

RECLAMATION

Managing Water in the West

Development of a Daily RiverWare Model of the Boise River System with Accounting

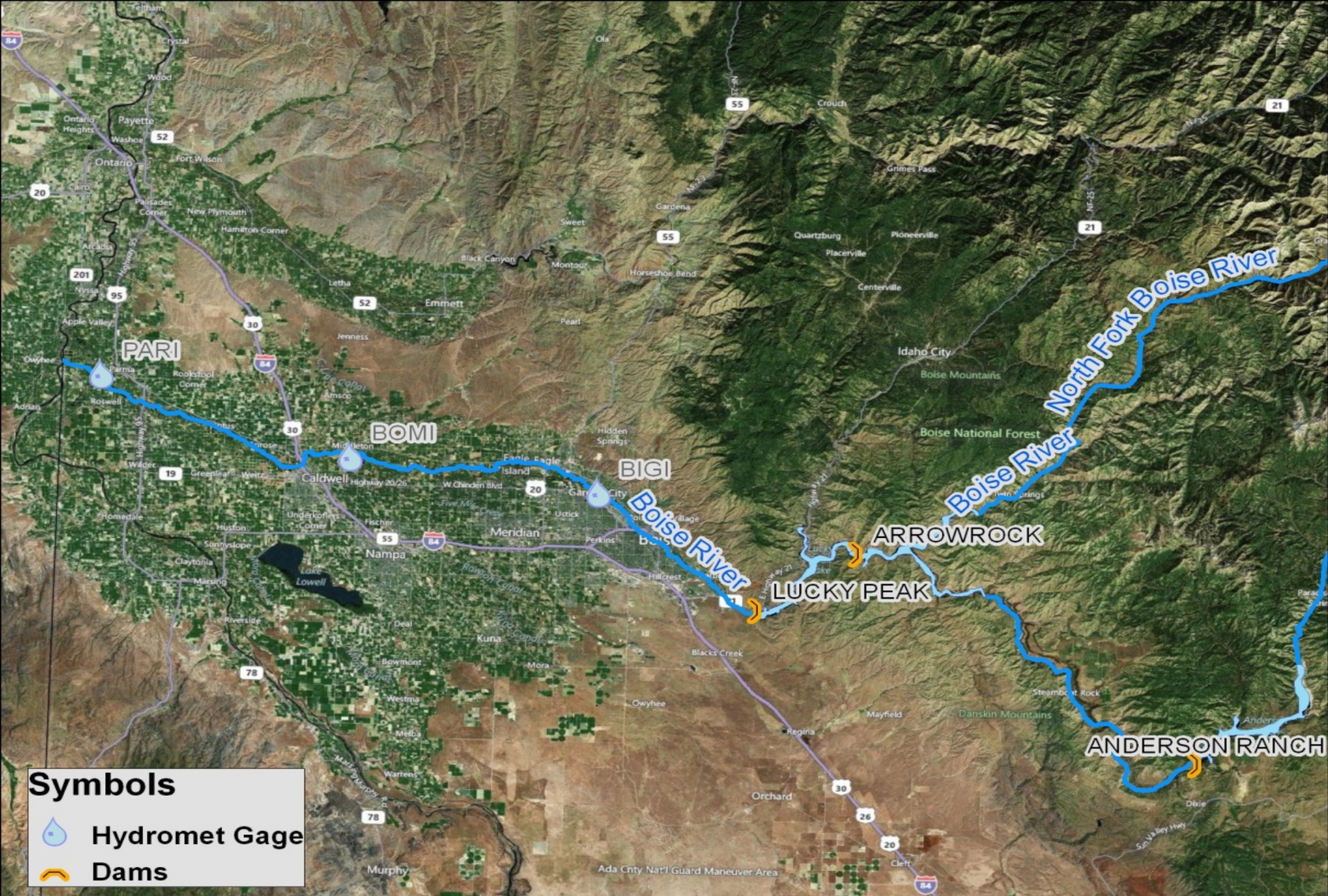
Jennifer Johnson, P.E.
Hydraulic Engineer





U.S. Department of the Interior
Bureau of Reclamation

Reason for model

- **Subject to Prior appropriations**
- **Planning models in MODSIM, monthly time step**
- **Transitioning planning models to RiverWare**
 - **Needed to test accounting functionality**
- **Need daily model for risk assessment and ESA related studies**
- **Part of a larger combined project**
 - **Combining output from RiverWare, MODFLOW and GAMS to evaluate hydrologic changes in terms of dollars**



Symbols

-  Hydromet Gage
-  Dams

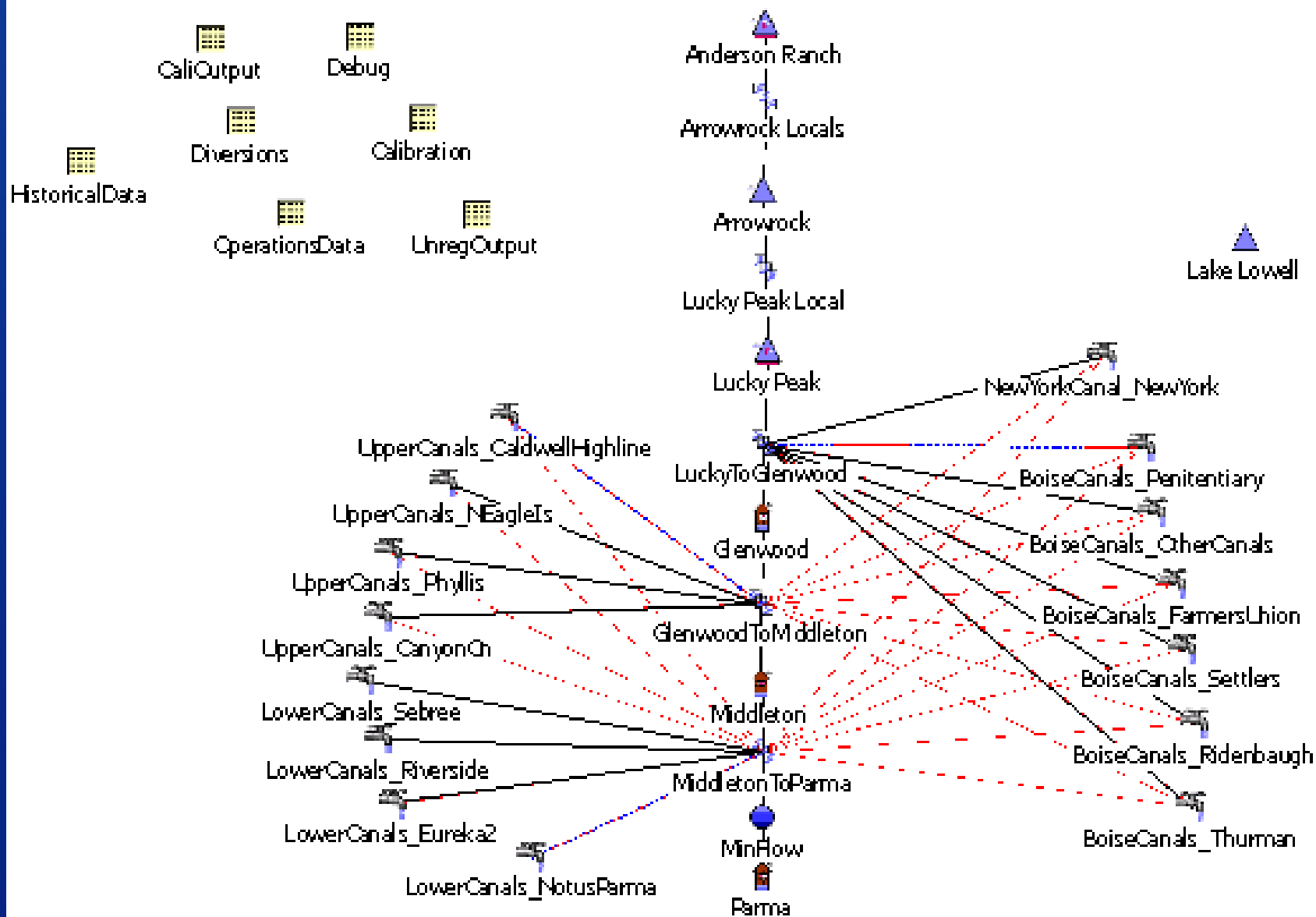
RECLAMATION

System Operations

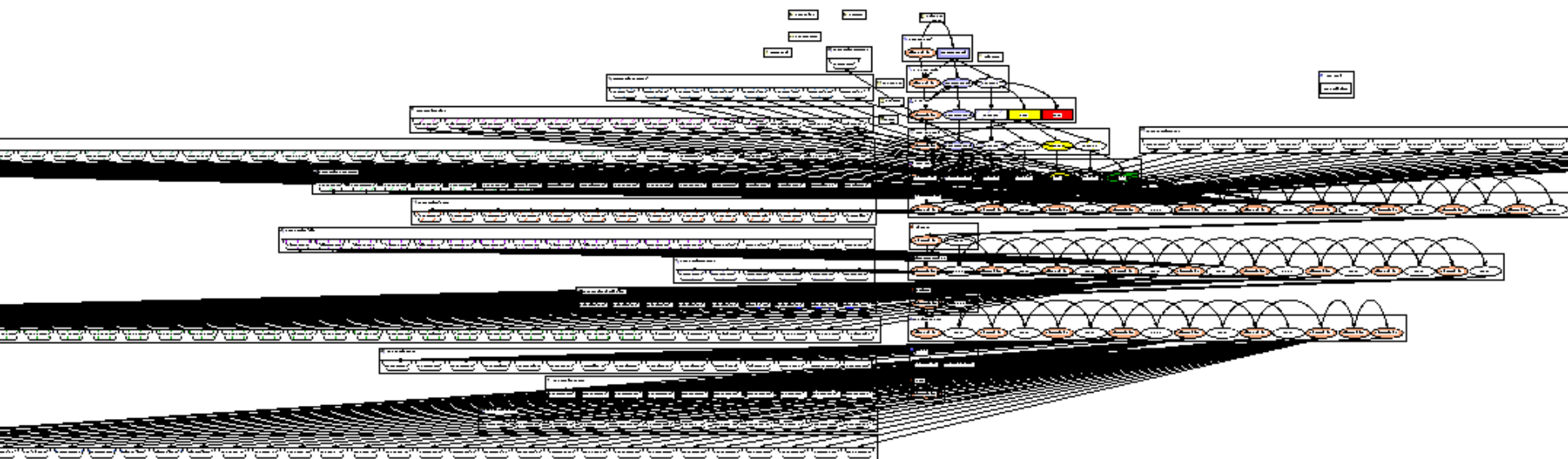
- Flood Control
- Irrigation
- Power Production
- Instream flows

Diversions

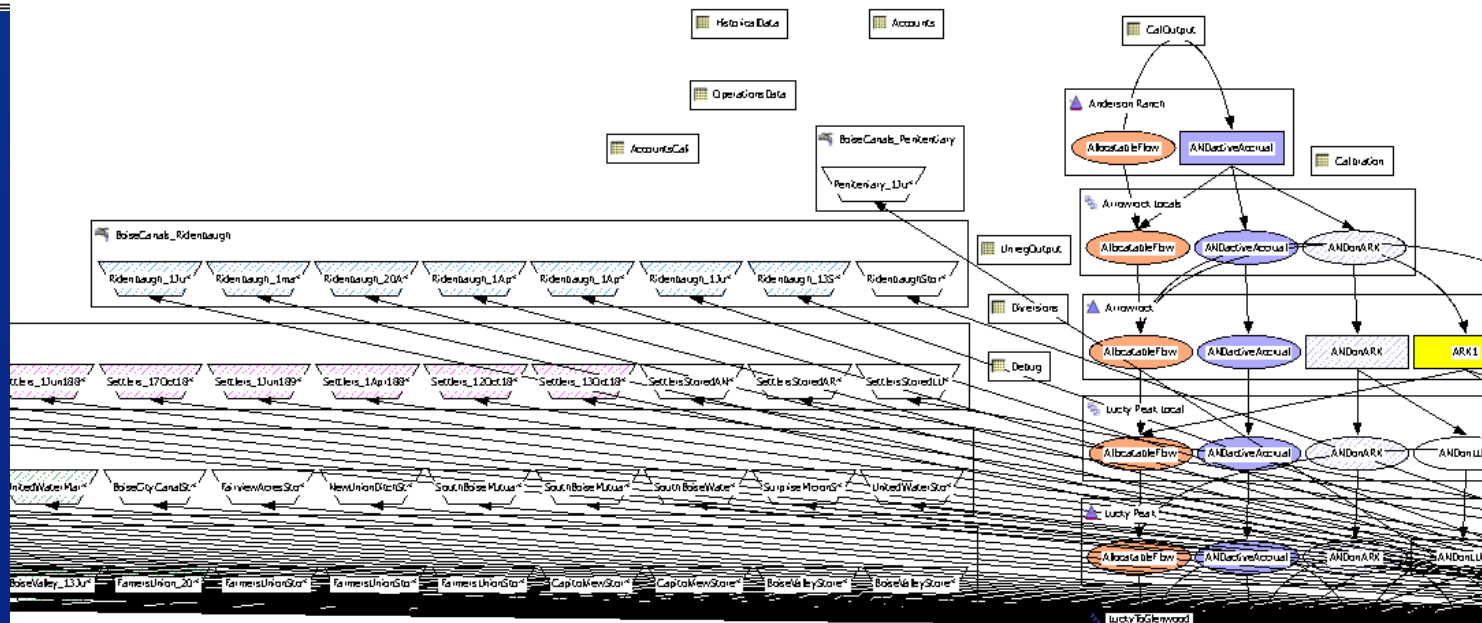
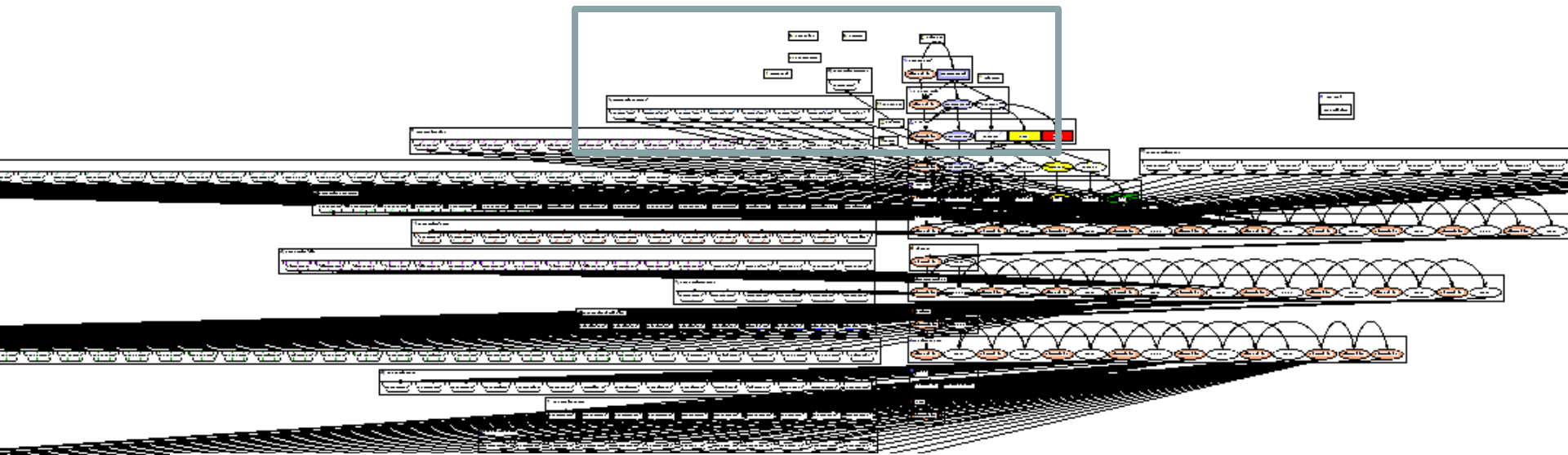
- **15 diversions (water user objects)**
 - Aggregated from 47 actual points of diversion
- **287 accounts**
 - 241 Natural Flow
 - 46 Storage



RECLAMATION



RECLAMATION



RECLAMATION

Rule Order

Accounts

- **Initial Requests**
 - Accounts ask for water
- **Flood Control**
 - Water released for FC enters allocatable flow line
- **Natural Flow**
 - Allocatable flow line solved for priority water right allocation
- **Storage**
 - Shortages are filled by stored water

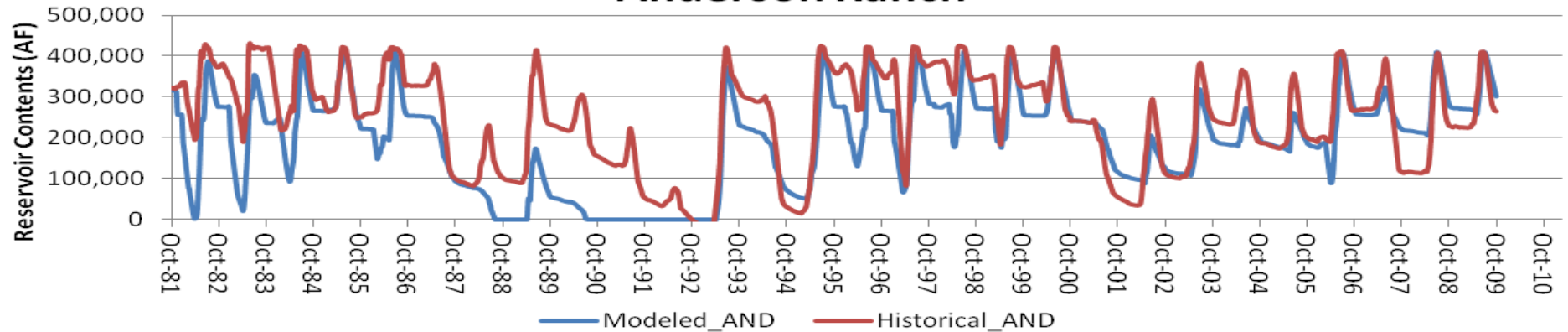


Physical

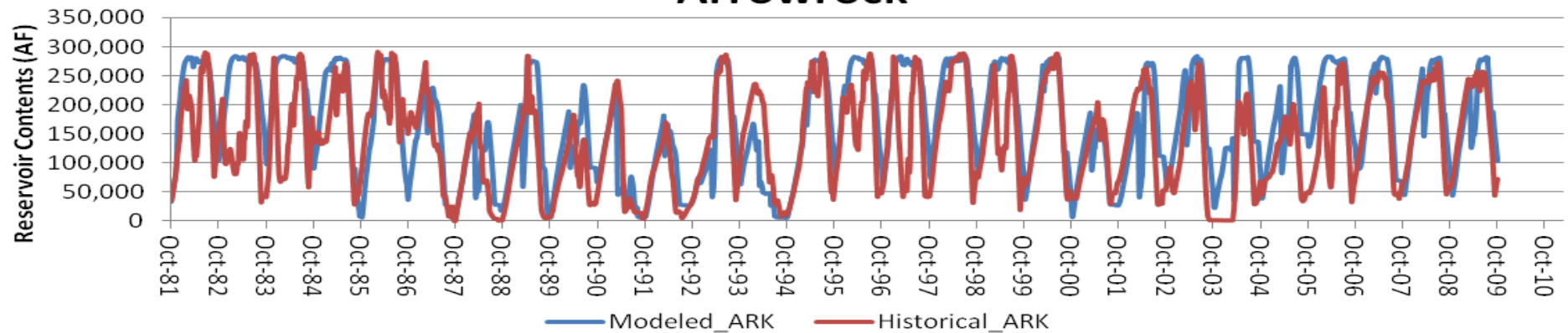
- **Outflows and Demands are set**

Reservoir Calibration

Anderson Ranch



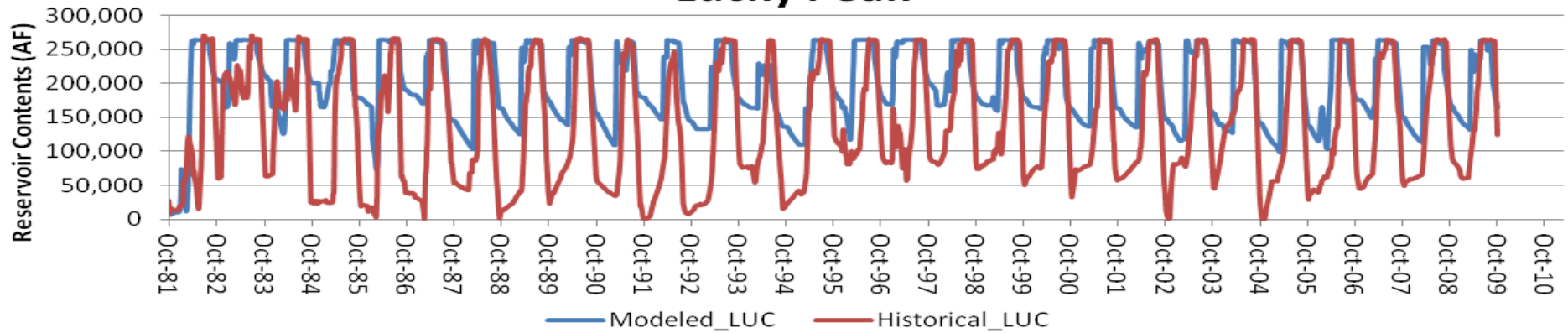
Arrowrock



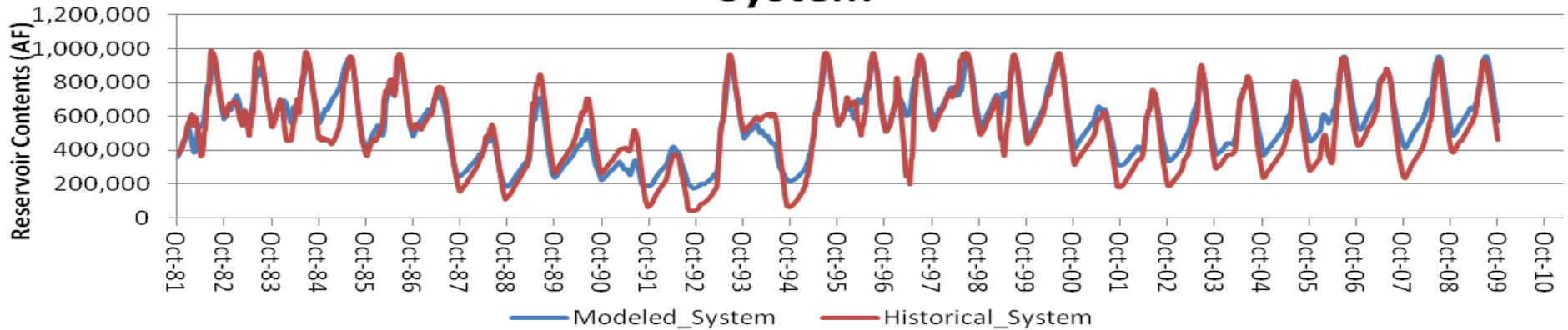
RECLAMATION

Reservoir Calibration

Lucky Peak



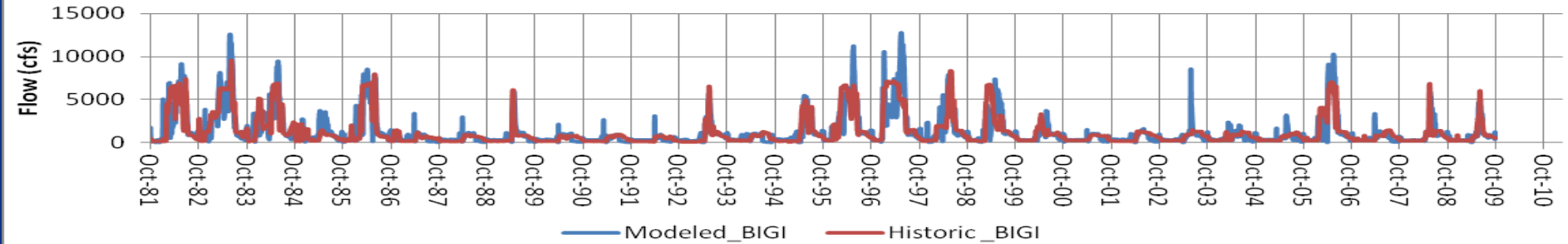
System



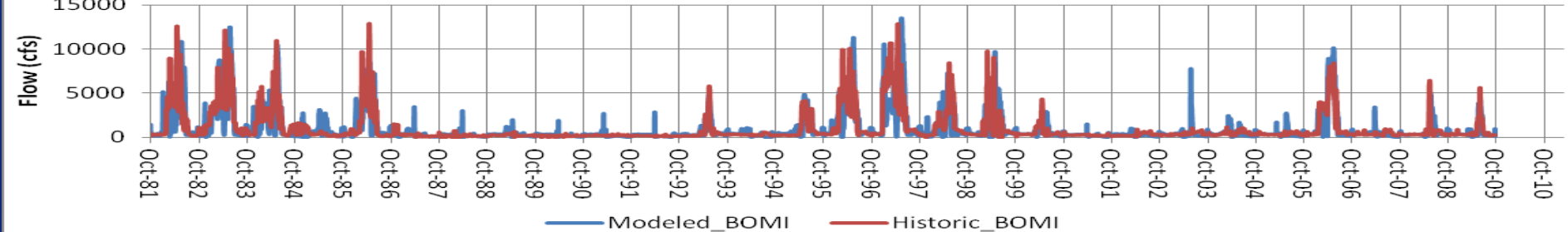
RECLAMATION

Stream Gage Calibration

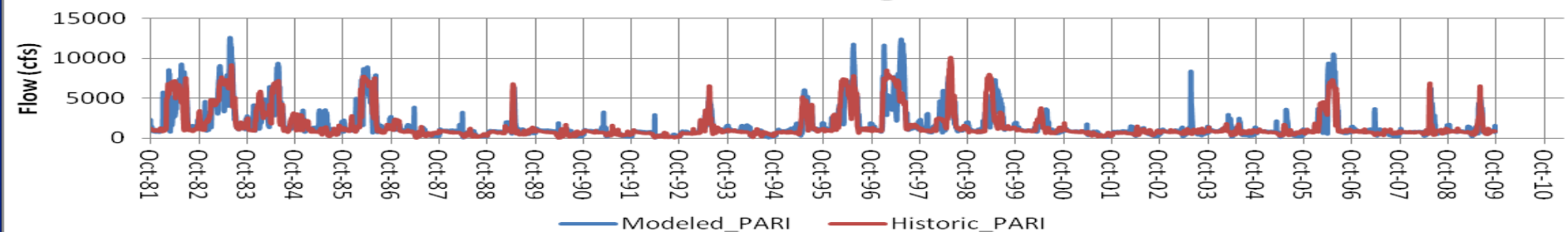
Glenwood Gage



Middleton Gage



Parma Gage



What's next?

- **Final adjustments to calibration**
- **Checking ratio storage to natural flow**
- **Combined hydro-econ model runs**
- **Finalize model development report**

Thank you!

Questions?

RECLAMATION