**I New/Enhanced Software**

1. **Unfunded software development and documentation**

**Inline Power Specify Units Generating Method:**

A new method, Specify Units Generating, was added to the Inline Power category on the Inline Power object. In the original version of this method implemented for RiverWare 7.1, the user specifies the generating capacity for each unit in the Unit Capacity slot (table slot) and the fraction of capacity at which each unit is generating in the Unit Generation Fraction slot (agg series slot). The method then calculates the Unit Power and Unit Energy (agg series slots) as well as the total plant Power and Energy. For the RiverWare 7.1.1 patch release, a further enhancement was added to the method to allow the user to optionally specify the unit turbine capacity in the Unit Capacity table slot. The user can then optionally specify the Unit Turbine Release (agg series slot) and let the method calculate the Unit Generation Fraction and Unit Power or specify the Unit Generation Fraction and let the method calculate Unit Turbine Release and Unit Power. If neither Unit Turbine Release nor Unit Generation Fraction is specified, then the Unit Generation Fraction defaults to 1, and the unit operates as full capacity. The method now also calculates total plant Turbine Release and Bypass in addition to total plant Power and Energy. Documentation for the new method was added to the RiverWare Help for release 7.1 and patch release 7.1.1.

**Reservoir Diversion Power, Tailwater and Power Bypass Methods:**

Three new categories were added to the Reservoir objects to allow for the modeling of power on the reservoir Diversion. One new method was added in each category. These new methods and categories (described below) were implemented for the RiverWare 7.1.1 patch release.

The Diversion Power Efficiency Curve method in the Diversion Power category is analogous to the Plant Efficiency Curve method on the primary power plant. It uses a 3-D table to calculate Diversion Power as a function of Diversion Turbine Flow and Diversion Operating Head. Diversion Operating Head is calculated as the difference between the average Pool Elevation and the Diversion Tailwater Elevation. The Diversion Power Efficiency Curve method is more limited than the existing Plant Efficiency Curve method. It does not allow Energy or Power to be input or set by rules. It does not include Plant Power Limit or Plant Failure methods.

The Diversion Base Value Plus Lookup method in the Diversion Tailwater category is analogous to Base Value Plus Lookup Table method for the standard Tailwater category. Diversion Tailwater is a function of Diversion (from the Diversion Tailwater Table slot) added to the Diversion Tailwater Base Value, which can be linked or defaults to zero if not input or set by rules.

The Diversion Power Bypass Capacity Table method in the Diversion Power Bypass category is analogous to the Regulated Spill method in the standard Spill category. If not input or set by rules, Diversion Power Bypass is set to Diversion minus Diversion Turbine Flow. It is limited to the max bypass interpolated from the Diversion Power Bypass Table (analogous to the Regulated Spill Table). It is not permitted for both Diversion Turbine Flow and Diversion Power Bypass to be specified (input or set by rules).

The method in the new Diversion Power category is called from each of the reservoir dispatch methods, at the end of the dispatch method. When the Diversion Power method is called, Diversion is already known. The new methods do nothing to affect mass balance or dispatching. They are calculated "after the fact." The Diversion Power method calls the Diversion Tailwater and Diversion Power Bypass methods.

Documentation for the new Diversion Power, Tailwater and Power Bypass categories and methods was added to the RiverWare Help for the 7.1.1 patch release.