

FY16 NM WRRI Research Progress Report Form

Report Due Date: September 8, 2015

1. **Project Title:** Implementing a Web-based Streamflow Statistics Tool for New Mexico (StreamStats)

2. **Investigators (names, university/agency):** Matt Ely, US Geological Survey New Mexico Water Science Center; Tara Gross, US Geological Survey Colorado Water Science Center

3. **Brief description of project, research objectives, and impacts on New Mexico (provide performance measures and outcomes):** An assessment of statewide water resources would be incomplete without consideration of surface water. Estimates of streamflow are needed for a wide variety of applications, including water-resources planning and management, flood-plain mapping, and instream flow determinations for pollution and habitat studies. Surface water is the primary source of water for irrigators along major stream corridors in New Mexico and is increasingly being utilized by large municipalities, such as Albuquerque and Santa Fe, for potable water supply.

While streamflow statistics for gaged sites are readily available from existing sources, streamflow statistics are needed for ungaged sites where no observed flow data are available. Quantification of streamflow at ungaged locations will provide information that State water planners and managers need to insure a secure water future for New Mexico.

The proposed work will provide an interactive web-based tool to determine streamflow statistics for stream locations in New Mexico for which streamflow regression equations are available. The web tool will be available to Federal, State, and local agencies, as well as the public, so that information about basin characteristics and streamflow statistics can be quickly obtained. It will provide commonly needed hydrologic information that can quickly be accessed to provide scientifically defensible results in a uniform and non-biased manner. The web-based tool will provide basin delineation results as Geographic Information System (GIS) shapefiles and basin characteristics and streamflow estimates as text files.

4. **Brief description of methodology:** The proposed work will consist of the compilation of a streamflow statistics database, development of digital map-base layers, and the construction of the web-based GIS hydrologic framework.

5. **Brief description of results to date and work remaining:** Processing of the National Hydrography Dataset (NHD) is complete for a majority of the State. About 50 percent of the NHD edits and processing through the HydroDEM step for Region 13 (Rio Grande) have been completed. Remaining work includes (1) the completion of the remainder of the NHD edits and processing, (2) quality checks of the flow direction and flow accumulation grids output by the HydroDEM process, (3) construction of the flow accumulation adjustments to downstream HUCs and completion of the terrain pre-processing steps, (4) merging the 8-digit HUCs that have been individually processed into a larger 2-digit unit so that it can be merged with the surrounding regions' NHD plus data, and (4) setting up Global.mdb, regression regions, basin characteristic grids, XML, exclusion polygons, and submit to the StreamStats Team for web implementation.

6. **Student participation:** None at this time.
7. **Provide special recognition awards or notable achievements as a result of the research:**
None at this time.
8. **Include references as needed:**
Waltemeyer, S.D., 2008, Analysis of the magnitude and frequency of peak discharge and maximum observed peak discharge in New Mexico and surrounding areas: U.S. Geological Survey Scientific Investigations Report 2008–5119, 105 p.
9. **Provide a few sentences on progress toward uploading data to a common/standardized platform, if applicable.** None at this time. All data and interactive tools will be hosted by the USGS and NM WRRI can provide links. Specific data sets used by other study components can be uploaded upon their completion.
10. Provide two PP slides that provide summary information on your project appropriate for viewing by state legislators.