NID-PFW ResSim Model

February 21, 2023

Reservoir Operations Model

Agenda

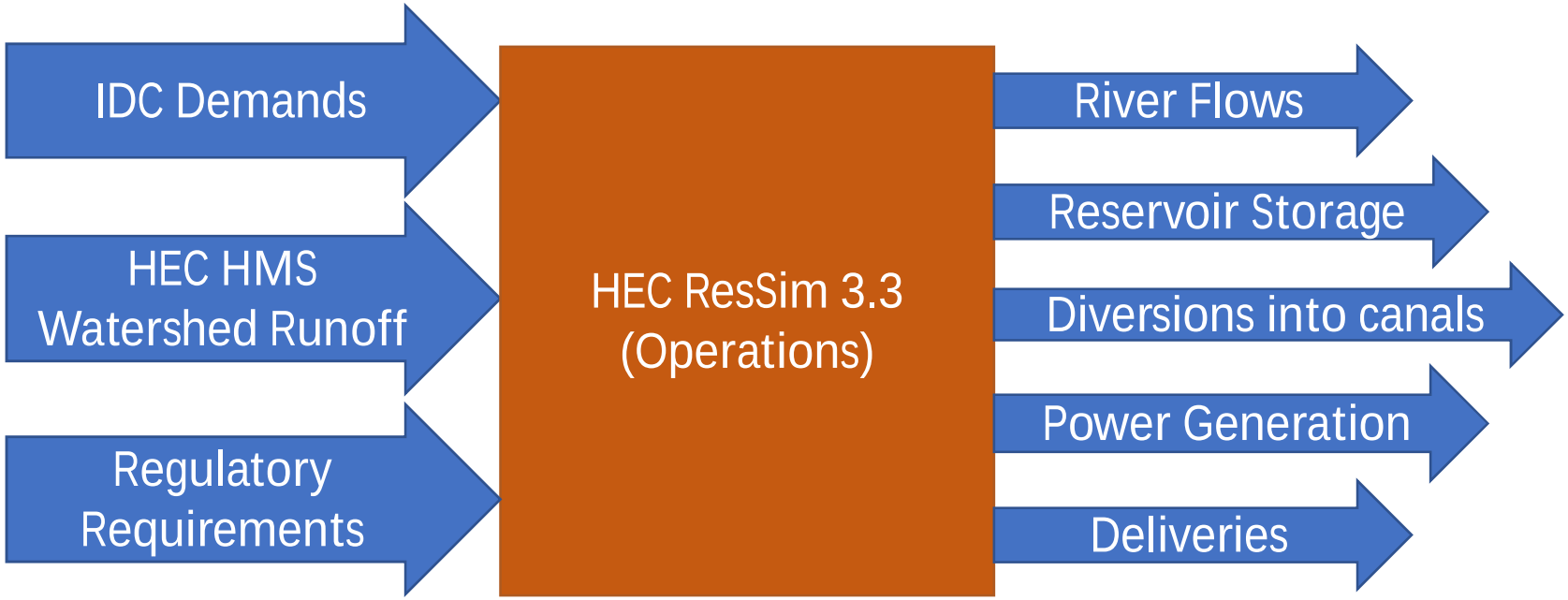
- Model Overview
- Work Performed
- Next Steps
- Discussion and Questions

Reservoir Operations Model

US Army Corps
of Engineers
Hydrologic Engineering Center

HEC-ResSim

Reservoir System Simulation



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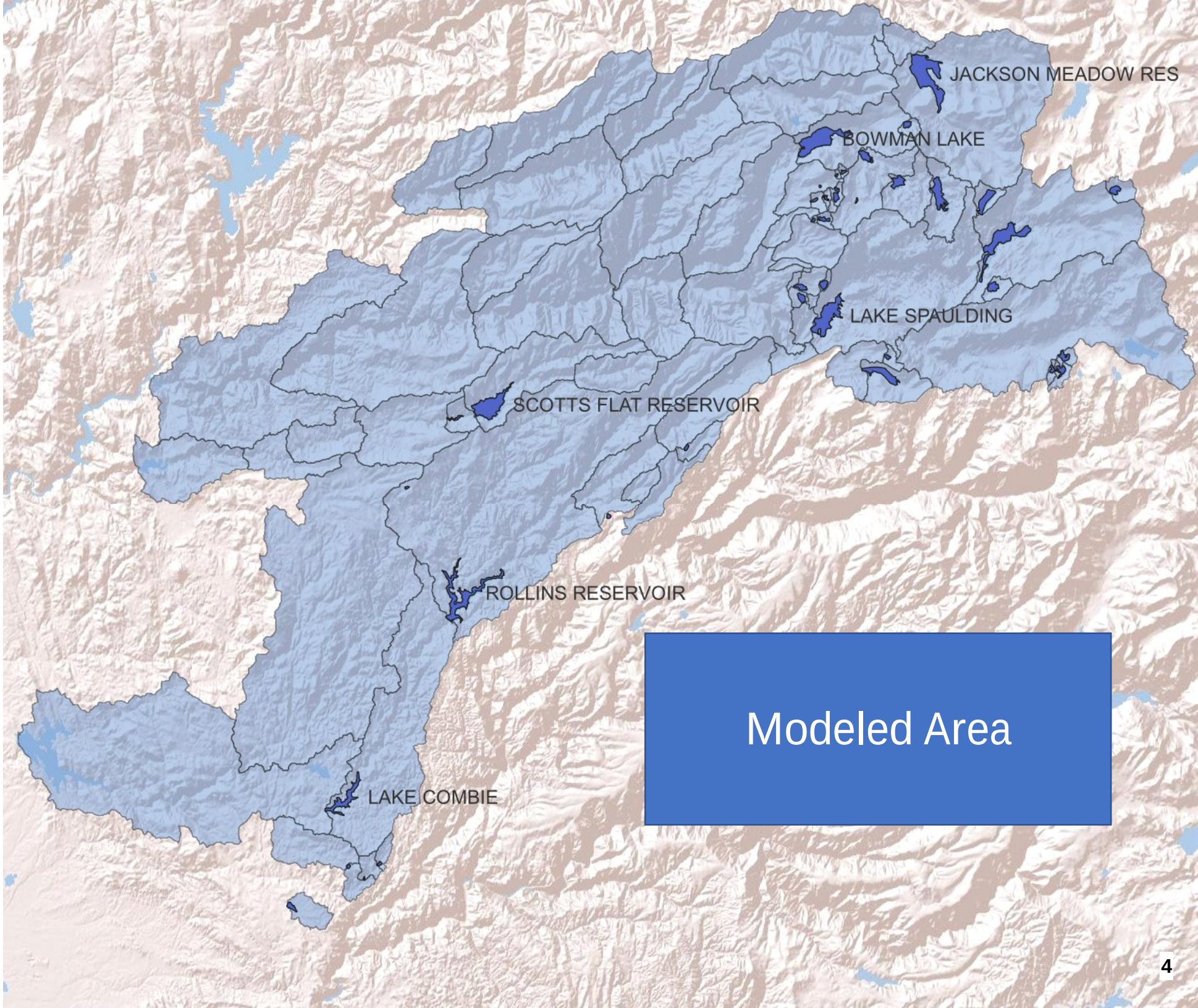
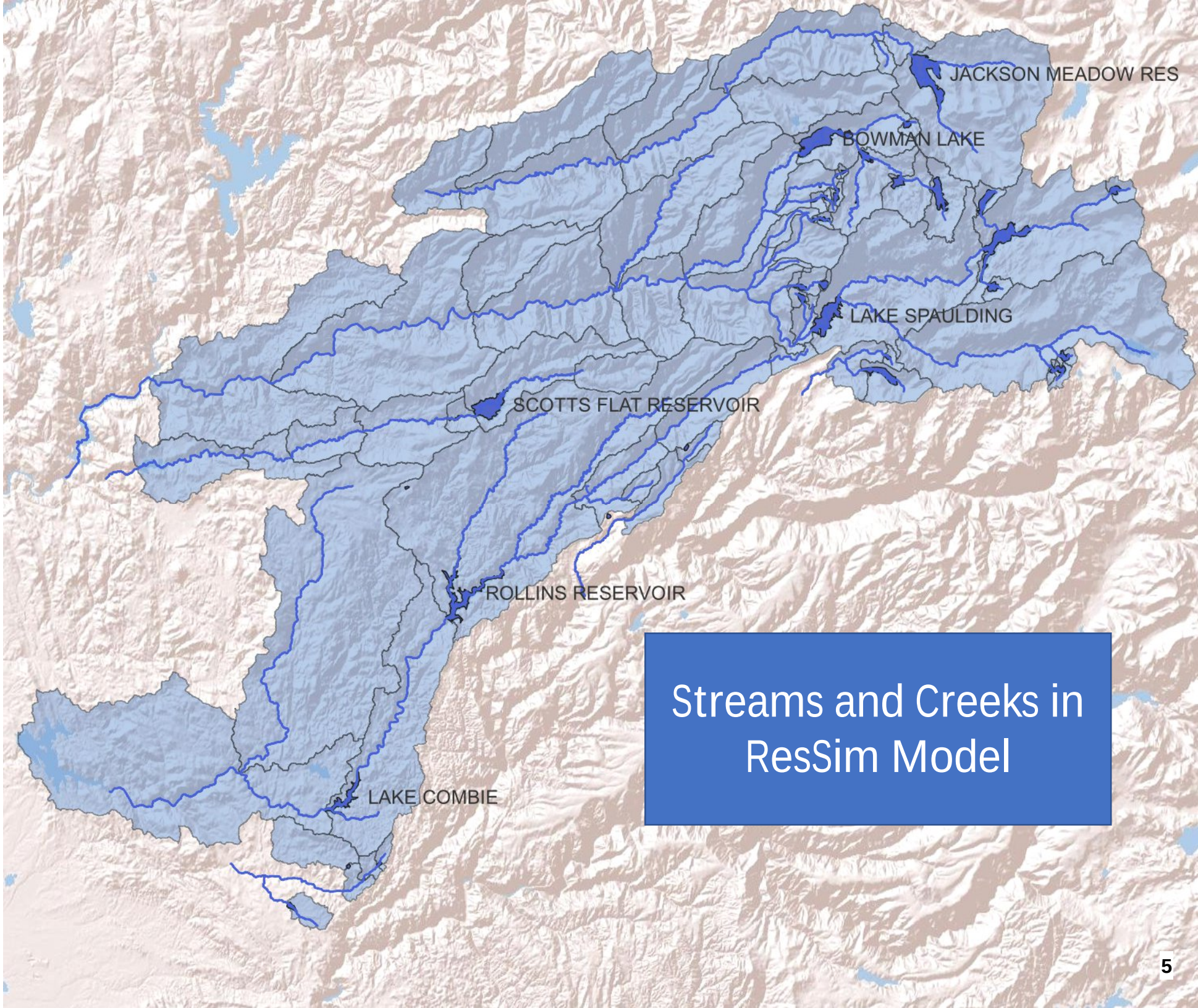
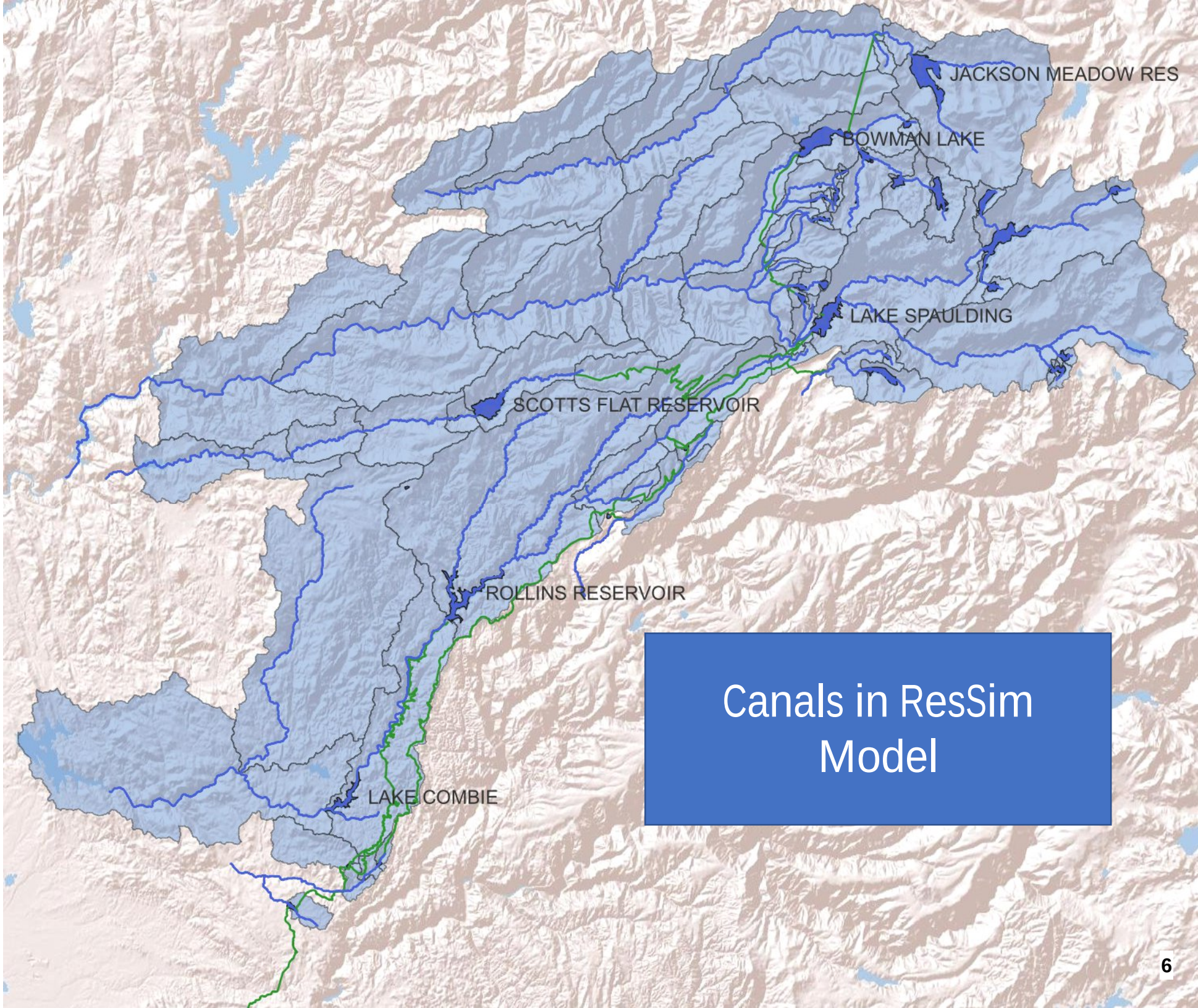
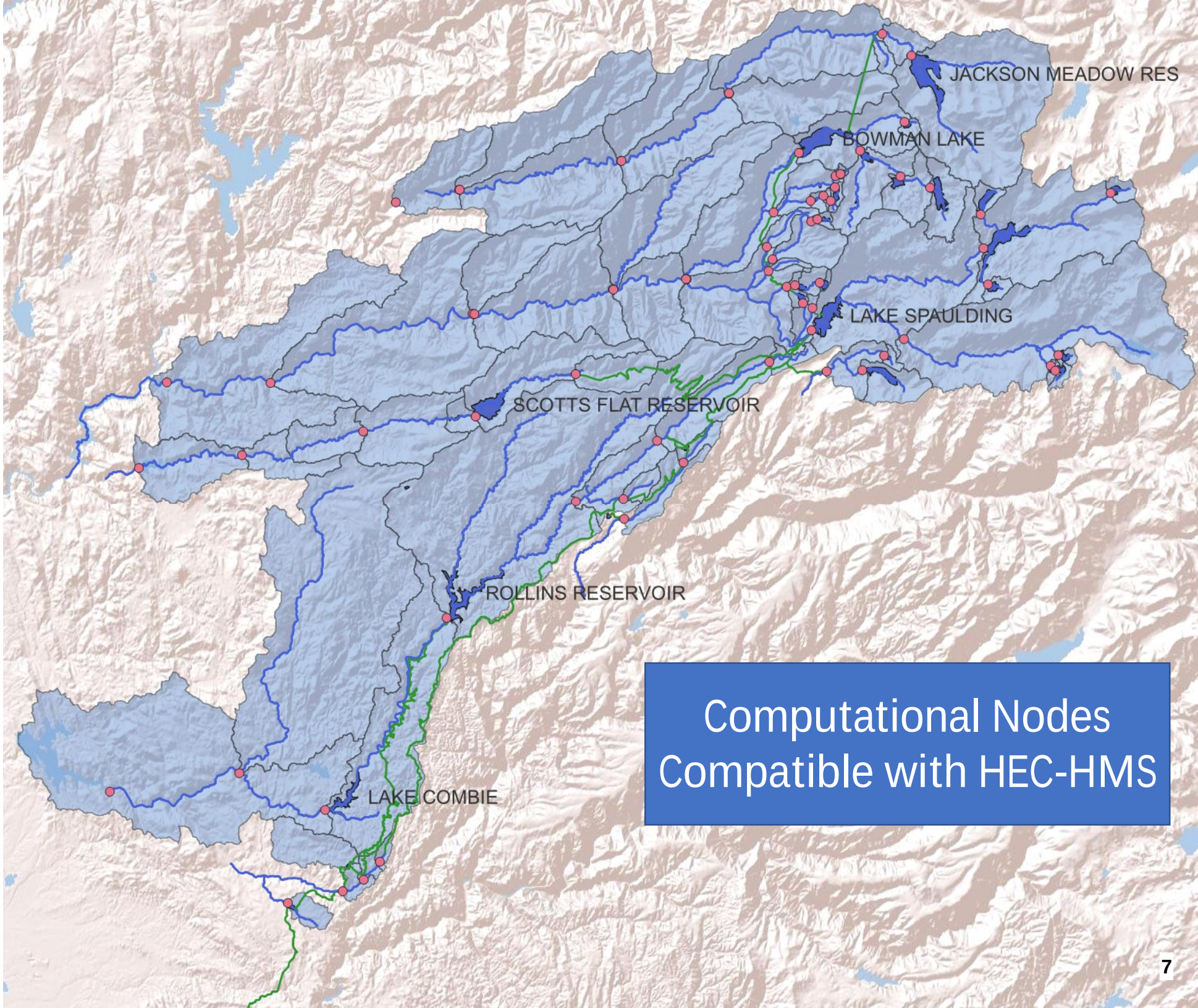

JACKSON MEADOW RES
BOWMAN LAKE
LAKE SPAULDING
SCOTTS FLAT RESERVOIR
ROLLINS RESERVOIR
LAKE COMBIE
Modeled Area



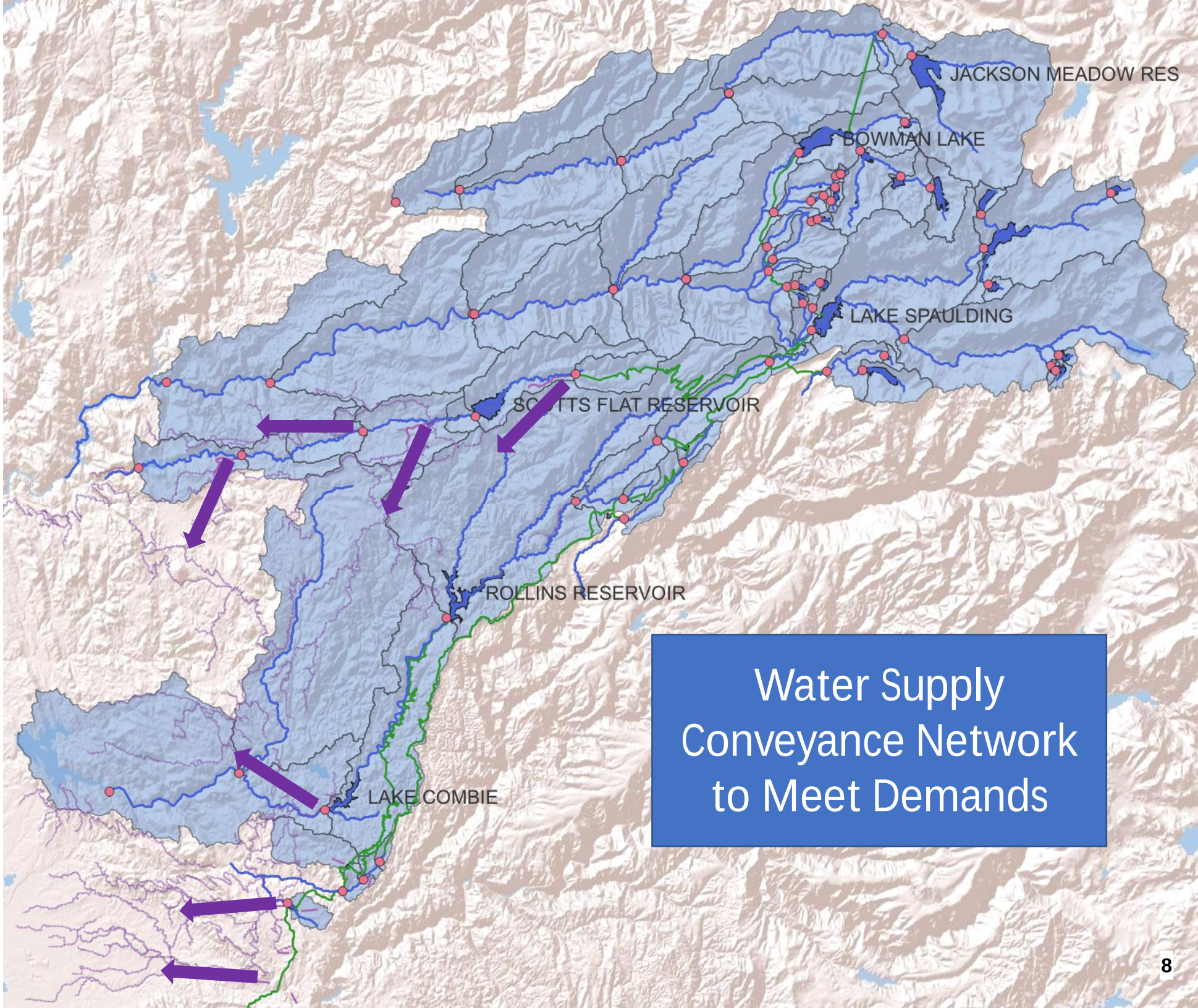
Streams and Creeks in ResSim Model



Canals in ResSim Model



Computational Nodes Compatible with HEC-HMS



Water Supply Conveyance Network to Meet Demands

HEC-ResSim Model Build

- HEC-ResSim v3.0a (April 2007)
  - Previous NID Operations Model
- HEC-ResSim v3.3 (February 2021)
  - Updated NID Operations Model

30 Reservoirs Modeled

NID Reservoirs
Jackson Meadows Reservoir
Bowman Lake
French Lake
Faucherie Lake
Sawmill Lake
Jackson Lake
Scotts Flat Reservoir
Rollins Lake
Lake Combie

PG&E Reservoirs
Lake Spaulding
Fordyce Lake
Lake Sterling
White Rock Lake
Meadow Lake
Kidd Lake
Upper Peak Lake
Lower Peak Lake
Lake Valley Reservoir
Kelly Lake
Upper Rock Lake
Lower Rock Lake
Lindsey Lakes
Feely Lake
Carr Lake
Culbertson Lake
Rucker Lake
Fuller Lake
Blue Lake

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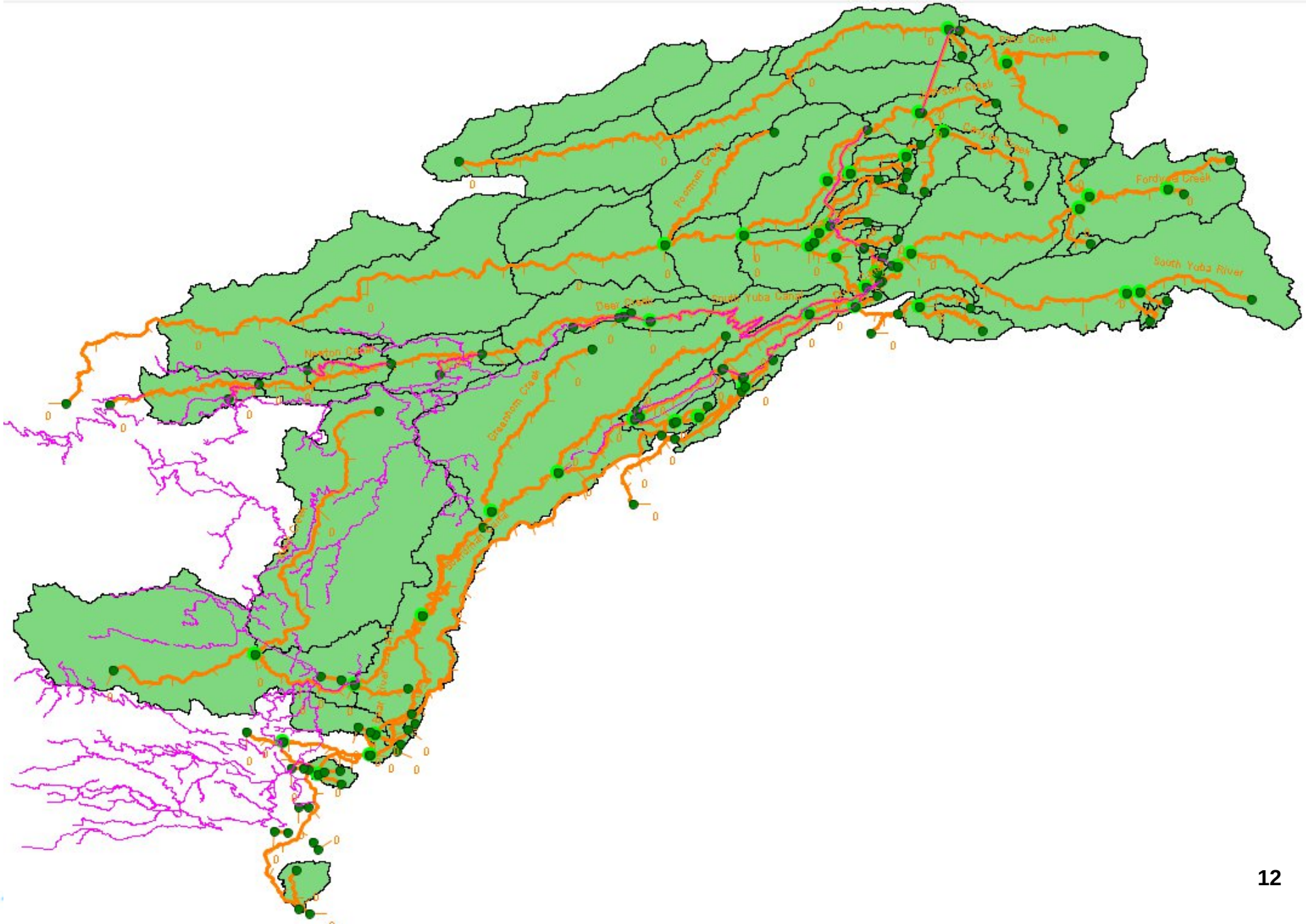
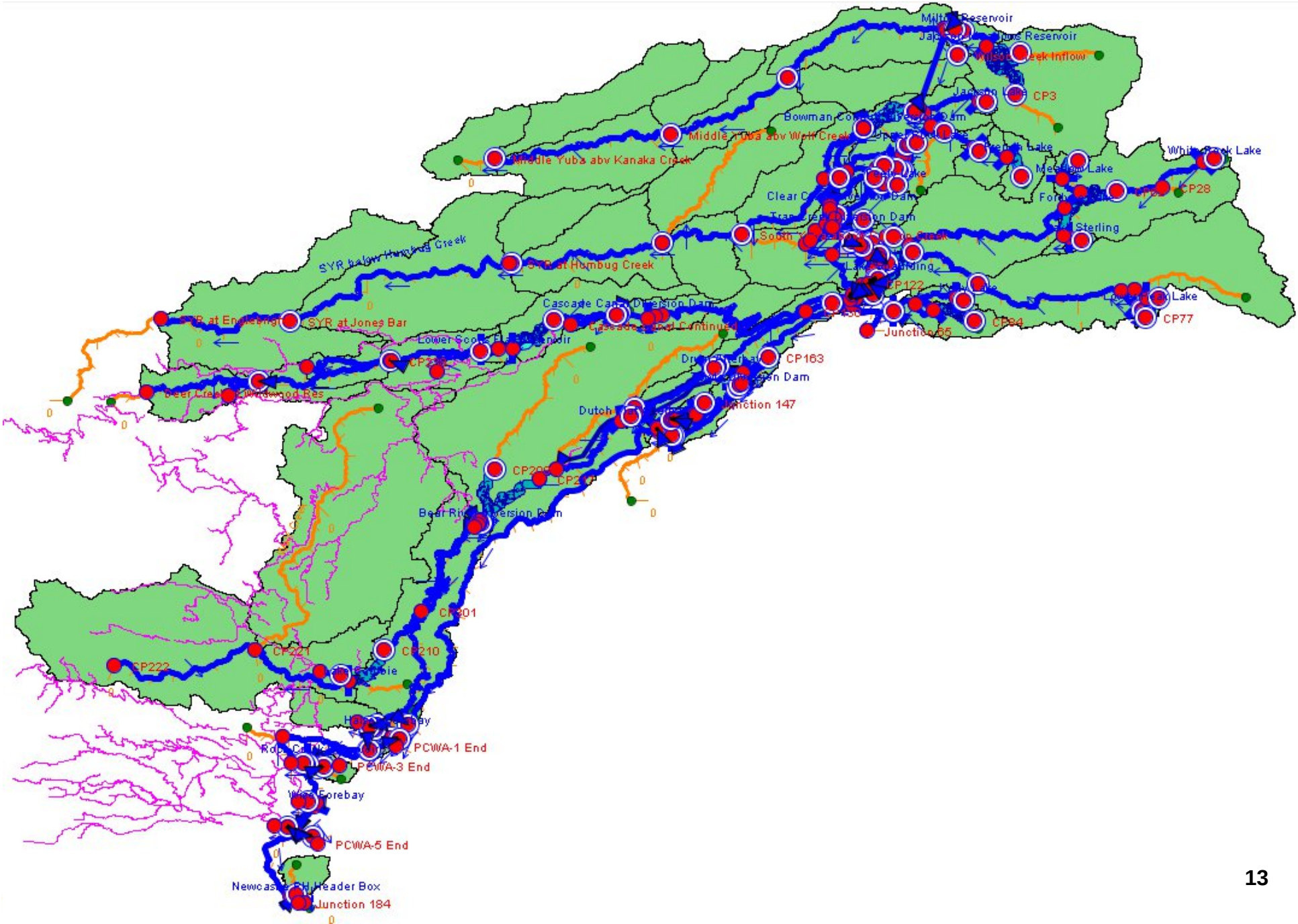
Canals modeled explicitly

- Milton Bowman Conduit
- Bowman Spaulding Conduit
- South Yuba Canal
- Chalk Bluff Canal
- Drum Canal
- Bear River Canal
- Wise Canal
- Boardman Canal

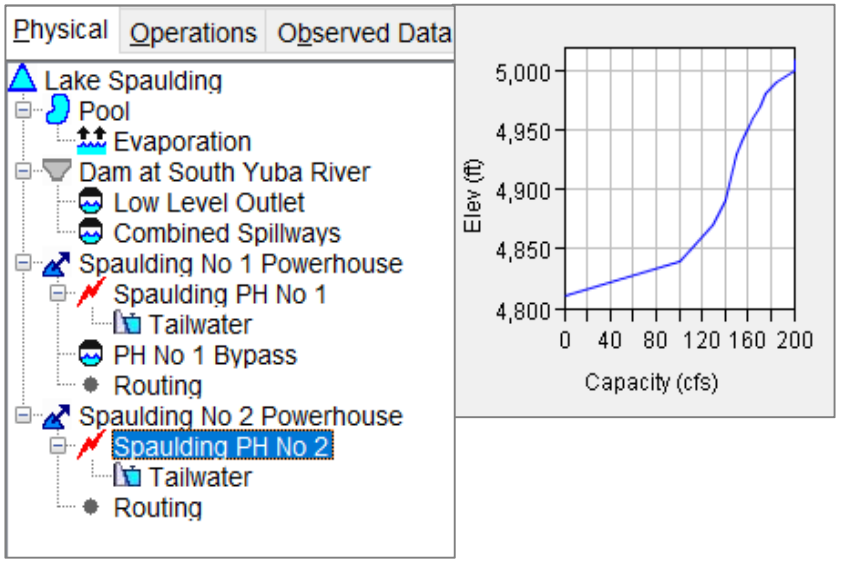
Model Schematic and Framework

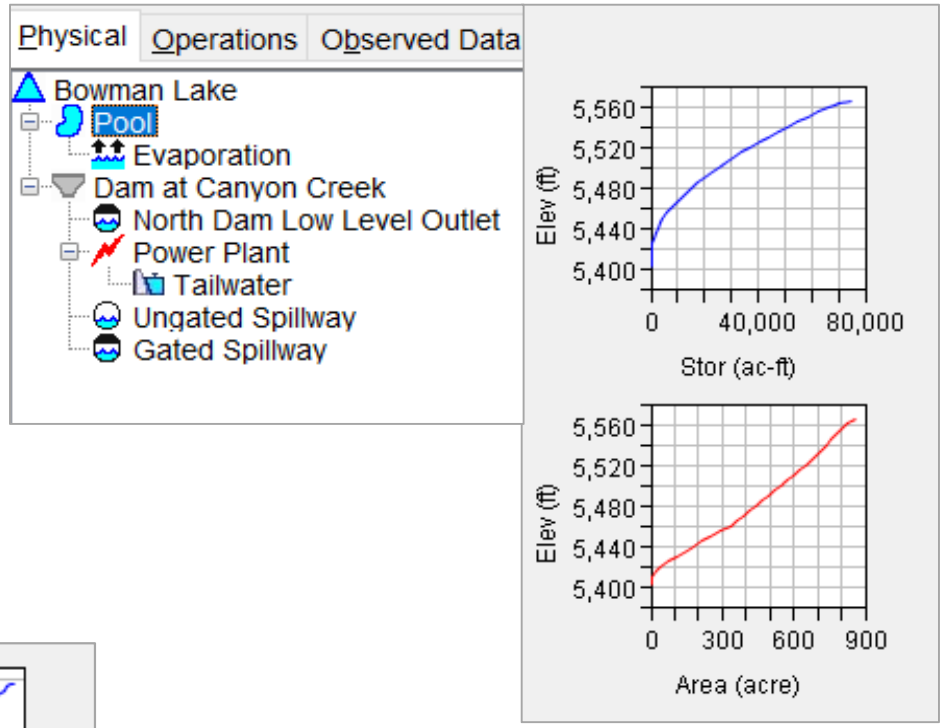


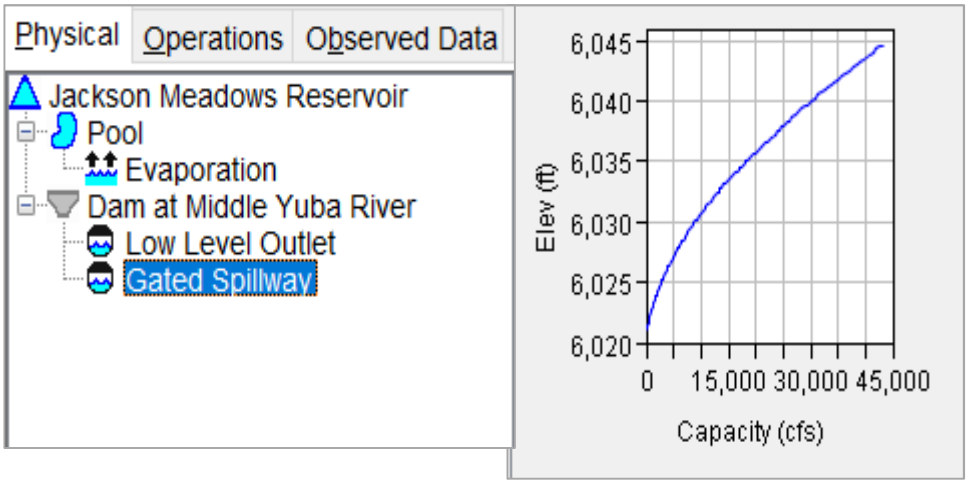
Facilities and Conveyance Structures



Added reservoir and canal capacities, ratings, etc.







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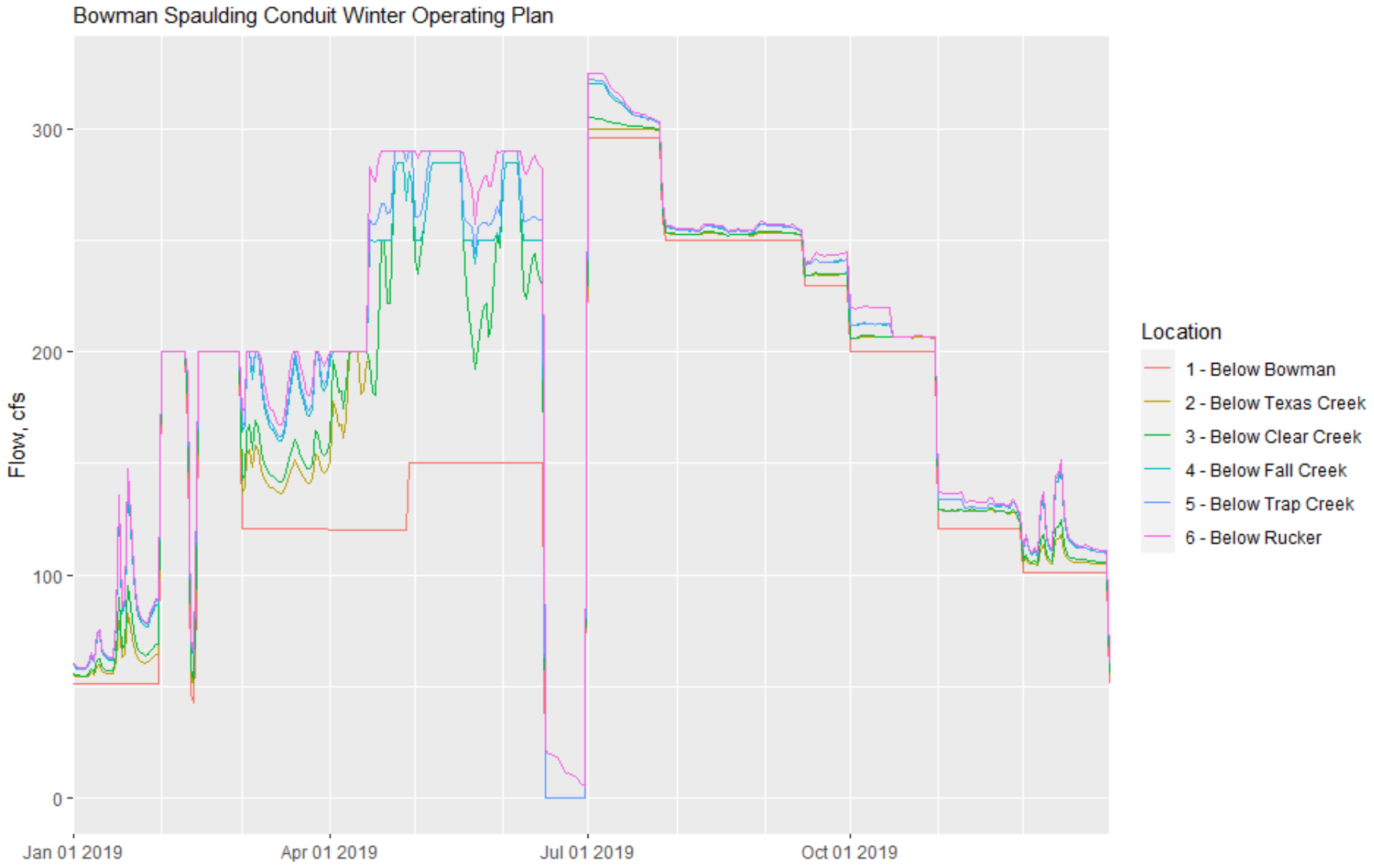
Updated Operations Rules



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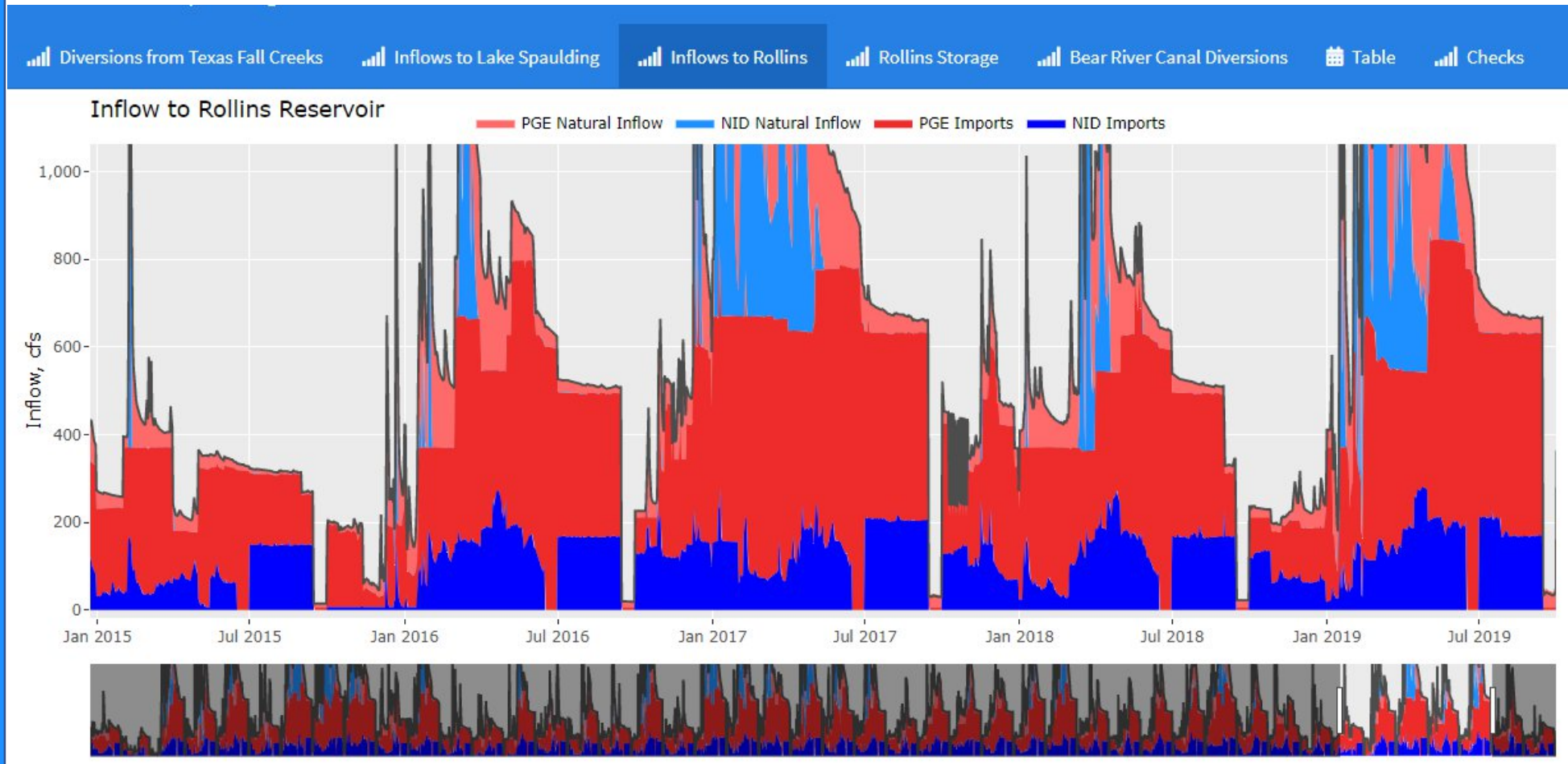
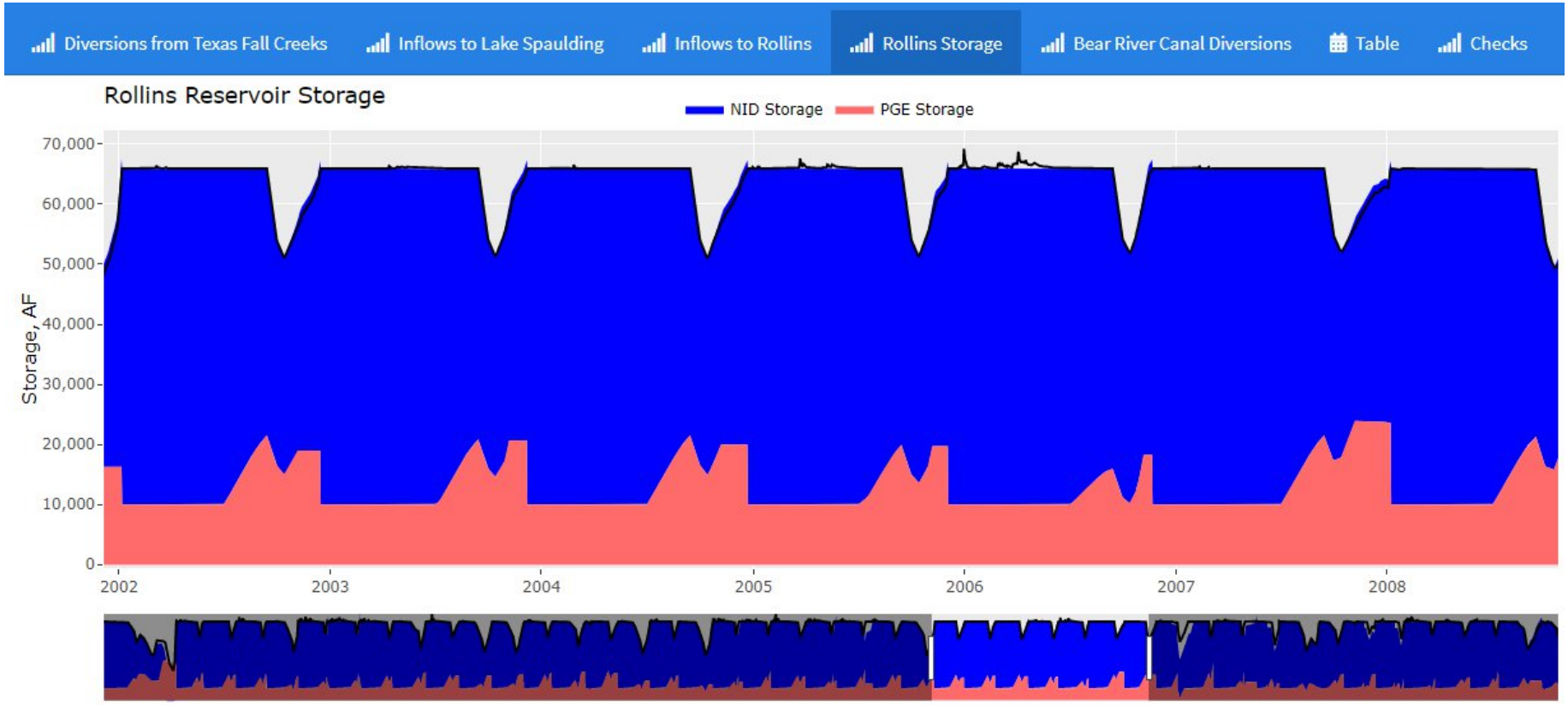
Track NID & PG&E Supplies

- Inflow to Rollins Reservoir



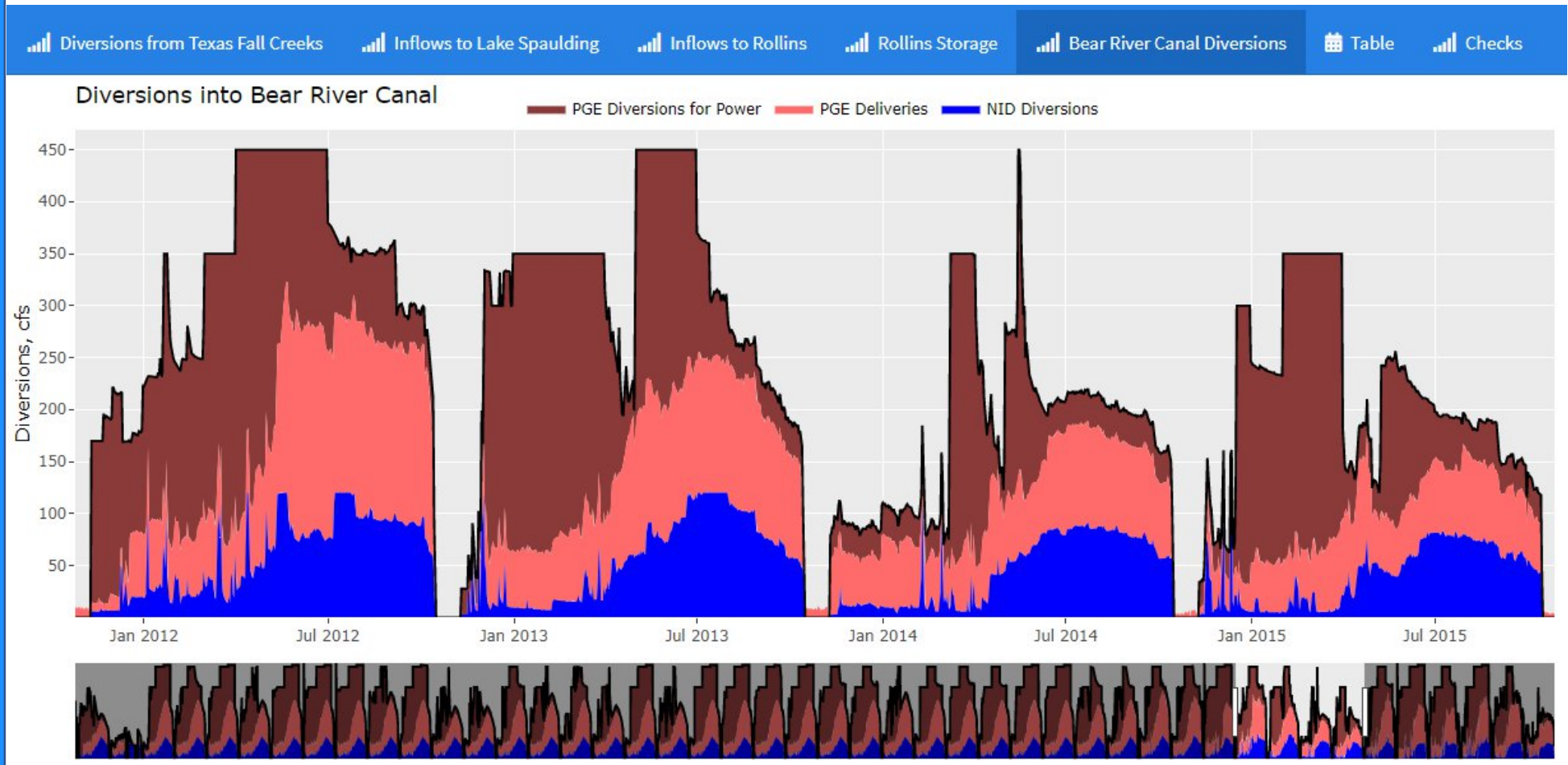
Track NID & PG&E Supplies

- Rollins Reservoir Storage



Track NID & PG&E Supplies

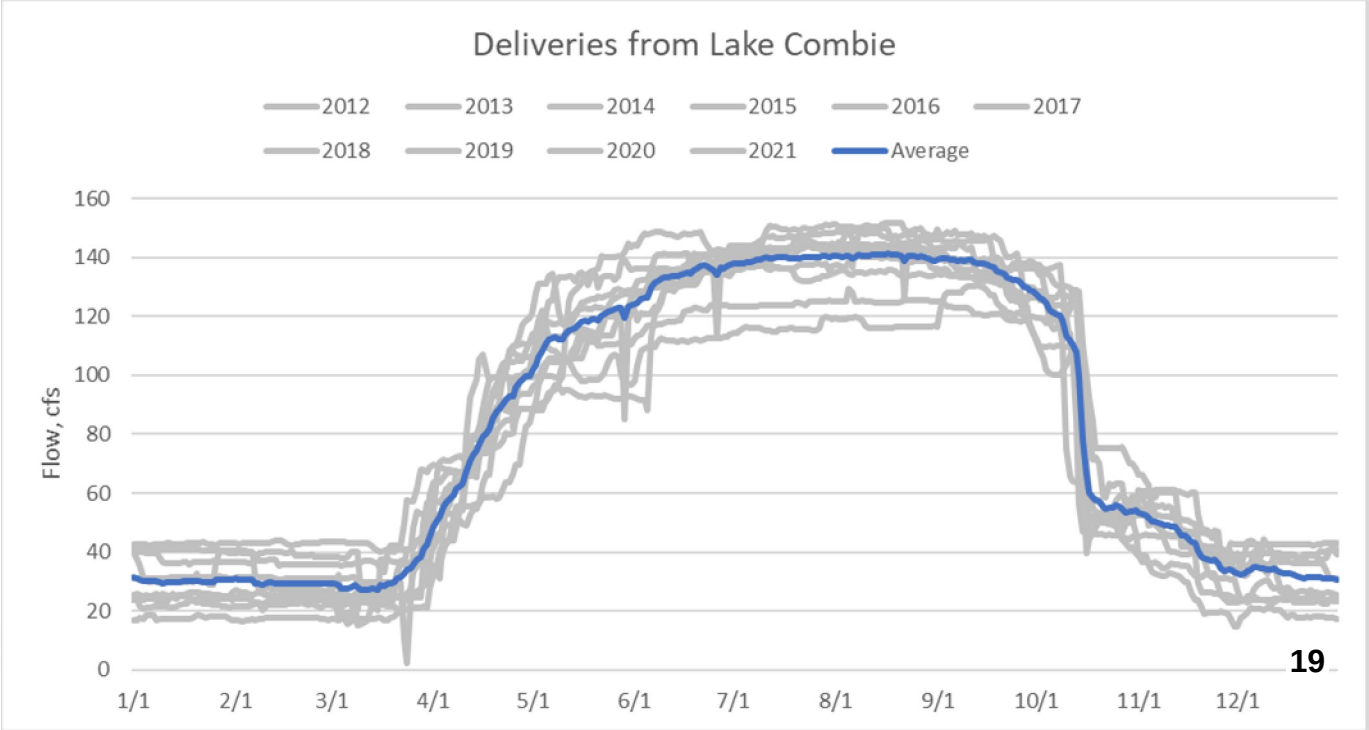
- Diversions into Bear River Canal



Calibration

- Performing calibration studies

Calibration Study Inputs		
Watershed Runoff	Consumptive Demands	
1976-2021	1976-2011	2012-2021
Historic, extended from previous hydrology work	Daily Average of 2012-2021 Gage Data	Gaged Delivery Data



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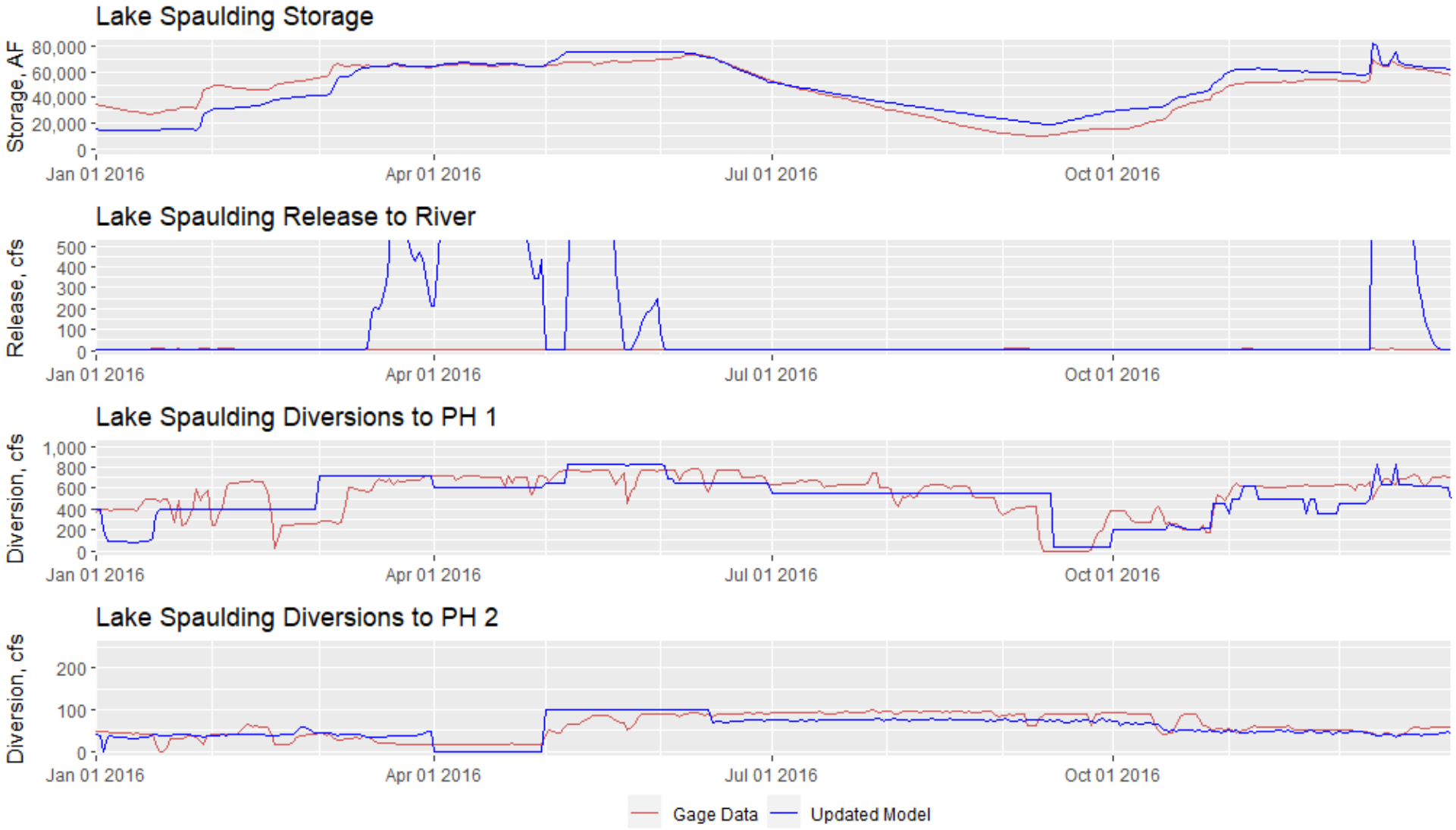
Calibration notebooks



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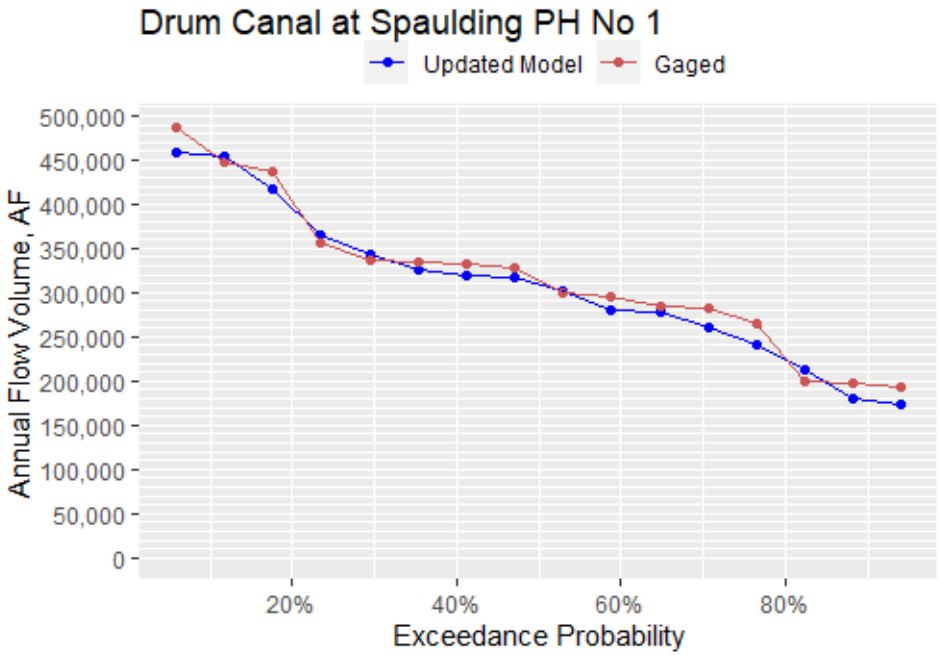

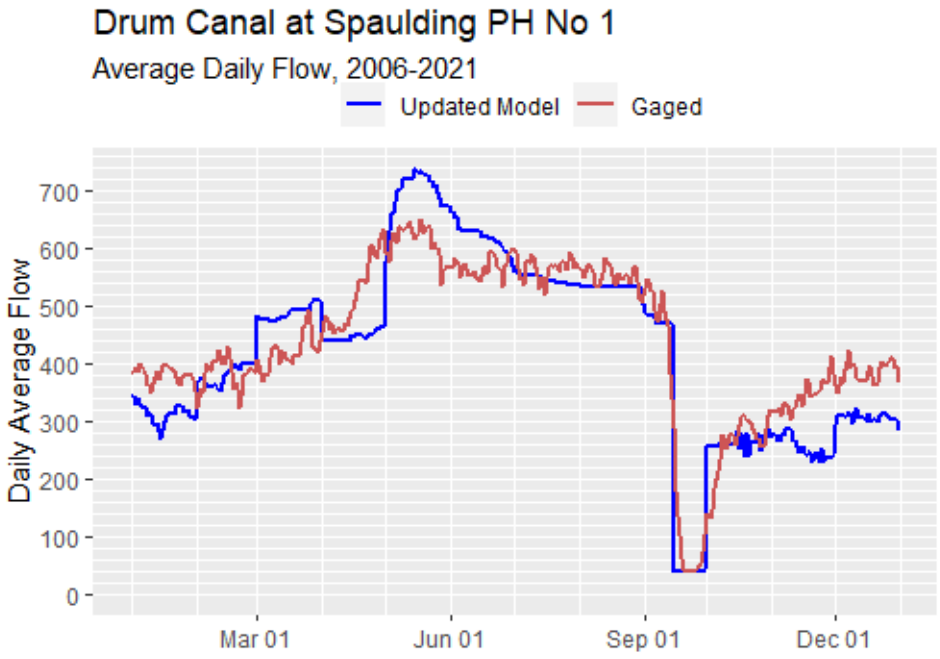

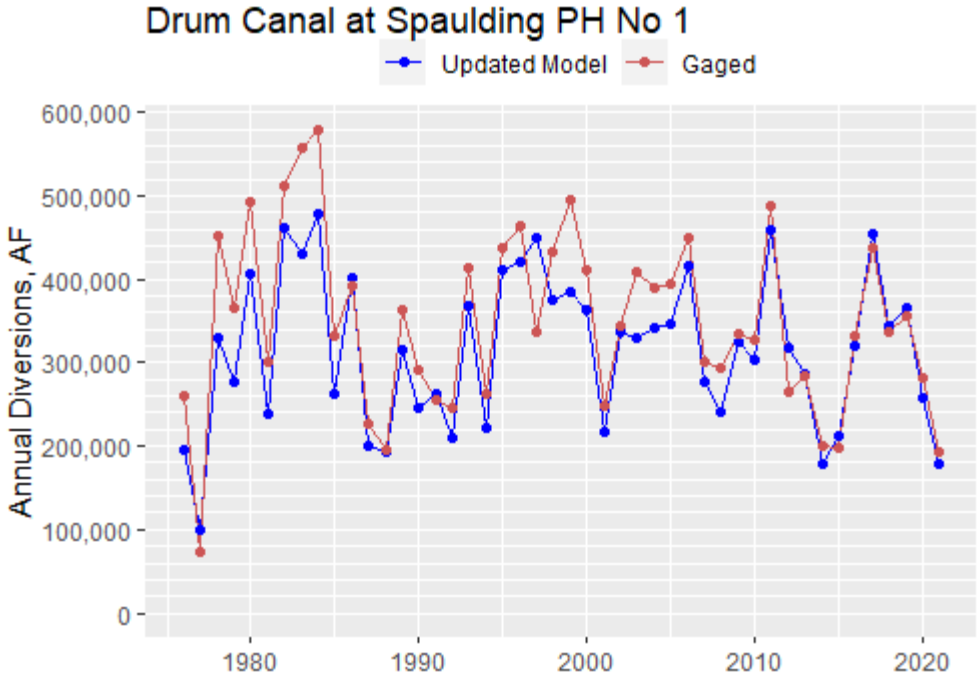

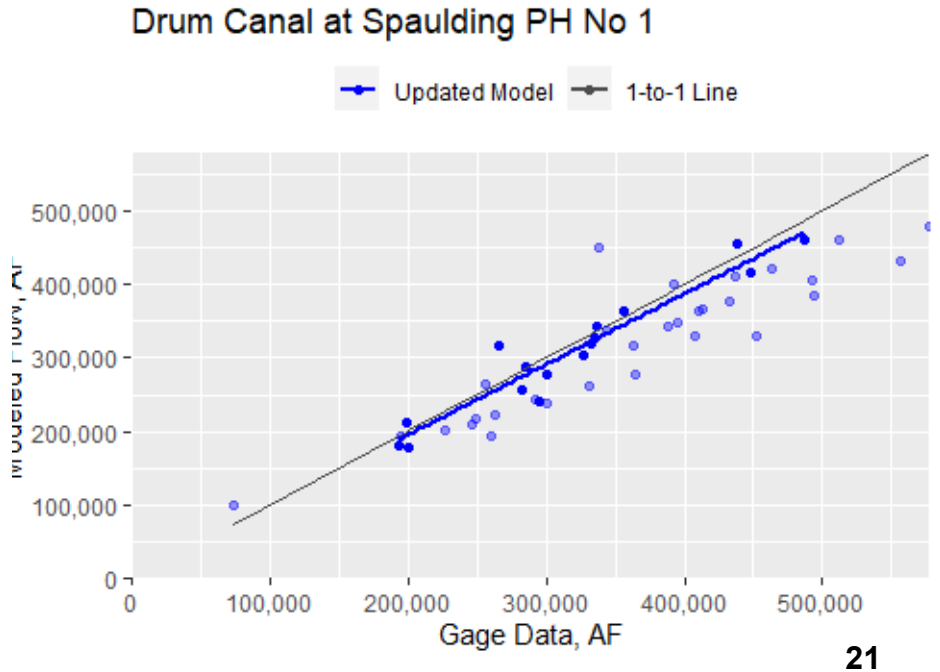

Next Steps

- Add Drought Contingency Plans
- Continue calibration
- Develop post-processing tools and metrics

- Determine scenarios
  - Vary demand assumptions
  - Vary climate change assumptions
- Perform studies with new input datasets

Questions & Comments