

**Arid West Water Quality Research Project**  
**Revised Work Plan – Phase I**  
**July 11, 2003**

This Work Plan supersedes the original Work Plan established in May 1996 and its revision, May 1999. It has been restructured to present the revised scope of work based on Project activities to date. In addition, the Work Plan includes updates and information on Project activities and participants. The Work Plan structure has been simplified to use a categorical approach to describe Work Plan activities. (The previous Work Plan used a series of phases and emphasized the start-up and initial research phases of research.)

**Project Background**

*Establishment of the Arid West Water Quality Research Project (AWWQRP or “Project”)—*The AWWQRP began as an idea in the early 1990’s, an idea developed out of concerns regarding the applicability of national water quality criteria to western ephemeral and effluent-dependent waters. Two key issues were originally identified: (1) national water quality criteria were based on aquatic species and flow regimes not necessarily representative of ephemeral and effluent-dependent streams; and (2) the methods provided by the U.S. Environmental Protection Agency (EPA) to modify national water quality criteria for use in effluent-dependent and ephemeral streams were not readily applicable primarily because of the lack of basic data on organisms of importance in these arid West waters (note: throughout this document references to the arid West include both arid and semi-arid areas). With these concerns in mind, efforts were initiated to demonstrate the need for the establishment of a program for the development of standards and criteria applicable to the arid West, similar to regional programs established for the Great Lakes and coastal marine waters.

These efforts bore fruit with the establishment of the AWWQRP in 1995 as the result of a \$5,000,000 federal appropriation (Public Law 103-327) and the establishment of an Assistance Agreement between the EPA and Pima County, Arizona. The establishment of the Agreement provided a significant opportunity for Pima County, EPA Region 9 and others throughout the arid West to work cooperatively to conduct the scientific research necessary to develop appropriate water quality criteria and standards for the region and improve the scientific basis for regulating wastewater and stormwater discharges in the arid and semi-arid West.

Since the establishment of the AWWQRP, three projects have been funded and additional projects are planned. As projects have been implemented and completed, the AWWQRP has shared Project results and their implications in a variety of forums. This outreach effort is leading to a broader understanding of water quality issues unique to the arid West and growing support for the establishment of a regional approach for the development and implementation of water quality standards. This growing support recently resulted in an additional federal appropriation of \$500,000 that is being administered as a separate AWWQRP grant. In addition, increased support of the AWWQRP also has been fueled by an increasing interest in recognizing the ecological benefit of effluent-supported riparian habitats in the West. Moreover, it is being recognized that as the cost of wastewater treatment climbs and the quality of effluent improves,

the competition and value of treated wastewater will likewise increase to the extent that treated wastewater, which could be used to support riparian habitat and wildlife, will likely be diverted to other urban uses. This is especially a concern for areas of the arid West where riparian and wildlife habitats are already limited. Thus, an ongoing purpose of the AWWQRP is to provide critical data to support efforts to address these unique western water quality concerns and provide innovative solutions.

*Description of Arid West Ecosystems*—The arid West is defined as the arid and semi-arid portions of the western United States that extend from south central Texas west to southeastern California and north along the east side of the Sierra Nevada and Cascade Ranges to the Canadian Border in eastern Washington. The eastern boundary of this region extends from central North Dakota south through central South Dakota, Nebraska, western Kansas and Oklahoma to south-central Texas. The arid and semi-arid areas of this region, which incorporates portions of 17 western states, is characterized generally by annual precipitation of less than 20 inches, with numerous localities receiving less than 12 inches of precipitation annually.

While much of the region can be classified as arid or semi-arid based on annual precipitation, the northern portions are characterized by strong seasonality with warm summers and cold winters. By contrast, southeastern California, southern Arizona, New Mexico, and Texas are characterized by comparatively mild winters and warm to hot summers.

Terrestrial vegetation within the arid West is most frequently composed of plant communities of low stature, dominated by a variety of species of small trees, shrubs, grasses and forbs. Forested landscapes within the region are generally restricted to higher elevation sites where precipitation is greater and summer temperatures more moderate, or where water is more readily available. At lower elevations, often the most complex vegetation communities are located along watercourses.

The arid West is also as diverse regulatorily as it is geographically diverse. The region includes all or portions of five EPA regional offices (Regions 6, 7, 8, 9 and 10) and 17 state and numerous tribal governments (28 tribal governments in Arizona alone) with jurisdiction over establishment of water quality standards. In addition, several federal agencies exert considerable influence over western water resource management including the U.S. Fish and Wildlife Service, Army Corps of Engineers, Bureau of Reclamation, U.S. Forest Service and Bureau of Land Management. All of these agencies have a number of regional and state offices with different portions of the arid West under their jurisdiction. Given the diversity of the regulatory entities established across the arid West, it is not surprising that there can be many different and possibly conflicting viewpoints over expectations for water quality.