

FY16 NM WRRI Research Progress Report Form

Report Due Date: December 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 web-based streamflow statistics tool for New Mexico (StreamStats) was delivered to the USGS National StreamStats Team for review, testing, and implementation. Next, hydrologic region layers will be developed and regression equations assigned to the appropriate layers. The low-flow equations from Waltemeyer (2002) present challenges as they apply only to perennial streams. We will need to develop a unique approach, possibly determining the periodicity of the user-selected stream.

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., 2002, Analysis of the magnitude and frequency of the 4-day annual lowflow and regression equations for estimating the 4-day, 3-year low-flow frequency at ungaged sites on unregulated streams in New Mexico: U.S. Geological Survey Water-Resources Investigations Report 2001-4271, 22 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.