Flaming Gorge Operational Rules Outline for Probabilistic Midterm Model

Revisions:

- V1, *27 January 2010:* Cameron Bracken
- V2, *3 February 2010:* Cameron Bracken

Data

Data Object

- 1963 - Present historic Data for definitions of hydrologic calssification
- Look up tables for Hydrologic Classification Wet, Moderately Wet, Average, Moderately Dry, Dry
- May 1 Target elevation table
- Look up table for Upper Limit Drawdown Elevation
- Base flow limits and ramp down rated for each classification

Rules

Spring Flow Hydrologic Classification

Execution Constraint: January - July

Description: Use forecast of April-July Volume to determine the hydrologic classification for the given month

- In any particular month, classify based on following season forecasted April - July unregulated inflow.
- When running from different start dates, the hydrologic classification may change from month to month but will not change during a single run

Base Flow Hydrologic Classification

Execution Constraint: August - December

Description: Use observed April-July for classification.

- Classification will not change from spring classification during a single run
- Between runs with start dates August-December, classification will not change
- May vary between runs with start dates Jan - July since incomplete or no observations are available
- *In forecast mode when no observational data is available should the forecast be used as the 'observed' once the model reached August?*

Set Safe Operating Elevation Limit

Execution Constraint: March or April

Description: Sets the May 1 target elevation

- Based on the most probable forecast for May 1 flow, set the target elevation accorg

Check Max daily rate of change

Execution Constraint: August - February

Description: Ensures that rate of change of release does not exceed 50 cfs/day.

Base flow Operations

Execution Constraint: June - February

Description: Depending on the model start month, set the base flow operations based on the hydrologic classification in order to meet the May 1 ULDE.

- Overlap with spring flow rule since ramp down month is variable
- Automatic way to check if the base flow operations have already been set. For example if it is a Dry year and we start the model in July, the down ramp period will have already occurred. This will be tricky since the down ramp period will get rolled into the previous months average flow (maybe check for changes in pool elevation?).

Spring Flow Operations

Execution Constraint: March - August (depending on classification)

Description: Sets the spring release to meet power plant capacity and control flooding. Higher priority than Base flow operations.

- Power plant capacity unless more release is necessary to prevent flooding.
- Assume May 23 ramp up date, 2000 cfs/day (partition volume across months)
- Fix ramp down periods
- Crude checking weather total volume in month is enough to meet peak flow requirement.