



Water Resources
Research Center

College of Agriculture and Life Sciences

Update on the Arizona-Sonora portion of the United States-Mexico Transboundary Aquifer Assessment Program

**Water Committee of the Arizona-Sonora Commission
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Introduction

- ◆ Last presentation I made to this committee was in June 20, 2008. We provided a brief update on June 5, 2009. Also represented at the December 2009 meeting in Hermosillo.
- ◆ U.S. Public Law 109-448, the United States - Mexico Transboundary Aquifer Assessment Act was approved in late 2006.
- ◆ Authorized the Transboundary Aquifer Assessment Program (TAAP) in the U.S., with a spending authorization limit of \$50 million.
- ◆ Intent is to provide scientific information useful to policy makers and water managers.
- ◆ To date, a total of \$2 million has been appropriated for this program.
- ◆ The presentation will highlight accomplishments to date and note challenges moving forward.

Primary Participants

- ◆ U.S. Geological Survey (USGS) in the Department of Interior
- ◆ U.S. federally recognized water institutes/centers located at universities in Arizona, New Mexico and Texas.
 - Water Resources Research Center at the University of Arizona
- ◆ International Boundary and Water Commission (IBWC)
 - U.S. section
 - Mexican Section - Comisión Internacional de Límites y Aguas (CILA)
- ◆ Comisión Nacional del Agua (CONAGUA)

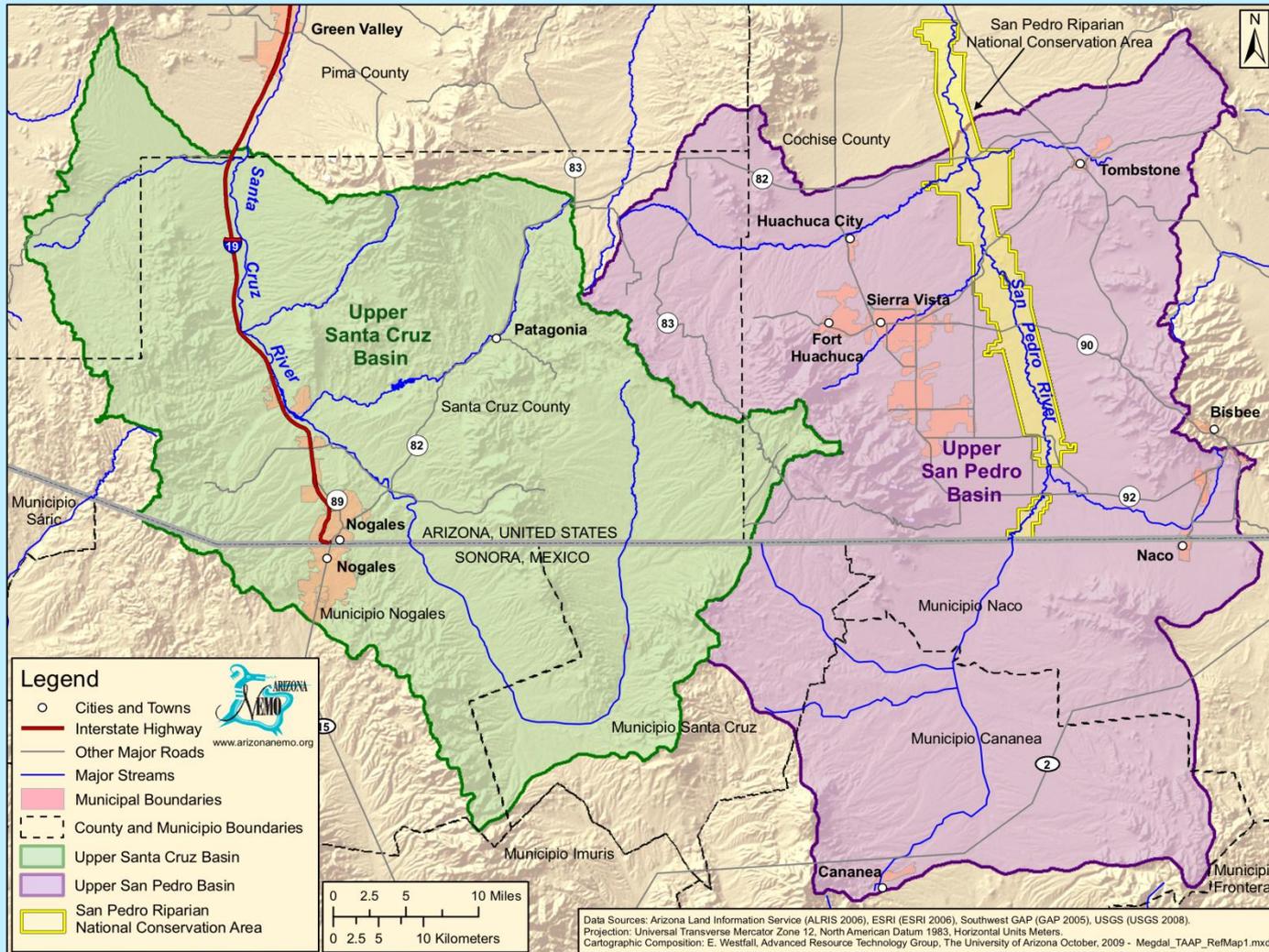
Focus on two transboundary aquifers at Arizona-Sonora border



Arizona-Sonora Aquifers

Santa Cruz

San Pedro



Institutional Arrangements – U.S.

- ◆ USGS is the lead federal agency on U.S. side according to the legislation.
- ◆ No federal responsibility in regulating groundwater in the states
- ◆ Funding for the U.S. portion of the tranboundary aquifer program must be appropriated by the U.S. Congress.
- ◆ University of Arizona Water Resources Research Center (WRRC) is specified as the university partner, working with USGS on U.S.-funded work.
- ◆ Funding for Arizona from U.S. Congress is split between the USGS and WRRC.
 - WRRC can direct funding to outside partner organizations.
- ◆ By law, U.S. Section of IBWC, located within U.S. Dept. of State, is to be consulted as appropriate.

Institutional Arrangements – MX

- ◆ CONAGUA is the federal agency charged with administration of waters. It leads scientific and technical activities associated with binational aquifer assessment
- ◆ CILA, a branch of the Mexican Ministry of Foreign Affairs, has major federal responsibilities for groundwater and surface water at the border. It works diplomatically with the U.S. section of IBWC.
- ◆ Mexico permits state level water uses. Mexico requires all water matters at the border with the U.S. be handled through CILA.

Have worked through Institutional Asymmetries

- ◆ Partners have had to work through two major asymmetries
 1. The U.S. legislation specified priority aquifers and a funding plan, but there was no corresponding Mexican legislation.
 2. The roles of the federal water agencies differ.
 - a. Mexican water management is more centralized than in U.S.
 - b. U.S. federal agencies have limited state-level water management responsibilities
 - c. Have had to work through these differing responsibilities

Key Binational Milestone #1

IBWC-CILA Joint Cooperative Agreement was signed on August 19, 2009 to facilitate binational work



**Signing Ceremony at Boundary Monument #1 in El Paso/Juarez
Principal Engineers John Merino (U.S.) and Luis Antonio Rascón
Mendoza (Mexico)**

Joint Cooperative Framework

- ◆ The objective of the joint cooperative process for groundwater research is to improve the knowledge base of transboundary aquifers.
- ◆ The following is carried out within the IBWC framework:
 - Assure concurrence of the U.S. and MX for binational aquifer assessment activities
 - Facilitate agreement on the aquifers that will be evaluated jointly
 - Establish and coordinate binational technical advisory committees for each aquifer
- ◆ IBWC serves as an official repository for binational studies developed

Have worked on building shared vision with stakeholders

- ◆ Cross-border meetings and field trips have involved numerous governmental and non-governmental stakeholders
- ◆ Emphasis on shared priorities
 - Water availability
 - Climate change
 - Water quality
- ◆ Materials (factsheets, meeting minutes) prepared in English and Spanish



Santa Cruz, Sonora – Summer 2008

Binational workshop held in November 2009

- ◆ Participants included:
 - CONAGUA, USGS
 - CILA, IBWC
 - Sonora, Arizona state agencies
 - NGOs
 - Universities
 - UNESCO
 - Congressional staff, others

- ◆ Established elements of binational work for both aquifers



Tucson, Arizona – 3-4 Nov 2009

Status of binational efforts

Key Binational Milestone #2

- ◆ Agreement that the Santa Cruz and San Pedro aquifers are priority.
- ◆ Developed integrated work plans for both.
- ◆ **Key Milestone #2**: Established necessary interagency-intergovernmental contractual agreements for binationally funded work
 - University of Sonora (MX) researchers will carry out work in Mexico
 - \$160,000 (U.S. dollars total, split between U.S. (WRRC share of funding) and MX



Nogales, Sonora – 30 June 2010

Elements of binational work plan

- ◆ Development of joint data on both sides of border
- ◆ Synthesis and analysis of existing and new data and reports
- ◆ Identify data gaps
- ◆ Update conceptual hydrological models of functioning and state of the aquifers (quality and quantity)
- ◆ Cross-border socioeconomic and institutional studies are expected to be carried out
- ◆ Hope to have sufficient funding over time for cross-border modeling over a number of years, but funding is highly uncertain

Binational efforts (continued)

- ◆ Univ. Arizona Water Resources Research Center has redirected funding to support in part work to be conducted at the University of Sonora in MX.
- ◆ CONAGUA is providing matching funds
- ◆ This is an important first element of the binational work plan.
- ◆ The work efforts were developed jointly by the Binational Technical Advisory Committee, as called for in the IBWC-CILA Binational Cooperative Framework.
- ◆ Jointly authored paper for ISARM2010 Conference
- ◆ WRRC has also funded water quality monitoring by the Friends of the Santa Cruz River

We have been busy – TAAP-A/S work plan for project year 2010-11 focused on the following activities:

- ◆ Data collection of land use, zoning, economic and population growth, infrastructure, etc.
- ◆ Urban growth characterization and effect on watershed land use and hydrology
- ◆ Bi-national water balances and supply / demand analysis
- ◆ Groundwater Vulnerability Assessment
- ◆ Water quality assessments including anthropogenic impairments
- ◆ Assessment of institutional asymmetries and bi-national cooperation frameworks
- ◆ Improved linkages with international best practices (via ISARM)
- ◆ Refinement of data base on existing studies and reports
- ◆ Presentations and papers
- ◆ Etc.

Handouts here at the meeting

- ◆ Two-page fact sheet in English and Spanish on the Arizona-Sonora portion of the TAAP
- ◆ Two-page fact sheet on the overall program
- ◆ Article from the WRRC's Arizona Water Resource newsletter
- ◆ Binationally authored paper from the ISARM 2010 Conference, forthcoming in the conference proceedings, in English and Spanish
- ◆ Recently submitted article, "The Importance of Institutional Asymmetries to the Development of Binational Aquifer Assessment Programs: The Arizona-Sonora Experience," co-authored with C. Scott, submitted to special issue of the journal, *Water*

Conclusions

- ◆ It is necessary to recognize and work through Institutional asymmetries that can pose challenges to transboundary aquifer assessment
- ◆ The Mexican and US parties have established the foundation for genuinely collaborative efforts to acquire, share and analyze data/information
- ◆ Aquifer assessment requires time and financial resources.
- ◆ Developing the collaborative framework requires time.
- ◆ Efforts to date have resulted in a long-term commitment to a partnership that will result in better understanding of transboundary aquifers and thereby lead to better cross-border water management.
- ◆ BUT...There is no funding on the U.S. side for current federal fiscal year or any funding proposed for the fiscal year beginning October 1, 2011.
- ◆ We have had to reduce our staffing and graduate assistance support, which means a reduction in our assessment activities. Only funded activity is the current binational contract and related activities.

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 - IBWC/CILA, CONGUA
 - Many others

Thanks!!
¡¡Gracias!!

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Arizona-Sonora TAAP Web Site at the
University of Arizona
www.cals.arizona.edu/azwater/taap/