New and Upcoming Engineering Methods

Steve Setzer & Sarah Stapleton

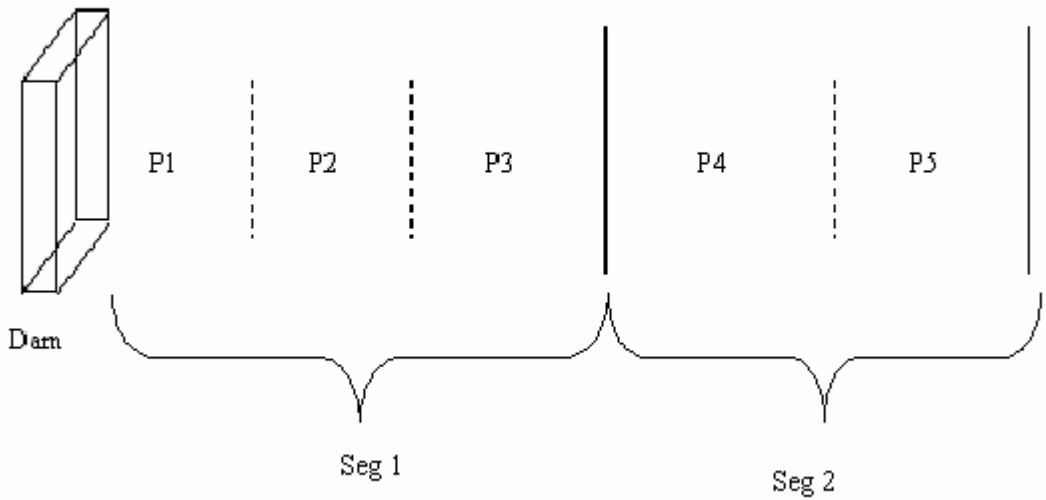
Stream Gage Conditional Flow Calculation

- Hypothetical simulation
- Two methods: None and Fractional Flow
- Fractional Flow:

```
IF(Condition One < Condition Two)
    gage.Inflow = Condition One * Loss Factor
ELSE
    gage.Inflow = Normal Flow
```

Slope Storage Coefficient Category

- Two methods: ImpulseResponseCoefficients, WeightingCoefficients



Weighting Coefficients Method

- Flow Parameter at each partition:

$$P_j(t) = a_{j1}I(t) + a_{j2}I(t-1) + \ldots + a_{jn}I(t-n) + b_{j1}H(t) + b_{j2}H(t-1) + \ldots b_{jn}H(t-n) + c_{j1}I2(t) + c_{j2}I2(t-1) + c_{jn}I2(t-n) + d_{j2}P_j(t-1) + \ldots + d_{jn+1}P_j(t-n) + e_{j1}O(t) + e_{j2}O(t-1) + \ldots + e_{jn}O(t-n)$$

- Backwater elevation at each partition
- Storage calculation for each segment

Distribution Canal: Split Seepages

- Allows user to split seepage to multiple seepage destinations, similar to the Multi Return Fractional Split method on WaterUser object.

$$\text{Seepage}(i) = \text{Seepage Proportion}(i) * \text{Seepage}$$

Upcoming Projects

- AggDistribution Canal
  - Input carriage water, propagated upstream with demands
  - Keep track of storage in canal
    - Input fill and drain dates and volumes
    - Compute volume (mass balance) for each timestep
  - Include evaporation in mass balance
    - Specified as rate (volume/day)

Upcoming Projects

- New Inline Pumping Object
- Pipeline object
  - Add hydraulic characteristics and computations
  - Pressure, head loss, etc.