Department of Water Resources Simulation Model (DWRSIM) Version 7.54.

Purpose: DWRSIM was developed by the California Department of Water Resources to simulate the SWP and CVP water systems in the northern central valley and south of the Delta. The model is designed to simulate riverflow and reservoir storage response to reservoir operations, regulatory standards, hydrologic conditions, and water demands. It is an adaptation of an HEC-3 model and has been customized to simulate the SWP system. DWRSIM operates the SWP reservoirs as an integrated unit. The model user can modify input data to assess the effects of such changes on rivers and reservoirs in the model area.

CALFED.Potential: This model is compatible with and can be used in CALFED alternatives analysis

Approach: DWRSIM is an arithmetic accounting of hydrologic conditions within the model boundaries. The model boundaries include the Trinity, Sacramento, Feather, American, and San Joaquin Rivers. These primary rivers are subdivided for model calculations and analyzed in detail. The Yuba, Bear, Mokelumne, Cosumnes, and Calaveras Rivers, and numerous small tributaries, are included in the model at a lesser level of detail. The Stanislaus River is input as a time series developed from STANSIM or a similar model.

Input Data: Input includes data on hydrologic conditions, water demands, regulatory criteria, and operational considerations. Hydrologic data include reservoir inflows, rainfall, evaporation, and river accretions and depletions. Regulatory criteria include instream flow and Delta standards. Operational considerations include reservoir management criteria, flood control requirements, and canal or pump capacity. Data are application-specific and are provided to the model in separate files for each type of input. The user specifies the simulation period; current data sets extend 71 years.

Methods: The model performs mass balance calculations at each model node to estimate several model conditions. The model nodes are approximations for physical conditions and locations. For example, the model starts with the flow into a node, subtracts diversions and losses, and adds water gains to estimate the flow leaving the node.

Results: DWRSIM produces extensive output at each model node in a binary file. Examples of output include data on flow, storage, diversions, deliveries, deficiencies, and regulatory criteria. The output can be accessed directly and presented in tables or graphs.

Applications: DWRSIM is useful in determining the change in a condition that could result from changes in input data. The model is site-specific to the SWP and CVP systems and does not analyze local water projects in detail.

Documentation: There is no official documentation for the current version of DWRSIM.

Source: DWRSIM is available through the California Department of Water Resources, Sacramento, CA.