Working Collaboratively on the Arizona-Sonora Portion of the Transboundary Aquifer Assessment Program

IBWC Southeast Arizona Citizens Forum
10 June 2021
Sharon B. Megdal, Ph.D.
Director, University of Arizona Water Resources Research Center
smegdal@arizona.edu

wrrc.arizona.edu
Transboundary Aquifer Assessment Program (TAAP) – Where we’ve been, where we are, and where we are heading
Key milestones
**IBWC - key coordination & facilitation**

- 2006, May: Sharon Megdal provides testimony at US House of Representatives subcommittee hearing at the invitation of Congressman Jim Kolbe
- 2006, December: The U.S. – Mexico Transboundary Aquifer Assessment Act (Public Law 109-448) signed by President Bush
- 2007: Meetings started
- 2009, November: Workshop to discuss workplan for Arizona-Sonora portion
- Work continuously carried out along the Arizona-Sonora border though funded intermittently and asynchronously
- 2016: Adoption and release of *Binational Study of the Transboundary San Pedro Aquifer*
- 2021 (we hope): Adoption and release of *Binational Study of the Transboundary Santa Cruz Aquifer*
Collaboration and communication
Web sites:  https://wrrc.arizona.edu/TAAP and https://wrrc.arizona.edu/programs/spanish/transboundary-aquifer-assessment

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
  1. Water availability
  2. Climate change
  3. Water quality
- Materials (factsheets, meeting minutes, this ISARM paper) prepared in both English and Spanish

Binational workshop

- 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
US-MX Border Water Governance and Management

• US water governance is decentralized
  • By jurisdiction (federal government versus states)
  • By type of water
• MX water governance is centralized
• Long history of working two countries working together through the International Boundary and Water Commission on surface water and wastewater issues (IBWC)
• IBWC Commissioners authorized to approve Minutes to the 1944 treaty governing binational Colorado River and Rio Grande management
• Limited involvement of IBWC on groundwater governance and management
• CHALLENGES: Multi-level and asymmetric governance systems; different units of measurement and languages – and cultures
Citations for the above (more citations at the very end and check out the WRRC TAAP pages)


Six Principles of Agreement in Joint Report

1. Activities described under this agreement should be beneficial to both countries.

2. Aquifers to be jointly studied, as well as the scope of the studies or activities to be done on each aquifer, should be agreed upon with the framework of the IBWC.

3. The activities should respect the legal framework and jurisdictional requirements of each country.

4. No provisions set forth in this agreement will limit what either country can do independently in its own territory.

5. Nothing in this agreement may contravene what has been stipulated in the Boundary and Water Treaties between the two countries.

6. The information generated from these projects is solely for the purpose of expanding knowledge of the aquifers and should not be used by one country to require that the other country modify its water management and use.
San Pedro Report completed in 2016
Santa Cruz Report nearing finalization
Summary bilingual bulletin for San Pedro Report

Bilateral Information

INFORMACIÓN BINACIONAL

THE BINATIONAL EXPERIENCE

LA EXPERIENCIA BINACIONAL

Hydrogeologic Units

Unit 1: San Pedro Aquifer

Unit 2: High-conductivity water

Unit 3: Low-conductivity water

Geology

Tectonic and structural setting:

Ongoing TAAP Work

Tejido Actual en la Reducción de Obstáculos Transfronterizos

The Mexican and U.S. Governments, through the U.S. Department of State and the U.S. Agency for International Development (USAID), have initiated a TAAP project in the San Pedro River basin to facilitate trade and commerce between Mexico and the United States. The TAAP project focuses on improving the efficiency and effectiveness of cross-border trade and commerce by addressing obstacles and challenges that hinder the flow of goods and services across the border.

The project aims to identify and address key obstacles that are hindering trade and commerce in the San Pedro River basin, including customs procedures, border infrastructure, and regulatory barriers. It will also provide technical assistance to stakeholders to help them implement solutions to these challenges.

In addition, the TAAP project will work with local and national governments, as well as private sector participants, to develop and implement strategies to promote cross-border trade and commerce.


Information complements:

- Unique WDF 2014 MB-203
- www.deptstate.gov/taap
Much work went into harmonizing maps, information
Documenting the science and the collaboration

https://doi.org/10.1016/j.ejrh.2018.08.002

Findings and lessons learned from the assessment of the Mexico-United States transboundary San Pedro and Santa Cruz aquifers: The utility of social science in applied hydrologic research


*OSR 320 W Park Ave, Tucson, AZ, 85719, USA
†University of Arizona, 320 W Campbell Ave, Tucson, AZ 85719, USA
‡Universidad de Sonora, Col. Av. Bocadillo SN, Cempoala, 83000 Hermosillo, Son., Mexico

http://dx.doi.org/10.1111/1752-1688.12853

A Review of Climate Change Impacts on the USA-Mexico Transboundary Santa Cruz River Basin

Eylon Shamir 1,*, Elia M. Tapia-Villaseñor 2, Mary-Belle Cruz-Ayala 3 and Sharon B. Megdal 4
The process of carrying out the TAAP project has produced an experienced binational team, a tested process, and a precedent for a binational partnership of government institutions and universities, which can be used to facilitate and carry out new binational projects focused on transboundary aquifers...We feel that the methods developed in this paper, if used appropriately and flexibly, will help to fill data gaps, add skill sets, and build relationships in those areas in which typical aquifer assessments are weakest and where transboundary aquifer assessments are most in need: socio-political and historical information, governance, legal and institutional frameworks, cultural sensitivity, communication and stakeholder engagement among others.
“The cumulative 40-year water balance for the eight likely scenarios of effluent discharge and 1997–2002 average pumping indicate that wet years during the mid-1980s created a substantial surplus that has been subsequently depleted (Figure 7). Except for the maximum pre-LAWTP flow, all other scenarios presented a storage deficit by the end of the simulation period. This trend of increased water deficit that follows the wet years of the early 1980s is evident in several wells near the northern boundary of the TSCA aquifer.”
“Clearly, sustainable water management in a border setting requires collaboration. A first step for a collaborative transboundary effort is an advancement of the knowledge base, which is the aim of this manuscript. As a final point, given the projected uncertain future and the worrisome observed historical trends, we stress the urgency and the severe risk of water shortages that the region may potentially undergo. This urgent risk for water shortages calls for proactive and collaborative binational planning to achieve a sustainable transboundary aquifer system.”
Many presentations and other efforts to get the word out

Binational Assessment of the Santa Cruz and San Pedro Aquifers
Update of Arizona-Sonora collaboration under the U.S.-Mexico Transboundary Aquifer Assessment Program (TAAP)

Evaluación Binacional de los Acuíferos Santa Cruz y San Pedro
Informe sobre la colaboración Sonora-Arizona acerca del Programa para la Evaluación de Acuíferos Transfronterizos México-Estados Unidos (TAAP)

Arizona-Mexico Commission, Water and Environment Committees
June 8, 2012
Tucson, Arizona
James Callegary - jcallega@usgs.gov
Christopher A. Scott - cascott@email.arizona.edu
Sharon B. Megdal - smegdal@cals.arizona.edu
Plácido dos Santos – placido@cals.arizona.edu
CALS.arizona.edu/azwater/taap

The Cooperative Framework for the Transboundary Aquifer Assessment Program: A Model for Collaborative Transborder Studies
Sharon B. Megdal

Public Policy Review

The Cooperative Framework for the Transboundary Aquifer Assessment Program: A Model for Collaborative Transborder Studies
Sharon B. Megdal

Reconocimiento a la Cooperacon Transfronteriza entre Mexico y los EEUU en el Programa de Evaluacin de Acuferos Transfronterizos México-Estados Unidos (TAAP)

Arizona Water Resources Research Center
The University of Arizona
USGS
CONAGUA

Public Policy Review

Front-Row View of Federal Water Lawmaking Shows Process Works

U.S.–Mexico Transboundary Aquifer Assessment Act passed, signed

Otto von Bismarck reportedly once said, “Laws are like sausages, it is better not to see them being made.” I am not sure what to make of this remark since lawmakers, not sausage making, is my interest. It is an interest that recently broadened when I had the privilege of testifying before the Water and Power Subcommittee of the House Resources Committee on the United States-Mexico Transboundary Aquifer-Assessment Act. This bill, number S 214 in the Senate and HR 649 in the House, gained final approval in the wee hours of the 109th Congress and was signed by the President on December 22. My previous involvement in lawmaking had been at the state level.

water resource issues. The program also will serve as a catalyst bringing together the human capital and financial resources necessary to characterize transboundary aquifers. The resulting increased understanding should help resolve many of the currently unquantified — and therefore unresolved — water resource issues.

I emphasized the importance of water to the growing, and Southwestern, especially along the border where population continues to grow rapidly on both sides. Water resource issues become more complex and acute along the shared border where understanding aquifer characteristics is critical to the human health and economic reality of this region. Along the border many and varied interests need to cooperate and participate to address water issues.

I told how the modeling and data base developed as part of the program will address important water quality questions includ-
In the works

- Multiple papers still in preparation for the special issue
- Strategic look at future of the program
- Congressional reauthorization and continued funding

Funding Acknowledgement

This work was funded by the U.S. Geological Survey (funding authorized by P.L. 109-448) Award Number G17AC00439
Colorado River Basin wicked water problems connected to share borders

- Imbalance of water demand and supply in the Colorado River Basin
- Groundwater overdraft and invisibility
- Lack of water for nature (environmental flows)
- Lack of water and water infrastructure
Addressing wicked water problems...data and research...people and process

Renewal – A Reborn Colorado River Once Again Finds Her Path to the Sea
http://youtu.be/TODV7FW746s

Groundwater Invisibility

Supply-demand Imbalance

Water for Nature

Lack of Water

Universal Access to Clean Water for Tribes in the Colorado River Basin


wrrc.arizona.edu/TAAP


Supply-demand Imbalance

Water for Nature

Lack of Water

Universal Access to Clean Water for Tribes in the Colorado River Basin


wrrc.arizona.edu/TAAP
Key Factors that Contribute to Mitigating Wicked Water Problems

- Functioning cooperative mechanism(s)
- Trust and mutual respect
- Involvement of key stakeholders
- Good communication
- Persistence
- Patience
- Sharing experiences/lessons
- Eating with your partners

Long-term efforts – The work continues.

INFORM, EDUCATE, COMMUNICATE
Thank you!

Stay Informed
Subscribe to keep up with our news and events.
wrcc.arizona.edu/subscribe

smegdal@arizona.edu
wrcc.arizona.edu/director
Twitter @SBMWater
Full Citations for Selected Publications


Full Citations for Selected Publications


