

ARIZONA WATER INSTITUTE

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Distribution Program Committee
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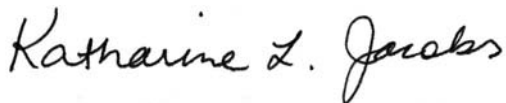
Dear Committee Members,

Thank you so much for providing the Arizona Water Institute with the opportunity to apply for a grant from the Arizona Community Foundation. The Arizona State University Foundation has agreed to apply on behalf of the Arizona Water Institute, which does not yet have 501.C.3 status. The Foundation has agreed to provide fiscal services related to this application. As required by the prospectus, our proposal is focused on scientific research in Maricopa County.

This proposal meets all three of the priority criteria for science projects, in that it will help build the information system that supports the Arizona Water Institute, encourage collaboration between the universities and the three state agencies that are part of the Institute, and support capacity building through education opportunities for agency employees and students at ASU.

If you have any questions regarding this proposal, please do not hesitate to contact me.

Sincerely,



Katharine Jacobs
Executive Director
Arizona Water Institute

**Arizona Community Foundation Proposal:
Supporting the Development of the Arizona Hydrologic Information System
in Maricopa County**

Funding Requested: \$150,000

Submitted by the Arizona State University Foundation

Introduction

This proposal is submitted by the Arizona State University (ASU) Foundation on behalf of the Arizona Water Institute (AWI). AWI is a collaboration of the state's three universities focused on supporting community efforts to resolve water problems, promoting economic development through development and transfer of water-related products and services, and expanding educational opportunities. Partners in this effort include state agencies (Water Resources, Environmental Quality and Commerce), water stakeholders, the governor's office and private sector interests. The AWI began functioning formally in January, 2006.

The proposal focuses on capacity building and research related to developing the information "nodes" for the **Arizona Hydrologic Information System (AHIS)** at the Arizona Department of Water Resources Phoenix office and on the Arizona State University campus. The **AHIS** is a statewide water information system that will support water management and research activities within communities and watershed groups as well as within state agencies and universities. It is intended to be linked to a prototype National Hydrologic Information System that is being developed with support from the National Science Foundation, and has the potential to be linked to the National Integrated Drought Information System being developed by the National Oceanic and Atmospheric Administration.

Significant investment is required to build the database and the "cyberinfrastructure" that links the three universities and the state agencies. This investment includes collection of metadata regarding the location, format and nature of hundreds of individual databases located throughout the state, as well as capacity building for staff to design the data access and retrieval system and a geographically based web interface. The project leverages existing funding from NSF and Technology and Research Initiative Funding (TRIF) at The University of Arizona (UA) and the ASU Decision Center for a Desert City, an anticipated private donation of \$300,000, and likely additional investments from public and private sector donors.

Background

Important strategic and economic opportunities are expected to result from the establishment of the AWI. AWI will be largely self-supporting, and result in significant influx of federal funding, grants and contracts, and private and foundation support. The recently completed business plan, by the Battelle Technology Partnership, predicts that the AWI may generate \$7.5 million in new annual revenues

for the state within five years. However, currently there is no permanent funding source and the only firm support for this multi-pronged initiative is \$150,000 from the Arizona Board of Regents TRIF fund to support the Executive Director and related expenses for the first year.

An Executive Committee oversees the Executive Director and the activities of the AWI; this committee includes the Vice-Presidents for Research at the three universities and the chief of staff of the governor's office. The Executive Director works with coordinators on each campus to match faculty within the three institutions to appropriate AWI projects and funding sources, and ensure the timely completion of projects. New associate directors will be located in the Department of Water Resources (ADWR), Department of Environmental Quality (ADEQ) and the Department of Commerce to ensure that the agencies are given timely and appropriate support by the AWI and to participate in AWI projects. An external advisory committee comprised of water interests, government agency and private sector participants with broad geographic representation is being established.

Four initial AWI projects are already underway. The largest of these efforts is the development of the **AHIS**, the information infrastructure of the AWI. **AHIS** will provide access to data relevant to water-related research, technology, planning, education, and outreach from multiple sources within the southwest. Specific aims of this project are to (1) develop a web based "metadata" catalog of known available water resources information, (2) design the information backbone or "cyberinfrastructure" for data sharing for the three universities, (3) initiate a collaborative design process for long-term public access, a web-based water information system and a phased implementation plan, and (4) complete demonstration "proof of concept" research projects. The first step in the establishment of the **AHIS** has been completed - a web portal that contains a catalog of over 400 university staff and researchers engaged in water activities located at the three state universities. This catalog is linked to 17 water centers across the three universities and provides links to multiple other websites. It allows users to sort for the type of expertise that they need to resolve water issues and develop research proposals. It is accessible at www.arizonawater.org. Two more "proof of concept" projects are in the process of being launched, a web-based water atlas for the Phoenix metropolitan area, and a statewide well information system that provides web-based public access to Arizona Department of Water Resources well information.

Proposal

This proposal would strengthen the institutional infrastructure of AWI by supporting the establishment of a data access portal at the Arizona Department of Water Resources and at ASU. The grant would provide bridge funding to provide training for ASU and DWR staff, support the collection of metadata, allow for limited hardware and software purchases, and further focus the development of the cyberinfrastructure, the data query system and the web interfaces. Because this collaborative effort is unique, it has attracted significant interest at the federal level. It is hoped that it will be a prototype for state-based information systems that can link to national water information databases.

The **AHIS** project will help advance the field by providing seamless access to data that are not generally available to practitioners and researchers, while allowing the developers of the data to retain control over maintenance and quality control. The proposed information system includes a network that is based on common protocols for searching and accessing data. “Nodes” would be hosted in offices at the three universities and at ADWR and ADEQ; they would serve as gateways for partnering entities – state, federal, municipal, private, etc. – to make certain data available in an updatable manner. All end user products, such as web information pages, data search and download sites, atlases, educational outreach sites, etc., would connect to one of these nodes to access data through published protocols that are supported by most application systems. By connection to one node, these applications can gain access to information at all of them due to the gridded nature of the network. Metadata catalogs will inventory information that can be accessed via that node. Dynamic workspace will be provided so that interactive applications can store and manage the temporary files that result from a given users’ session.

As a new, larger scale proof of concept, the project funded by this grant will focus on the capacity to search and retrieve data from various sources and integrate these data for specific research purposes. This will be demonstrated through specific analysis products, including one that will focus on identifying key factors, trends, and geographic patterns of domestic water demand in Maricopa and Pima counties. This will support development of geographically distributed forecasts that consider: socio-demographic factors; changes in housing stock; and impacts of wealth and weather, climate fluctuations, and urban heat island effects. As a result, cross-city analysis of trends in water demand will be facilitated, as will the ability to analyze the water savings potential for various conservation measures and regulations in different urban environments.

Users will be able to obtain key water demand data through the web portals and compare conditions in Maricopa and Pima counties. Visualization tools and protocols will also be developed as part of the AHIS interface.

The budget for the Community Foundation component of this project includes:

AHIS Senior Database Staff Hire:	\$58,824
Employee related expense:	\$17,647
Operations support:	\$ 8,274
Consulting/Training for AHIS/ADWR/ASU Staff:	\$13,525
Graduate Student to support data collection effort:	\$19,969
Travel for AHIS developers to meetings and conferences:	\$6,806
Software and hardware purchases for ADWR and ASU portals:	\$10,439
Administrative Service Charge	\$14,516
TOTAL	\$150,000

Budget Explanation

(Reference the excel spreadsheet that includes total project costs)

The costs for the Community Foundation proposal include only costs in Maricopa County. There are matching funds being used for system development at UA and NAU.

Salaries include \$58,824 for the AHIS Database Specialist at ASU; \$40,000 for the Database Specialist at UA; \$38,000 for the Database Specialist at NAU; and \$19,969 for an academic year graduate student at ASU. The UA component is supported by two existing UA sources: the TRIF Recruitment and Research Initiative, and the SAHRA TRIF Directed Initiative. The NAU component and portions of the travel, consulting and supplies funds come from an anticipated private donation of \$150,000.

Employee related expenses are calculated at 30% of the total salaries.

Consulting fees include \$13,525 for the Community Foundation component, \$10,000 for the outside of Maricopa County components.

The subcontract is for Wil Orr, USGS Applications Center, who will be developing visualization products for AHIS. 100% of his support comes from the anticipated private donation of \$150,000.

\$6,806 of the total of \$15,000 for travel; 100% of the equipment funds; and \$8,274 of the \$15,000 for supplies are from the Community Foundation with the remainder from the private donation.

An administrative service charge of 10.5% (\$14,516) will be charged on the Community Foundation funds.