Institutional Assessment of the Transboundary Santa Cruz and San Pedro Aquifers on the United States-Mexico Border

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Sharon B. Megdal, Ph.D., Director
email: smegdal@cals.arizona.edu

Co-authors, Roberto Sención, Christopher A. Scott, Florencio Díaz, Lucas Oroz, James Callegary, Robert G. Varady

www.cals.arizona.edu/azwater
Introduction

♦ Shared, transboundary aquifers along the U.S.-Mexico international boundary are subject to unsustainable levels of water use and water-quality degradation resulting from rapid urban growth as well as climate change and variability.

♦ US Public Law 109-448, the U.S.-Mexico Transboundary Aquifer Assessment Act was approved in late 2006

♦ Intent is to provide scientific information useful to policy makers and water managers.

♦ Presentation will discuss how we have developed and are implementing a binational work plan.
Primary Participants

♦ U.S Geological Survey 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
  - U.S. section
  - Mexican Section - Comisión Internacional de Límites y Agua
♦ Comisión Nacional del Agua
Focus on two transboundary aquifers at Arizona-Sonora border
Institutional Arrangements – US

♦ US Geological Survey (USGS) is the lead federal agency on US side according to the legislation.
♦ No federal responsibility in regulating groundwater in the states
♦ Funding for the US portion of the tranboundary aquifer program must be appropriated by the US Congress.
♦ University of Arizona Water Resources Research Center (WRRC) is specified as the university partner, working with USGS on US-funded work.
♦ Funding for Arizona from US Congress is split between the USGS and WRRC.
  ▪ WRRC can direct funding to outside partner organizations.
♦ By law, US Section of IBWC, located within US Dept. of State, is to be consulted as appropriate.
Comisión Nacional del Agua (CONAGUA) is the federal agency charged with administration of waters. It leads scientific and technical activities associated with binational aquifer assessment.

Comisión Internacional de Límites y Agua (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 US section of IBWC.

Mexico permits state level water uses. Mexico requires all water matters at the border with the US be handled through CILA.
Working with the 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 US 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
  1. Water availability
  2. Climate change
  3. Water quality

• Materials (factsheets, meeting minutes, this ISARM paper) prepared in both 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

♦ Agreement that the Santa Cruz and San Pedro aquifers are priority.
♦ Developed integrated work plans for both.
♦ Establishing necessary interagency-intergovernmental contractual agreements
♦ University of Sonora (MX) researchers will carry out work in Mexico

Nogales, Sonora – 30 June 2010
Institutional Asymmetries

♦ Partners have had to work through two major asymmetries

1. The US 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 US, but…
   b. US federal agencies have limited state-level water management responsibilities
   c. Have had to work through these differing responsibilities
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.

♦ This jointly authored paper for ISARM2010 Conference!
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Sharon Megdal1, Roberto Sencion2, Christopher A. Scott3, Florencio Diaz4, Lucas Oroz4, James Callegary5, Robert G. Varady8

Evaluación Institucional de los Acuíferos Transfronterizos Santa Cruz y San Pedro en la Frontera México-Estados Unidos: UNESCO-IAH-UNEP Conference, Paris, 6-8 December 2010

RESUMEN

Los acuíferos transfronterizos y compartidos a lo largo de la frontera internacional Estados Unidos - México están sometidos a usos no sustentables y degradación de calidad como resultado del crecimiento urbano acelerado, y también del cambio climático y su vulnerabilidad. Los acuíferos aluviales del Alto Santa Cruz y Alto San Pedro, compartidos por los estados de Arizona, EE.UU. y Sonora, México, son fuentes esenciales de agua para las ciudades en crecimiento, las comunidades, las granjas, y los ecosistemas en ambos lados de la frontera. La Ley de la Evaluación de Acuíferos Transfronterizos Estados Unidos - México, según autorización en los EE.UU., como la Ley Pública 109-448, fue firmada en diciembre de 2006. La continuidad del apoyo financiero y para programas para la evaluación de acuíferos transfronterizos es esencial para las iniciativas de colaboración. Las autoridades en México apoyan esta iniciativa para colaborar en la evaluación científica, sin embargo, todavía en México no se ha aprobado una legislación parecida, dado que no es lo acostumbrado. En los EE.UU., la colaboración entre una universidad y una agencia federal dirige las actividades de la evaluación de los acuíferos, y de prioridad cueste por caso a los acuíferos. Mientras que en México, el procedimiento empieza en la Comisión Nacional del Agua, que coordina las actividades de las agencias estatales y servicios públicos municipales de agua, con los investigadores universitarios realizando un panel de apoyo. Complejidades institucionales adicionales incluyen un papel variable de la Comisión Internacional de Límites y Aguas entre México y Estados Unidos; la Sección Estadounidense trabaja para facilitar la coordinación mientras que la Sección Mexicana establece prioridades y toma decisiones. Un marco binacional especializado para la coordinación y el intercambio de datos ha sido desarrollado y acordado específicamente para la evaluación del acuífero binacional. Los intentos para establecer este marco han tenido como resultado un compromiso de colaboración a largo plazo, una mejor comprensión de los acuíferos transfronterizos, y una mejor gestión de los recursos de acuíferos compartidos.

Palabras Claves: manejo de aguas subterráneas, instituciones, políticas, asimetría
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.
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Sharon B. Megdal
smegdal@cals.arizona.edu

University of Arizona Water Resources Research Center