

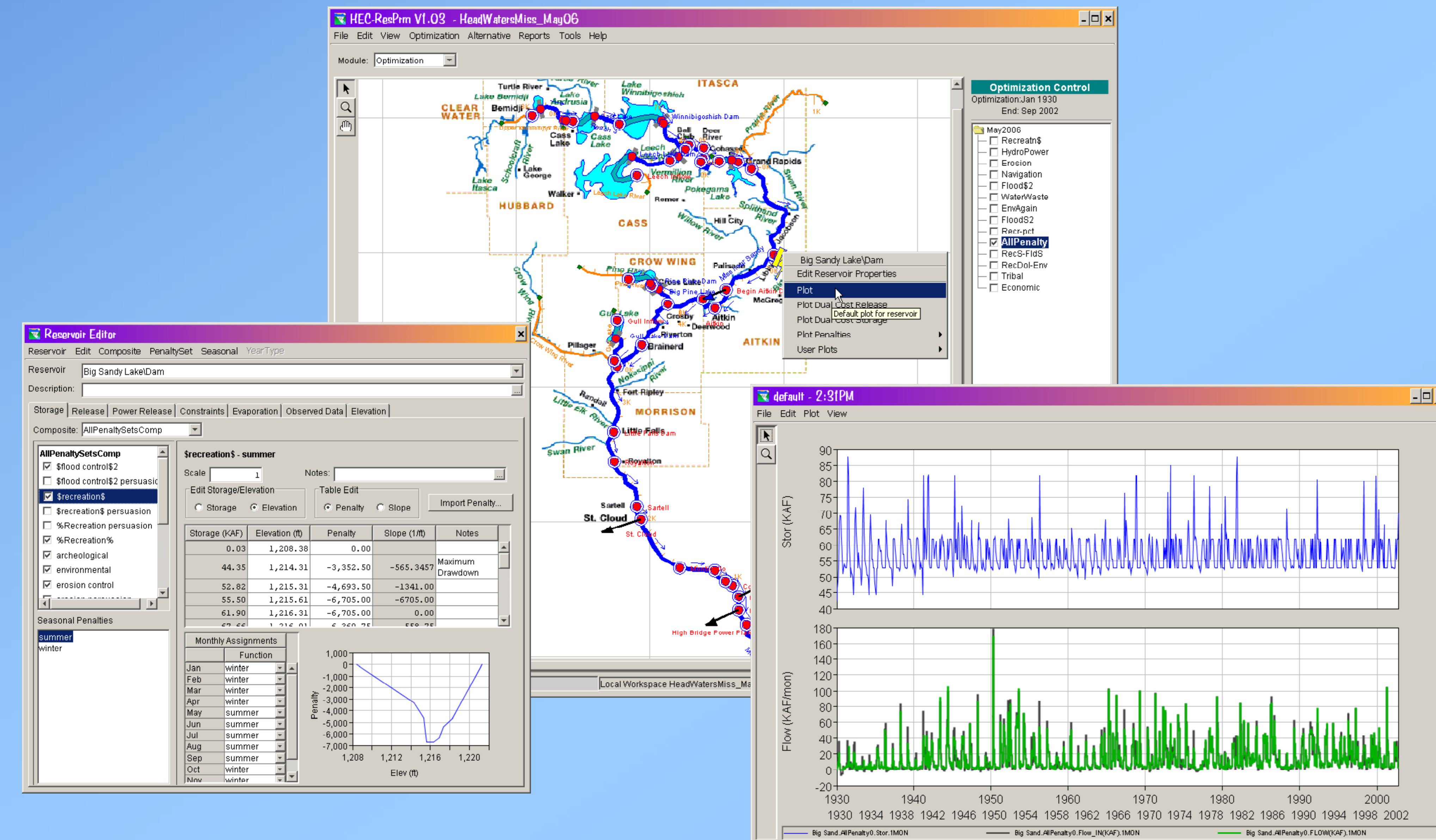
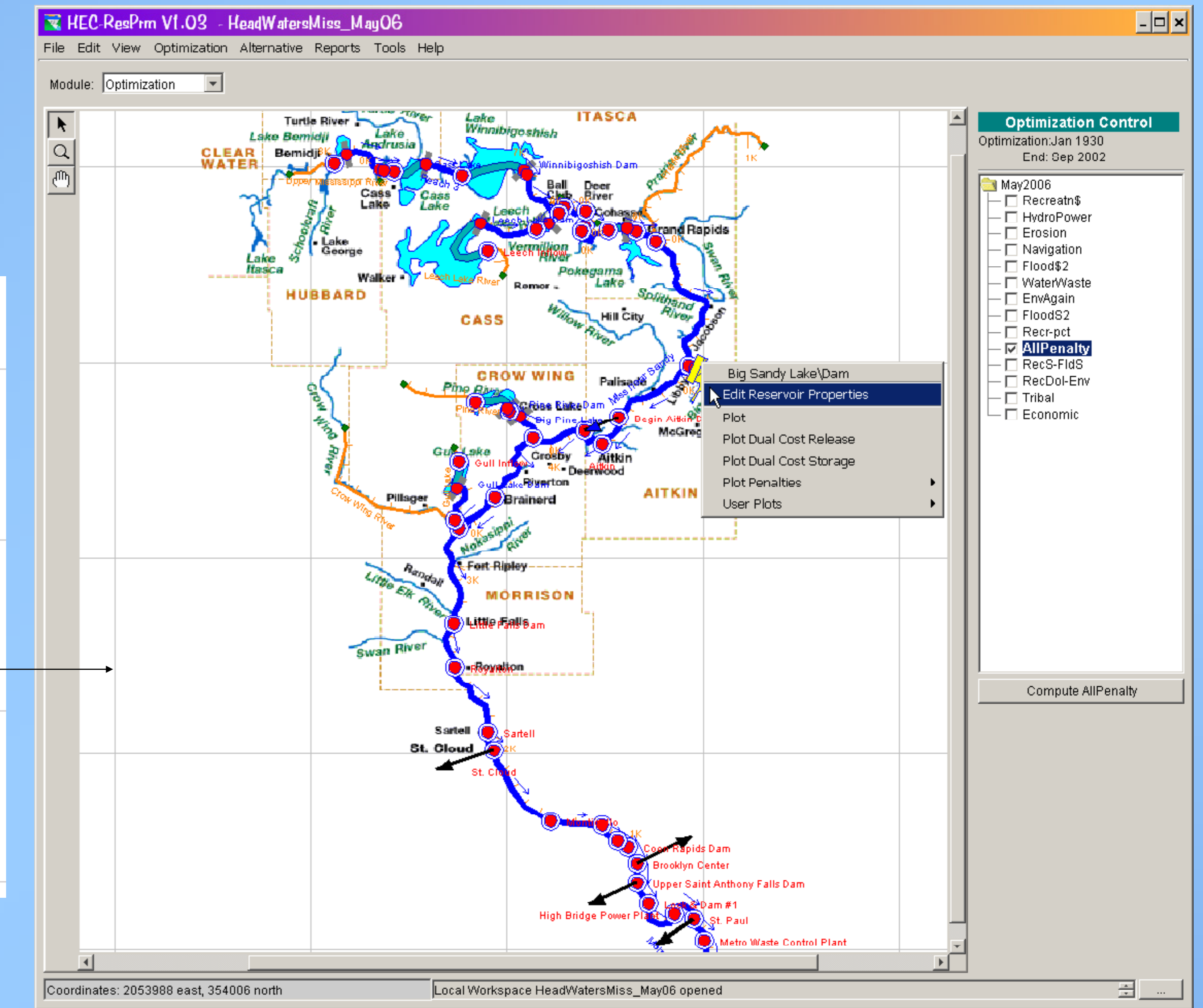
# Hydrologic Engineering Center – Prescriptive Reservoir Model (HEC-PRM)

## Multi-objective Optimization of Reservoir Systems

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### HEC-PRM

HEC-PRM (“Prescriptive Reservoir Model”) is a generalized computer program that performs deterministic network flow optimization of multi-reservoir systems. PRM “prescribes” optimal values of flow and storage over time by minimizing penalty functions at selected locations in the water resource network.

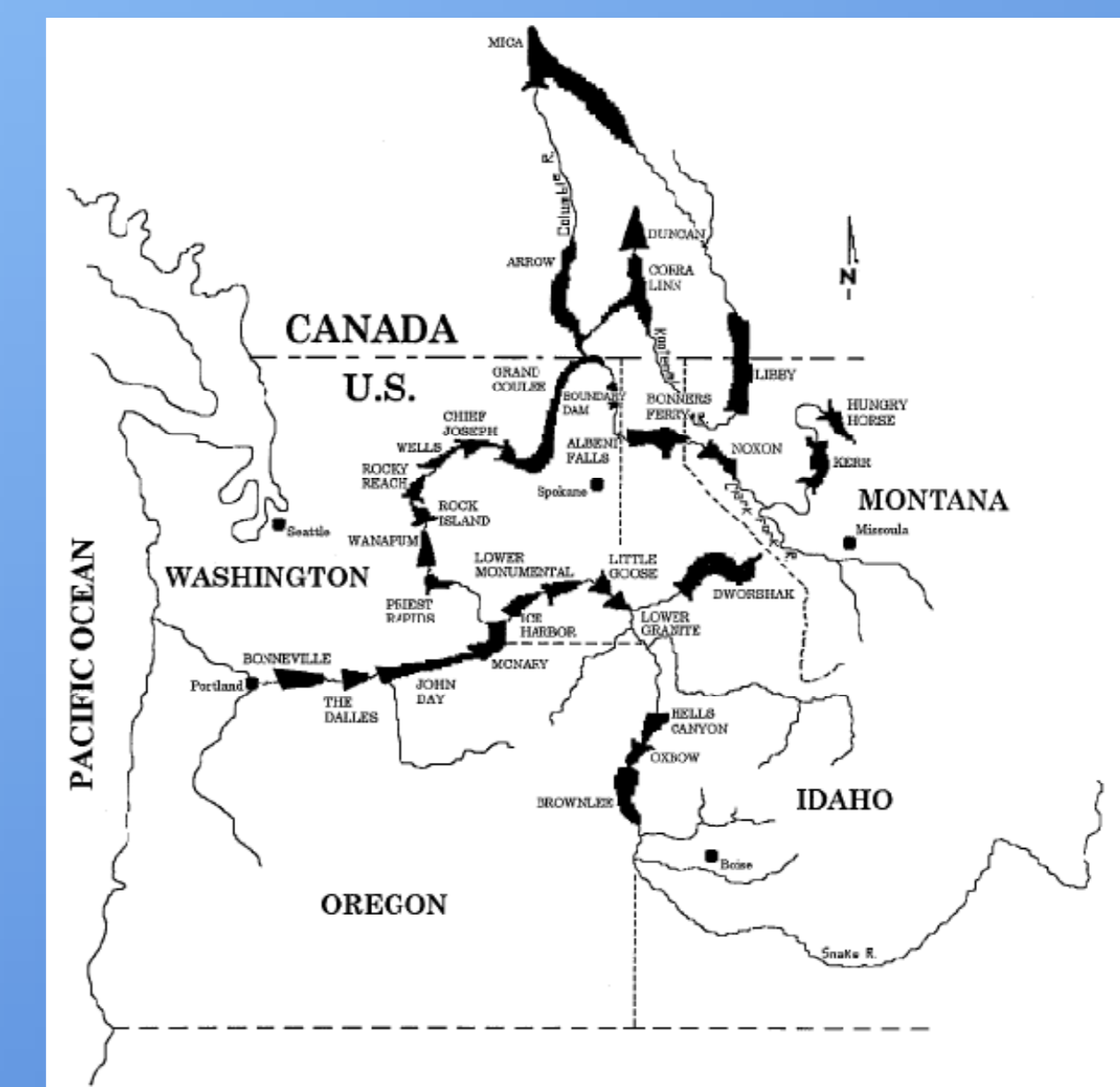
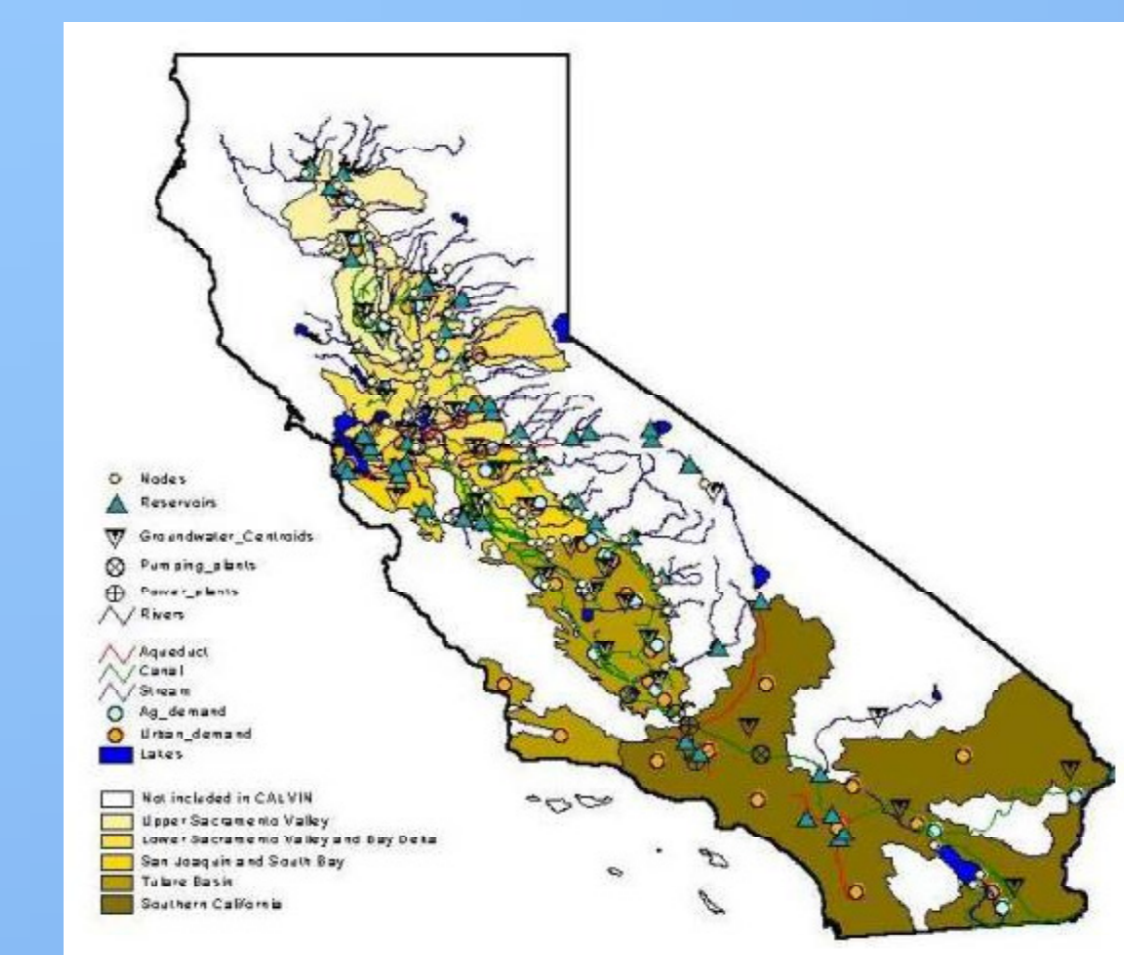


### Fast Multi-objective Optimization

Because a given location (flow reach or reservoir) can have several competing objectives, a separate penalty curve for each objective can be included in the model. Optimization with a Network Flow Programming with gains algorithm enables relatively fast runs times for large systems although it restricts constraints to capacity limits and mass balance at nodes.

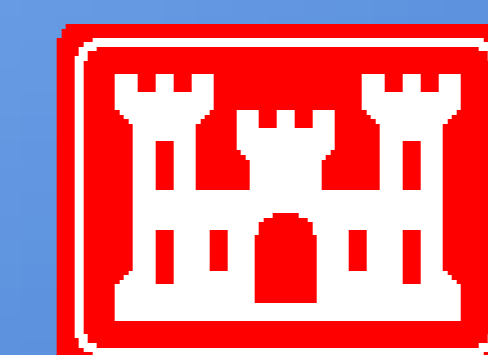
### Modern Interface: HEC-ResPRM

HEC-ResPRM is new graphical user interface for HEC-PRM that has been developed to facilitate large multi-objective reservoir operation studies. The GUI is in large part shared with HEC-ResSim – a multi-reservoir simulation modeling system. The integration of HEC-PRM into the HEC-RES modeling platform was made to facilitate the joint development and use of simulation and optimization models.



### Proven Performance for Large Systems

PRM has been applied to several large multi-reservoir river systems, such as the Mississippi Headwaters, the Columbia system, the Missouri system and the entire state-wide water resource network of California.



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