of Big Stone Lake focus on the periods when flows are relatively low, less than 80 cubic feet per second (cfs). Historically, these low flows occur about 75 percent of the time. The water use model was used to predict the frequency of flow reductions during such low flow periods resulting from the additional Big Stone Unit II appropriations. Those flow reduction impacts are illustrated in Figure C.

Figure C – Effect on Minnesota River Low Flows



This graph illustrates that Minnesota River flow reductions greater than about 10 percent during low flow periods are predicted to occur only about 1.4 percent of the time over the 70 years modeled. As another example, Figure C illustrates that Minnesota River flow reductions greater than about 80 percent during low flow periods are predicted to occur less than 0.4 percent of the time over the 70 years modeled.

Q: Does this conclude your testimony?

A: Yes.