

## **DRAFT Scope of Work**

### **Phase II of the Paso del Norte Watershed Council's Cooperative Water Resources Database Project**

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#### **Introduction and Context of the Phase II Scope of Work**

In Phase I of this Project, an operational website was established and put on line through the New Mexico Water Resources Research Institute (NM WRRI) that provides access to a range of databases that house water resource data in the Paso del Norte region. The majority of these databases exist on servers in other agencies, and the Project website acts as a portal to these databases. The Project also hosts datasets that are housed internally in the server maintained by the NM WRRI. To provide access to these distributed datasets, the Project uses a GIS-based user interface to provide spatial area of interest tools that employ GIS maps to allow users to click on spatial features of interest. These map features then link to either off-site URLs of websites that contain . data or to files internally housed on the Project server. Through this interface, users are able to view and download a range of water quality and flow data housed at different agencies via one user interface.

As part of Phase I, Project staff compiled a final report that details the development of the Project, and the final report also details ideas for future work that will build on the successful pilot project detailed in the report. (See PDNWC Final Report on Cooperative Water Resources Database Project 2003). Project staff also hosted a **PDNWC Cooperative Water Resources Database Project Workshop** that was held at the Texas A&M Agricultural Research & Extension Center in El Paso on 15 September 2003. The intent of the workshop was to share the outcomes of Phase I with as wide a range of potential users as possible and gather ideas for future project development from the participants. This Scope of Work incorporates the key ideas generated through the publication of the Final Report and the comments shared at the Workshop.

#### **Tasks and Areas of Interest to be Advanced in Phase II of the Project**

Based on the outcomes of the Final Phase I Report and the Workshop, as well as discussions with members of the PDNWC Cooperative Water Resource Database Project Technical Committee, the following tasks are identified to guide future work in Phase II of the Project.

**Task One** - Complete migration of the Project website and related databases to the ArcIMS software. As detailed in the Final Phase I Report, this would allow

Project Staff to easily revise the GIS maps that allow spatial queries of relevant water resources data. Related to this are two subtasks, as detailed below:

- Field checking of data points through the use of Global Positioning Systems (GPS) tools. Students at NMSU will conduct field verification of the location of gauges, using GPS to more accurately and precisely locate these points.
- Perform enhanced quality control and assurance of the digital GIS maps that are input into the ArcIMS software, and related data.

**Task Two** - Integration of datasets identified in Phase I of the Project by the El Paso Water Utilities, El Paso County Water Improvement District #1, and la Universidad Autonoma de Ciudad Juarez. The Technical Committee would also incorporate historical data identified by the PDNWC/US Army Corps of Engineer Project into the GIS-based web interface to link the EPWU-funded project to USACE-supported database efforts.

**Task Three** – Integration of data from new monitoring stations and equipment to be installed in the field, as detailed in the Final Phase I Report. Additional funding outside of the support requested from the EPWU for the Phase II Database activities would support the installation of this field instrumentation. EPWU staff have indicated an interest in installing conductivity probes with telemetry at the East and Montoya drains just upstream of where they enter the river so impacts from these two drains on water quality can be monitored. Phase II efforts would incorporate data from any new monitoring sites into future ArcIMS map products and database archives.

**Task Four** - Exploration of scripting and automated FTP routines or a batch mode of data transfer to allow progress on the “user interface plateau” discussed in the Final Phase I Report. The goal of this task is to explore how best to include both historical data and data currently being gathered. This would also facilitate a searching utility that would allow users to query on topical areas of interest, as well as spatial areas of interest. (NOTE - An alternative procedure to access historical data would be examined in the event this approach does not prove feasible. The alternative would involve downloading all available historic data and storing these data on the project server).

**Task Five** – Increased support for and participation of local and regional data providers. Enhanced levels of funding are written into the budget to support more active participation of volunteer regional data providers (El Paso County Water Improvement District #1 and Elephant Butte Irrigation District) and/or to bring new data providers into the project.

**Task Six** – Identification of potential sources of groundwater data. In Phase II, we would explore potential sources of groundwater data to be included in the project, and these would include data well locations, well depths, well

production, water levels, aquifer thickness and other hydrogeological information.

**Task Seven** – Explore the potential of linking results of the database inventory and compilation effort to some form of modeling activities. Phase II activities would support efforts by the USACE Upper Rio Grande Water Operation Review team in extending their Riverware Flow Model into the Rio Grande reach between Elephant Butte Dam and Ft. Quitman, and support their efforts in adding a water quality modeling component within this same reach.

**Task Eight** – Project management. Mr. Mathew Rich of the NMSU Department of Geography will handle management of all project activities. Funds have been written into the budget to support Mr. Rich handling these management responsibilities, and his contributions towards completing project tasks.

**Deliverables** – Through completion of the above-referenced tasks, we will produce the following deliverables by the end of the project period.

**Deliverable One** - Development of an enhanced operational website built on the ArcIMS software, allowing GIS access to the underlying database files. Data points will be field verified for locational accuracy, and enhanced quality control and assurance will be performed on database elements. The server will be located at NM WRRRI, and Mr. Matthew Rich will be responsible for completion of this Task.

**Deliverable Two** - A feasibility assessment of the scripting and automated FTP routines or a batch mode of data transfer described in Task Three above will be completed. Based on the success of this effort, a demonstration component may also be completed.

**Deliverable Three** – Documentation of groundwater data of interest to the Technical Committee members will be provided, including a listing of groundwater elements of interest, sources for these data elements, and the basic metadata elements involved.

**Deliverable Four** – Documentation of the potential to link the Coordinated Database Project to ongoing modeling efforts in the region will be provided. Specifics would include the potential to add a water quality modeling component into the Riverware Flow Model that is being advanced by the USACE Upper Rio Grande Water Operation Review team. The spatial focus of this investigation would be the Rio Grande reach between Elephant Butte Dam and Ft. Quitman.

**Deliverable Five** - A report documenting the development of the project deliverables and the architecture used to link to the data from the data providers will be prepared by staff at NM WRRRI, NMSU, UACJ, and TAMU.