

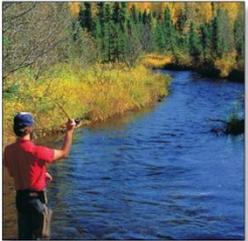
Prioritizing ESPAM Improvements

Allan Wylie IDWR

31 January 2014

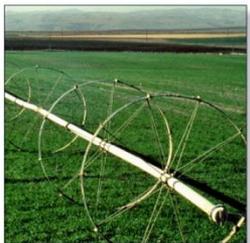
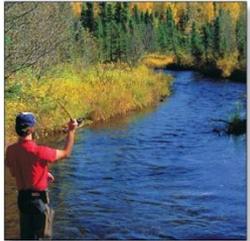
Outline

- Compile suggested improvements
- Obtain ESHMC feedback
 - Rankings by committee members
- Assign scores to rankings
- Recommendation to ESHMC

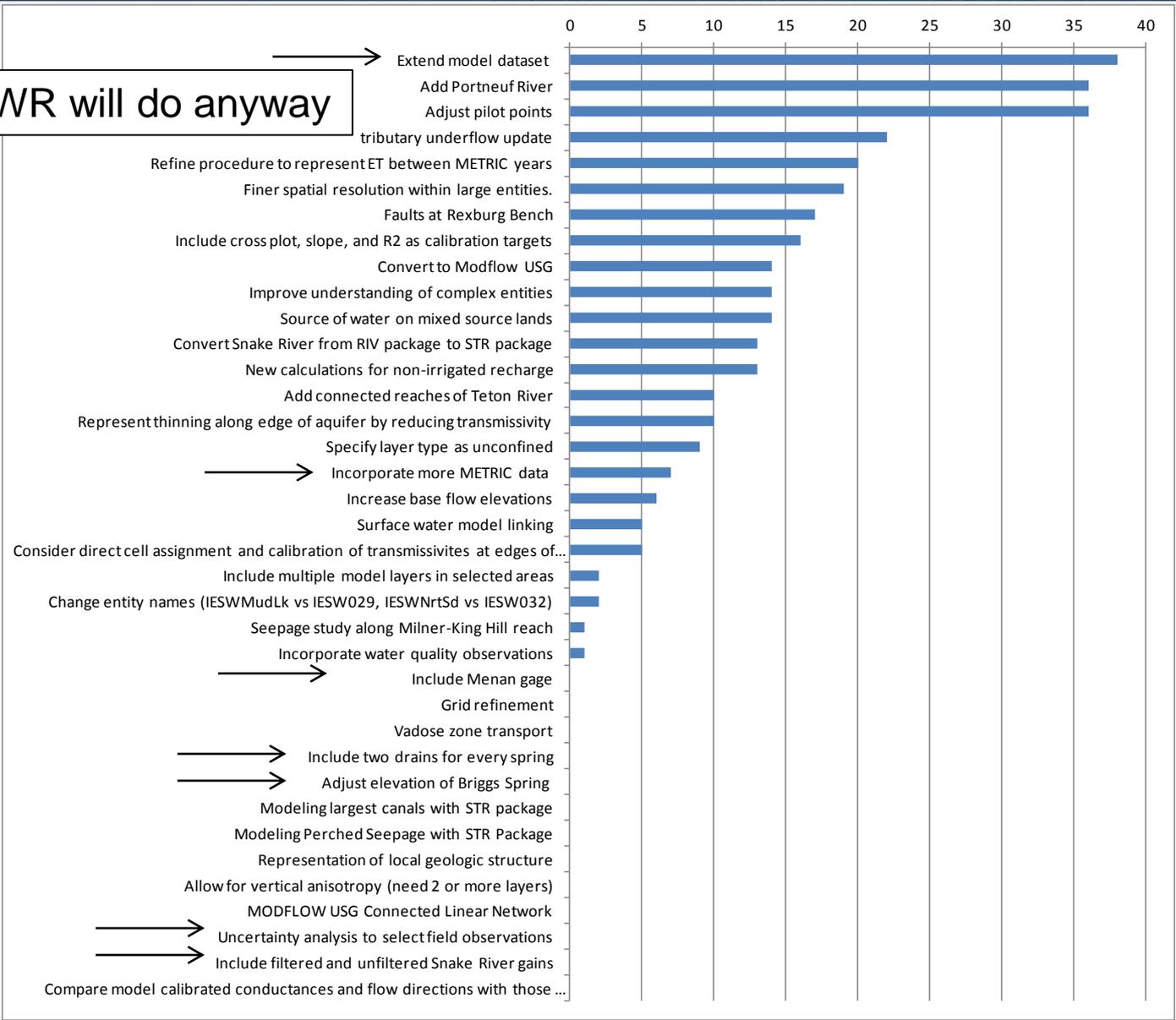


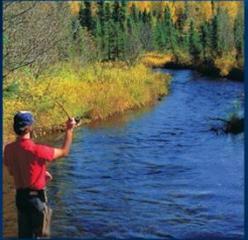
Compile and score feedback

- Sent list of potential improvement to ESHMC
- Everyone could vote for 10 items and rank them from 1-10, with 1 being the highest ranking
- Improvements that IDWR was going to do regardless of the voting were clearly identified
 - Extend dataset, include Menan gage, incorporate more METRIC data, etc



IDWR will do anyway





Recommendation

- IDWR pursue all low effort recommendations on the list with a bias toward higher ranking recommendations
- Resource intensive updates should come from recommendations that scored higher

Prioritized improvements to ESPAM2.1 - projected to be completed by December 2015			
Task		Level of Effort	Comments
1	Model the Portneuf River as connected to the ESPA aquifer	moderate	Will include the reach between the gage at Edson Fichter Park and the upper end of American Falls Reservoir, and will include the USGS gages at Pocatello and near Tyhee. The reach gain calculation is somewhat complex.
2	Include the Snake River USGS gage near Menan, ID as a model calibration target	easy	Data already entered into next draft model version (ESPAM2.2)
3	Include two drains in every cell where springs discharge along the western model	easy	Modification already built into draft version of ESPAM2.2.
4	Adjust the drain elevation in the model cell representing Briggs Spring	easy	Drain cell already modified in draft version of ESPAM2.2
5	Include filtered and unfiltered Snake River gains	moderate	Filtered data already entered into draft version of ESPAM2.2; evaluation of spikes and data outliers in
6	Extend model dataset	easy	Model period will increase approximately 5 years from 2008 through the 2013 irrigation season.
7	Incorporate more Metric data	easy	ET results for 2010, 2011, and 2013 and possibly 1986 and 1992 will be included in ESPAM2.2.
8	Adjust pilot points	easy	
9	Improve understanding and finer spatial resolution of complex irrigation entities	moderate	Refined data for AFRD2/Big Wood Canal Company Service area already entered into
10	Incorporate faults on Rexburg Bench	easy	Hydrologic significance of the faults is uncertain.
11	Include cross plot, slope, and R ² as calibration targets	moderate	
12	Change names of irrigation entities	easy	
13	Add Teton River as connected to the ESPA aquifer	easy	May not be feasible without field data
14	Direct cell assignment and calibration of transmissivity at edges of model domain	easy	No indication of benefit from results to date.
Prioritized improvements in developing ESPAM3.0 - projected to be completed in three to five years			
Task		Level of Effort	Comments
1	Convert to Modflow USG	easy	The conversion will be easy assuming we retain the uniform 1 mile x 1 mile grid. Will require significant committee review and discussion
2	Convert to an unconfined representation of the ESPA	moderately difficult	Will require significant committee review and discussion
3	Refine procedure to represent ET between METRIC years	moderately difficult	Will require significant effort to process other data (e.g, NDVI, other satellite imagery).
4	New calculations for non-irrigated recharge	unknown	Approach and algorithms need to be developed and requires committee review and discussion.
5	Source of water on mixed source Inads	difficult	Significant unknowns.

The Wylie Factor – or: The Order of Incorporation

3
2
2
3

5
4

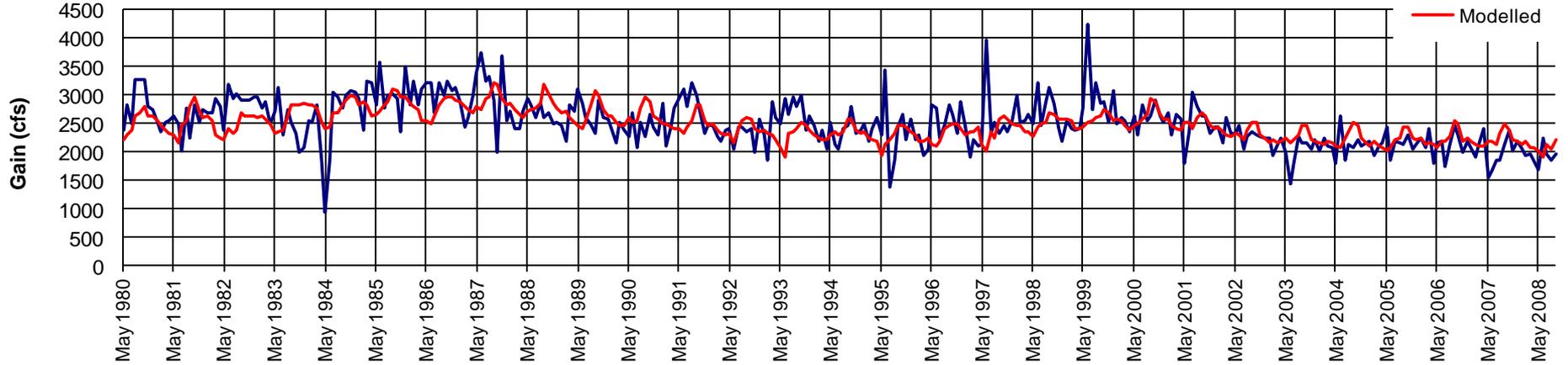
1

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5	8 Adjust pilot points	easy	
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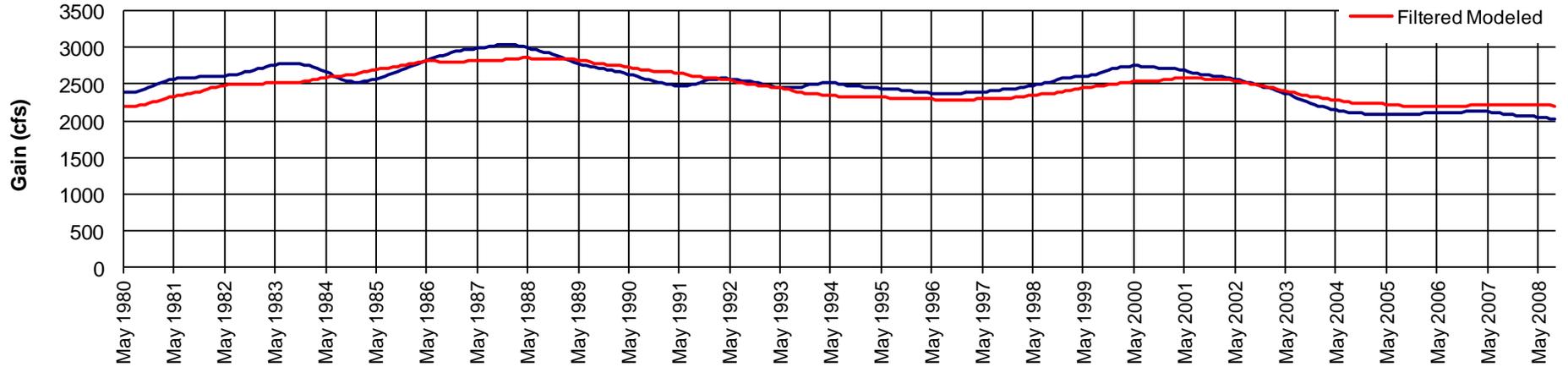
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nr Blackfoot to Neeley Unfiltered Gains
Calibration Period (May 1985 - Sep 2008)

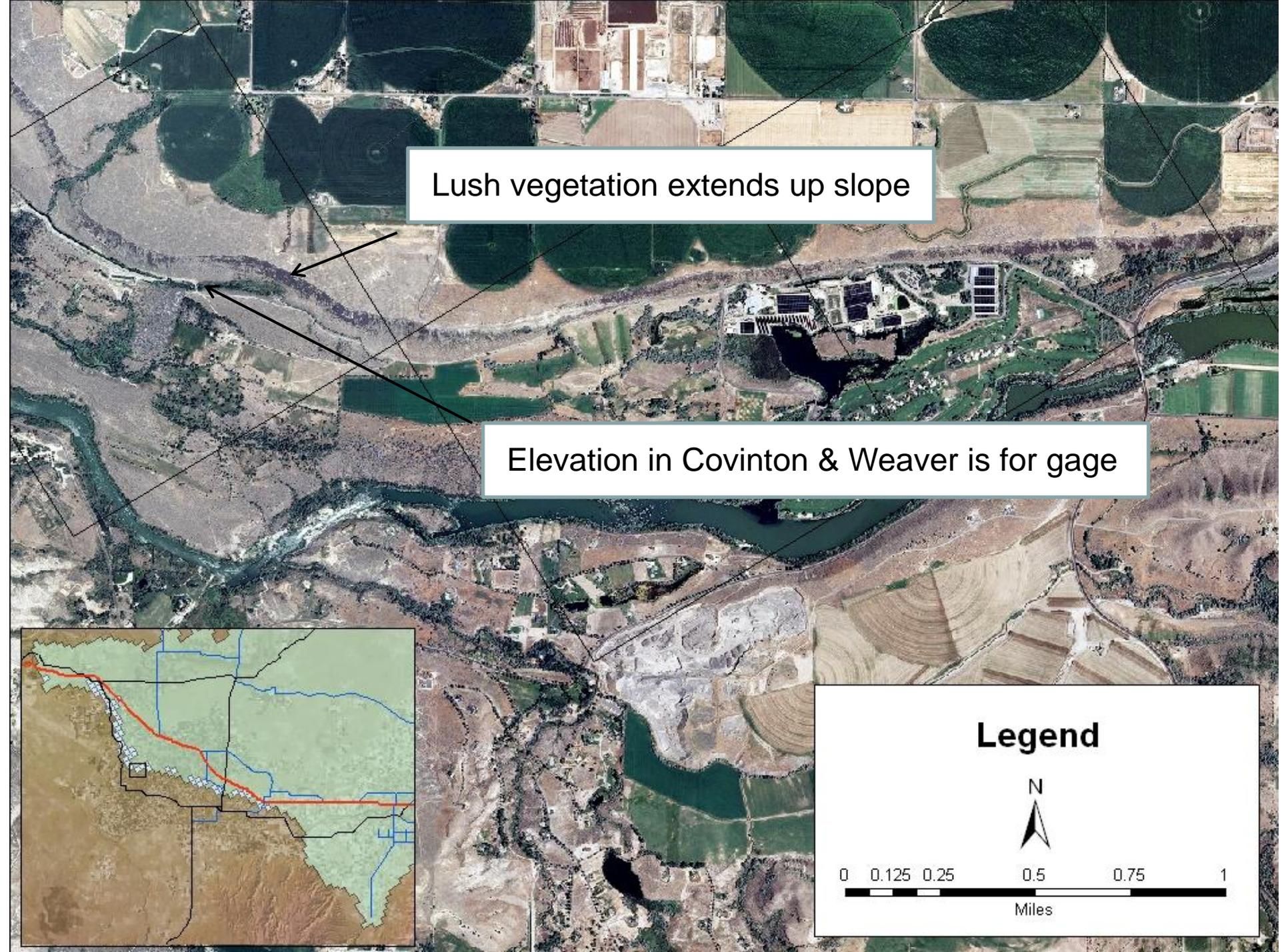


nr Blackfoot to Neeley Filtered Gains
Calibration Period (May 1985 - Sep 2008)



Adjust Elevation of Briggs Sp

- Elevation of Briggs is for the USGS gauge
- Spring emerges at a higher elevation
- Higher elevation will allow model to replicate observed seasonal variation



Lush vegetation extends up slope

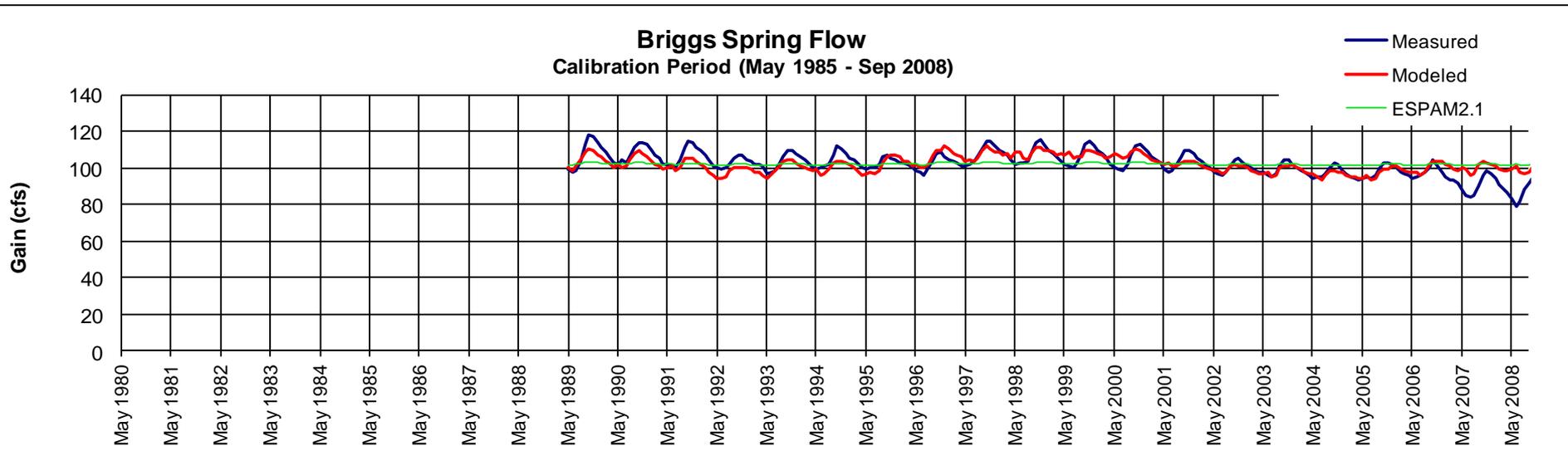
Elevation in Covinton & Weaver is for gage



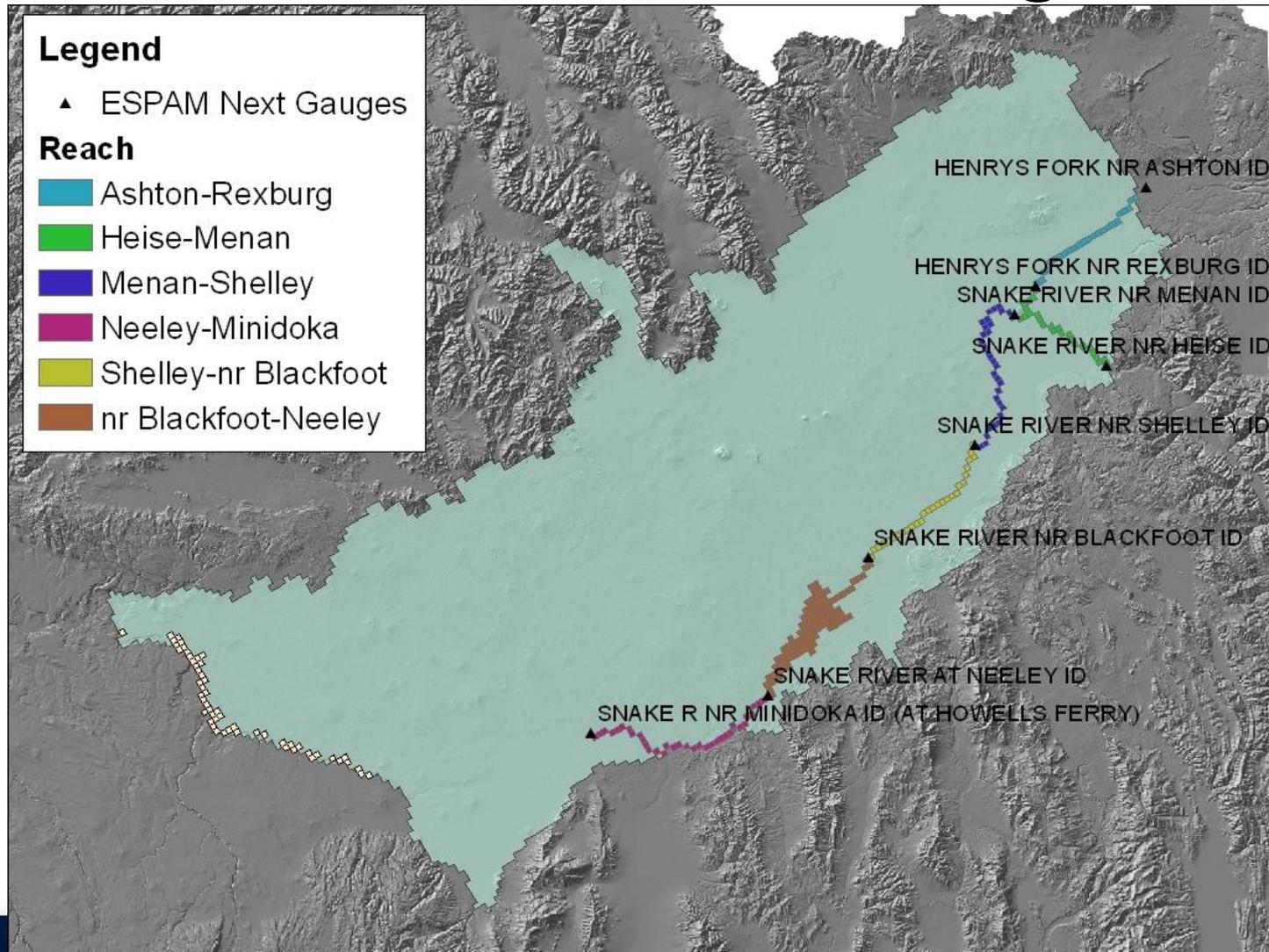
Legend

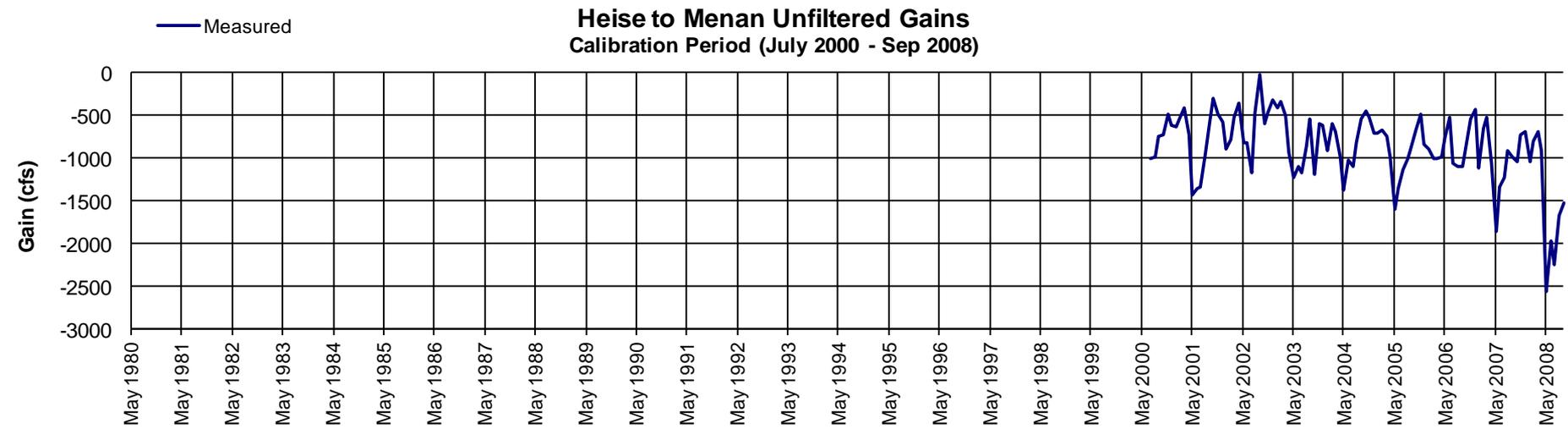
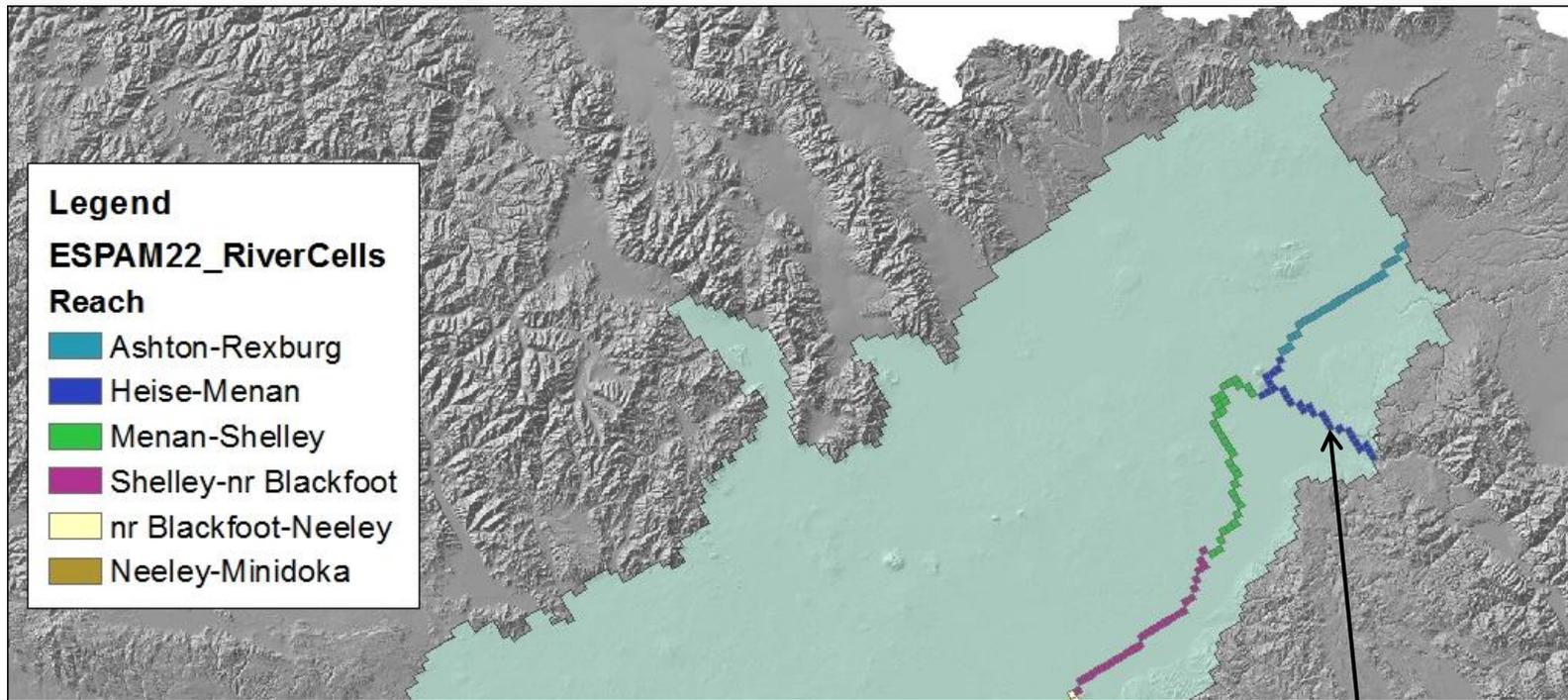


Adjust Elevation of Briggs Sp



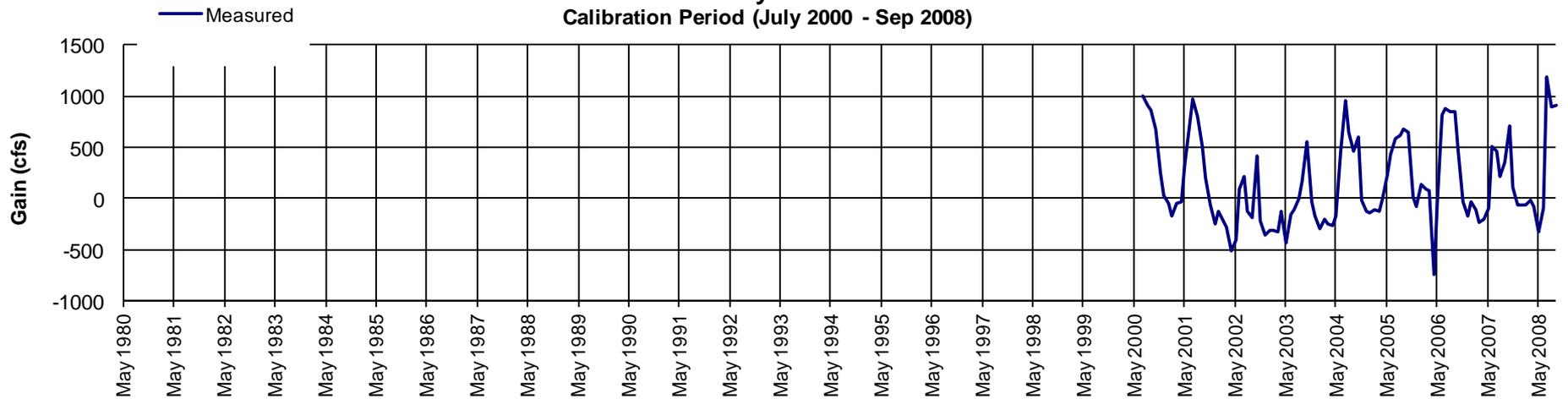
Include Menan Gage



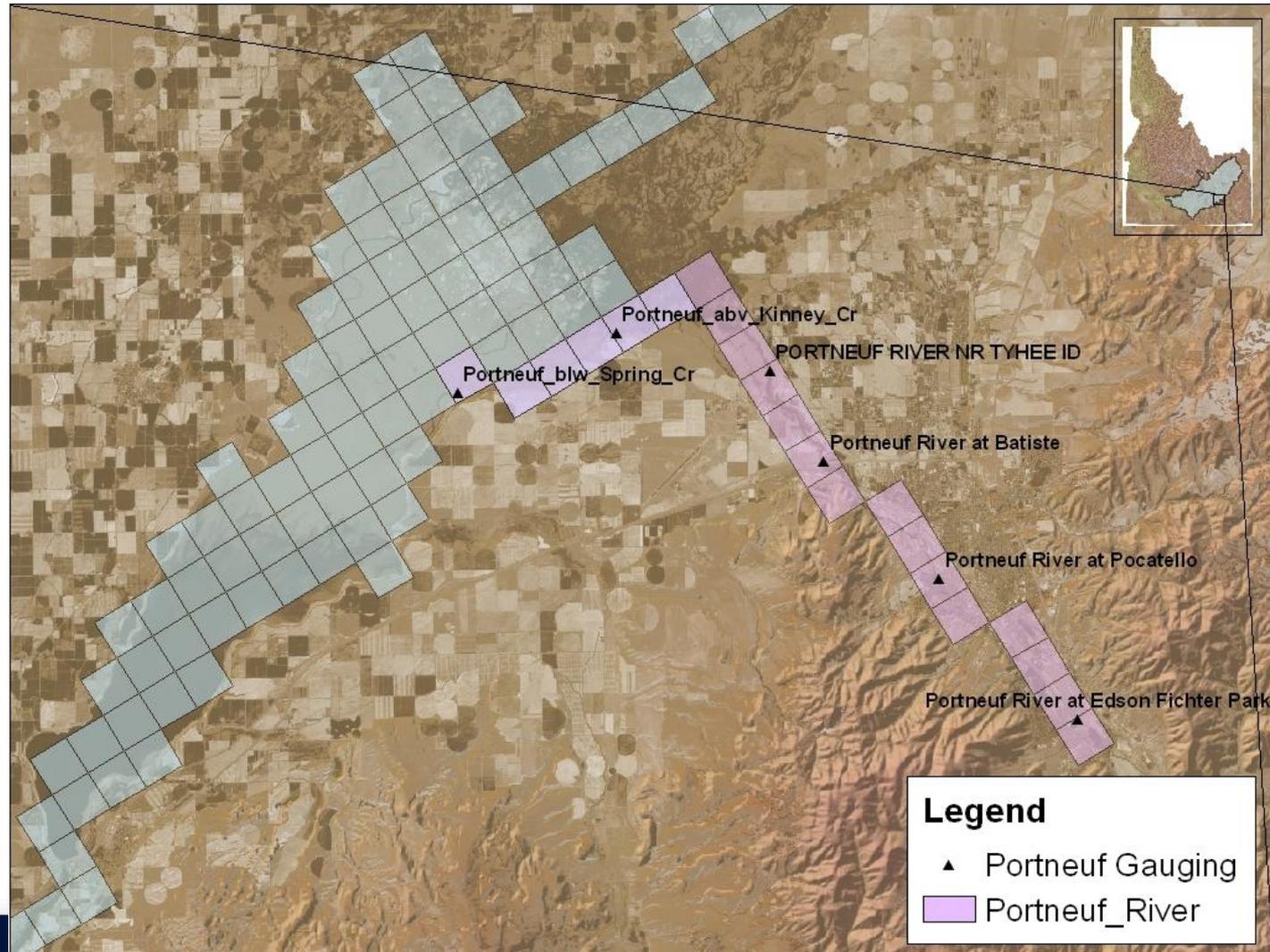


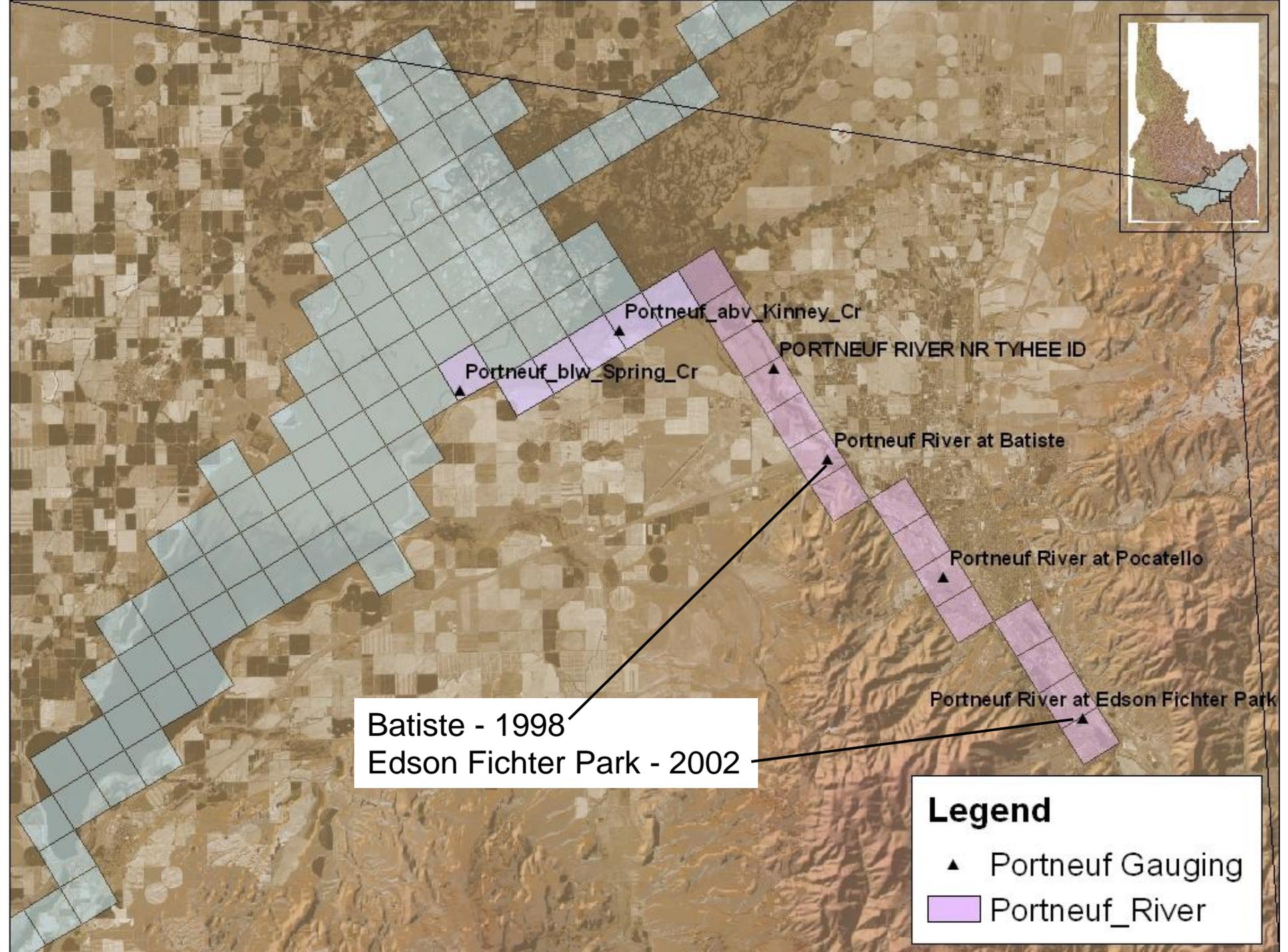
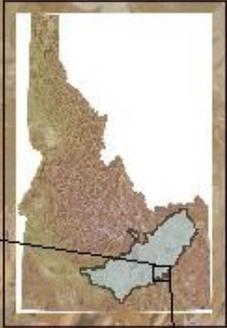


Menan to Shelley Unfiltered Gains
Calibration Period (July 2000 - Sep 2008)



Portneuff River

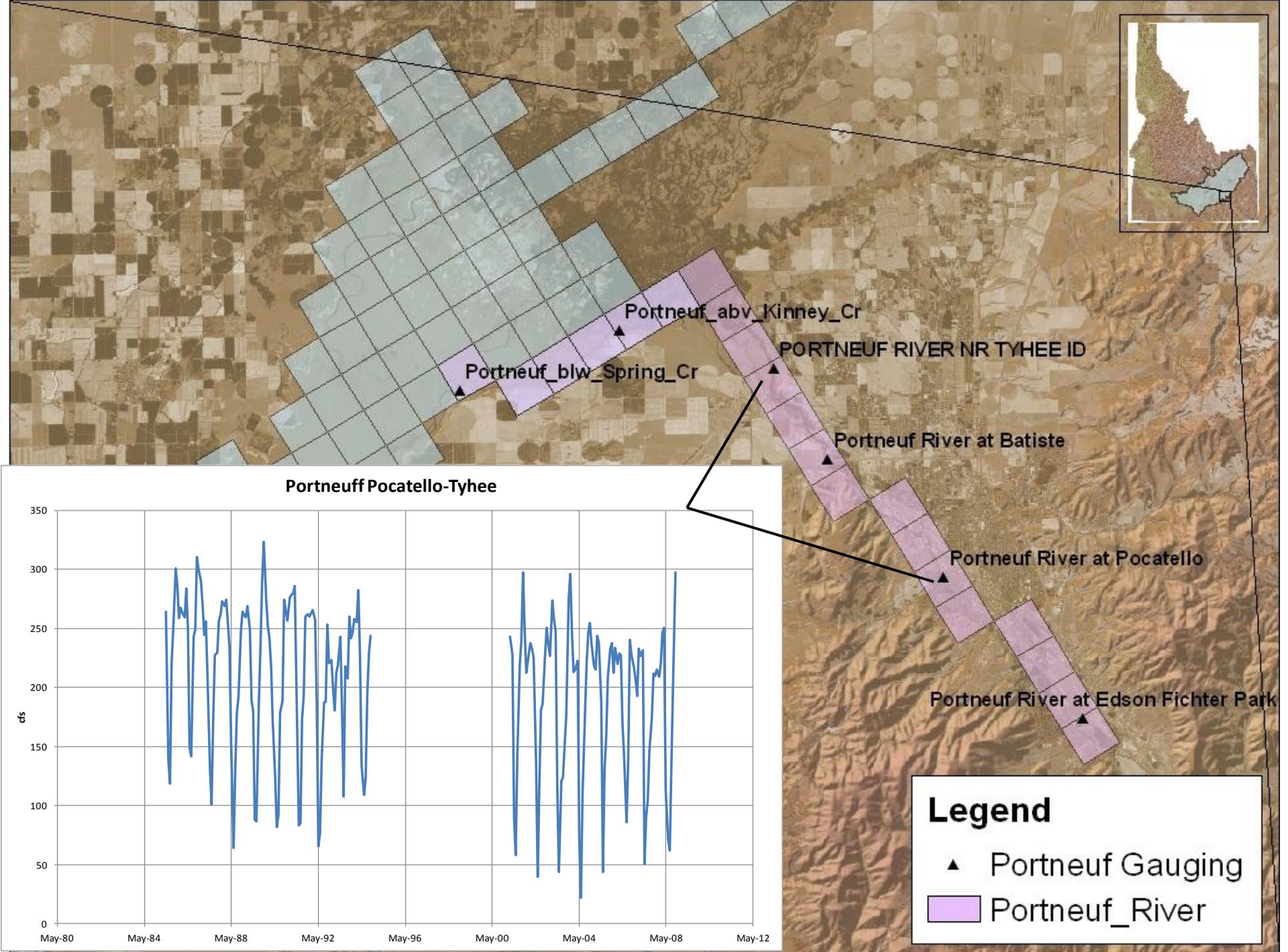




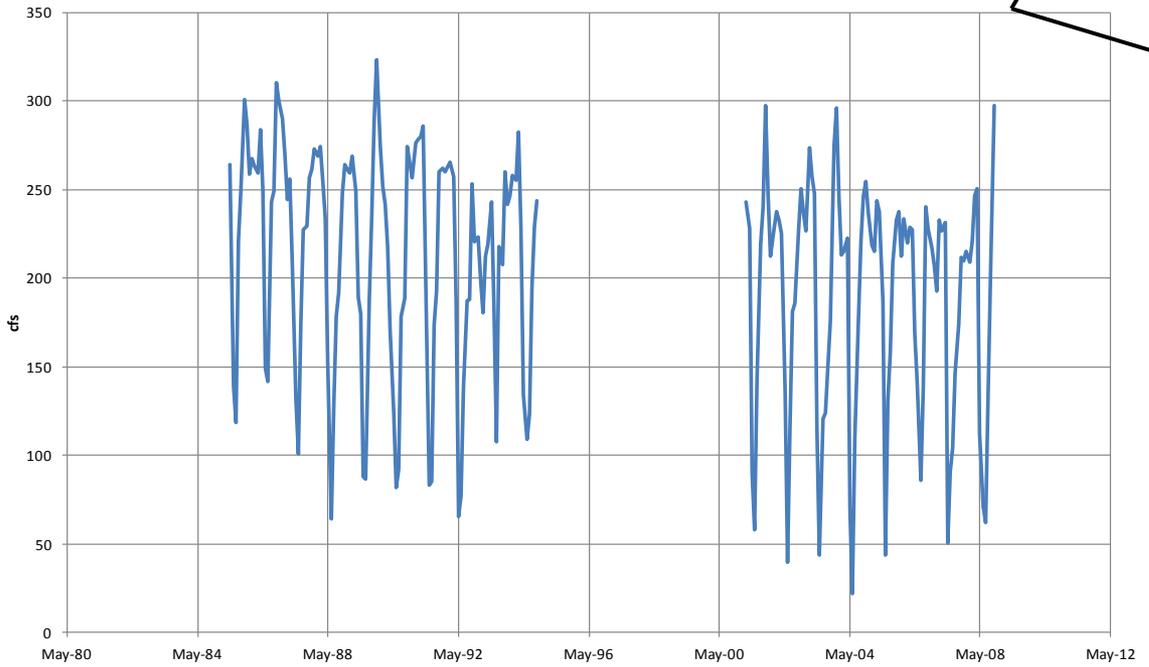
Batiste - 1998
Edson Fichter Park - 2002

Legend

- ▲ Portneuf Gauging
- Portneuf_River



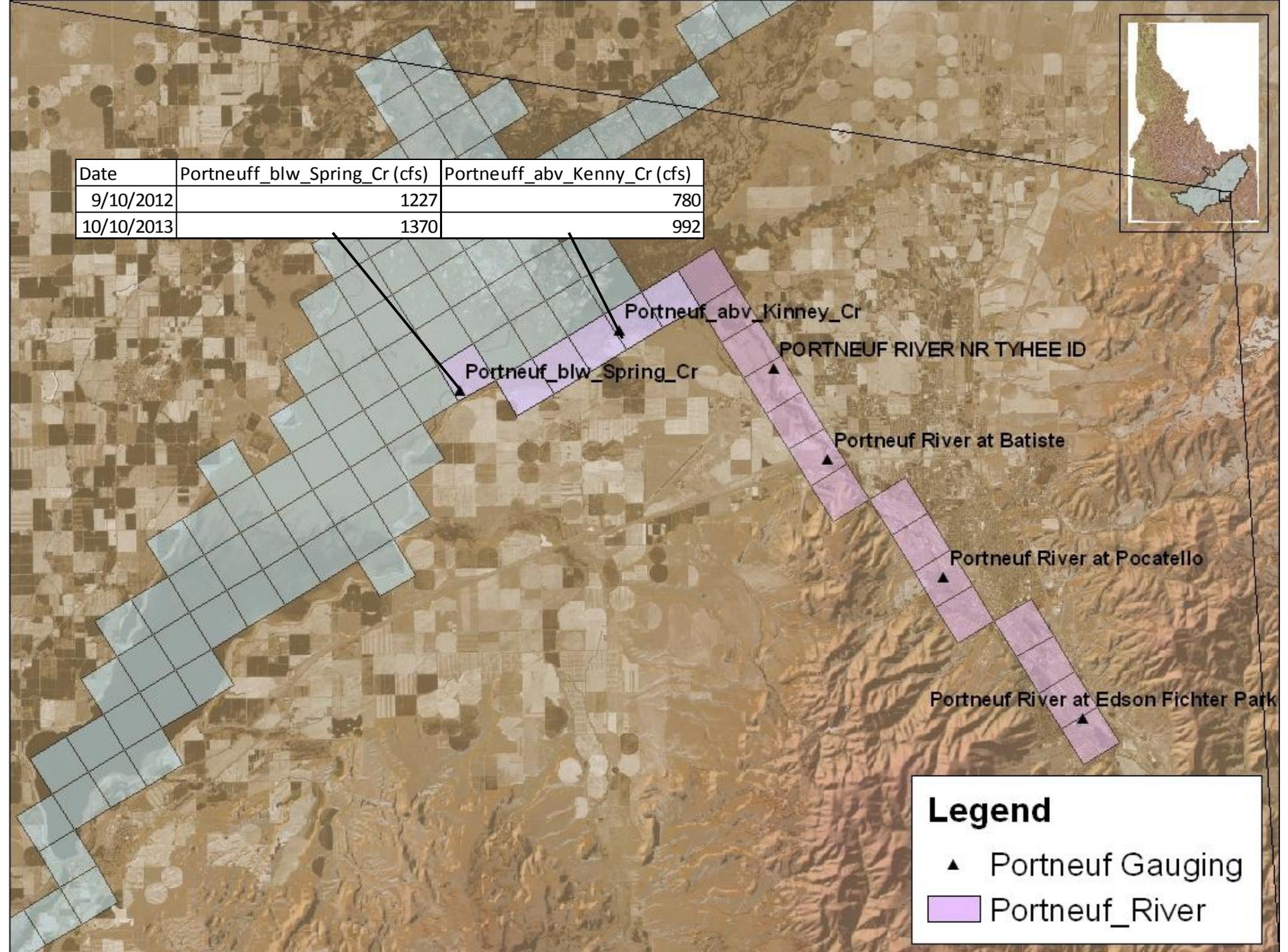
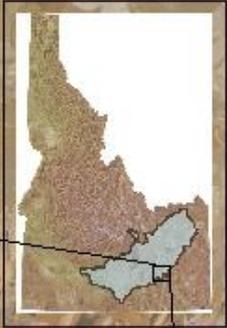
Portneuff Pocatello-Tyhee



Legend

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- Portneuf_River

Date	Portneuff_blw_Spring_Cr (cfs)	Portneuff_abv_Kenny_Cr (cfs)
9/10/2012	1227	780
10/10/2013	1370	992



Portneuff_abv_Kinney_Cr

PORTNEUF RIVER NR TYHEE ID

Portneuff_blw_Spring_Cr

Portneuf River at Batiste

Portneuf River at Pocatello

Portneuf River at Edson Fichter Park

Legend

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Time series begins in 2007

Danielson Creek headwaters

Biggie Creek

Mud Slough

Boone Creek Hatcher Springs and Birdcage Springs

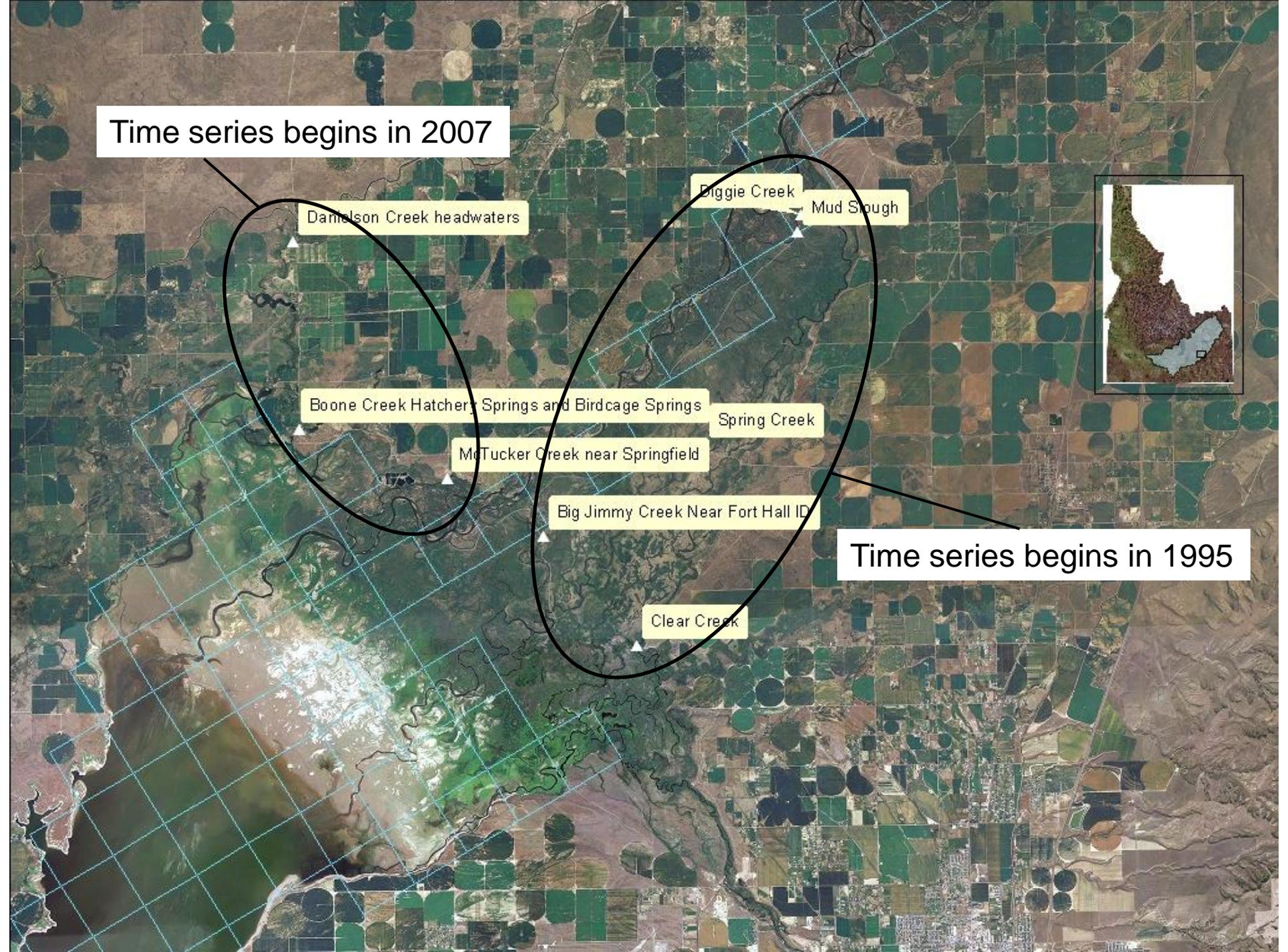
Spring Creek

McTucker Creek near Springfield

Big Jimmy Creek Near Fort Hall ID

Time series begins in 1995

Clear Creek



Which improvements do you think will prove to be most important?

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