



Winfield Pool Water Quality Model Study

WEST Consultants, Inc. (WEST) was contracted by the U.S. Army Corps of Engineers, Huntington District to develop a CE-QUAL-W2 (Version 3.0) water quality model of the Winfield Pool of the Kanawha River in West Virginia.



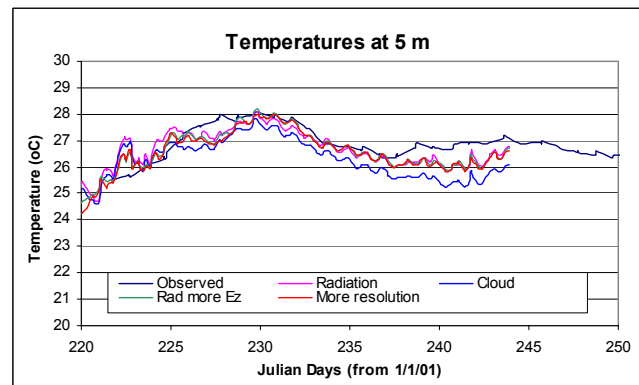
The District had collected a significant amount of bathymetric data, which were used to develop the model's geometry. The gauged inflows, and an assessment of the inflow from the major ungauged tributary, were used to develop inflows to the pool. Outflows were developed by initially specifying the downstream outlet as a spillway, to calculate the flows through the Winfield Dam that would maintain the pool near a constant elevation of 18 feet above pool datum. These flows were then used as flows through the gated outlet structure so that the model's selective withdrawal algorithms could be used to pull flows from the appropriate depths in the headwater of the dam, for water quality simulations.

The District had also collected significant inflow temperature data, which were used with meteorological data (including solar radiation) at the primary station at Charleston, as boundary input data. An in-pool thermister chain was used to calibrate the temperature model.

Next, water quality data describing the nutrient loads to the pool, and in-pool algal concentrations, will be used to develop and calibrate a comprehensive water quality model. The model will ultimately be used to simulate algal and dissolved oxygen concentrations, and then to investigate how pool operational alternatives might mitigate water quality impacts.

Project Owner:

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