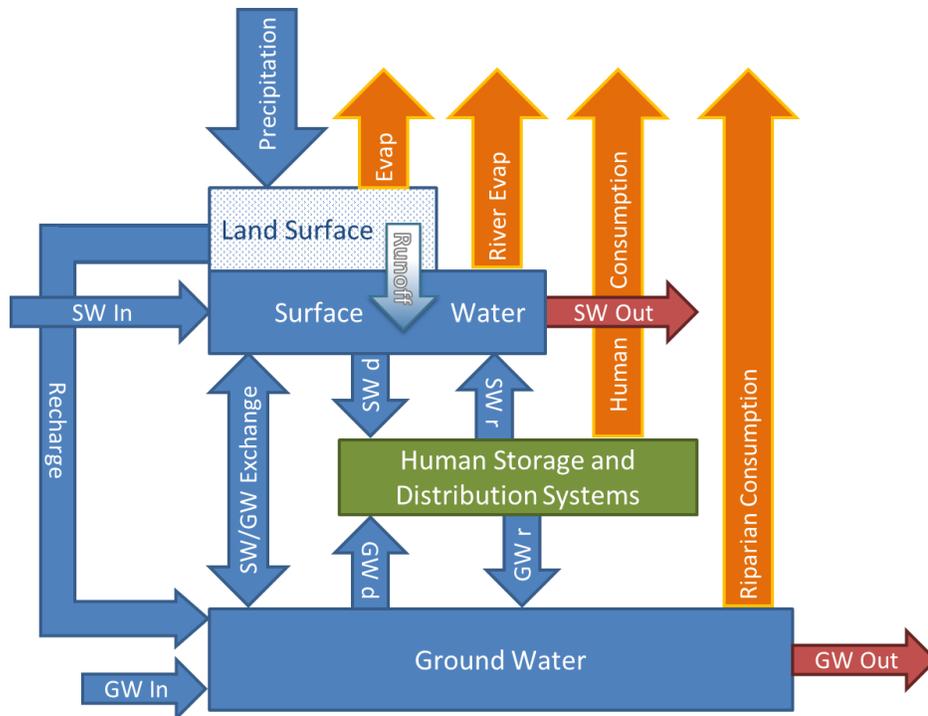


## FY15 NM WRI Research Progress Report Form

Report Due Date: January 1, 2014

1. **Project Title:** A Dynamic Statewide Water Budget for New Mexico
2. **Investigators:** *Principal:* Jesse Roach Ph.D., Tetra Tech Inc. *Unfunded Collaborators:* Vince Tidwell Ph.D., Sandia National Laboratories, Bruce Thompson Ph.D., University of New Mexico. *Other researcher:* Kenneth Peterson M.S., New Mexico State University
3. **Description:** The dynamic, statewide water budget (DSWB) is synthesizing water supply and demand information from across the state into a single, easily accessible location, and in such a way that users can view information at a variety of spatial scales. The overall objective of the project is a holistic view of water resources in the state to help support local and regional education and planning to improve stewardship of New Mexico's limited and critically important water resources.
4. **Methodology:** The DSWB is being built by pulling existing information from a variety of sources, predominately the New Mexico Office of the State Engineer / Interstate Stream Commission's Regional Water Plans (NM-OSE-ISC, 1999-2008), the New Mexico Office of the State Engineer's Water Use reports (Longworth, Valdez, Magnuson, & Richard, 2013) and USGS stream gage information.
5. **Results to Date and Work Remaining:**
  - a. Results listed in the December 1<sup>st</sup> progress report and earlier progress reports that have not been actively worked subsequently are not included here. Refer to those reports. This list represents results from work in the past month.
  - b. Model development documentation continues to be updated. New additions to the documentation since the December 1 progress report (Item 5a) include additions of descriptions of indoor versus outdoor domestic and municipal use, irrigation season length, livestock use, conversions of county level data to water planning region level data, estimates of recharge, and methodology for quantifying available surface water.
  - c. Conversations were initiated with Stacy Timmons at NMBG about the status of the groundwater storage change estimation work and if and how we will be able to incorporate it into our modeling efforts. The NMBG groundwater storage change group hopes to produce storage change estimates for at least one groundwater basin by June. This is likely to be the Mimbres Basin. We won't wait for the information, but will be ready to directly incorporate it when available.
  - d. Meetings with John Longworth and Molly Magnuson of the NMOSE revealed inconsistencies in our crop consumption modeling methods that have been fixed in the model. Our Blaney Criddle based crop consumption numbers now produce results that are reasonably consistent with published 5 year values from NMOSE (2013).
  - e. The conceptual mass balance model was updated again as shown below, and now only contains a single groundwater stock, explicitly represents river evaporation, and connects land surface to groundwater via the recharge flux.



- f. Livestock use has been dynamically modeled based on livestock population levels. Mining and energy use remains static and data driven only. Available resources will likely preclude mining and energy use being made more dynamic in this funding cycle.
- g. Development of surface water fluxes has begun by river basin starting with the Upper Colorado (San Juan). This includes obtaining Navajo reservoir storage information.
- h. Remaining work: Add surface water information for other river systems including integration of URGSiM at some level to represent Upper Rio Grande.
- i. Remaining work: Incorporate historic reservoir storage data for Pecos reservoirs, Canadian reservoirs, and possibly Grindstone and Alto Lakes in Ruidoso area?

6. **Student participation:** None

7. **Special recognition awards or notable achievements:** Our efforts were summarized in WRRRI's 12/2014 The Divining Rod. <http://wrri.nmsu.edu/publish/dr/xxxvii2.pdf>

8. **References:**

Longworth, J. W., Valdez, J. M., Magnuson, M. L., & Richard, K. (2013). *New Mexico Water Use by Categories 2010*. Santa Fe: New Mexico Office of the State Engineer.  
 NM-OSE-ISC. (1999-2008). *New Mexico Regional Water Plans*. Santa Fe: New Mexico Office of the State Engineer / Interstate Stream Commission.

9. **Progress toward uploading data to a common/standardized platform:** We have spoken with Fereshteh Soltani at NMSU about the type of data we expect to produce. Generally, the output from the DSWB will be available in Microsoft EXCEL file format.

10. **Provide two PP slides that provide summary information on your project appropriate for viewing by state legislators.**