

FY16 NM WRRI Research Progress Report Form

Report Due Date: October 1, 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:** The backbone of data for the StreamStats application is completed. Exclusions (areas of regulation that require special user notifications) and the last three grids required to run the precipitation basin characteristics (Waltemeyer, 2008) are being finalized. The approach used in StreamStats to process sinks (points located in internally draining closed basins) is not working well with the 30-meter data. A temporary solution is being tested so New Mexico will have a working online application. The additional testing and final tasks (exclusions and precipitation grids) will take about a month before the data can be implemented on the development server

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.