

Repurposing the Indianford Powerhouse to Improve Project Discharge Capacity

Jeffrey A. Anderson, P.E., Mead & Hunt, Inc.

Due to high flows in the Rock River and limited discharge capacity at the Indianford Dam, the Rock-Koshkonong Lake District (RKLD) has found it increasingly difficult to maintain the water level of Lake Koshkonong in recent years. These conditions have hindered the RKLD's ability to comply with the water level restrictions imposed by the Wisconsin Department of Natural Resources and have greatly increased the number of days that slow/no-wake conditions have been declared on the lake. This caused the RKLD to seek out options for increasing the discharge capacity at the dam. When the RKLD retained Mead & Hunt to design a new gated spillway to increase the discharge capacity at the Indianford Dam, both parties had every intention of following through with this approach. The RKLD's Board of Commissioners had already deliberated and voted in approval of Mead & Hunt's proposed approach: constructing a new crest gate spillway between the project's uncontrolled overflow spillway and the powerhouse. Furthermore, the RKLD had plans to apply for a funding grant to partially finance project improvements, so Mead & Hunt was faced with a very challenging design schedule. However, when Mead & Hunt identified an innovative alternative to the more conventional gated spillway option - modifying the decommissioned powerhouse to allow river flows to be sluiced through the structure - the RKLD quickly recognized the concept had merit and authorized Mead & Hunt to study the idea further. Within two weeks, Mead & Hunt presented their powerhouse retrofit design concept at a special meeting of the RKLD's Board of Commissioners, who voted unanimously to move forward with final design of this concept. While we anticipate these modifications will be approximately twice the cost of a new crest gate spillway, the powerhouse sluiceway will have roughly three to four times the discharge capacity of the gated spillway option once modifications are complete. This paper traces the evolution of Mead & Hunt's design - from the initial gated spillway concept through final design of the powerhouse modifications - and explains how this solution ultimately achieved the RKLD's goal of increasing the discharge capacity at the Indianford Dam to improve their ability to manage lake levels.