



## River and drain locations and calibration targets for Wood River Valley Groundwater Flow Model

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Preliminary data presented to Modeling Technical Advisory Committee

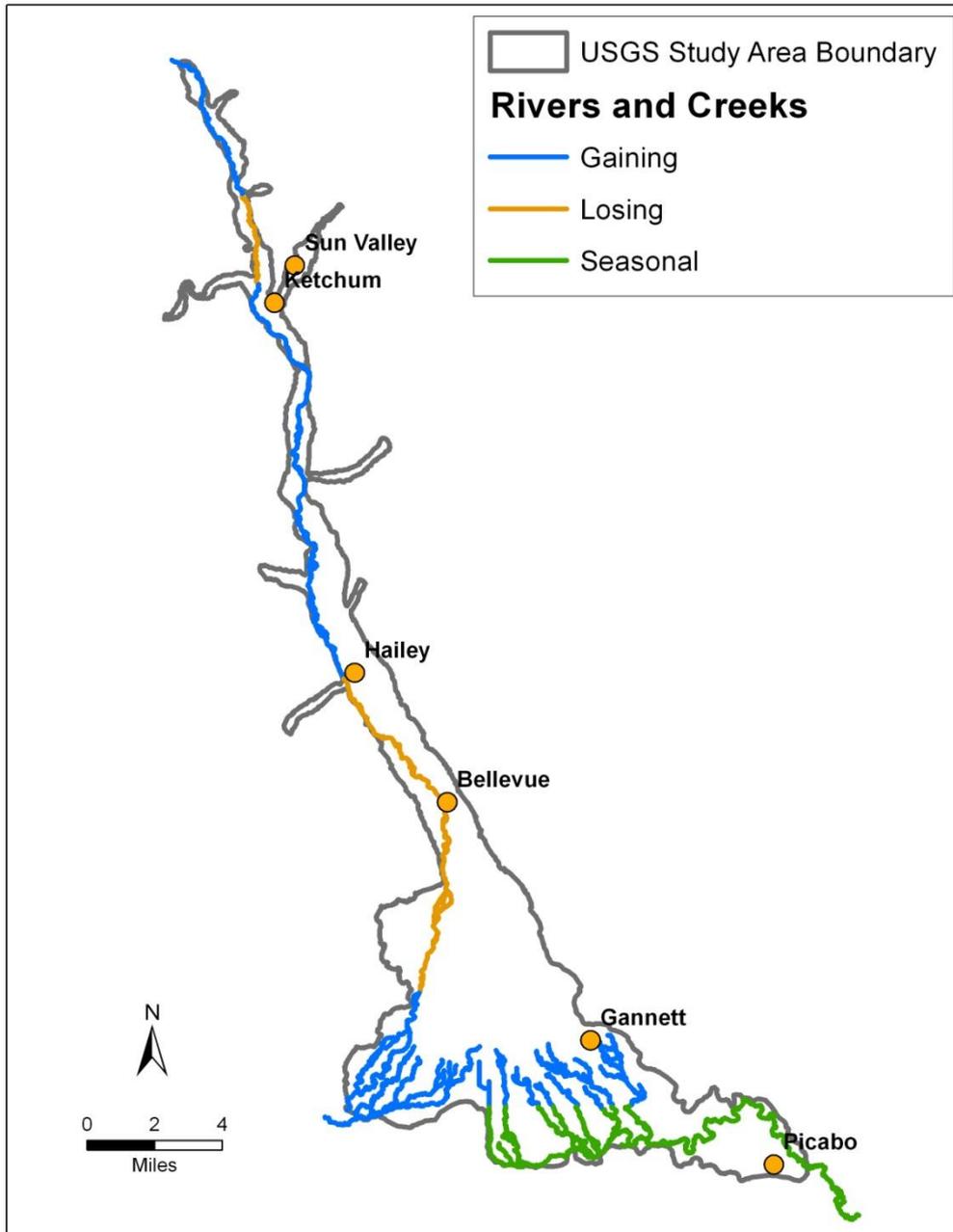
Jennifer Sukow, P.E., P.G.

February 6, 2014

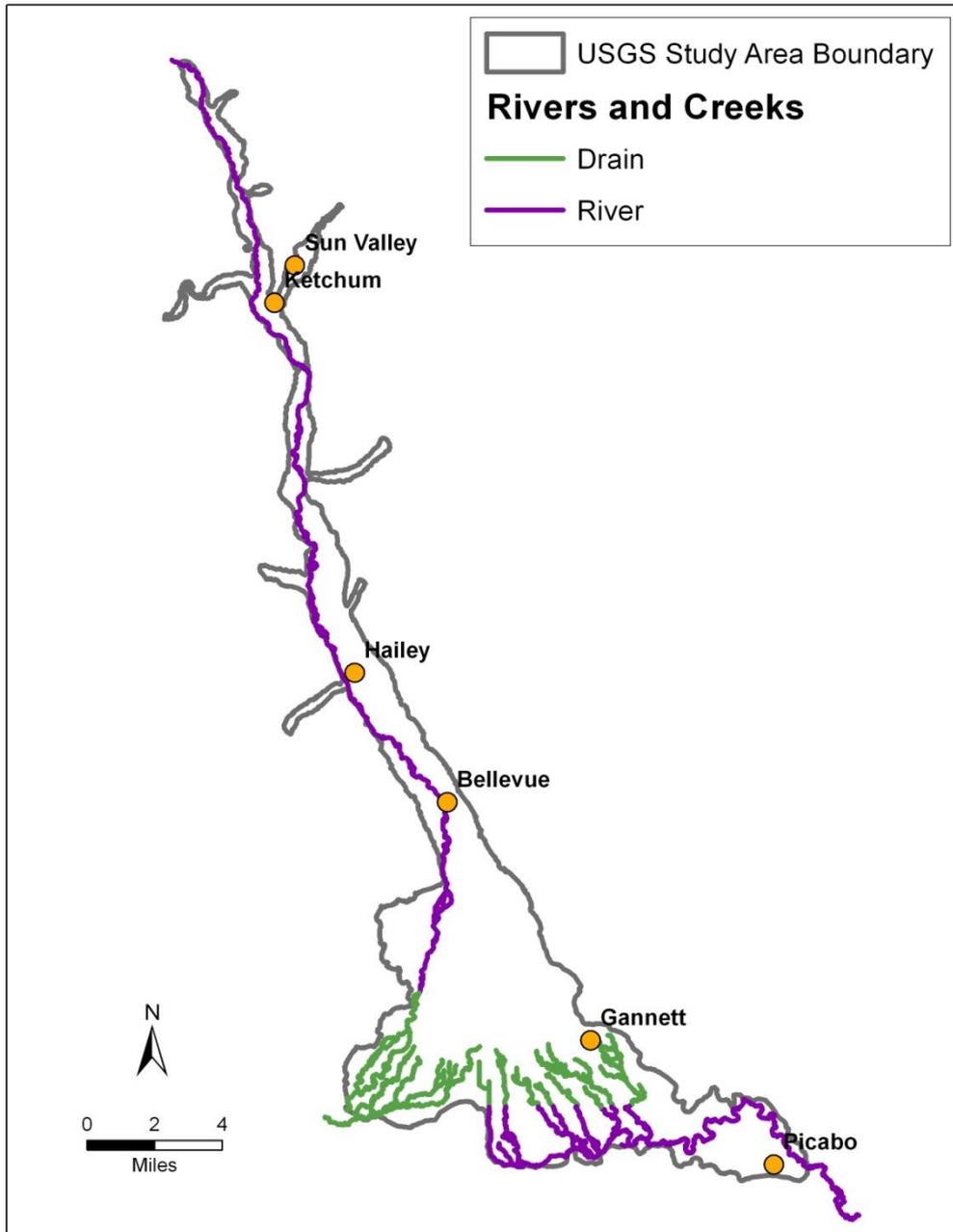


# Overview

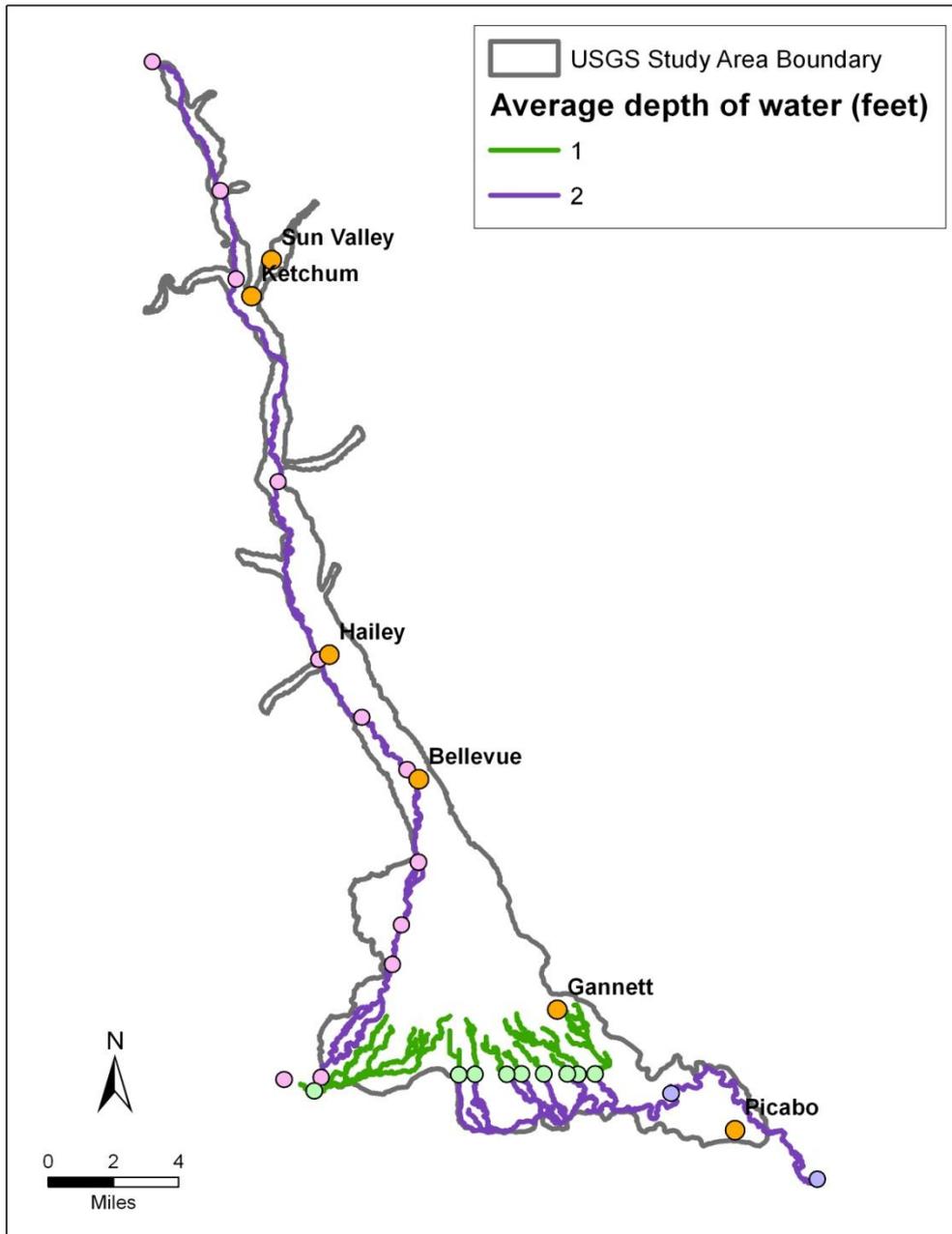
- Gaining and losing river reaches
- Assignment of reaches to MODFLOW river and drain files
- Calibration targets



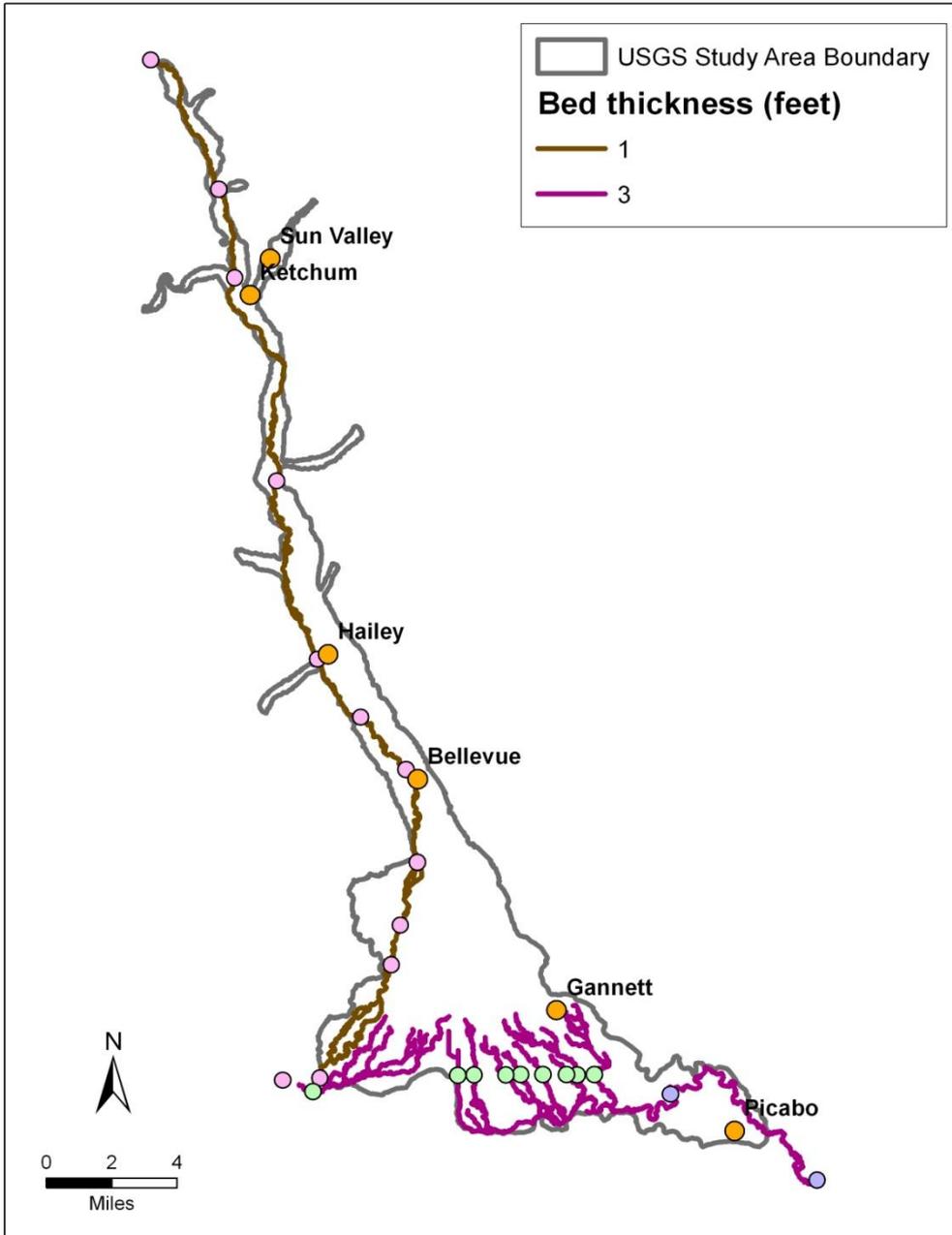
- Gaining and losing reaches
- USGS seepage survey (Aug 2012, Oct 2012, Mar 2013)
- Joe Moreland (USGS) seepage survey of Silver Creek (May, June, & Sept 1975)



- River file
  - Big Wood above Wood River Ranch
  - Silver Creek and tributaries below Hwy 20
- Drain file
  - Big Wood between Wood River Ranch and Stanton Crossing
  - Willow Creek and tributaries
  - Silver Creek tributaries above Hwy 20



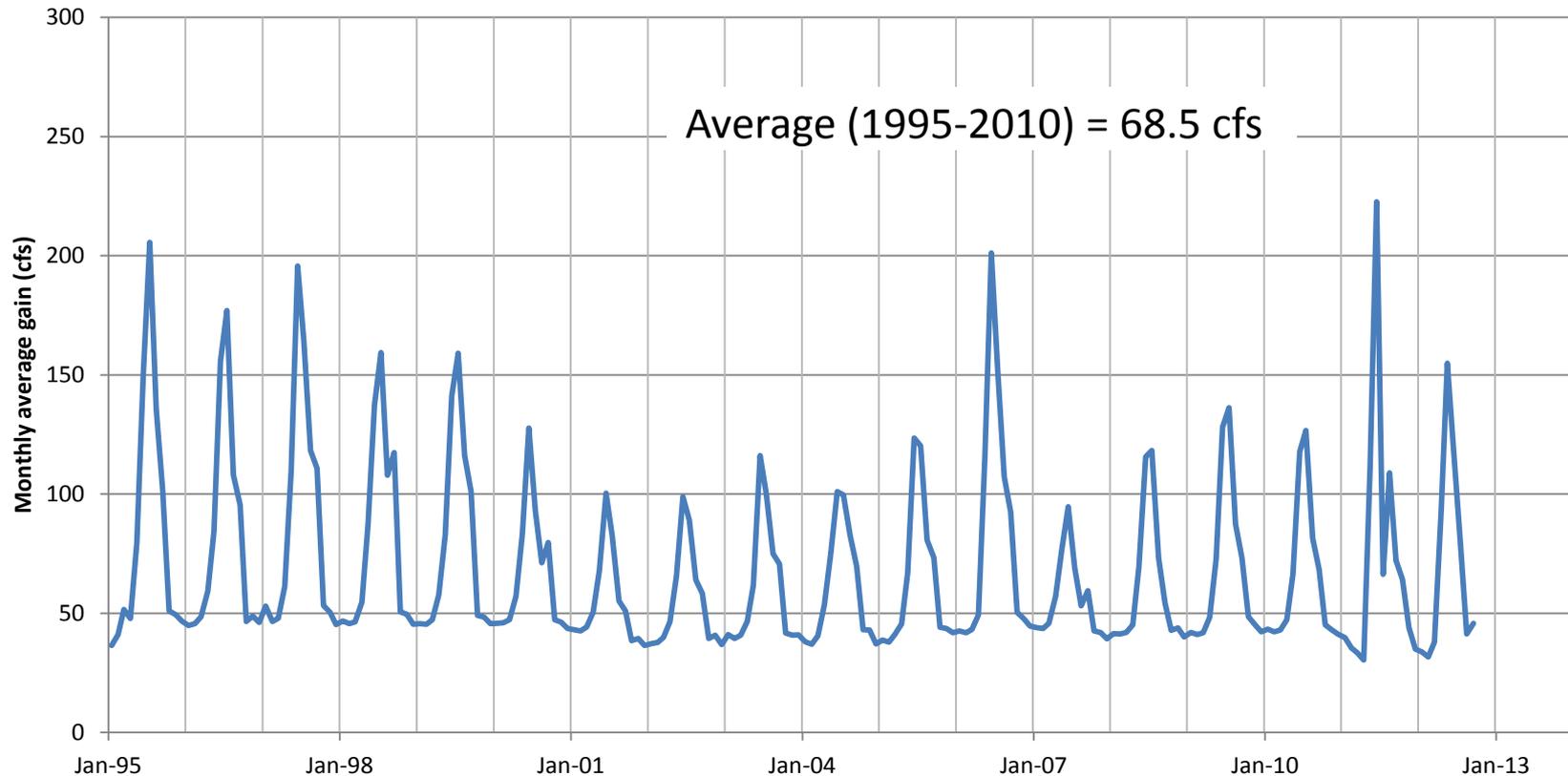
- Stage and rbot elevations for MODFLOW river file, drain elevations for MODFLOW drain file
  - NED elevations
  - Depth of water
  - Bed thickness



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# Transient Calibration Targets

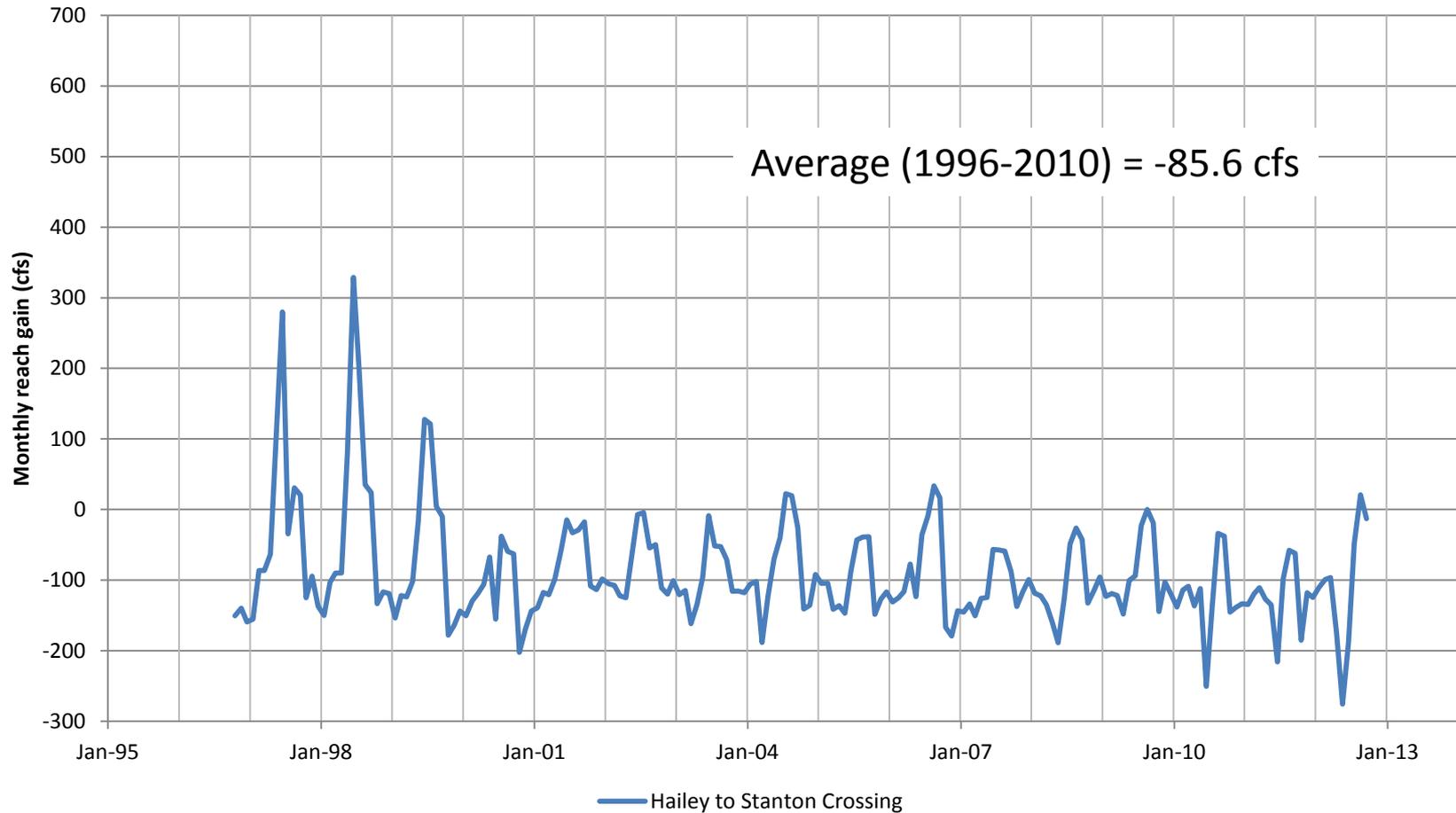
Nr Ketchum to Hailey reach gain



- Note: Surface water inflow from ungaged tributaries was estimated by differencing TSPROC quick response flow at Hailey gage and TSPROC quick response flow at gaged tributaries (Watermark Numerical Computing, 2008, PEST Surface Water Utilities, <http://www.pesthomepage.org/Downloads.php#hdr3>)

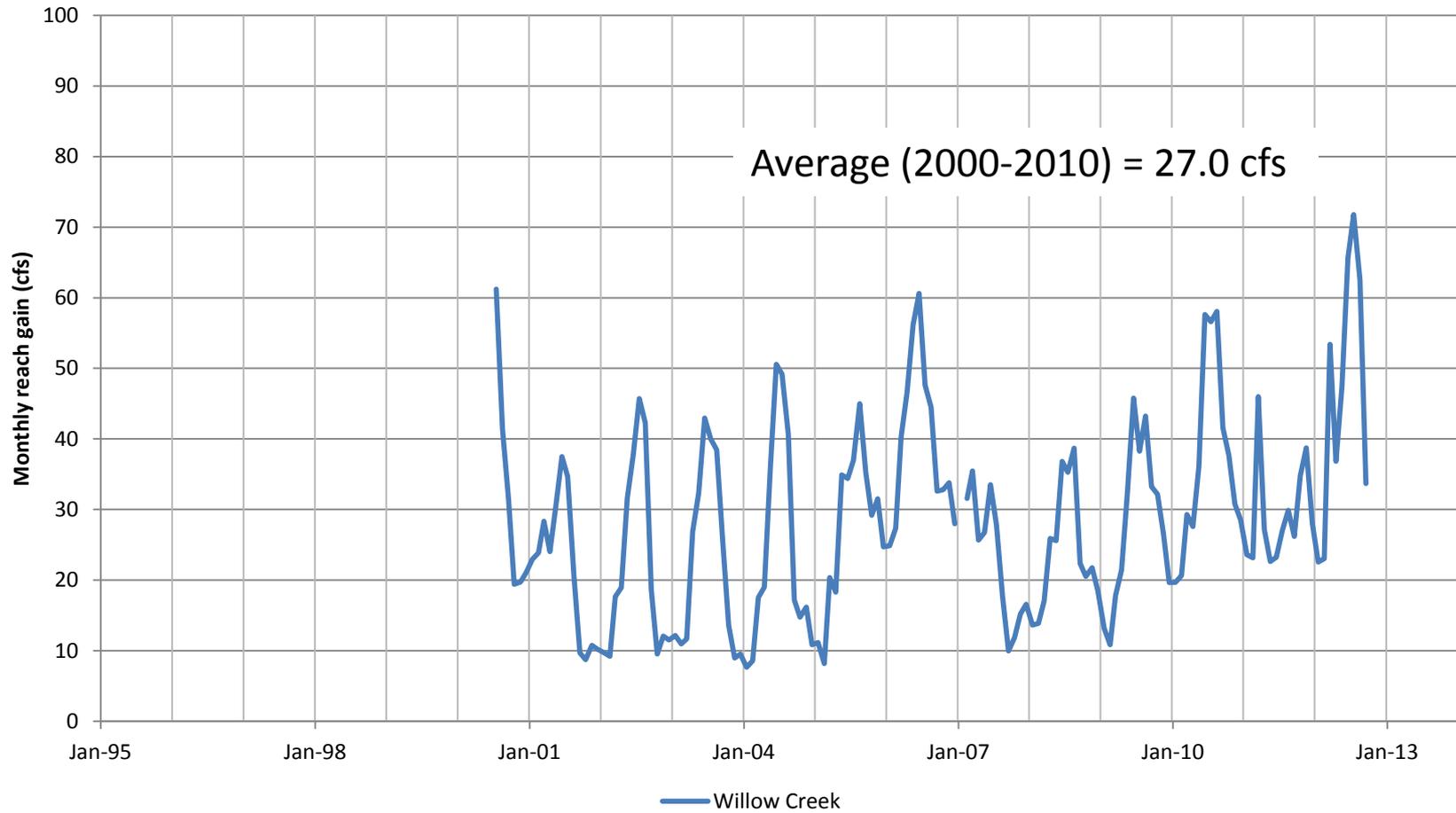
# Transient Calibration Targets

## Hailey to Stanton Crossing



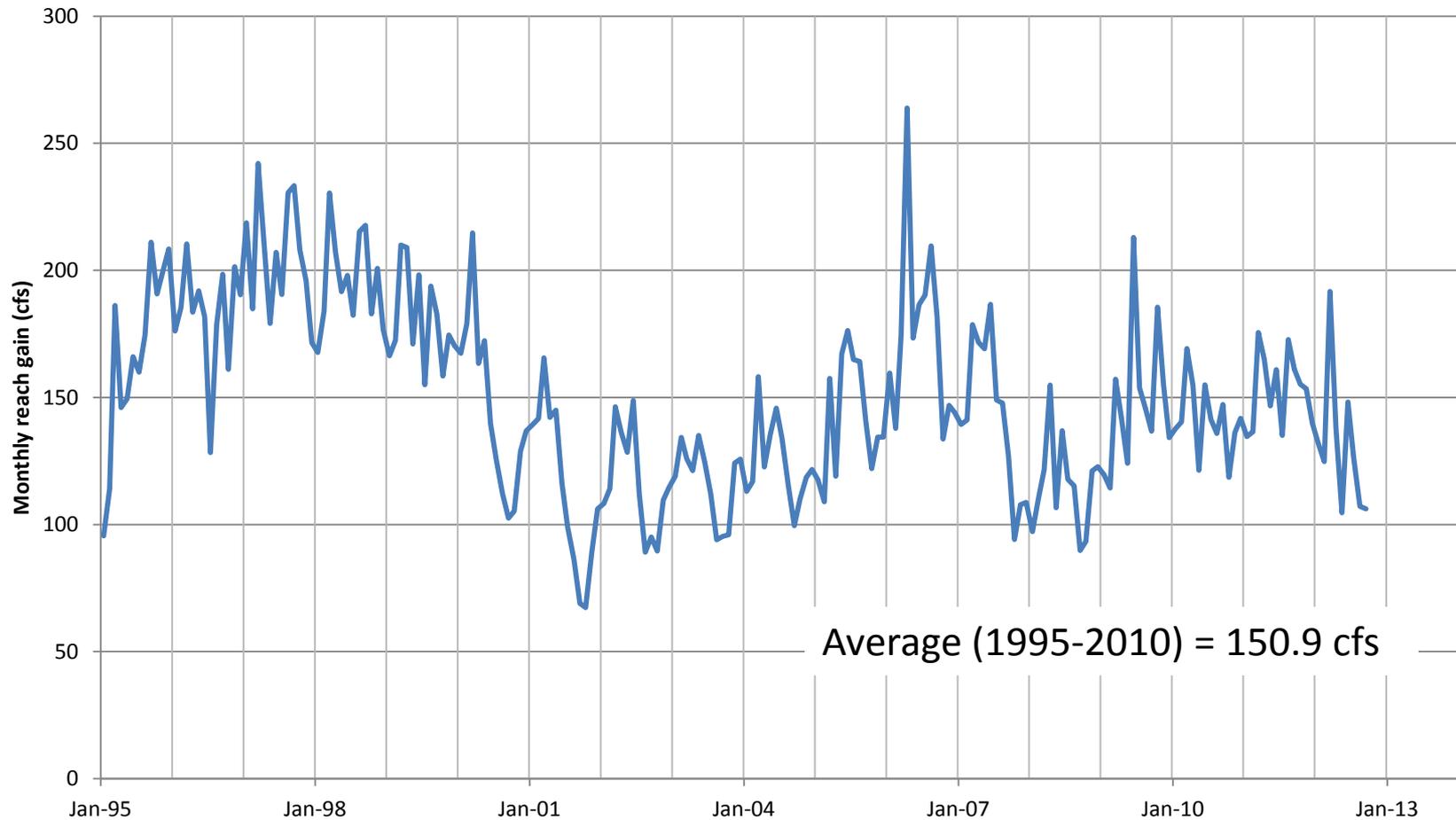
# Transient Calibration Targets

## Willow Creek



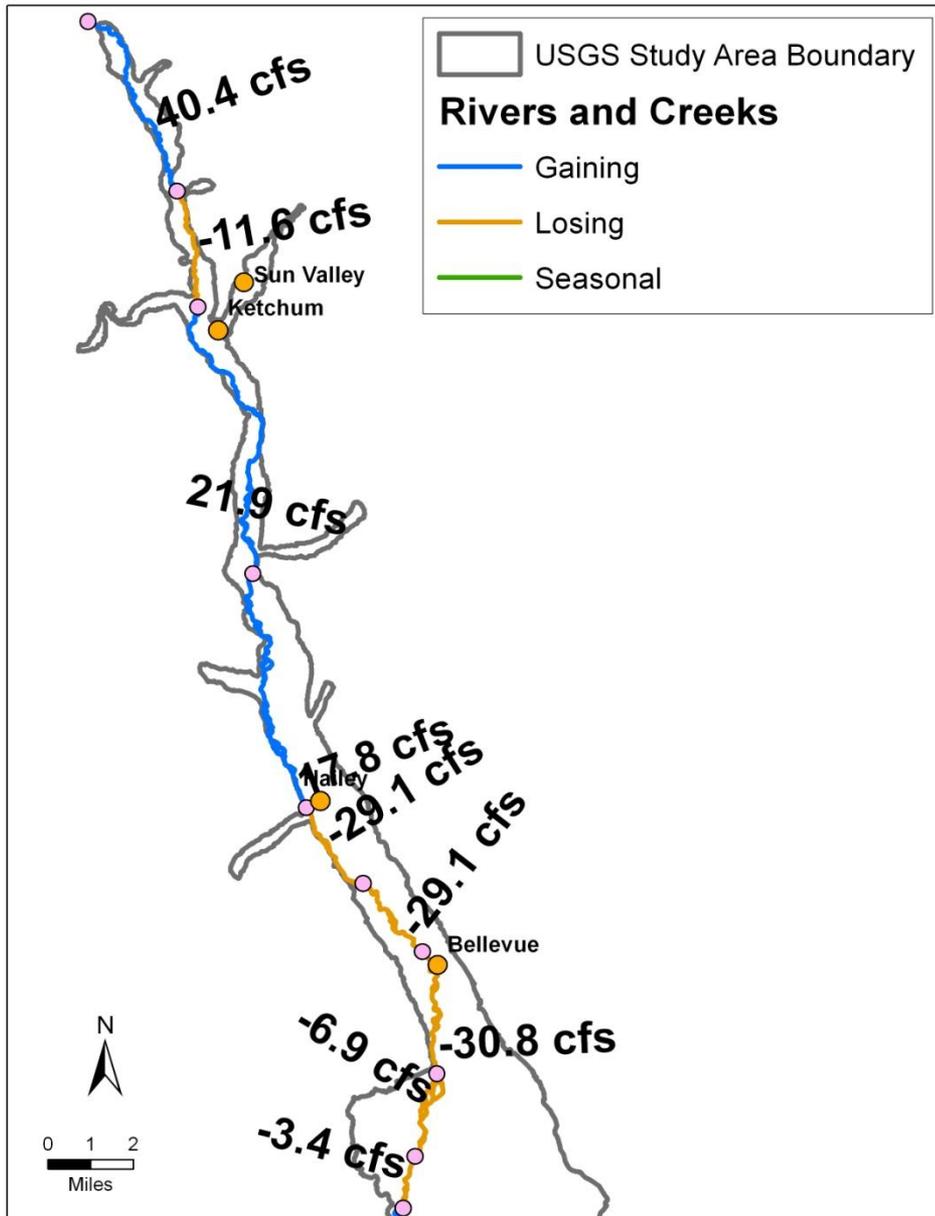
# Transient Calibration Targets

## Spring creeks above Sportsman Access

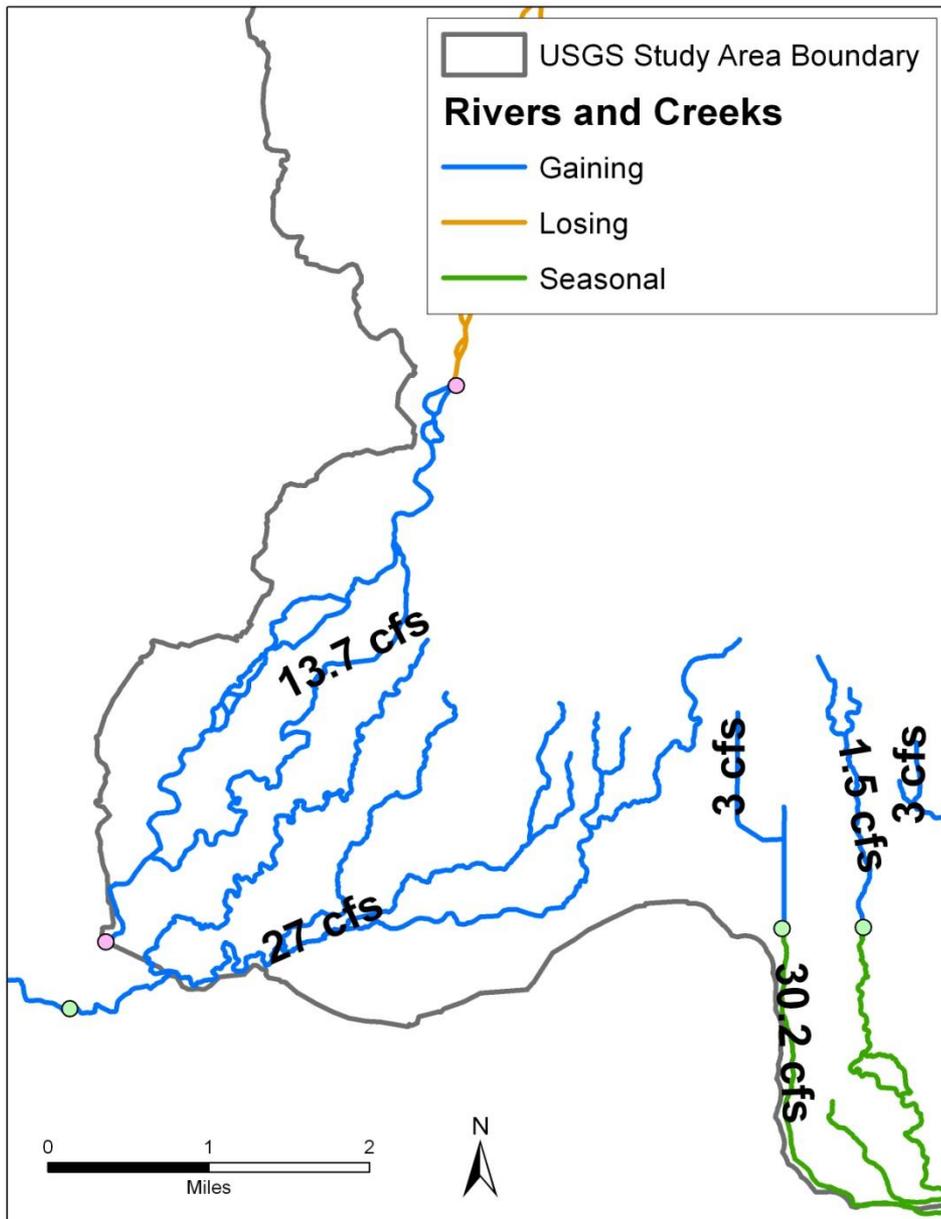


# Average Calibration Targets for Subreaches

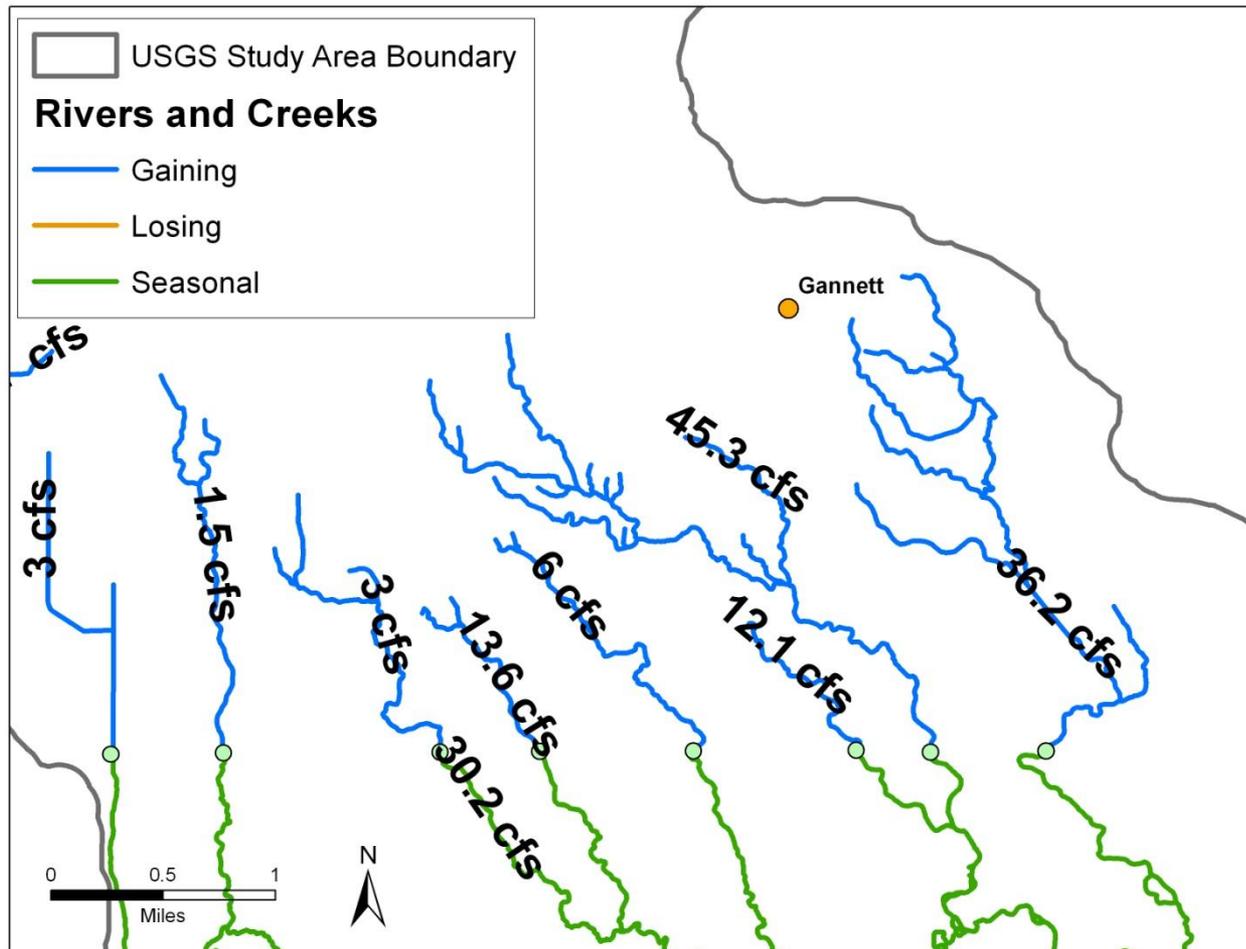
- Gains and losses during Aug 2012, Oct 2012, and Mar 2013 were calculated from the USGS seepage survey data. (Diversion and exchange well data from Watermaster were used where not measured by the USGS).
- Ratios between the subreach gain and the gaged reach gain were calculated for each seepage survey event, then averaged
- Average ratio for each subreach was multiplied by the average gain in the gaged reach to estimate an average gain in the subreach
- Examples:
  - Loving Creek abv Hwy 20 averaged 0.30 of the reach gains to spring creeks abv the Silver Creek Sportsman Access gage, so the estimated average reach gain target for 1995-2010 is 45.3 cfs ( $0.30 \times 150.9$  cfs)
  - Hulen Road to Ketchum averaged -0.17 of the Nr Ketchum to Hailey reach gain, so the estimated average reach gain target for 1995-2010 is -11.6 cfs ( $-0.17 \times 68.5$  cfs)



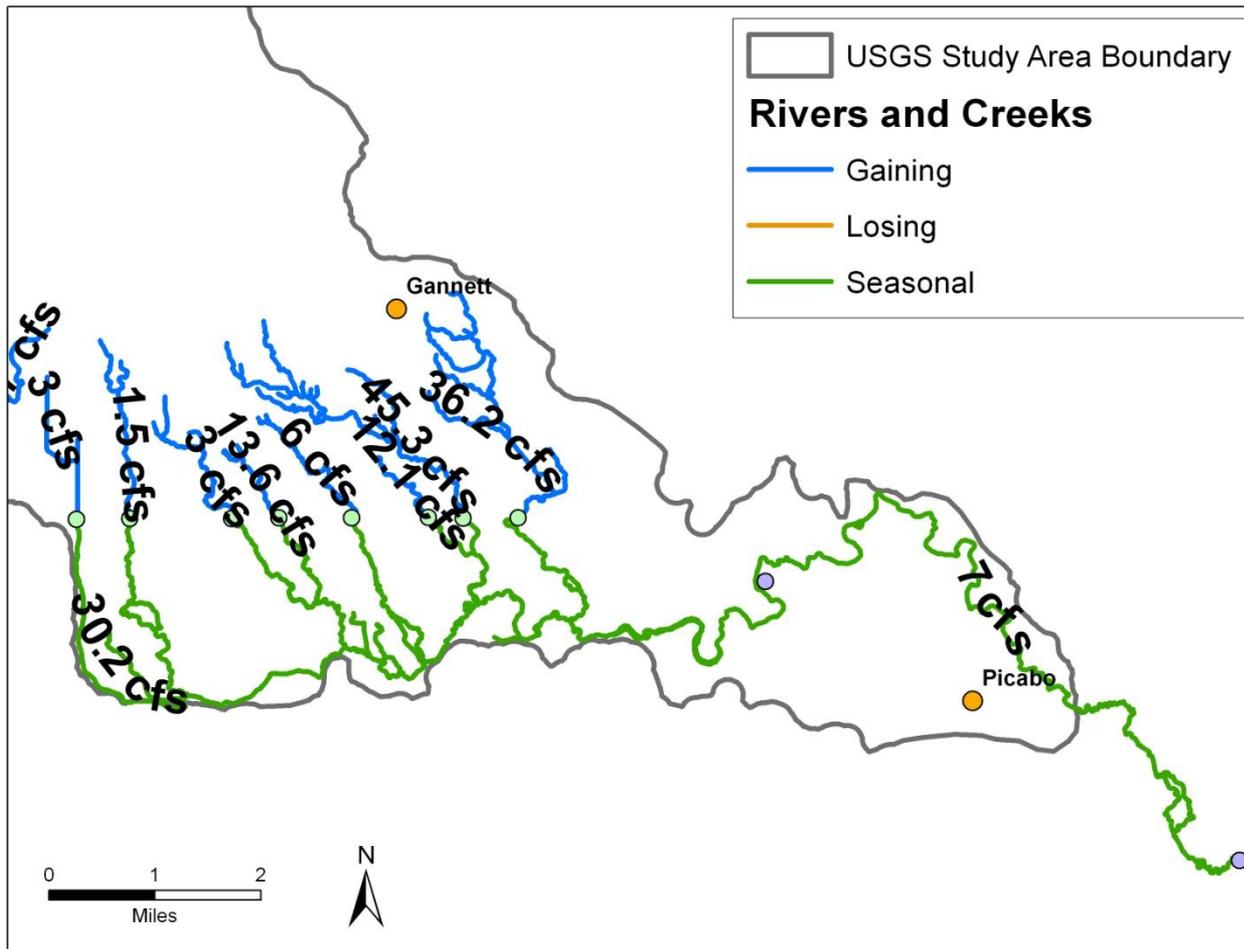
- Average subreach gain/loss targets for Big Wood River above Wood River Ranch



- Average subreach gain target for Big Wood River below Wood River Ranch



- Average subreach gain targets for spring creeks above Highway 20



- Average subreach gain targets for Silver Creek