



Wood River Valley Groundwater Flow Model, Simulated Curtailment of Groundwater Use

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Introduction

- ▶ Groundwater–Flow Model for the Wood River Valley Aquifer System developed by USGS and IDWR
 - For more information on model development
 - <https://idwr.idaho.gov/WaterInformation/Projects/woodriver/>
 - <https://pubs.er.usgs.gov/publication/sir20165080>
- ▶ Simulated curtailment of groundwater use
 - Model simulation requested by Wood River Collaborative
 - Intended to provide general information regarding impacts of groundwater use on surface water flow

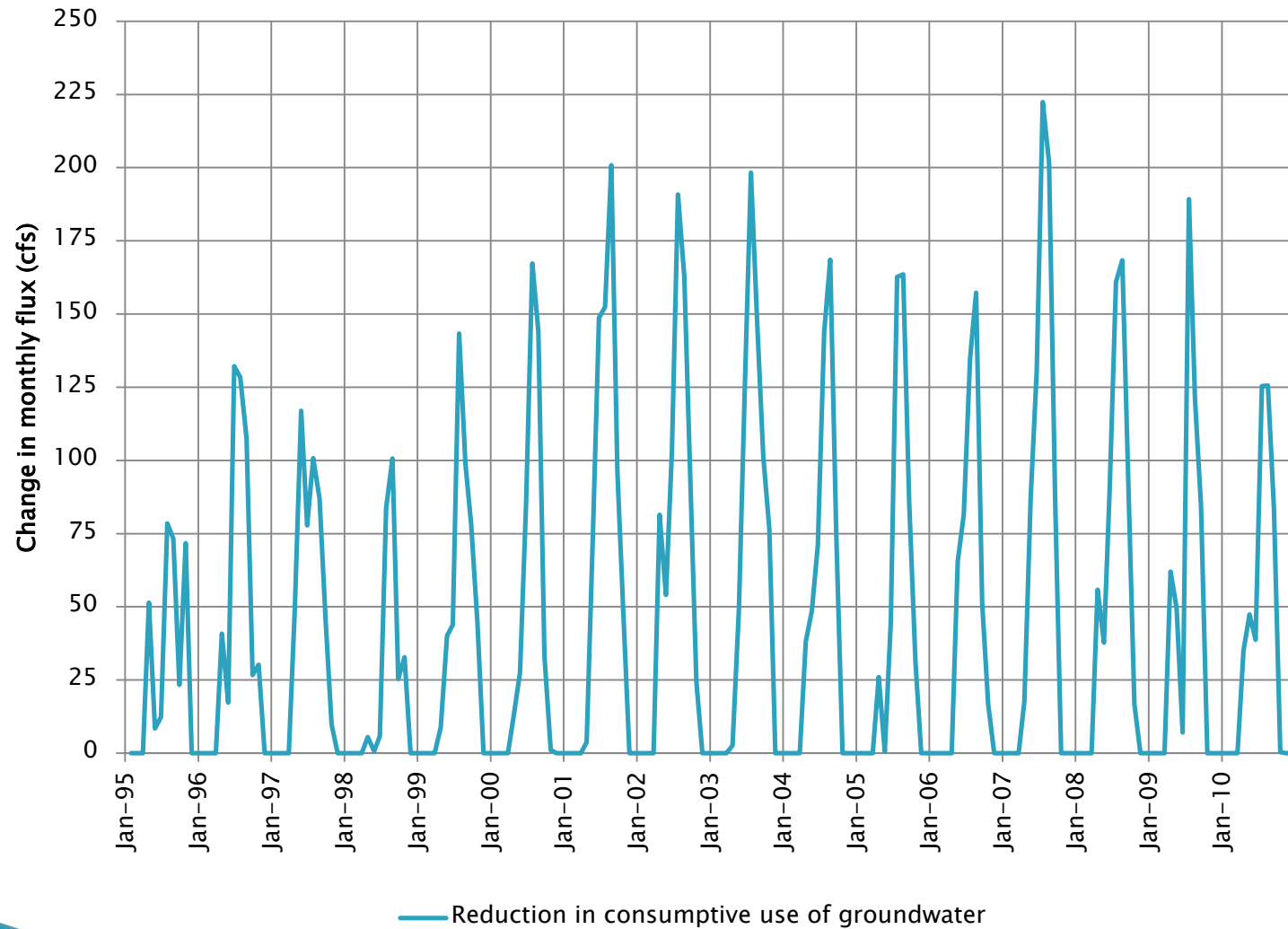
Model simulation

- ▶ Simulated reduction in consumptive use of groundwater for irrigation
 - agricultural irrigation supplied by groundwater
 - irrigation in municipal service areas supplied by groundwater
 - irrigation in subdivisions supplied by centralized water system wells
 - all priority dates included
 - excluded exempt domestic water use (individual well with less than ½-acre irrigation)
 - excluded groundwater rights mitigated by non-use of surface water

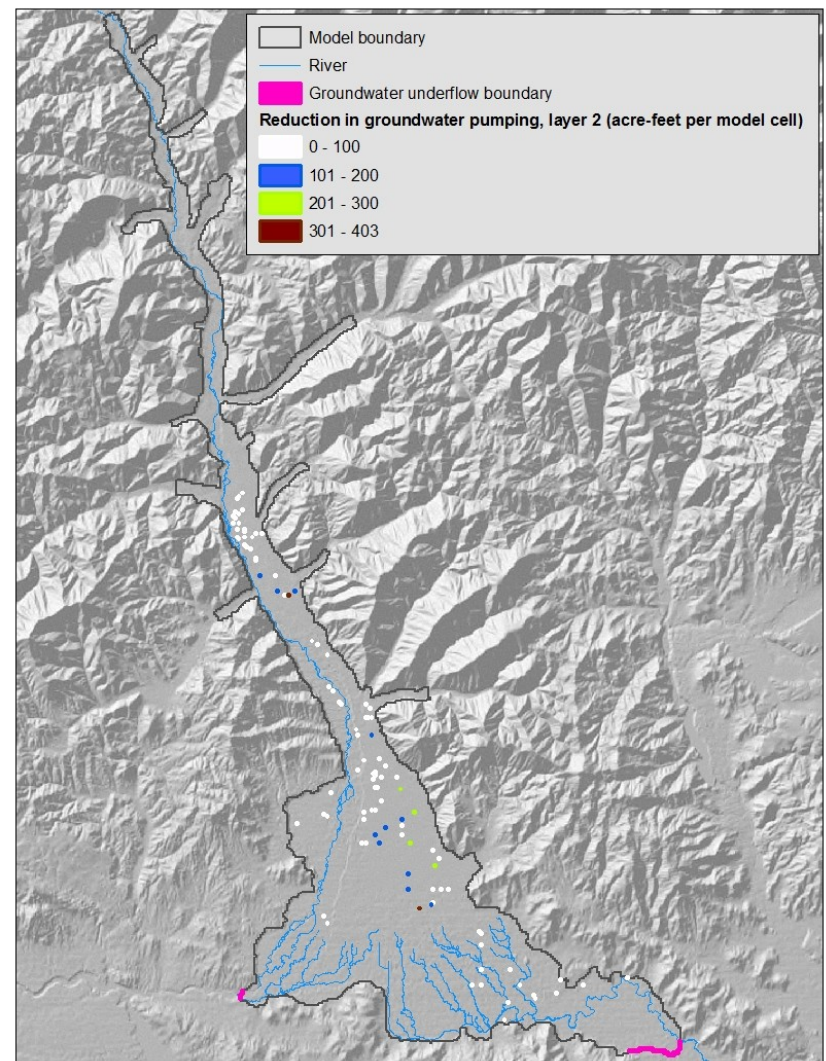
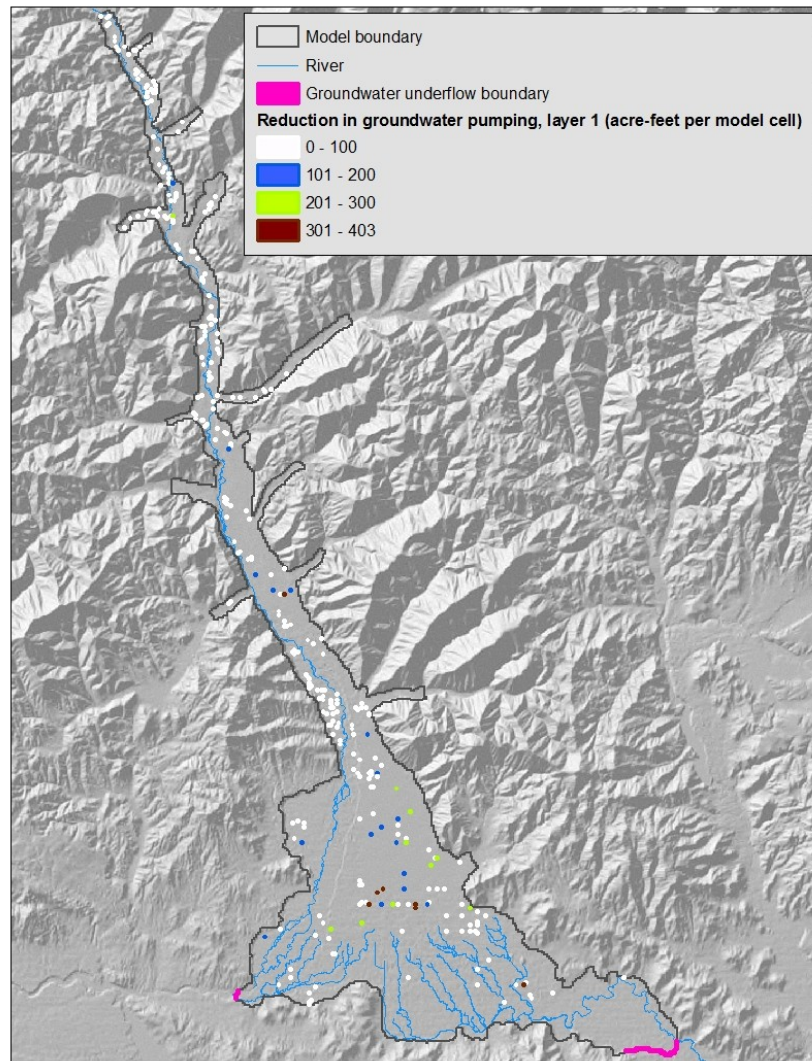
Model simulations

- ▶ Simulation based on 1995 – 2010 conditions
 - Illustrates impacts of groundwater use or curtailment during a variety of climatic conditions
 - Illustrates impacts of continuing use or curtailment over a 16-year period
- ▶ Simulated curtailment during a single year (2007)
 - Illustrates impacts of curtailment for only a single year
 - Illustrates impacts of curtailment during a year with low surface water supply and high groundwater use

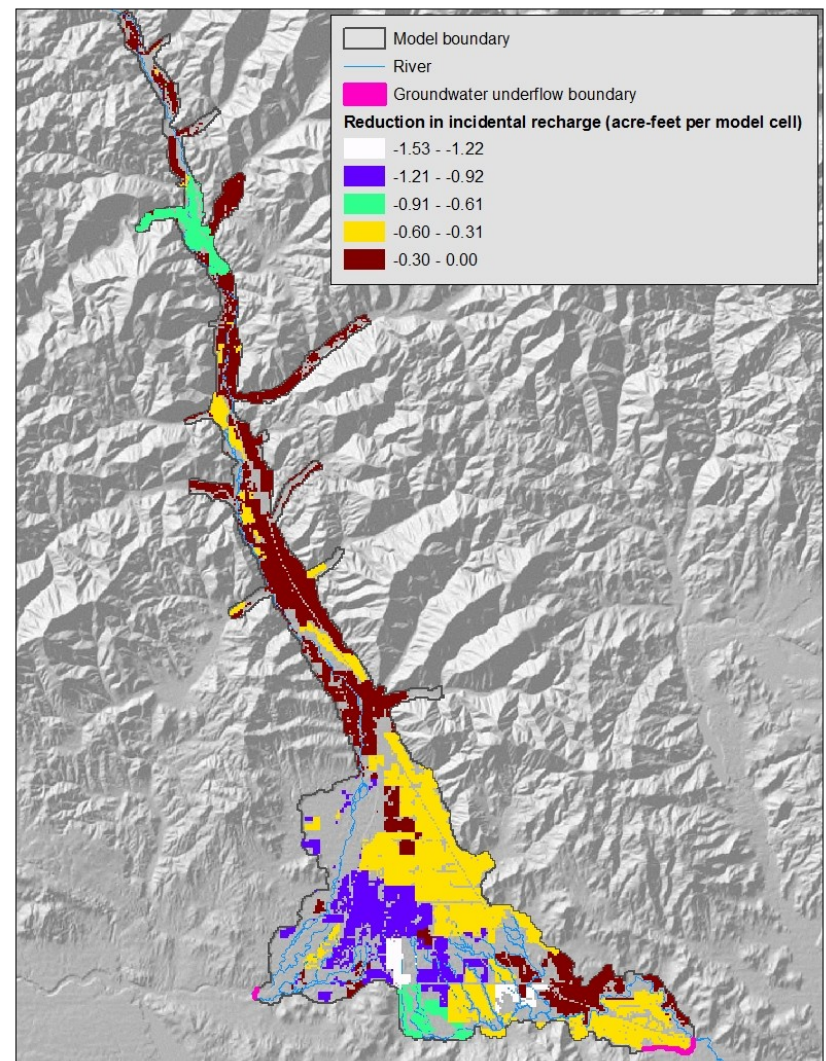
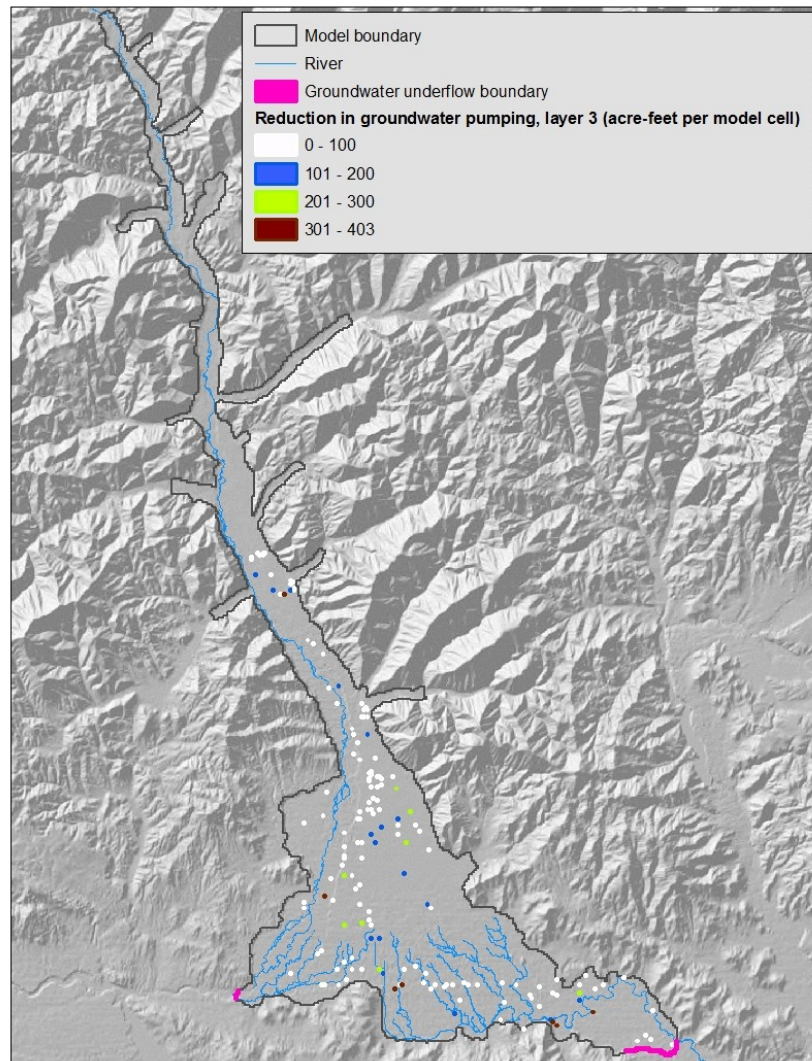
Consumptive use of groundwater (1995–2010)



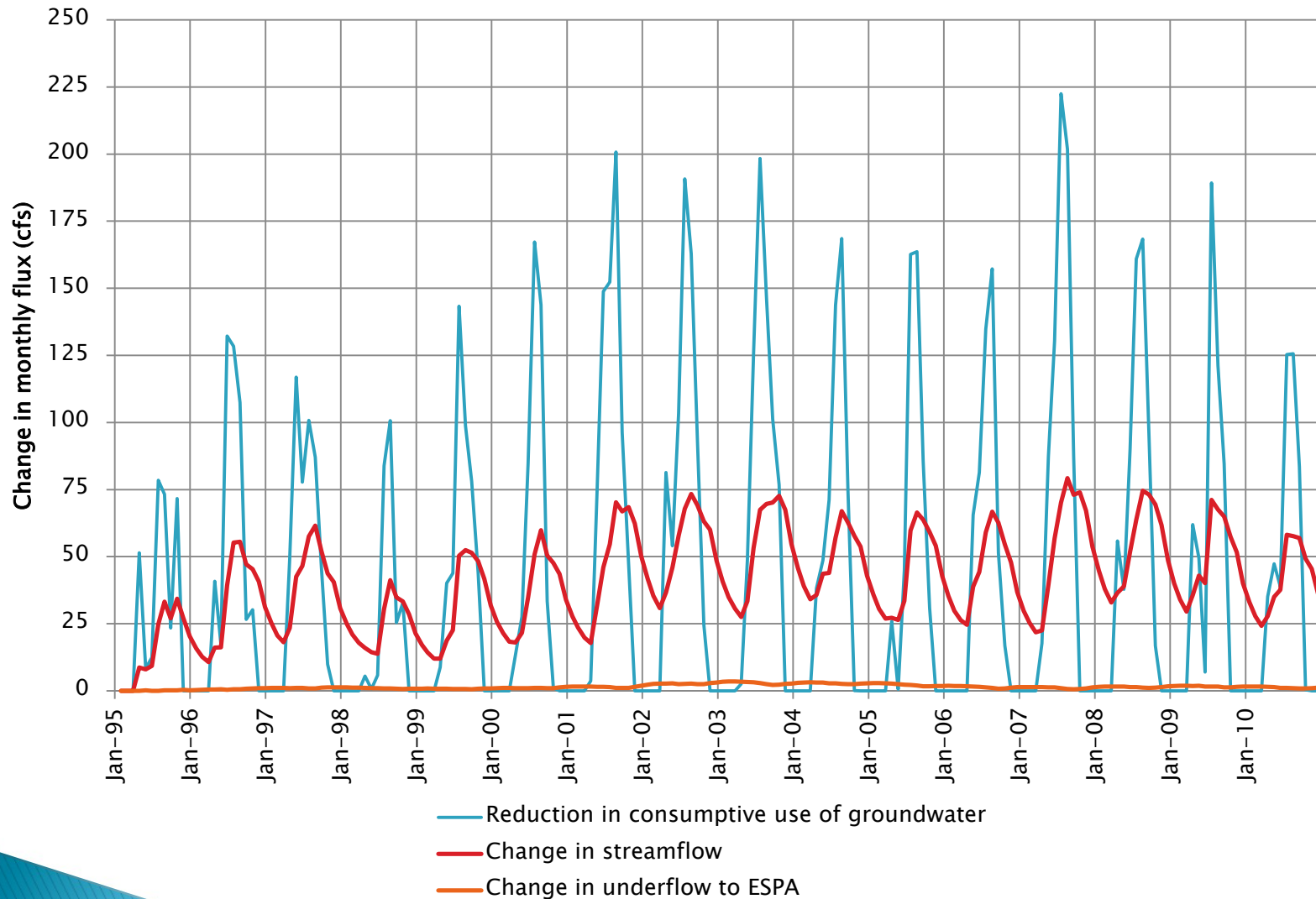
Spatial distribution of change in aquifer stress



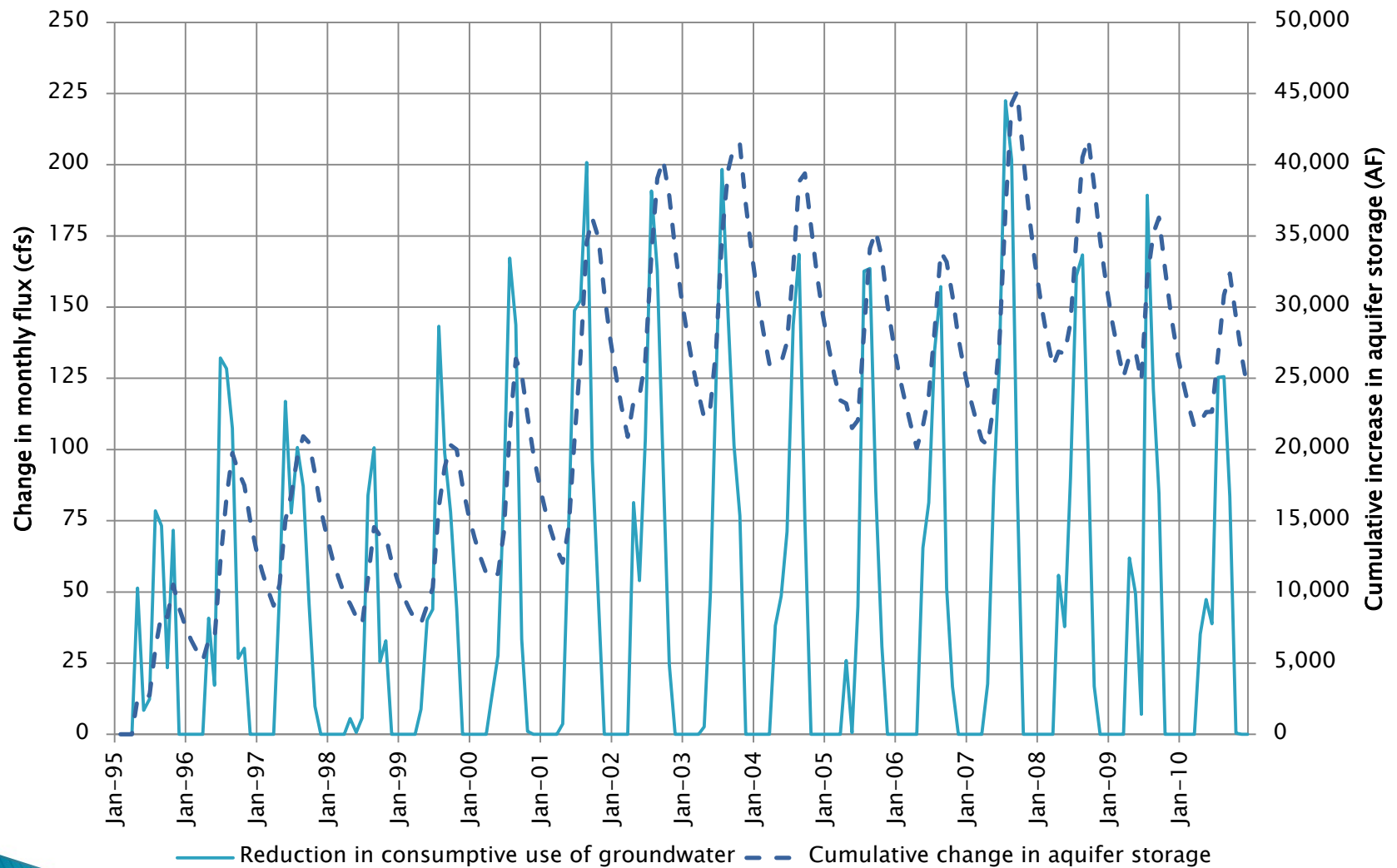
Spatial distribution of change in aquifer stress



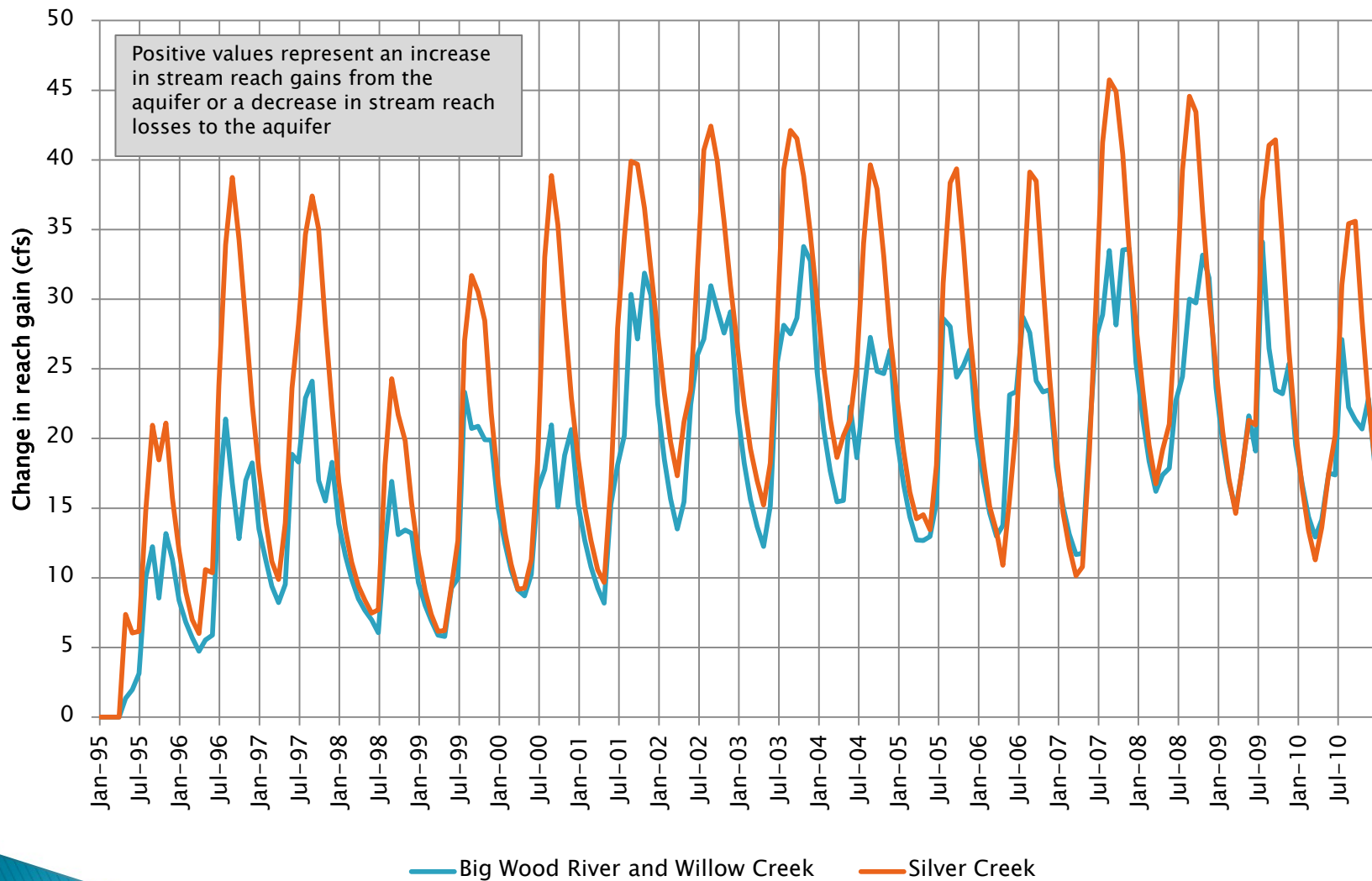
Simulation results, change in streamflow & underflow (1995–2010)



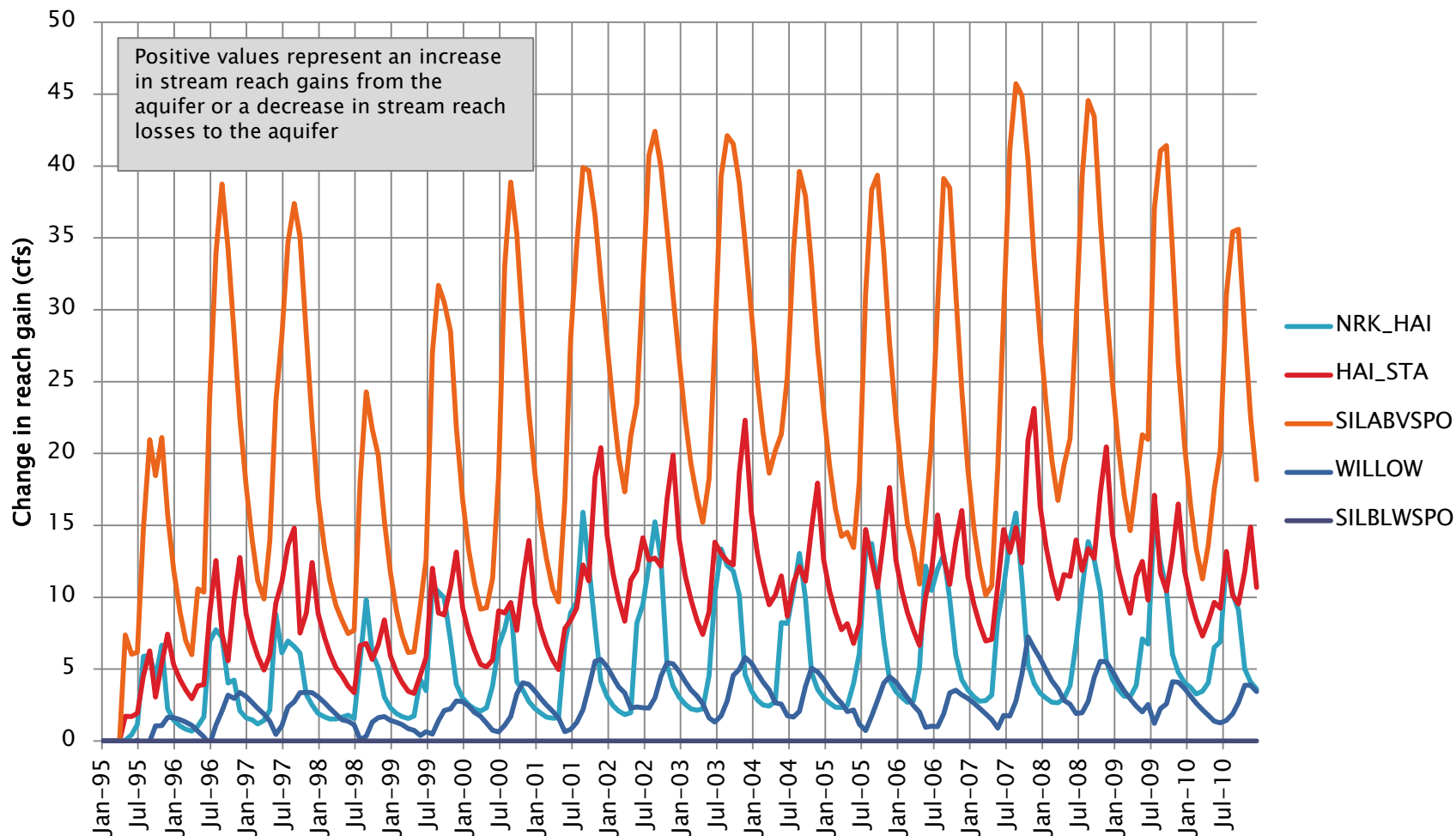
Simulation results, change in aquifer storage (1995–2010)



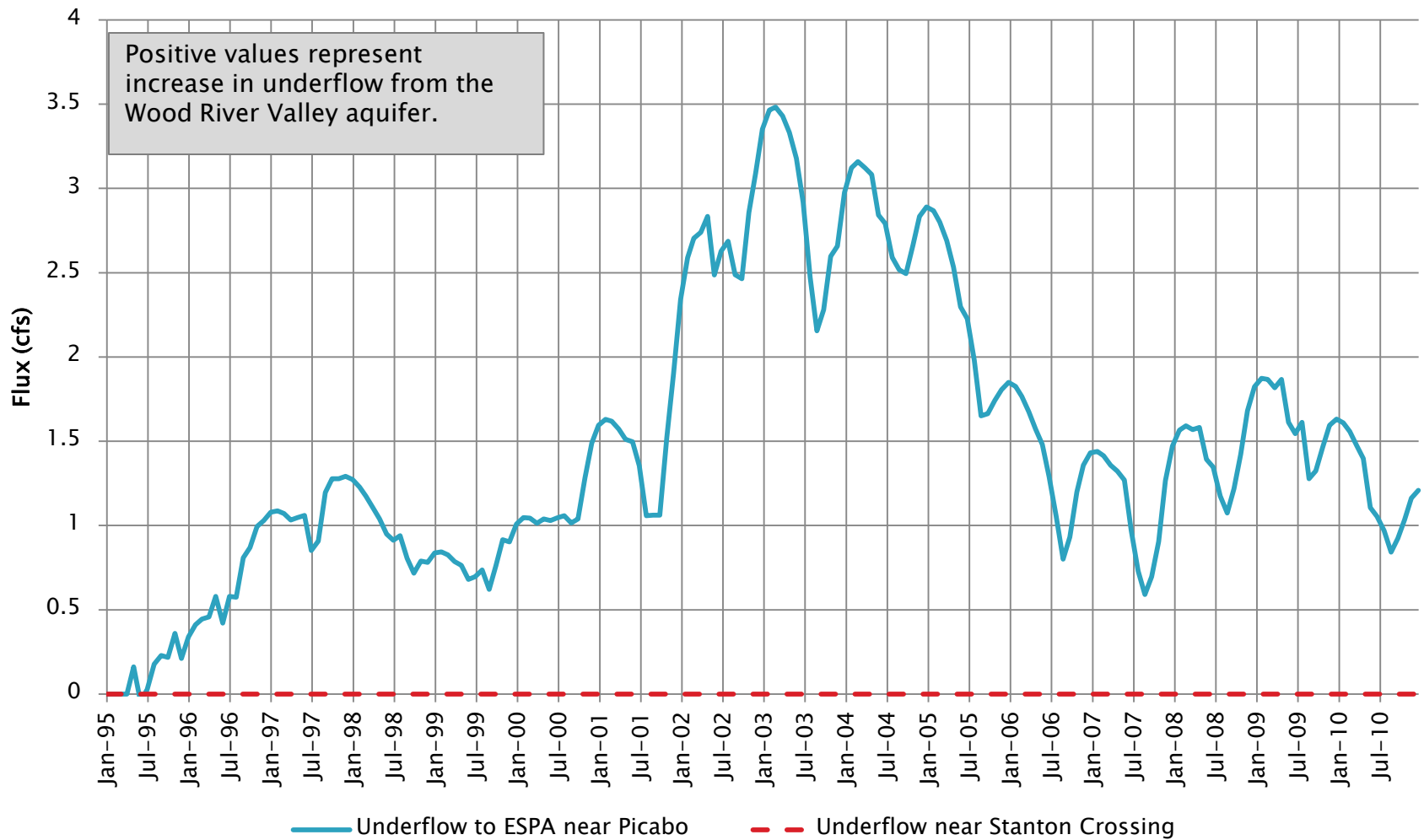
Simulation results by river (1995–2010)



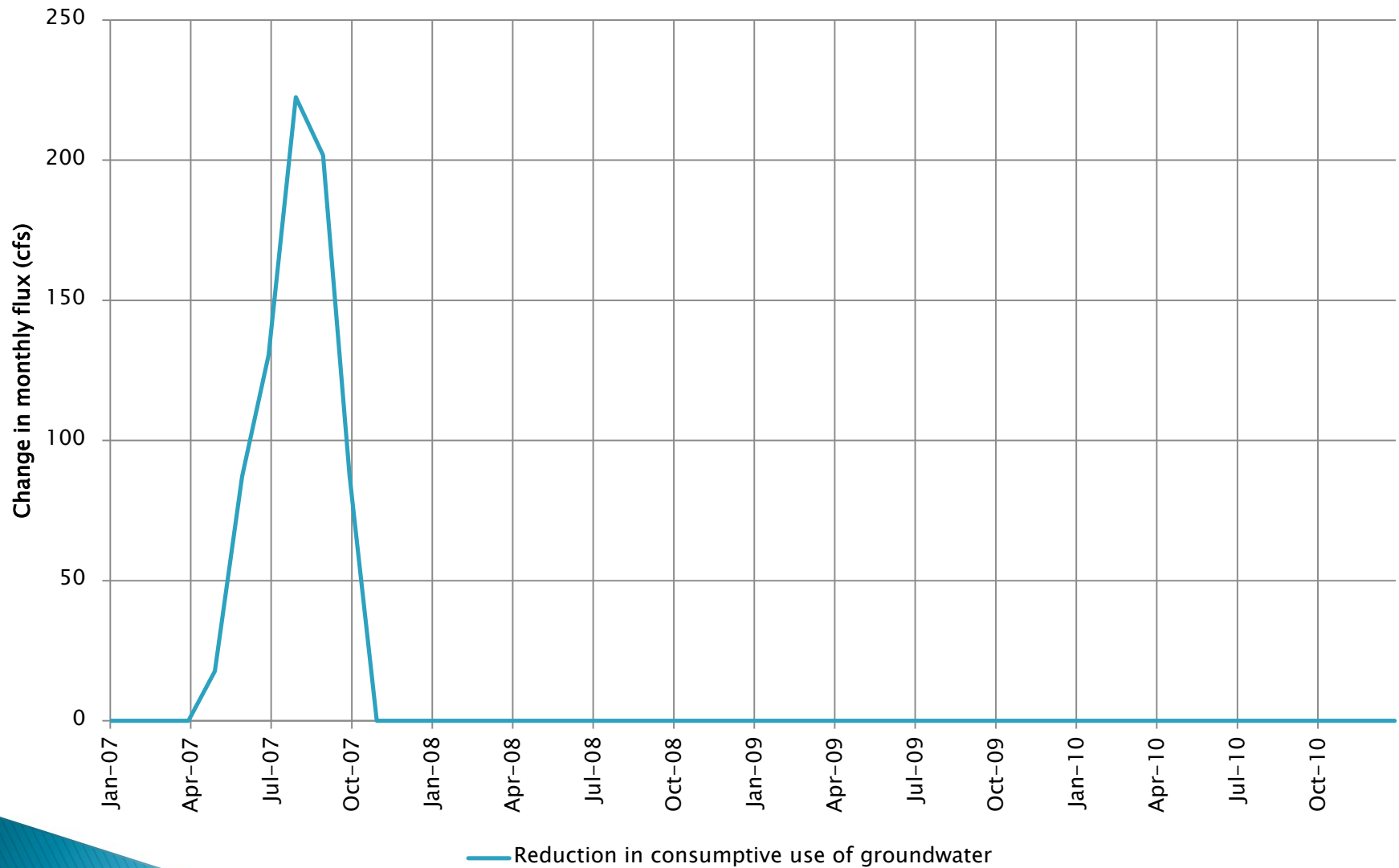
Simulation results by river reach (1995–2010)



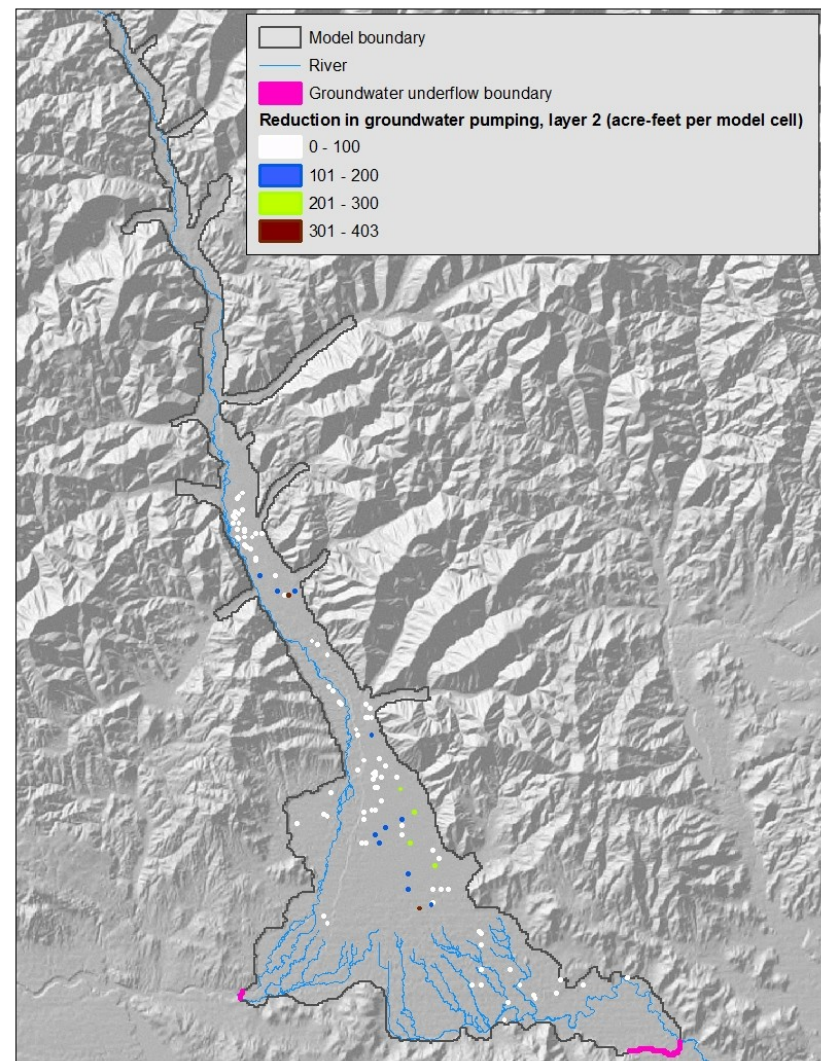
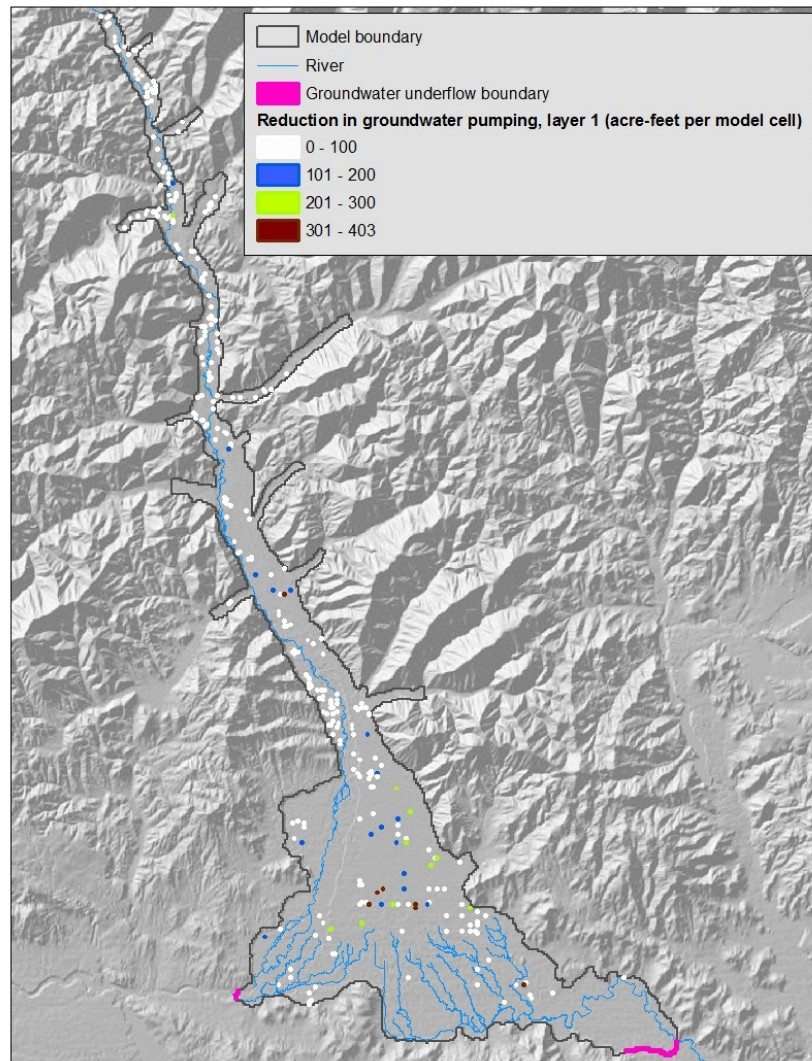
Simulation results, groundwater outflow (1995–2010)



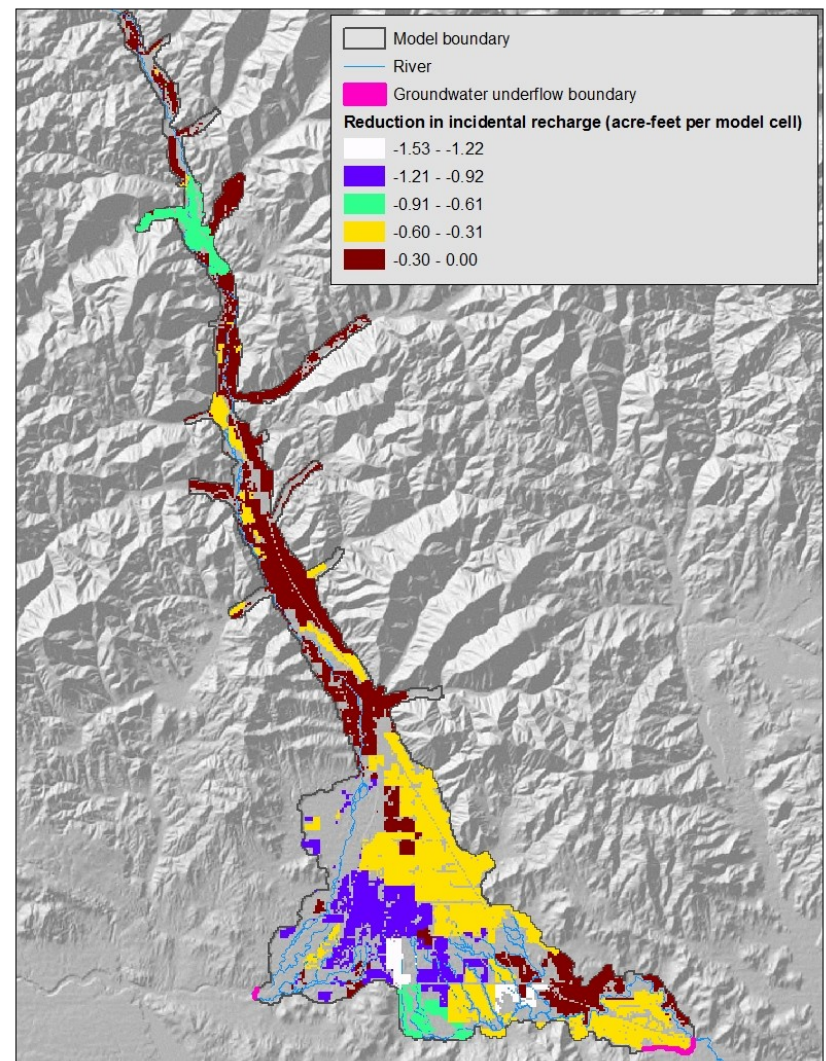
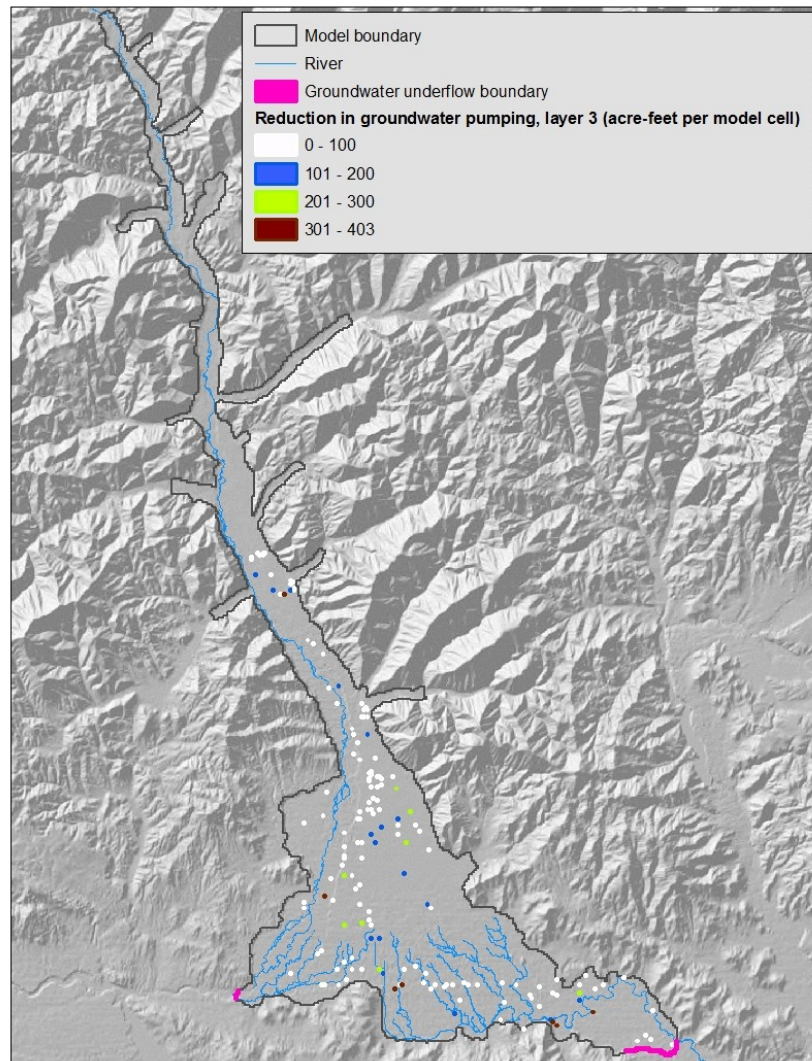
Consumptive use of groundwater (2007)



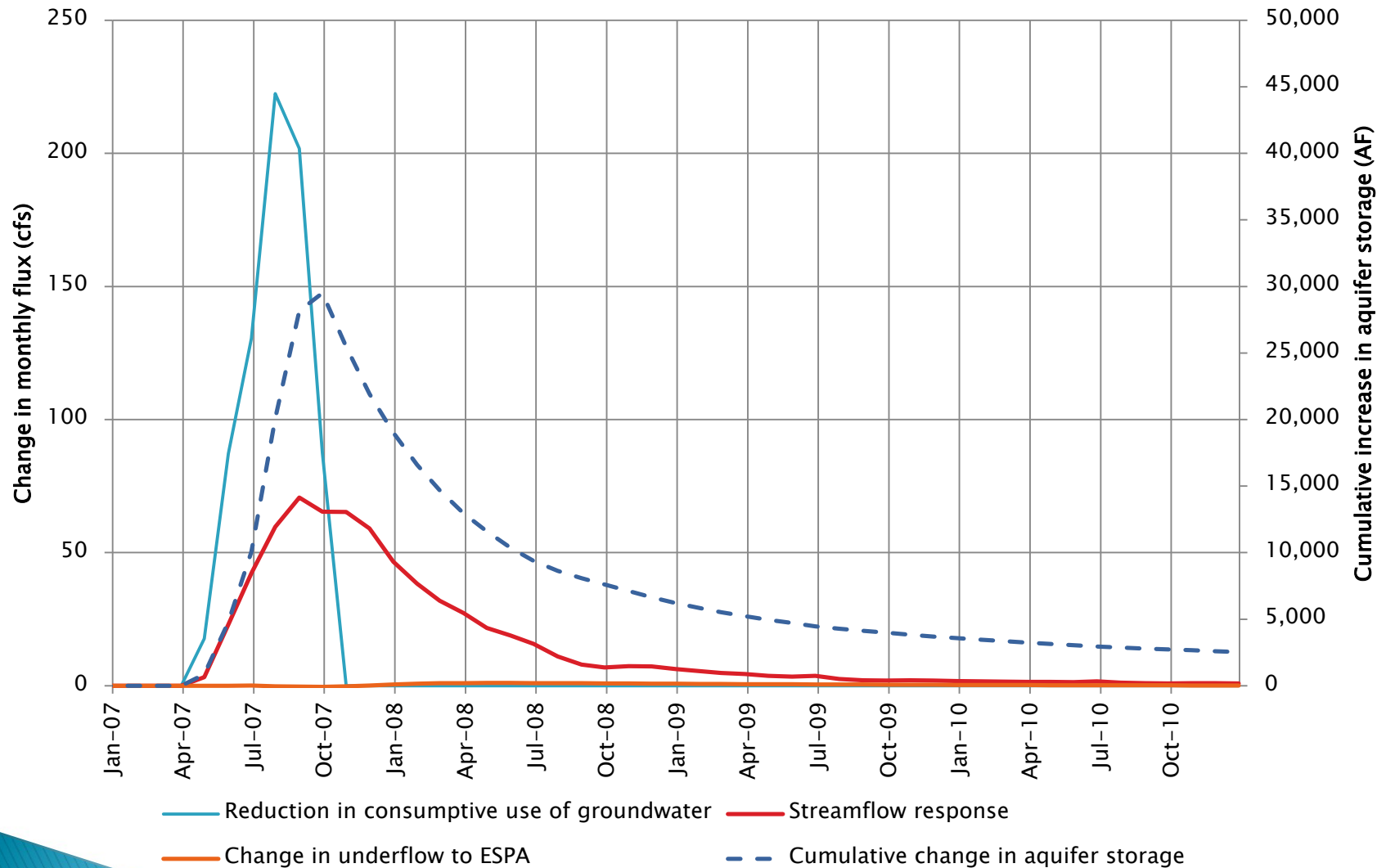
Spatial distribution of change in aquifer stress



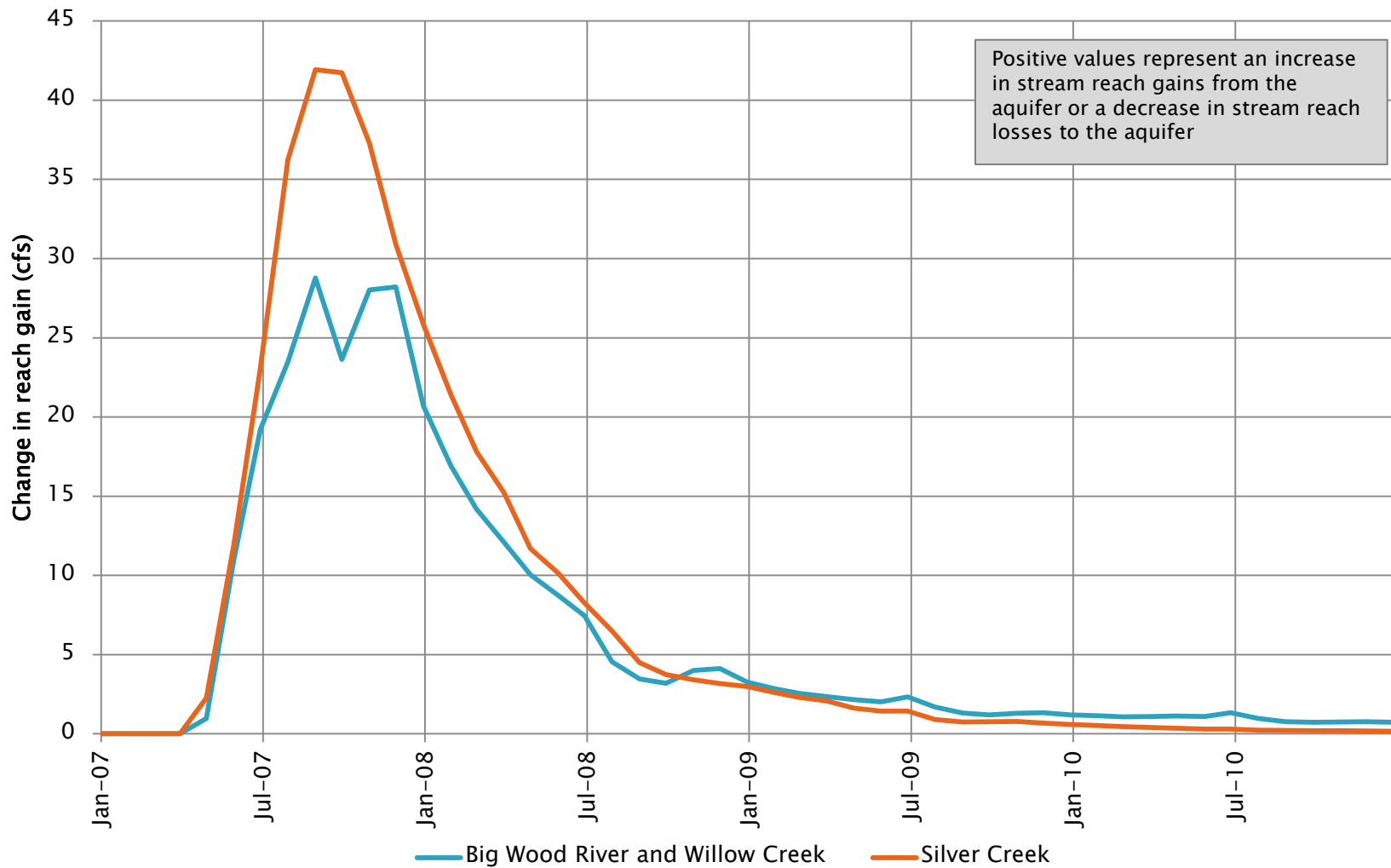
Spatial distribution of change in aquifer stress



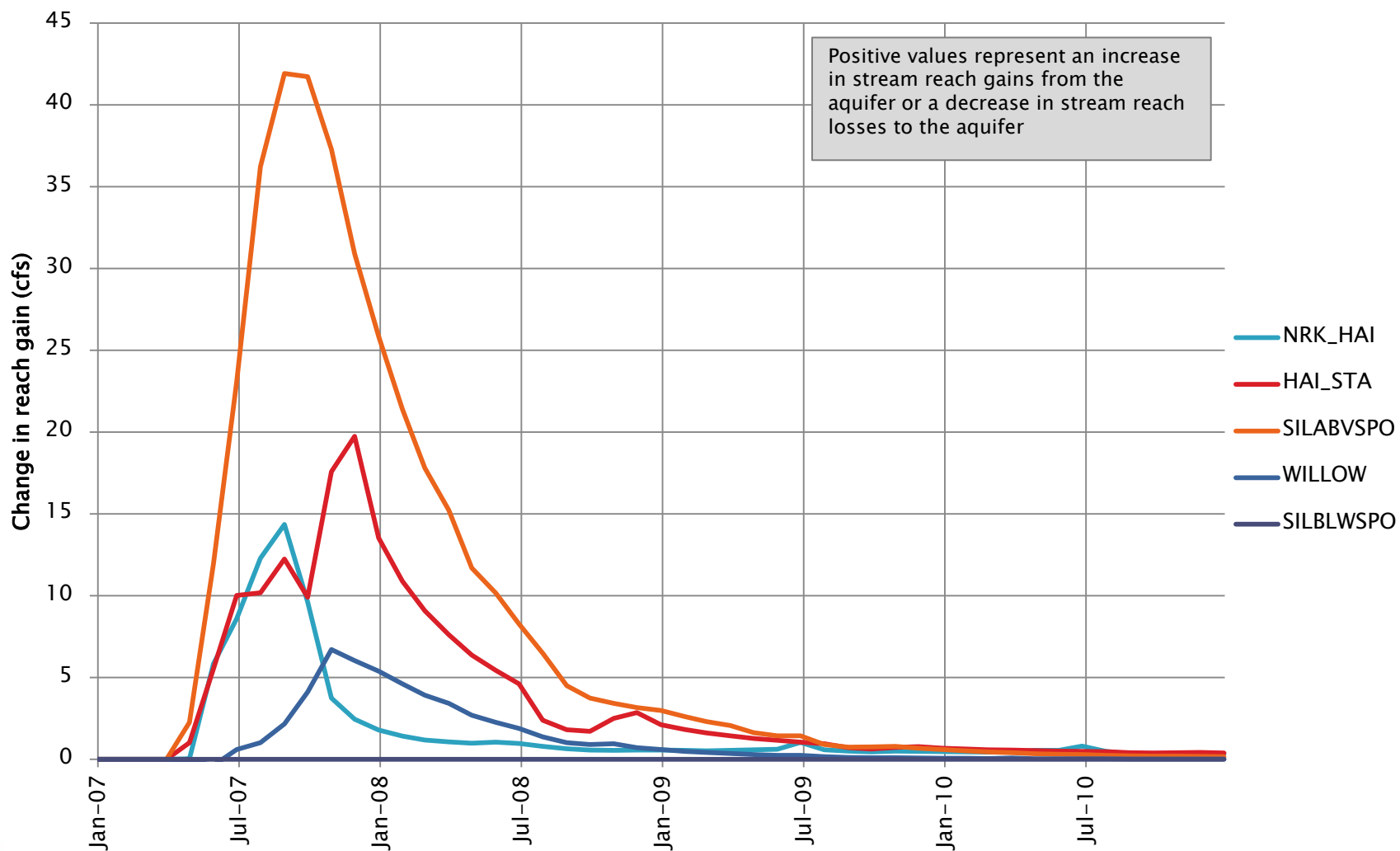
Simulation results, change in streamflow, underflow, & aquifer storage (2007)



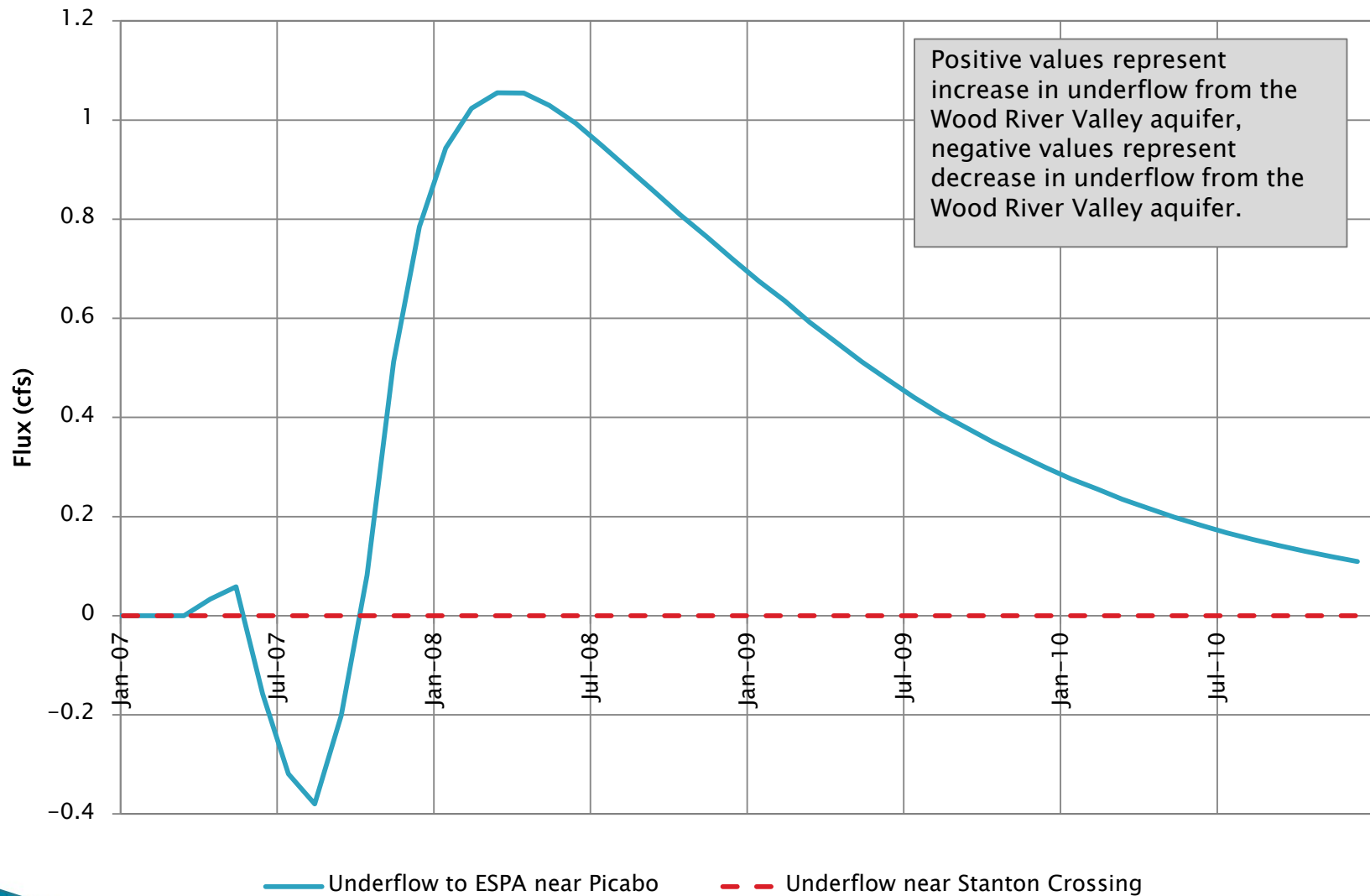
Simulation results by river (2007)



Simulation results by river reach (2007)



Simulation results, groundwater outflow (2007)



Questions???