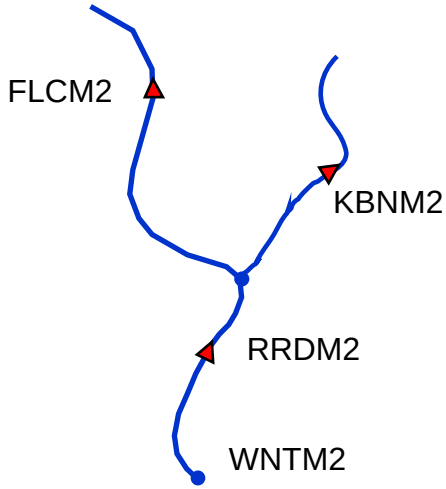
RES-SNGL

General Information

RES-SNGL Single Reservoir Model

- Designed with a modular structure allowing user to define only those portions needed to simulate reservoir of interest.
- Fully integrated within NWSRFS as an operation in the calibration, forecast, and ensemble streamflow prediction systems
- Facilitates long-term simulations of individual reservoirs Easily extended by adding new modeling schemes and utilities
- Uses explicit simulation approach

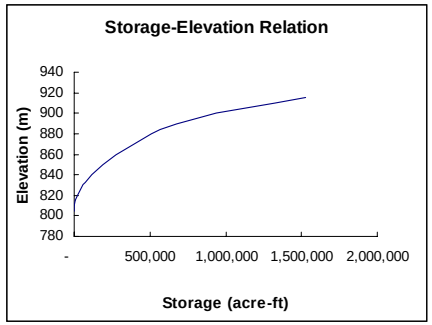


Operations Table:

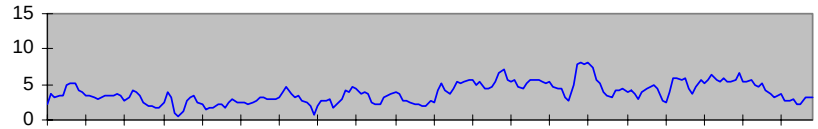
LAG-K	KLGN1
SAC-SMA	LOCAL
UNIT-HG	LOCAL
ADD-SUB	INF_TOT
RES-SNGL	WINSTON
PLOT-TUL	INFLOW
PLOT-TUL	RES_OP

RES-SNGL Input Sections

- **General**




```
INSTQIN  KEYO2   SQIN 6
MEANQIN  KEYO2   SQME 6
.
.
```



- **Specific**
  - **SCHEMES**
  - **UTILITIES**

- **RCL**

```
RCL
DO ENTERISC
IF (SURCHARGE) THEN DO INDSRCHGE
IF (POOL.GT.723.0.AND.POOL.LT.754.0) THEN   &
     DO STPOOLQ(1)
        IF (FLOOD) THEN DO SETQ(3)
        ELSE DO POOLQ(1)
        ENDIF
   ENDIF
DO SETMIN
ENDIF
ENDRCL
```

RES-SNGL General Information

- TITLE
- UNITS
- PARMS
- TIME-SERIES
- CARRYOVER

```
ARKANSAS RIVER AT KEYSTONE DAM (KEYO2)
   12 1995   12 2003
.
.
RES-SNGL    KEYO2
GENERAL
TITLE 'KEYSTONE LAKE (DCP) '
UNITS ENGLISH ACFT
PARMS
ELVSSTOR         654.40     660.00     666.00     670.00     674.00    &
                 680.00     684.00     690.00     696.00     700.00    &
                 706.00     710.00     716.00     724.00     730.00    &
                 740.00     746.00     754.00     759.90               &
                   0.00     538.00    5086.00   11043.00   20137.00    &
                 40669.     59872.     97793.    147742.    188148.    &
                260917.    316586.    412930.    581682.    746032.    &
               1088393.   1341098.   1737811.   2080077.
INTERP LINEAR
ENDP
TIME-SERIES
INSTQIN  KEYO2    SQIN  6
MEANQIN  KEYO2    SQME  6
MEANQOUT KEYO2    RQMP  6
INSTQOUT KEYO2    QINE  6
POOL     KEYO2    SPEL  6
ENDTS
CARRYOVER
INFLOW     1433.20
Q-MEAN        0.00
Q-INST        0.00
POOL0      722.95
POOL1      722.98
ENDCO
ENDGENL
```

RES-SNGL Specific Model Components

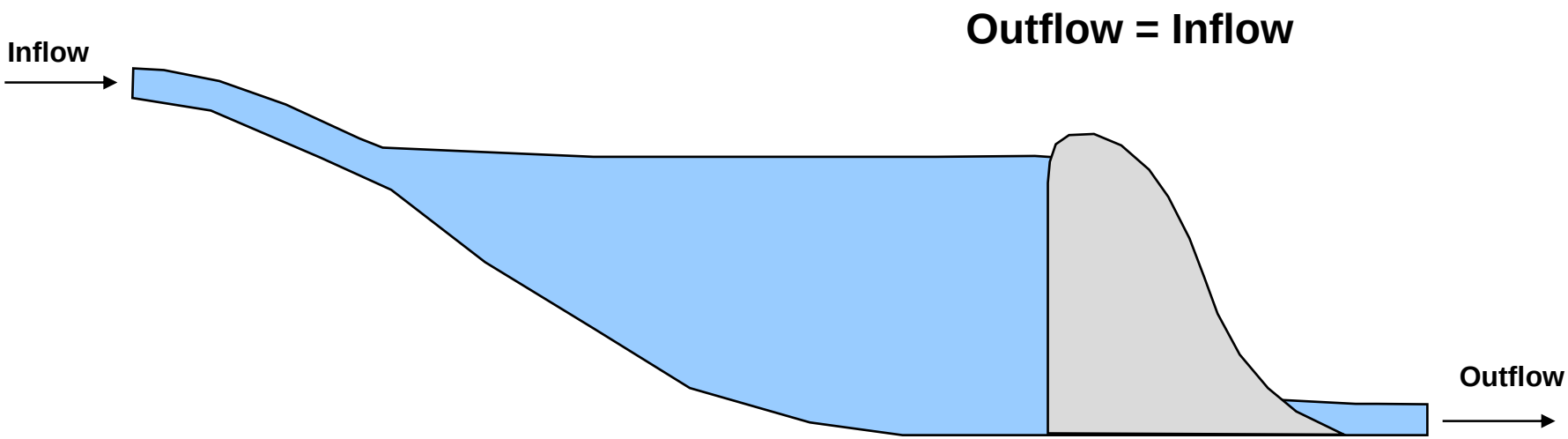
- Computational Schemes (Generates Output)
  - PASSFLOW
  - SETQ
  - SETH
  - SETDQ
  - RULECURVE
  - FILLSPILL
  - SPILLWAY
  - POOLQ
  - STPOOLQ
  - MINQ
  - MINH
  - INDSRCHGE
  - FLASSBDS
  - POWERGEN
- Utilities (Simulation Aid)
  - RULEADJ
  - SUMINF
  - RAINEVAP
  - ADJUST
  - BACKFLOW
  - MAXQ
  - ENTERISC
  - SETMIN
  - SETMAX
  - GOFLASH

Schemes and techniques shown in red have examples in this workshop.

RES-SNGL PASSFLOW SCHEME

The PASSFLOW scheme passes the reservoir inflow directly as the reservoir discharge. The pool will be maintained at the same elevation

- No specific inputs are required



RES-SNGL Reservoir Command Language

- Mechanism to allow the flexibility to accommodate different operating plans for each reservoir
- 3 Statement types
  - SET
  - IF – ENDIF
  - DO
- Variables
  - FORECAST, OBSERVED, FLOOD, SURCHARGE, GOFLASH, RISING, FALLING, NFLOOD, NSURCHARGE, NGOFLASH

RES-SNGL RCL Example

```
RCL
DO ENTERISC
IF (SURCHARGE) THEN DO INDSRCHGE
  IF (POOL.GT.723.0.AND.POOL.LT.754.0) THEN   &
    DO STPOOLQ(1)
      IF (FLOOD) THEN DO SETQ(3)
      ELSE DO POOLQ(1)
      ENDIF
  ENDIF
DO SETMIN
ENDIF
IF (POOL.LE.723.0) THEN DO POWERGEN(1)
ENDIF
IF (POOL.GE.757.0.AND.RISING) THEN DO PASSFLOW
ENDIF
IF (POOL.LT.1.00) THEN DO SETQ(1)
DO SETQ(2)
DO SETQ(3)
DO SETQ(4)
DO POOLQ(1)
DO STPOOLQ(1)
DO POWERGEN(1)
DO POWERGEN(2)
DO SETMIN
ENDIF
ENDRCL
```