Development & Tests of Particle Filter in DSM2-PTM

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Outline

- Purpose
- Working Principles
- Configuration & Usage
- Tests

Purpose

Block particle without interrupting flows

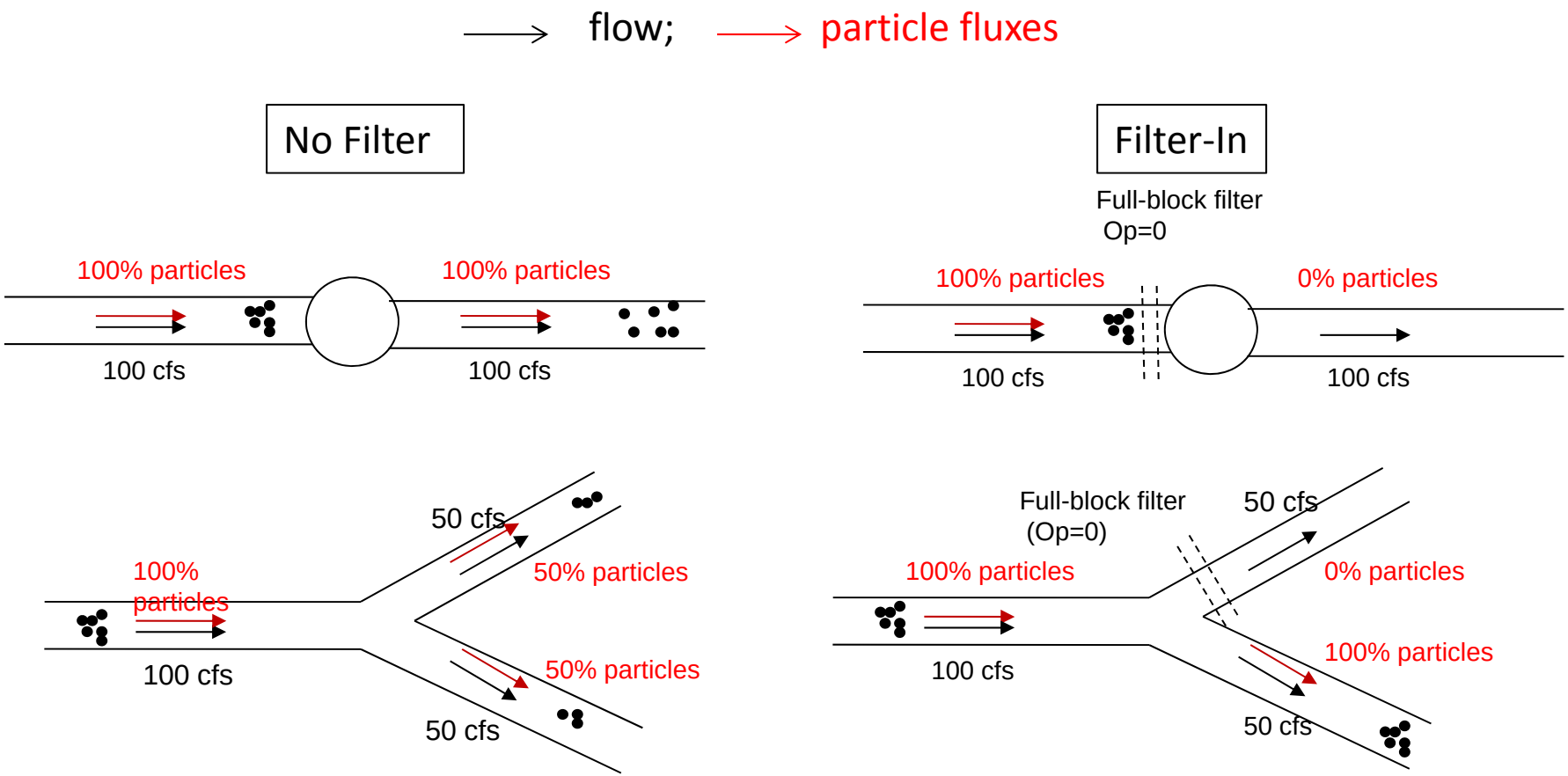
- Different from physical gate/barrier

Application examples:

- Non-physical Barrier
- Close all DICU

Working Principle

- Adjust the 'effective' flow particles reside at



Usage

DSM2 input system (ptm.inp)

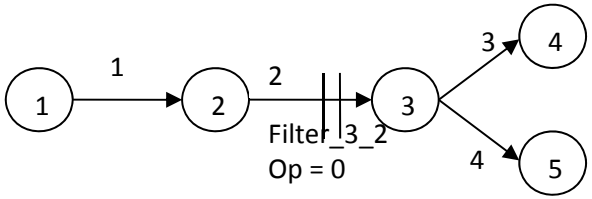
Location: node + waterbody

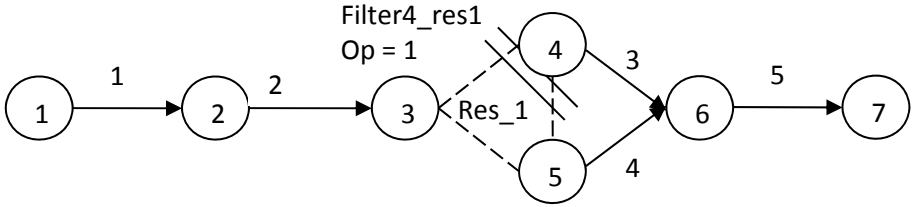
Operation:

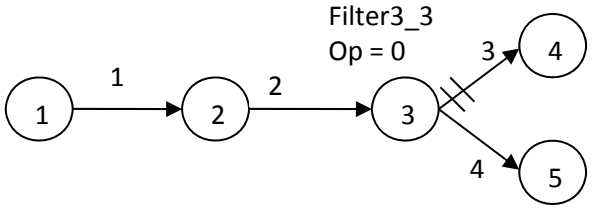
- 0-block; 1-pass
- constant; time-varying
- different time intervals
- regular/irregular timeseries

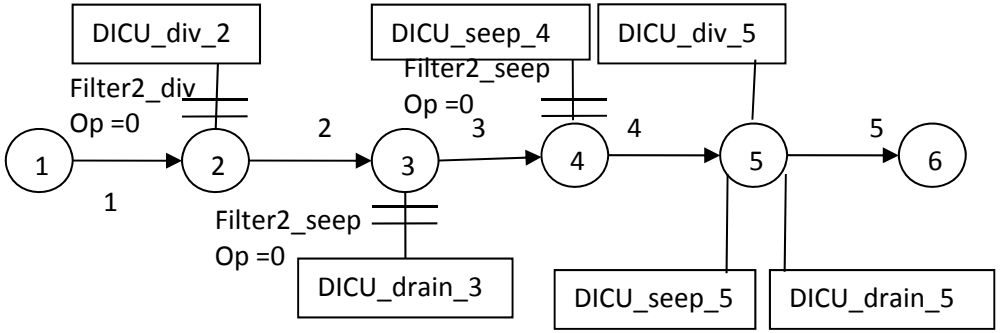
Implemented Location

- Node
- Waterbody: channel, reservoir, boundary (source Flow, downstream stage)









DSM2-PTM Input Block

```
PARTICLE_FILTER
NAME      NODE      AT_WB     FILLIN    FILE                    PATH
8_54      8         chan:54   last      constant                0
END

PARTICLE_FILTER
NAME      NODE   AT_WB      FILLIN    FILE                    PATH
343_366   343    chan:366   last      ./Filter_OP_GS.dss
    /HIST+FILTER/GS/FILTER_OP//IR-DECADE/DWR-BDO/
END
```

ptm_simple_sum.inp

DSM2-PTM Input Block (special case)

- Source flows directly from Reservoir

  e.g. DICU_BBID on Clifton Court Forebay

```
PARTICLE_RES_FILTER
NAME            RES_NAME    AT_WB                    FILLIN  FILE
   PATH
clfc_div_bbid   clifton_court  qext:dicu_div_bbid    last    ./ClfcFilterOp.dss
   /HIST+FILTER/CLFC_DIV_BBID/FILTER_OP//IR-DECADE/DWR-BDO/
END
```

Application Tests

Simple grid and condition

- Chain channels
- Tidal downstream stage
- 2-Branches Channels
- Reservoir
- Diversions (on node/reservoir)

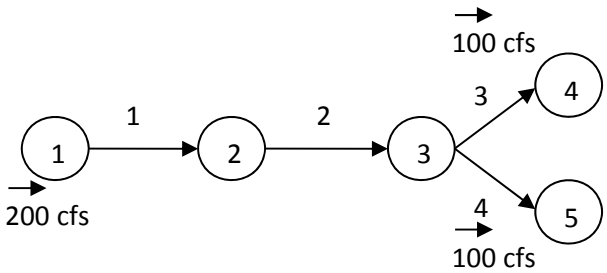
Delta historical

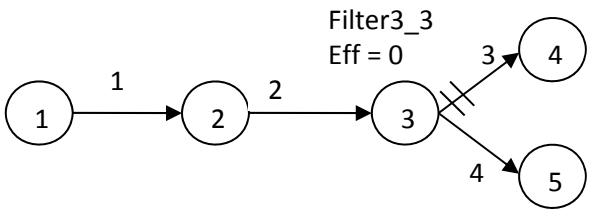
- HORB, GS
- DICU

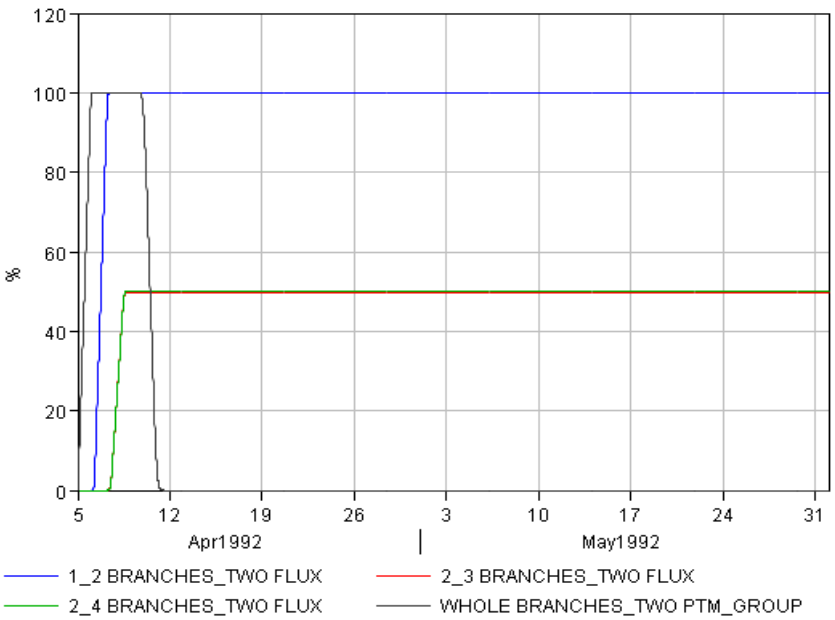
Regression Test, Input Error Checking Test

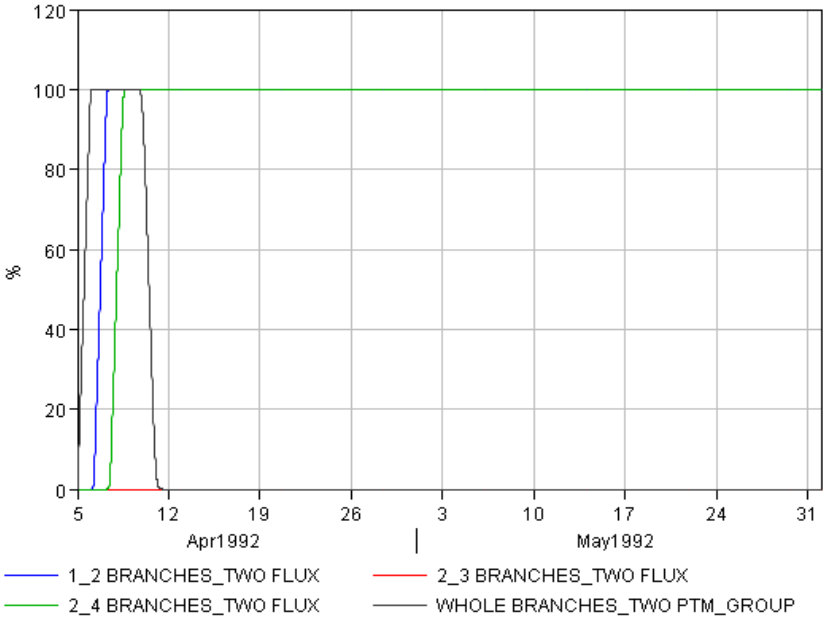
Application Tests

2-Branches Channels



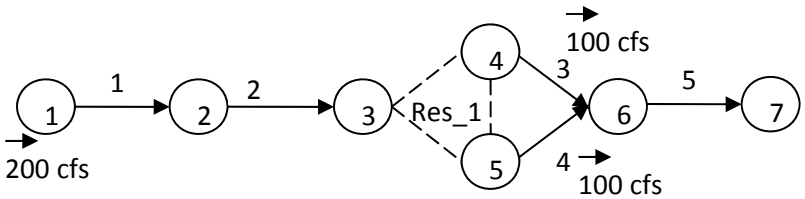


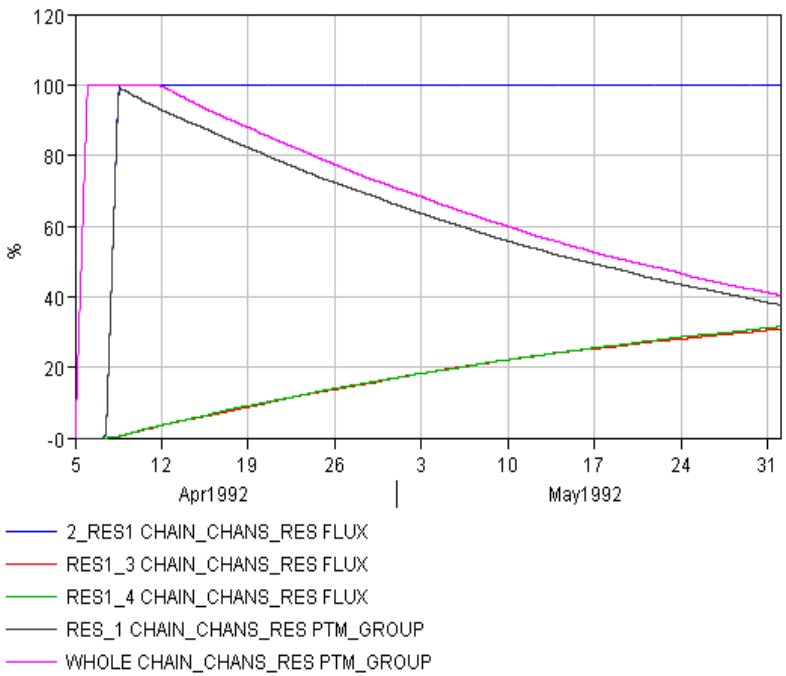


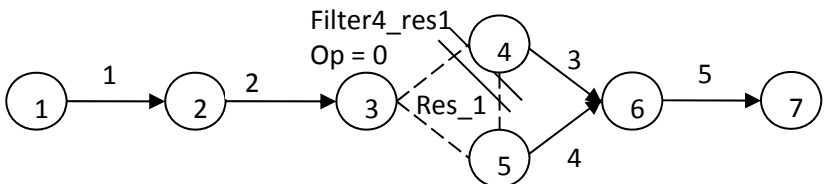


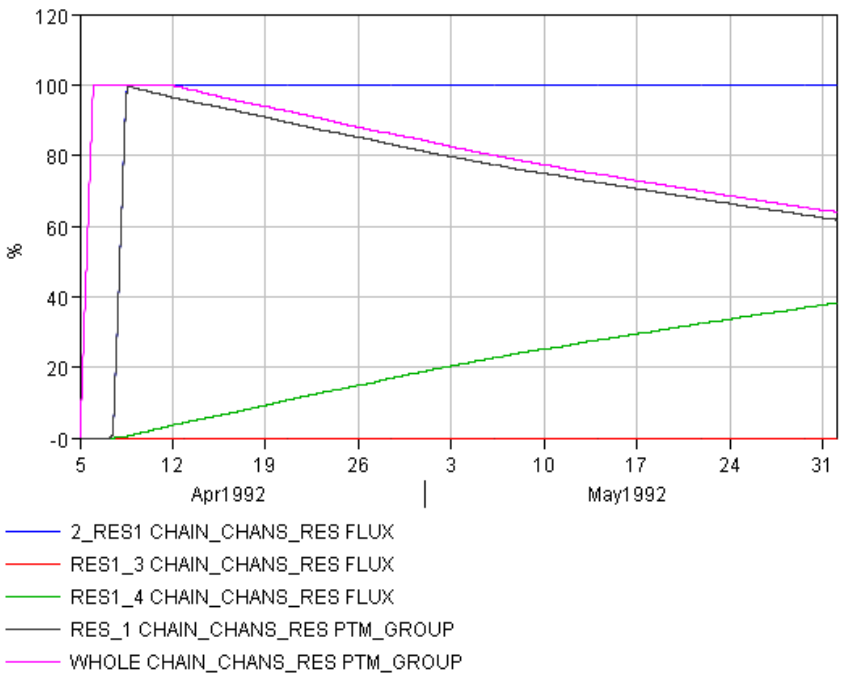
Application Tests

Reservoir





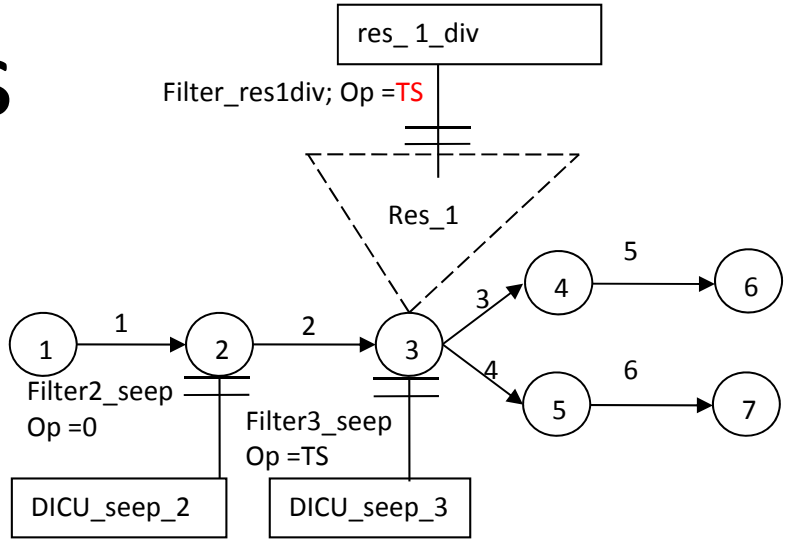


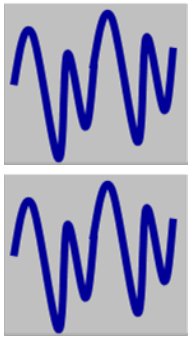


Application Tests

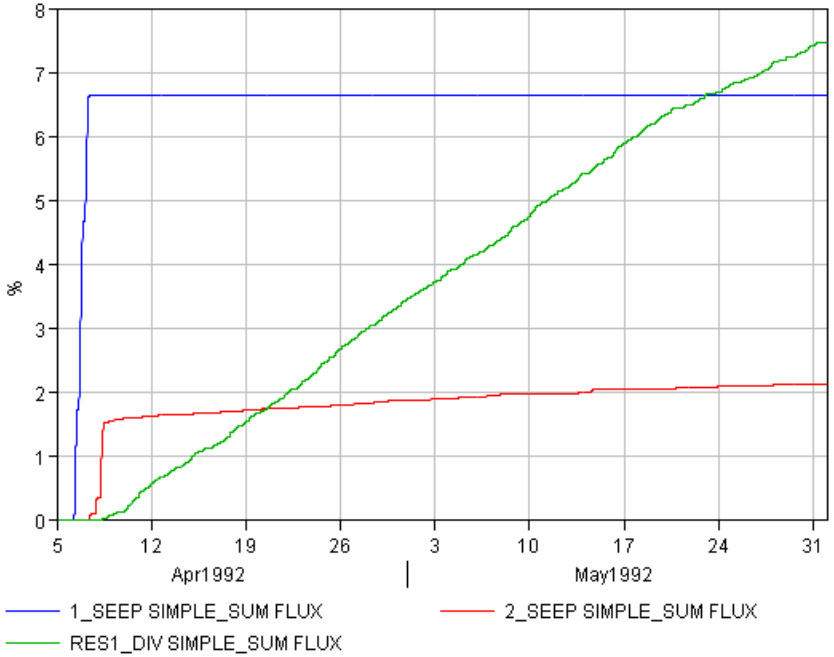
Diversions

- on node
- on reservoir

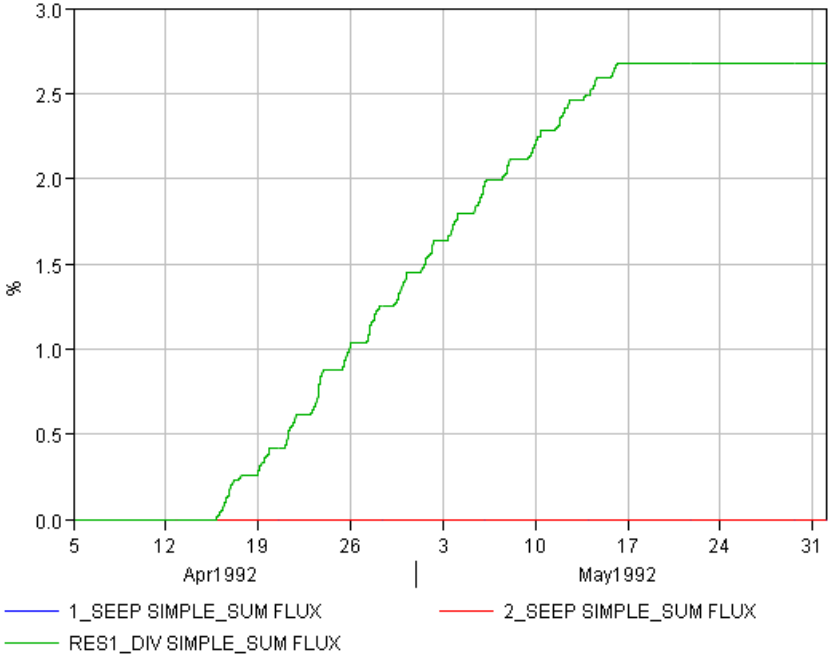




No Filter



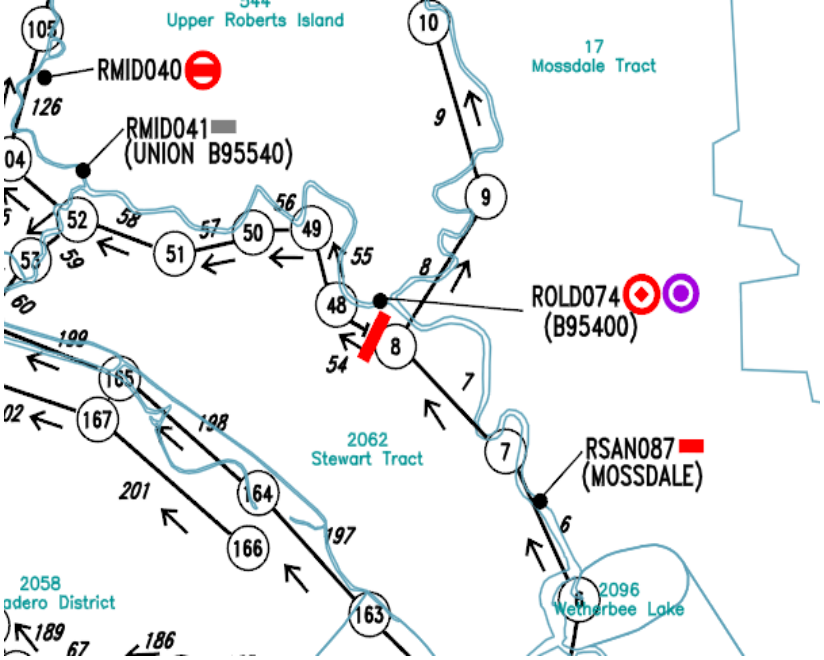
Filter-In

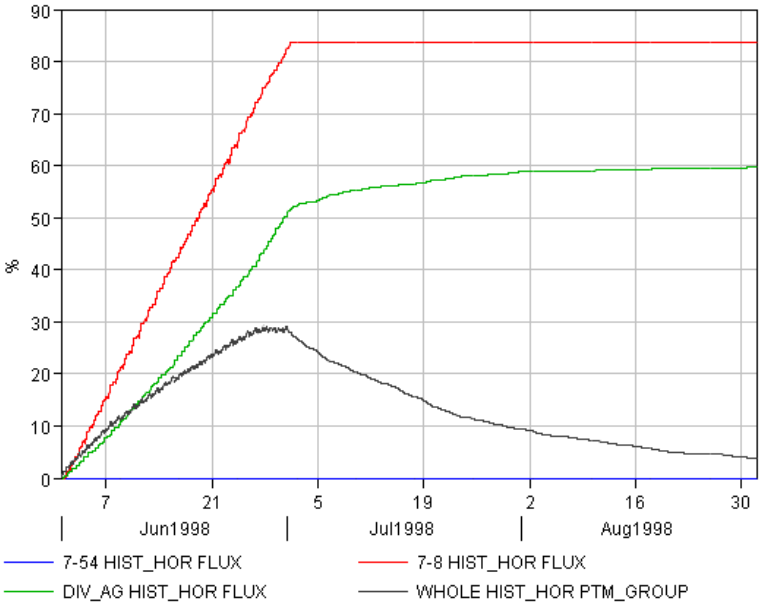


Application Tests

Delta historical

- Head of Old River
- Constant OP-Block





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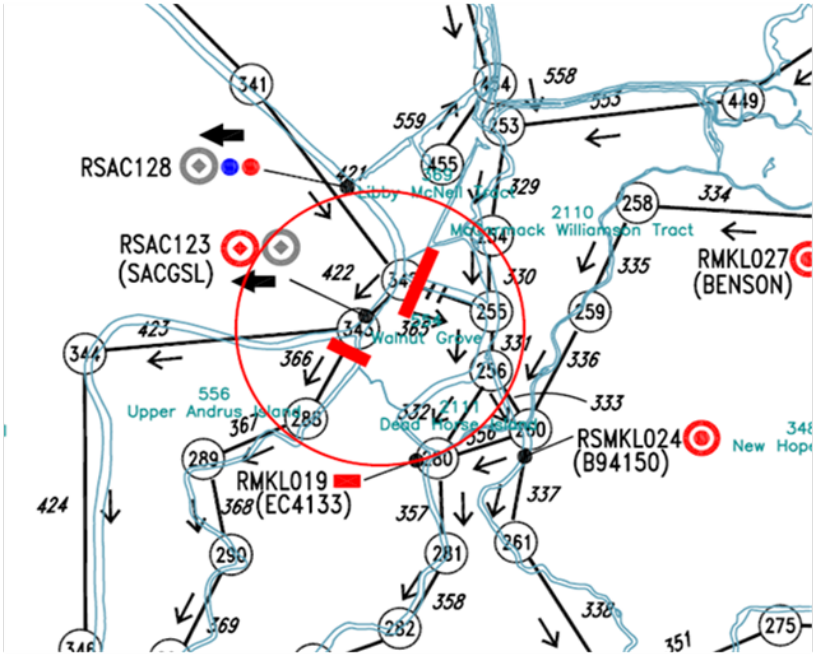
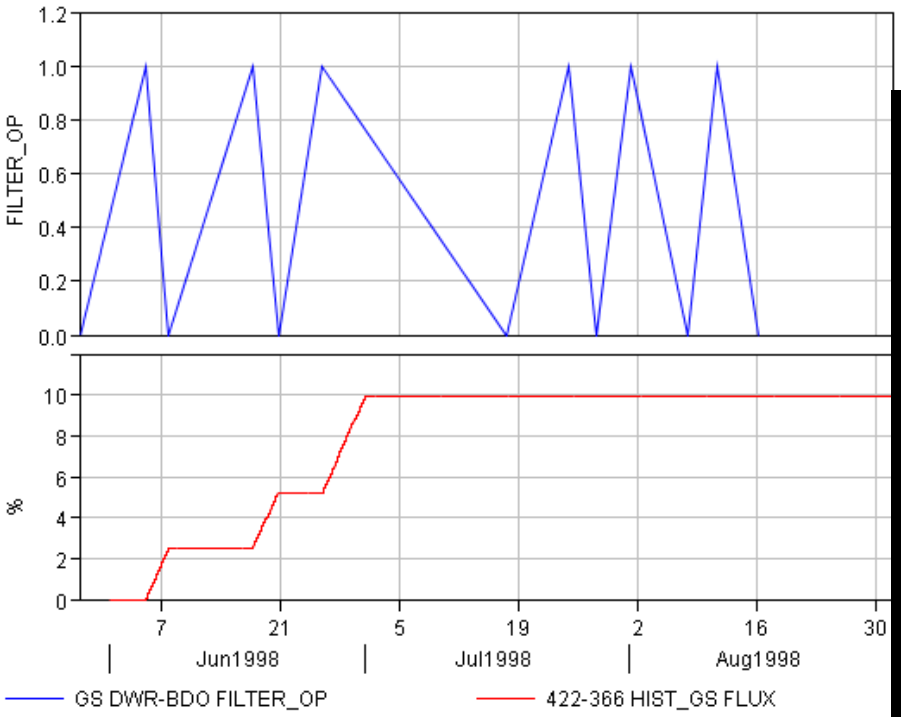
Application Tests

Delta historical

- Georgianna Slough
- Time-varying OP



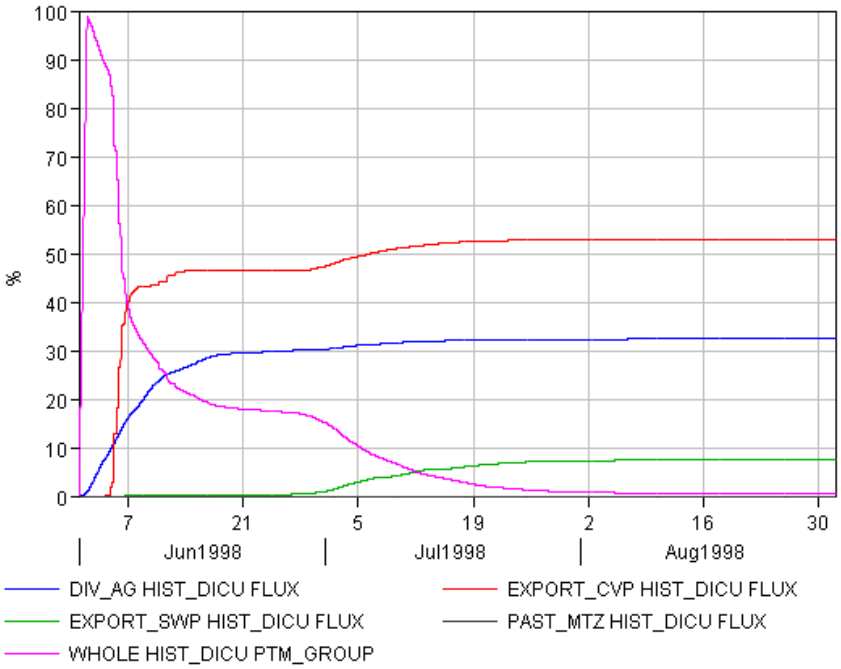


Application Tests

Delta historical

- Close all AG diversions & seepages

No Filter



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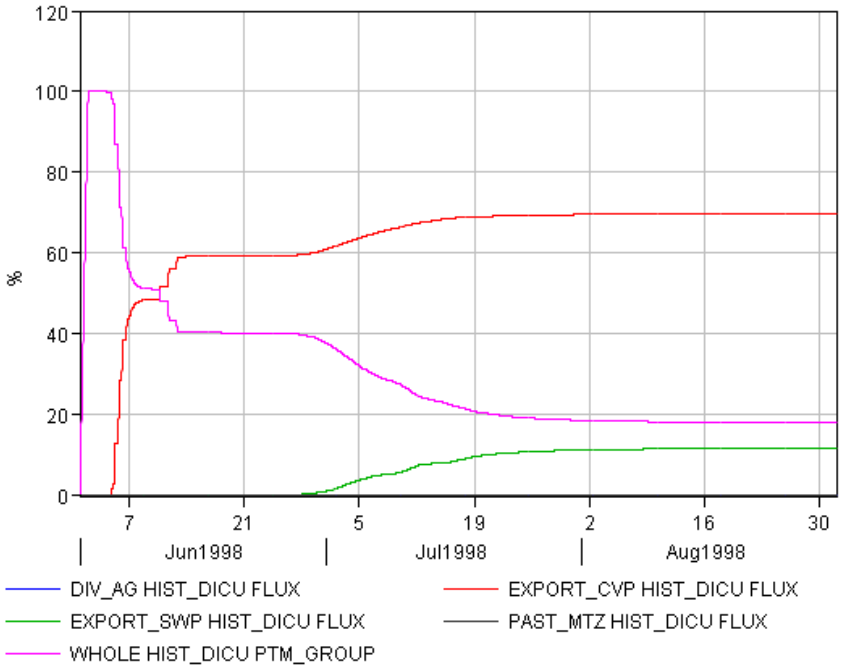

Questions & Comments