



Current monitoring plan going forward

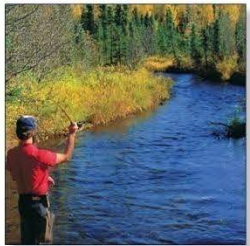
Presented by Allan Wylie, IDWR

Date December 3, 2015



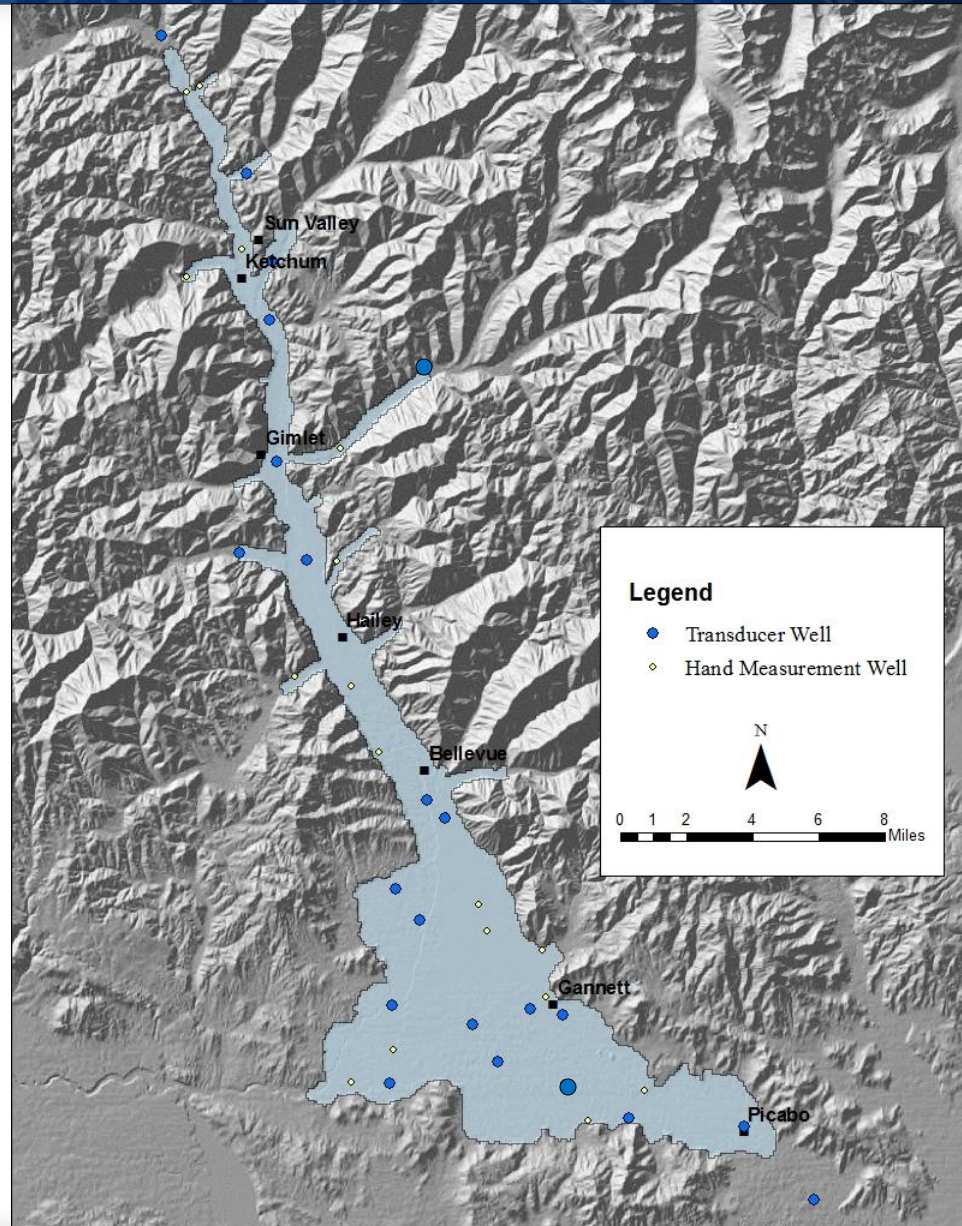
Outline

- A few recommendations resulting from analysis of the model calibration
- Look at where model is sensitive to water level observations
- Recommending some changes to water level network
- Recommending changes in stream gaging



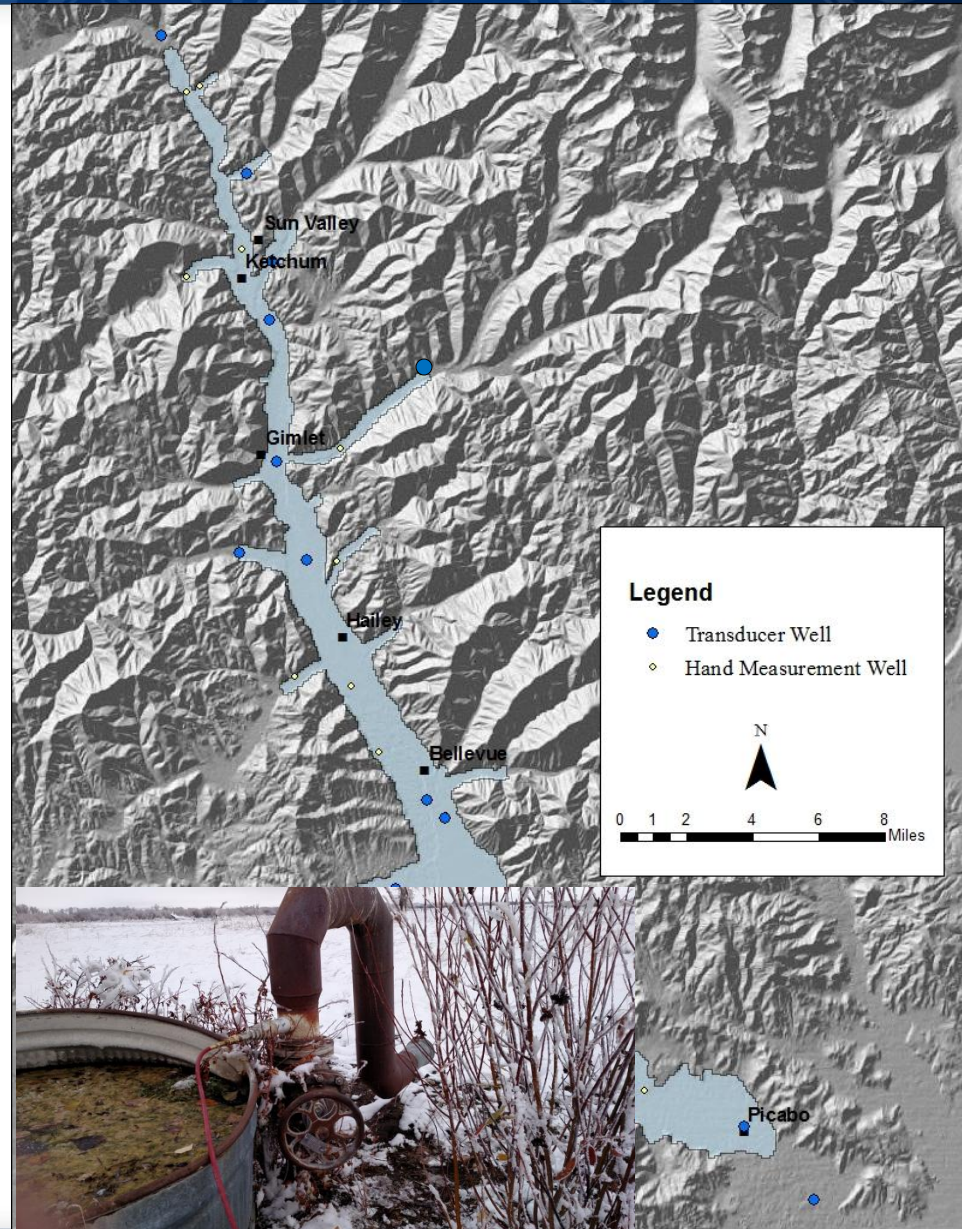
Existing Observation Well Network

- 22 wells with transducers
- 19 wells hand measured twice a year
 - March and November



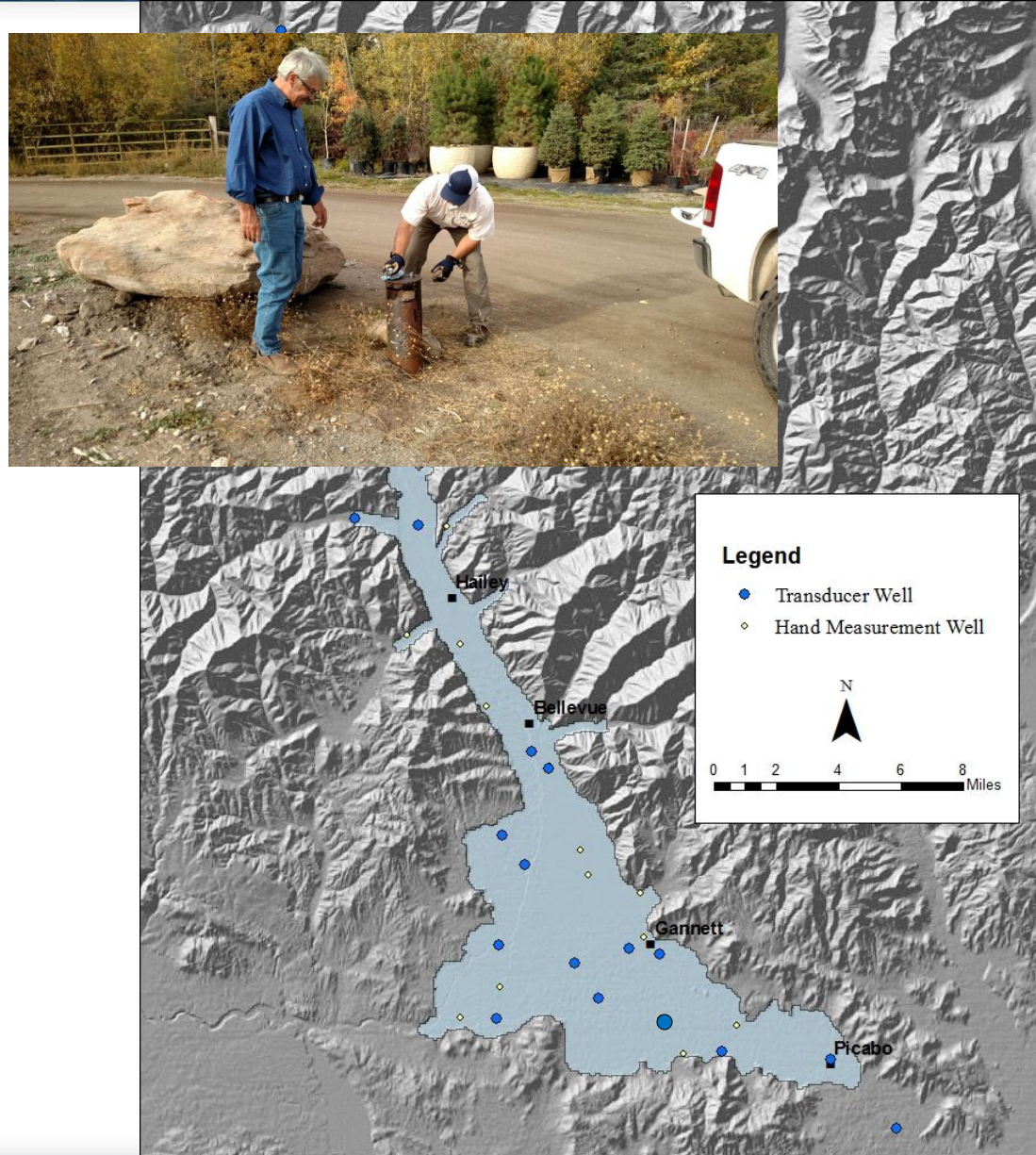
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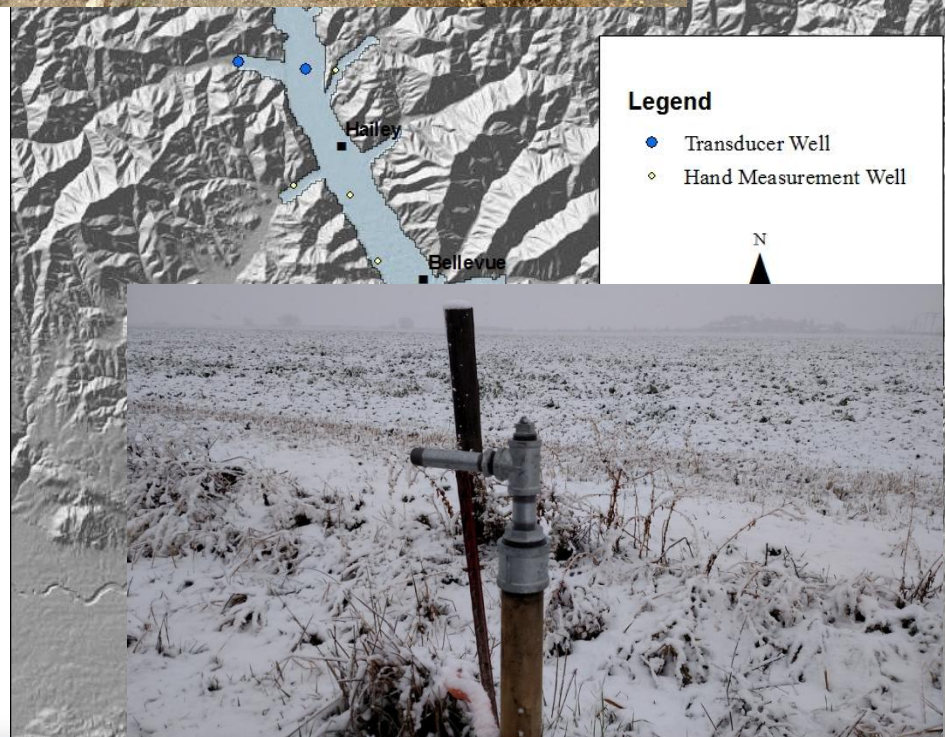
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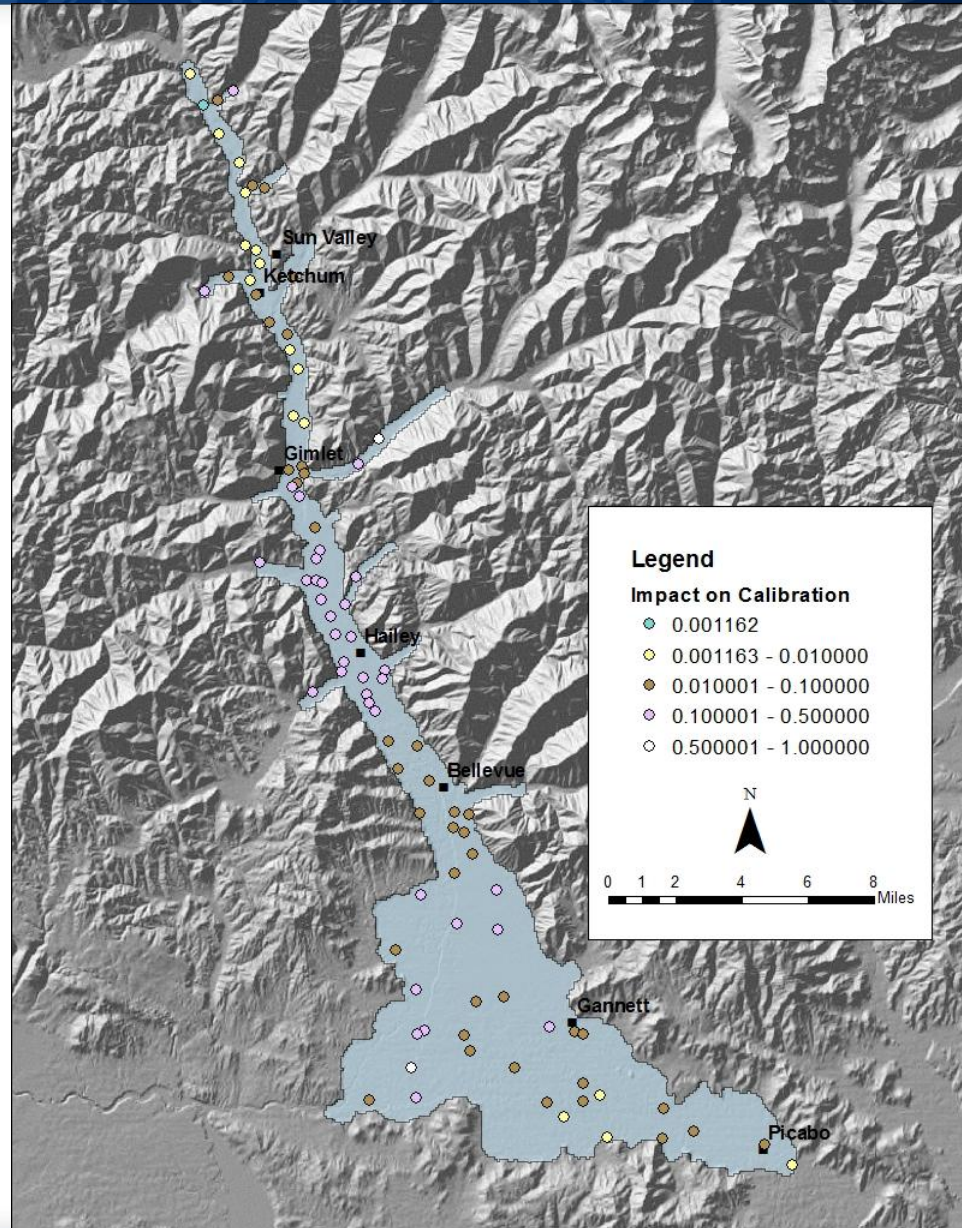
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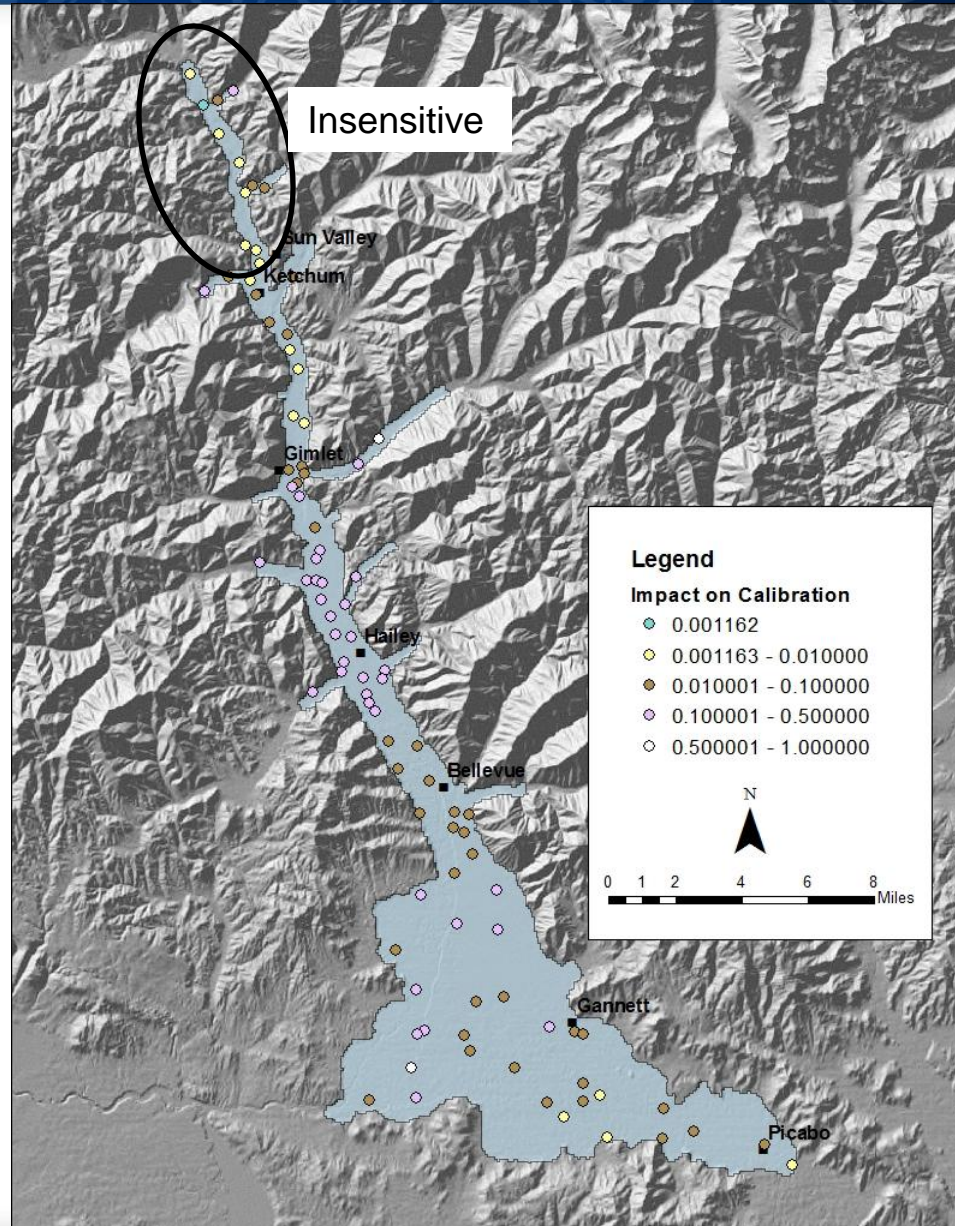
Sensitivity of the calibration to water level observations

- Sensitivity – measure of how much attention PEST is obliged to pay to the observation
- 94 Observation Wells used in 2006 synoptic
- Map “sensitivity” of Observation Wells
- Use average sensitivity for wells with more than one observation



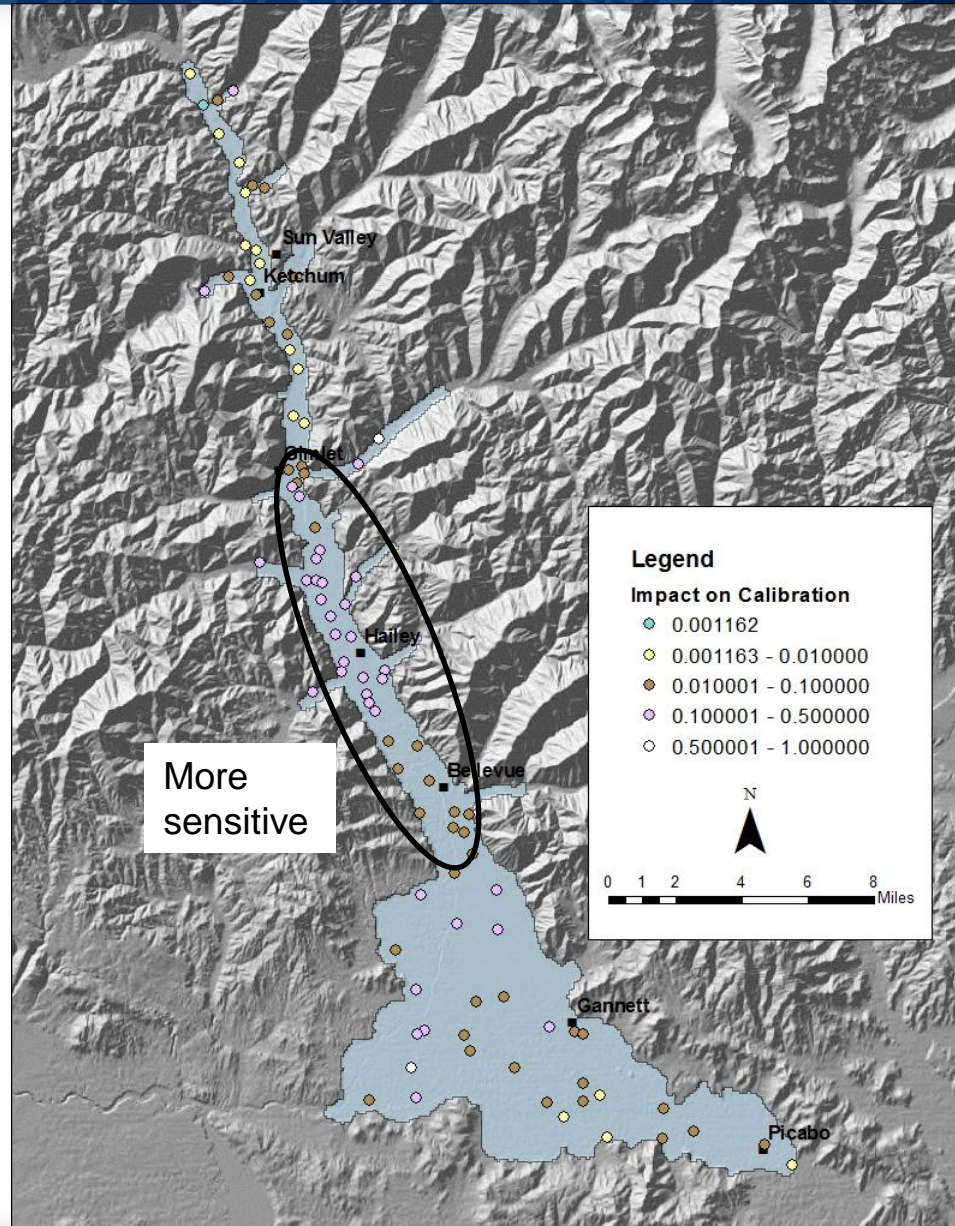
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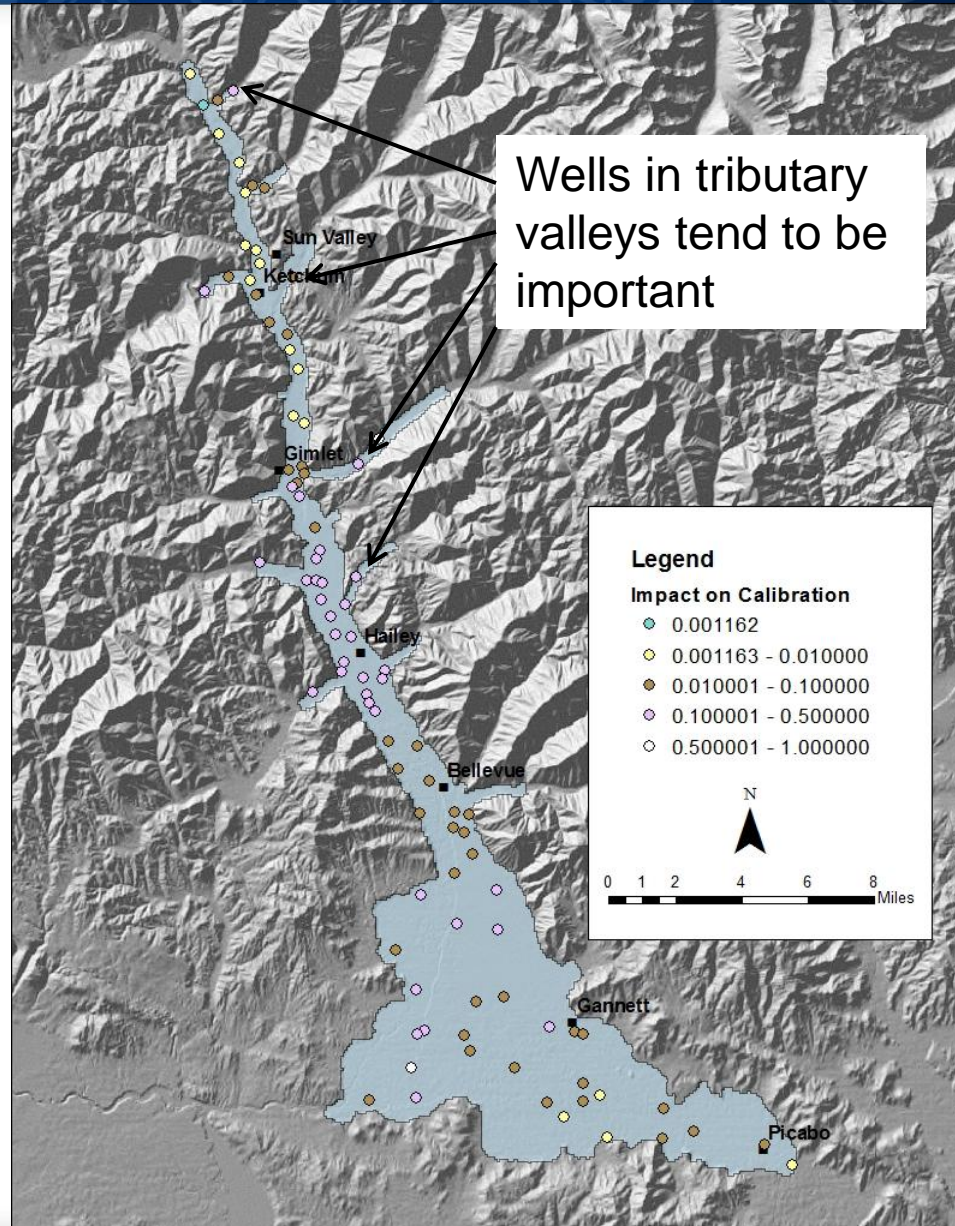
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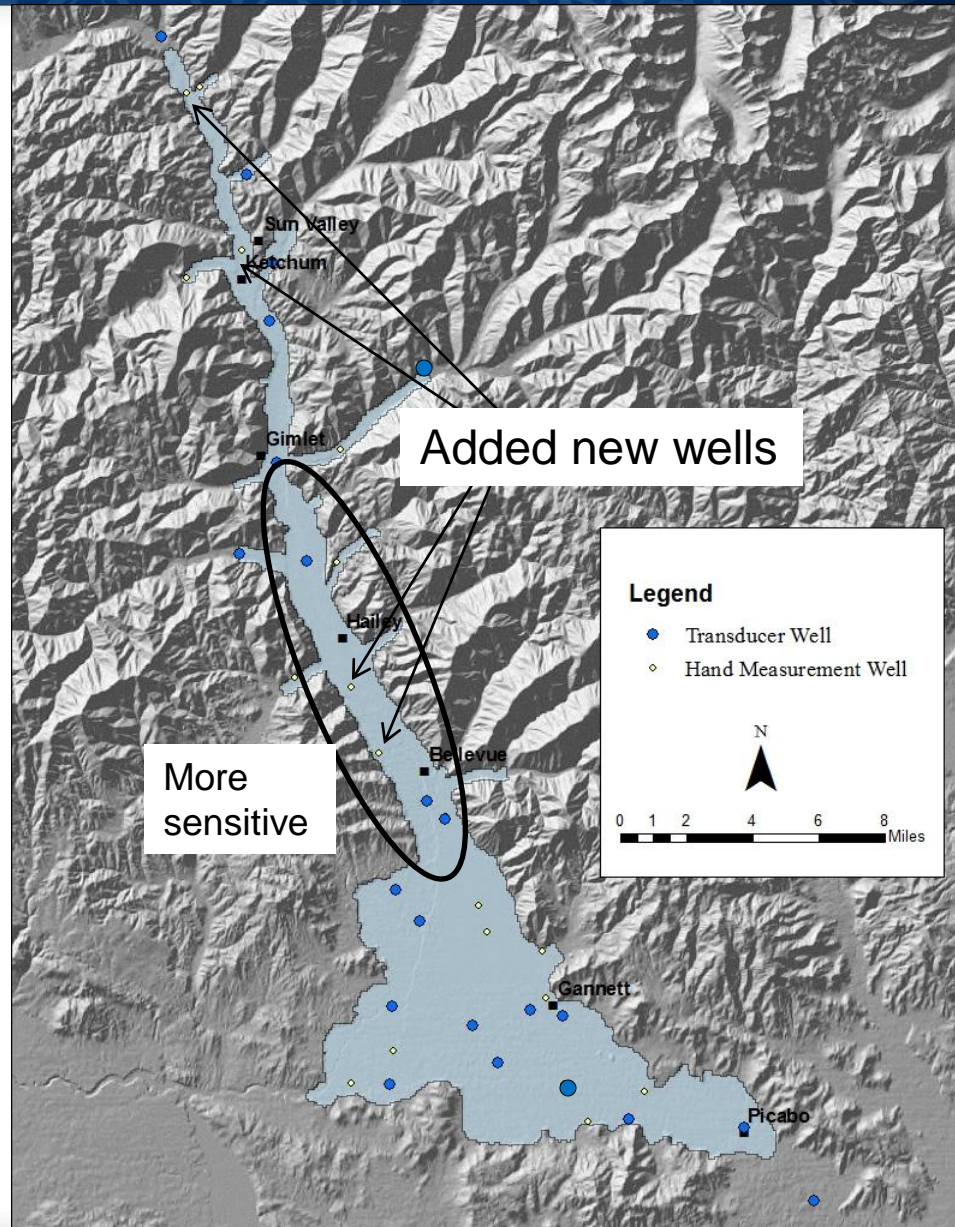
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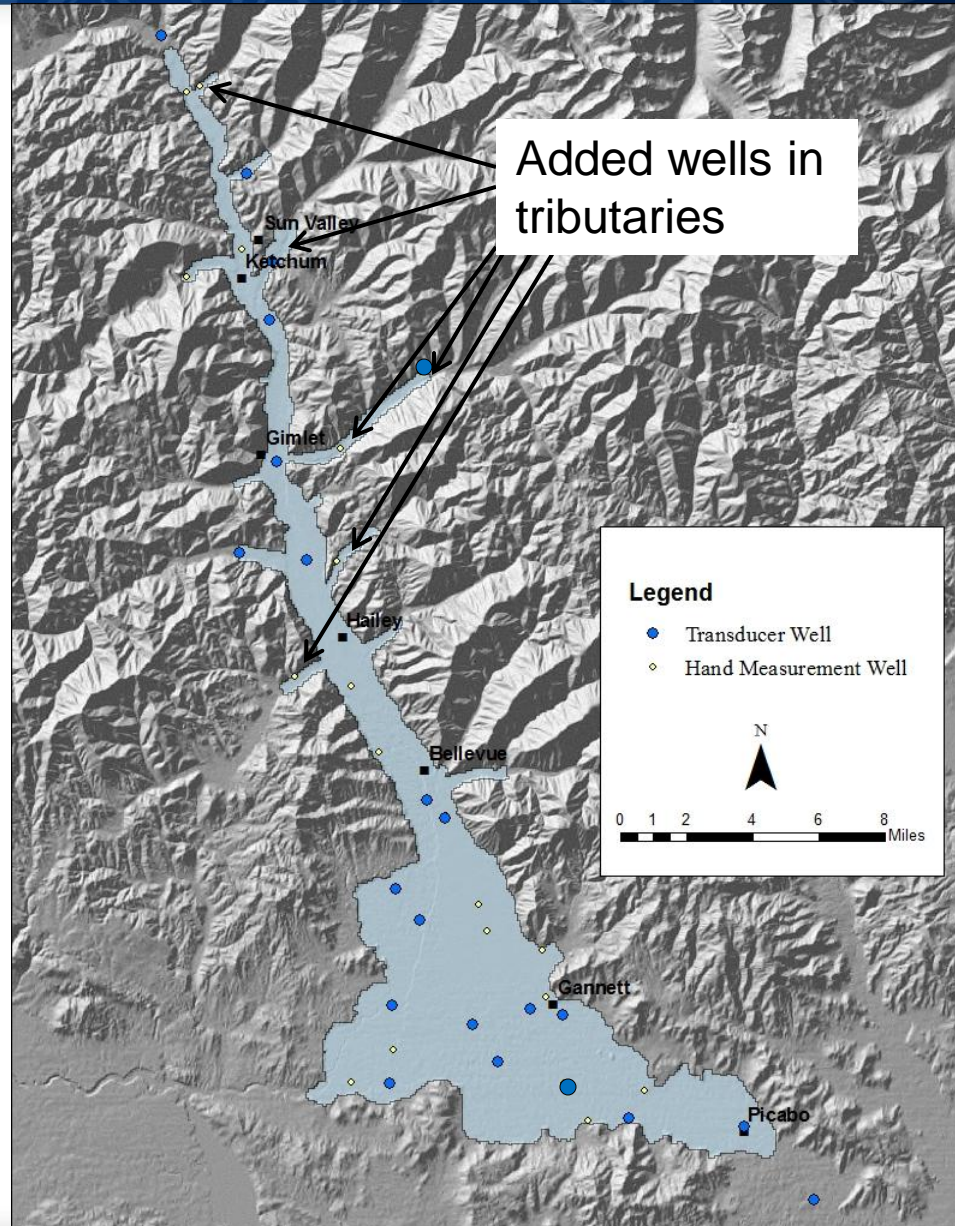
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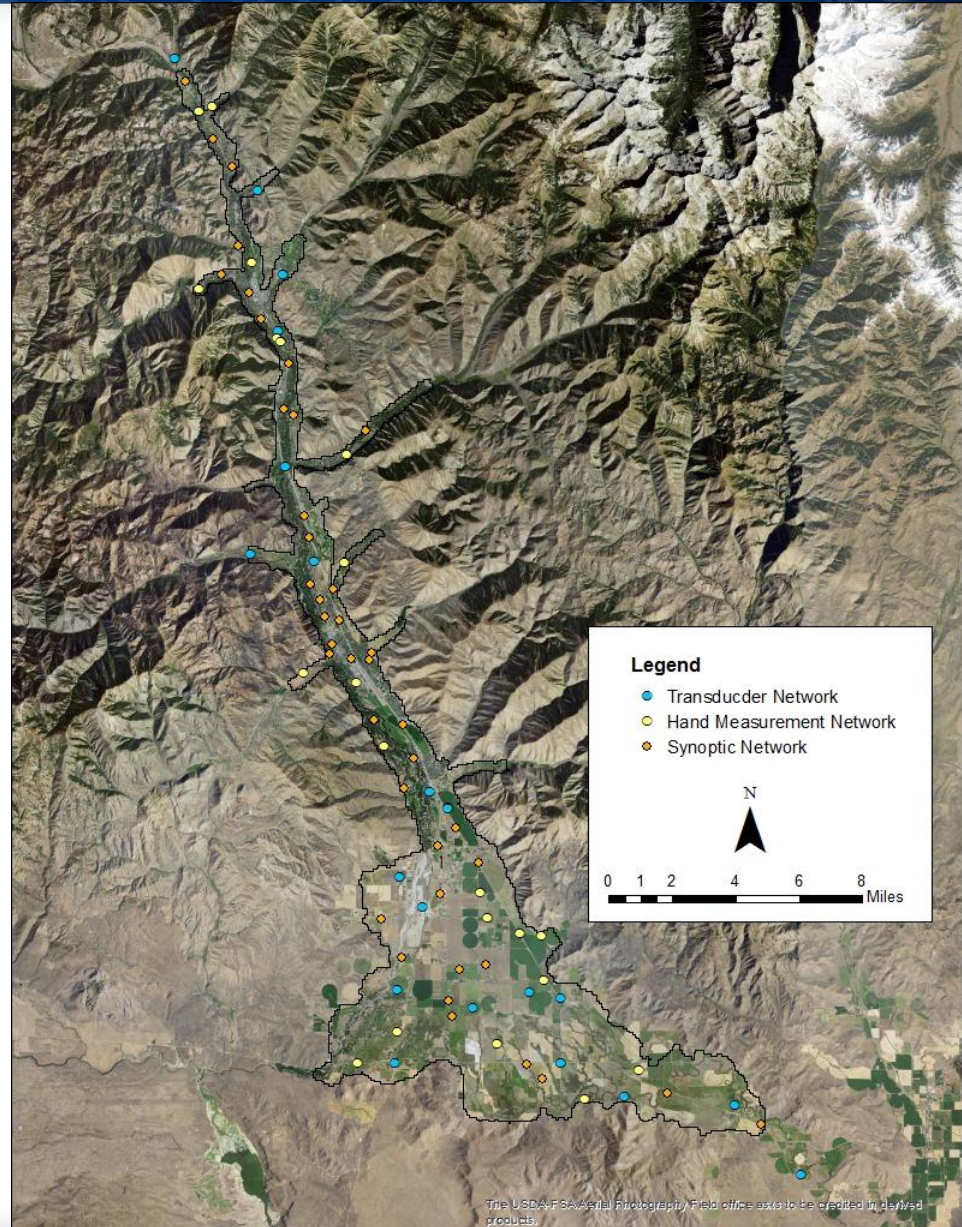
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Proposed Synoptic Well Network

- ~ every five years
- Coordinate with ESPA synoptic
- Around 80-90 wells in synoptic
 - 22 transducer wells
 - 19 wells hand measured twice a year
 - 40-50 synoptic wells hand measured every 5 years or so

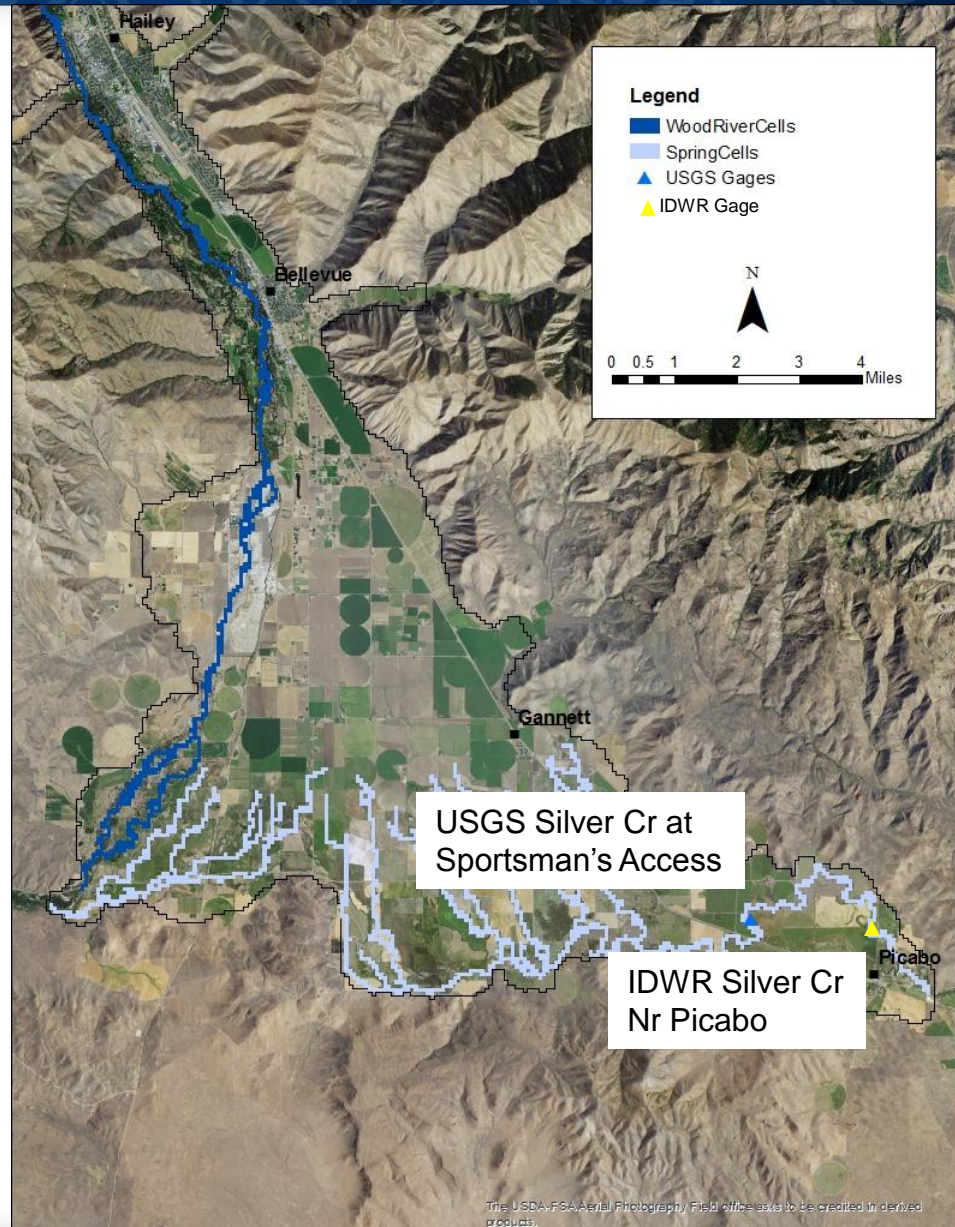


Stream Gaging

- Continue gaging Silver Creek at Picabo
- Collect stage at selected sub-reach stations several times a year
- Conduct seepage run during runoff
- Test chemical hydrograph separation technique for calculating gains during runoff

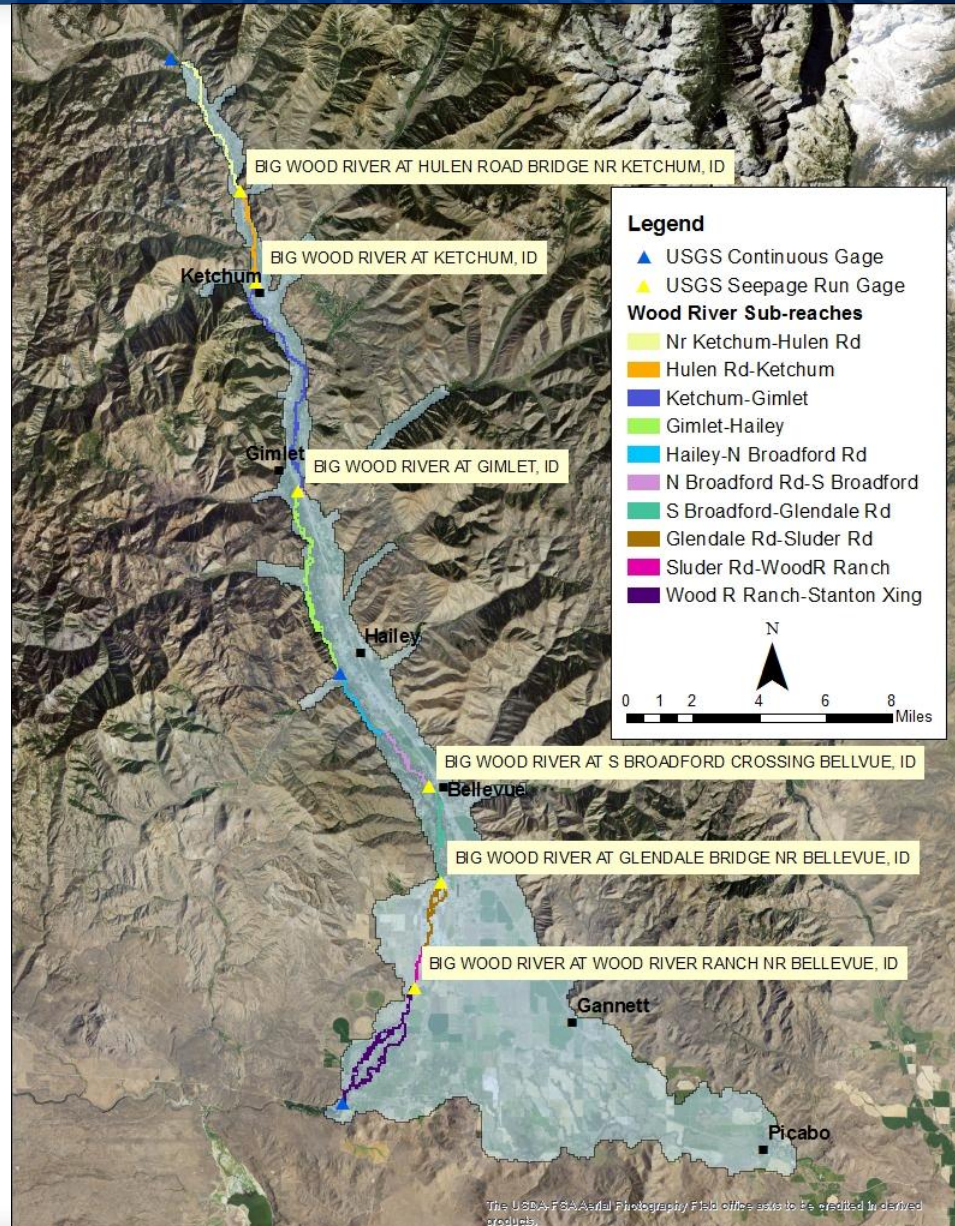
Continue gaging Silver Creek at Picabo

- Gage Silver Creek near Picabo twice a year during the non-irrigation season to verify the near zero gains below the Sportsman's Access gage.



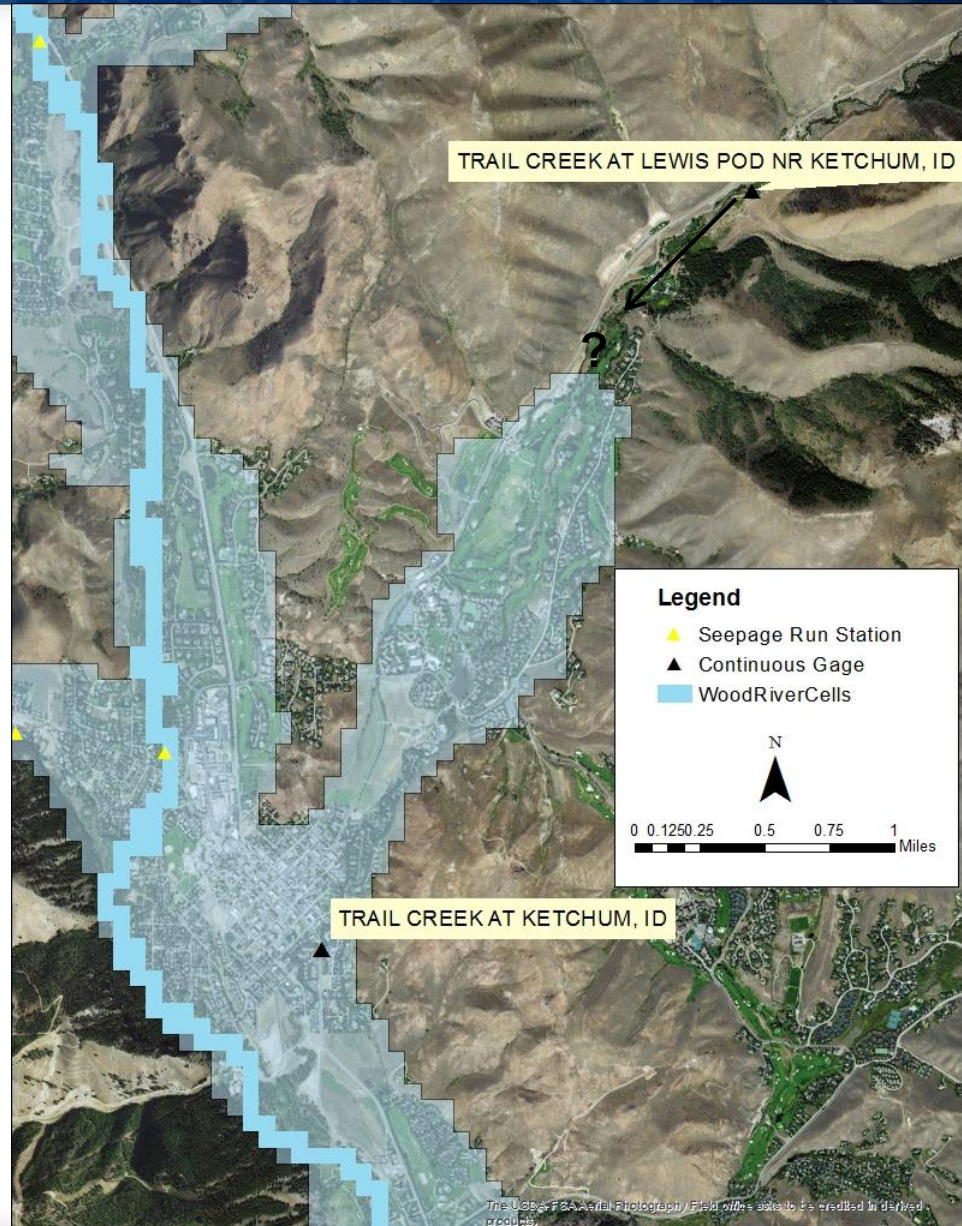
Measure stage at sub-reach gaging stations

- Currently we interpolate stage from Nr Ketchum to Hailey and then from Hailey to Stanton Crossing
- We then adjust stage to account for operation of the Bypass Canal
- Improvement
 - Measure stage at key sub-reach stations when the technicians check on the continuous gages
 - Technicians check the gages about every 6 weeks
 - Key gages
 - Hulen Rd
 - At Ketchum
 - At Gimlet
 - S Broadford
 - Glendale Rd
 - Wood River Ranch

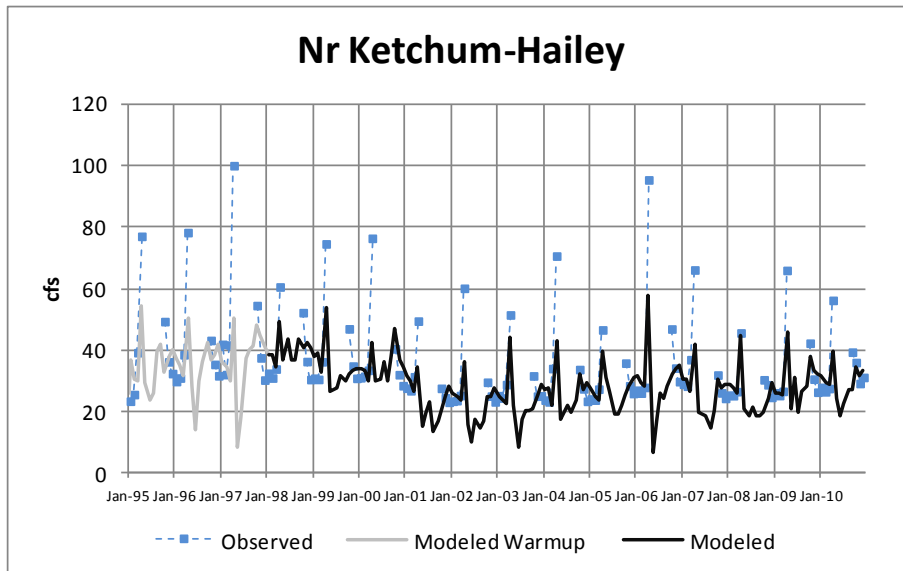


Trail Creek Gages

- Continuous gage near model boundary
- Monitor seepage losses
- Allow inclusion of Trail Creek as MODFLOW River



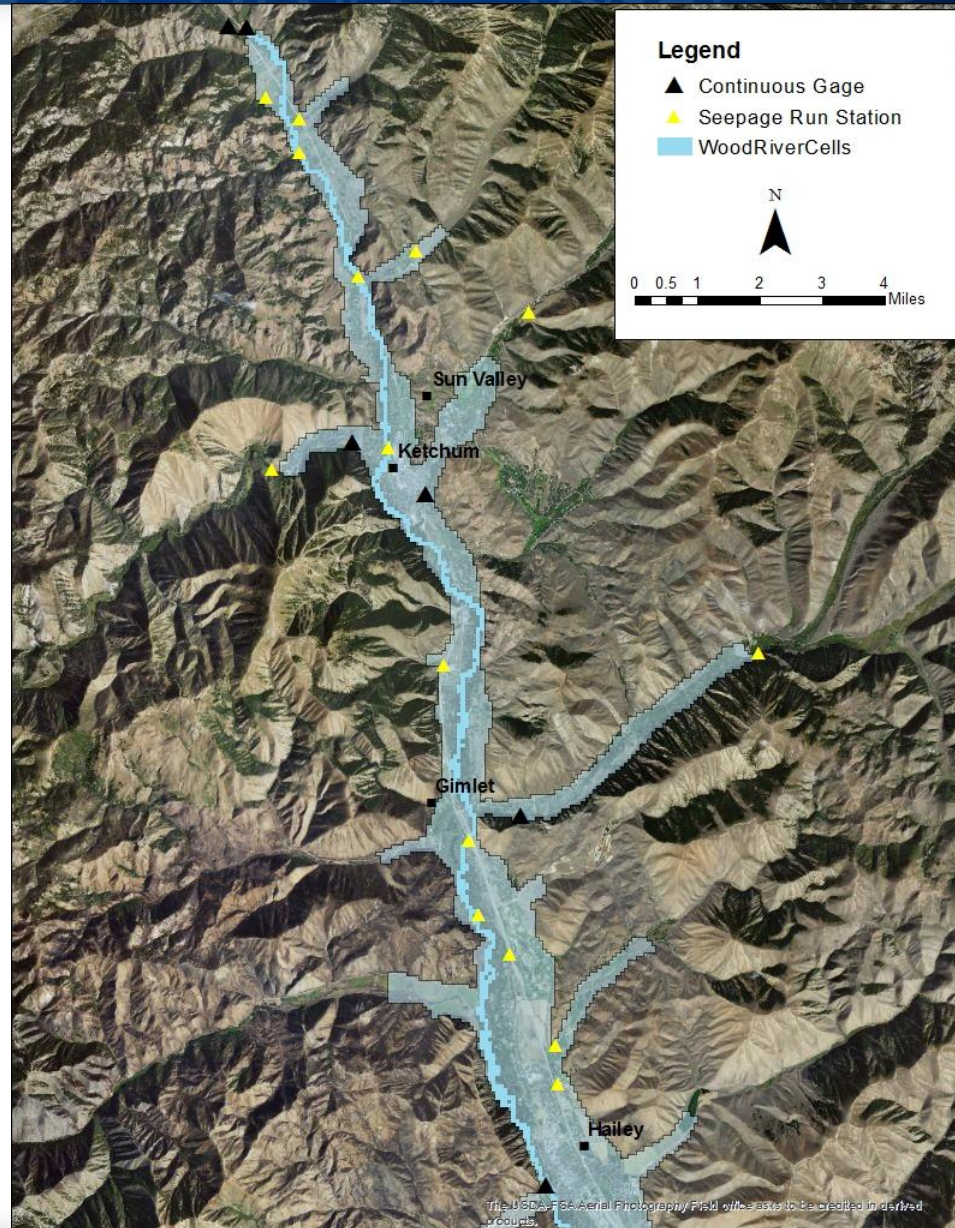
Nr Ketchum-Hailey Gains



- Currently we have no calibration targets during the summer months
- Model would be stronger if we had summer reach gain targets

Seepage run during runoff

- Nr Ketchum to Hailey
- Check modeled gains for nr Ketchum to Hailey reach



Nr Ketchum-Hailey Gains

$$Q_{BF} = Q \frac{SC - SC_{RO}}{SC_{BF} - SC_{RO}}$$

Q_{BF} = baseflow discharge

Q = total discharge

SC = specific conductance

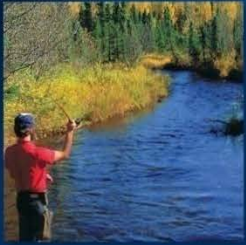
SC_{RO} = SC of the runoff

SC_{BF} = SC of the baseflow

- Attempt calculation of Nr Ketchum-Hailey gains using chemical hydrograph separation (Miller and others, 2014)
 - Miller, M.P., D.D. Susong, C.L. Shope, V.M. Heilweil, B.J. Stolp, 2014. Continuous estimation of baseflow in snowmelt-dominated streams and rivers in the Upper Colorado River Basin: a chemical hydrograph separation approach. Water Resources Research, V50, No 8, p 6986-6999.
- Collect SC for nr Ketchum-Hailey reach during seepage run.
 - Nr Ketchum, Hailey and tributary valleys
 - SC early spring runoff high in trib
 - SC late season baseflow
- Calculate reach gains
- Compare with results from seepage run.

Summary

- Add 11 wells to the current 30 well network
 - Preference for wells without pumps
 - Some located in tributary valleys
 - Some located between Gimlet and Bellevue
- Conduct synoptic with 80-90 wells in conjunction with ESPA synoptic
- Continue gaging Silver Creek at Picabo in the spring and fall
- Collect stage at key sub-reach stations several times a year
- Add continuous gage at model boundary in Trail Creek
- Test chemical hydrograph separation technique to obtain summer reach gains in nr Ketchum-Hailey reach



End