TCEQ, CNA, and U.S. EPA personnel collect samples in the Rio Grande near Presido (left) and El Paso (above).

Rio Grande/Río Bravo del Norte

Bridging an International Boundary

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In 1995 and 1998, I had the challenging but rewarding experience of managing a binational water quality study of the Rio Grande, known in Mexico as the Río Bravo del Norte. The rewards from this project went far beyond meeting the study objectives and publishing the results.

The River

The Rio Grande originates in Colorado and flows through New Mexico before reaching Texas near El Paso (see map, previous page), but only the international portion of the river was the focus of our study. For 1,276 miles, the Rio Grande separates Texas from the Mexican states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas before reaching the Gulf of Mexico. Like many rivers in the Southwest, the Rio Grande is a critical natural resource in this arid region.

Environmental Concerns

In the early 1990s, a great deal of attention was focused on the U.S.-Mexico border while the North American Free Trade Agreement (NAFTA) was being debated, passed, and implemented. Environmental issues in general, and the quality of the Rio Grande along the Texas–Mexico border in particular, were near-weekly topics of national news. Along with scarce water resources, the area has fast-growing metropolitan areas, with population growth fueled by the flourishing cross-border trade. Concerns grew about potential contamination of the river and its tributaries from untreated municipal wastewater, industrial wastewater, and nonpoint source contributions from urban and agricultural areas. The increasing number of Mexican manufacturing and assembly plants, or maquiladoras, caused residents to worry that the river was being contaminated with toxic substances.

Setting the Stage for Binational Water Quality Studies

Both the United States and Mexico understood the need for joint efforts in dealing with these growing environmental and health concerns along the border. However, the gap between understanding

needs and actually addressing them was wide. Making things happen would require a great deal of effort from both the United States and Mexico.

In February 1992, the two nations jointly issued the Integrated Environmental Plan for the Mexican–U.S. Border Area. The plan called for the countries to work together to solve environmental problems in the border region. Specifically, the plan called for the identification of boundary water resources that might be contaminated or at risk thereof.

Implementing this plan required the work to take place through proper diplomatic channels and in compliance with the Treaty of Feb. 3, 1944, "Utilization of Waters of the Colorado and Tijuana Rivers and the Rio Grande."

The U.S. and Mexican sections of the International Boundary and Water Commission (IBWC) are responsible for implementing border treaties and other agreements that require joint activities by both countries. Decisions and recommendations, subject to the approval of both governments, are recorded as Minutes to the 1944 treaty. These Minutes become binding obligations for both countries. In November 1992, the IBWC developed Minute No. 289, "Observation of the Quality of Waters Along the United States and Mexico Border." This document approved the study design for water quality investigations and addressed related binational cooperation issues.

The Resulting Binational Study

The result was the multiphased, binational Rio Grande Toxic Substance Study (RGTSS) funded by Region 6 of the U.S. Environmental Protection Agency. The U.S. and Mexican sections of the IBWC acted as liaisons between the participating U.S. and Mexican agencies, as well as the U.S. Border Patrol and U.S. Customs. The IBWC also helped researchers to gain access to certain areas of the river and tributaries. The Texas Commission on Environmental Quality (TCEQ) and Comisión Nacional del Agua (CNA) conducted the technical portion of the study, along with partners including the Texas Parks and Wildlife Department, the National Park Service, and the Texas Department of State Health Services.

The main objectives of the first two phases of the study were to screen the Rio Grande and its tributaries from El Paso/Juarez to Brownsville/Matamoros for the occurrence of toxic chemicals and to identify possible impacts of contaminants on human health or aquatic ecosystems. Each of the phases analyzed more than 161 constituents such as metals, pesticides, herbicides, semivolatile compounds, and volatile organic compounds in water, sediment, and fish tissue. A total of 302 samples were collected at 91 sites during the two phases. Far fewer contaminants were detected than expected. Moreover, the concentration and type of toxic substances found did not single out any specific source(s) nor did they indicate a problem with industrial wastes contaminating the river.

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The third and final phase of the study focused on a smaller area with more intensive monitoring at fewer sites in the area from El Paso to Big Bend National Park. This reach was chosen because it included three distinct land use areas: heavy urban-industrial, agricultural (both irrigated crop and ranch lands), and natural protected areas. Six stations were established to collect samples upstream and downstream of each land use area. Phase 3 also focused more on the biological community and instream habitat assessments and less on chemical analysis. Most data collected during Phase 3 are being used to develop binational biocriteria for the Rio Grande.

Building Trust

Fieldwork during the first two phases required numerous week-long trips spread out over several months. Challenges included long field days, frequently in hot summer months; field conditions and water levels that often changed

see Rio Bravo, page 33

Rio Bravo, continued from page 21

rapidly; and cultural and language differences among the participating agencies. However, with each trip the formality of the meeting room and treaty negotiations faded further away, and an atmosphere of informality, cooperation, and trust began to take hold in the field.

The key to building the trust needed for this study was respect. Stereotypes on both sides existed at first, but by the end of the study it was difficult to reconcile common stereotypes with the people we worked with day in and day out. I learned that the scientists in Mexico are highly educated and every bit as committed to improving the environment as anyone in the United States. I see now that we Americans can be viewed as aggressive and over-bearing, no matter how good our intentions are. Nothing is more detrimental to a binational effort or a faster way to ensure failure than to begin with the idea that the player with the most money should make the rules. Successful and continued binational collaborations require flexibility and the ability to understand and accommodate the traditions and social conventions of the other country. Both sides have a great deal to contribute to any research effort.

Other Binational Efforts

The lengthy process that began in 1991 opened the door to future water quality projects between the United States and Mexico. In 2003, the IBWC released the Binational Study Regarding Toxic Substances in the Lower Colorado and New River, patterned after the RGTSS. RGTSS also opened the door for other binational opportunities. TCEQ and CNA have subsequently hosted several binational water quality monitoring workshops on the border. Although the probability of another RGTSS is slim, new opportunities continue to present themselves.

Although most view the RGTSS as a scientific collaboration between two countries, those that participated saw it as comprising much more than data, methods, and reports. The effort didn't close a gap, it created a bridge to people who became trusted colleagues and friends.

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Conflict, continued from page 25

- Establish a contingency fund to be used during shortages to replace bypass flows. In shortage conditions, the fund would be used to prevent water supply disruptions through support of fallowing programs or direct mitigation.
- Provide proportional credit against the bypass for federal investments in efforts to salvage water currently lost to the system.
- Implement a pilot, basin-wide, consumptive-use reduction and forbearance program, based on voluntary, temporary land fallowing. If successful, continue the program to offset bypass flows and provide a shortage prevention mechanism in conjunction with the shortage contingency fund.
- Correct identified YDP design and construction deficiencies. Seek cost-sharing opportunities with municipal and industrial users to make operation cost-effective. Use YDP to desalt groundwater in the Yuma area that is saline but abundant, rather than MODE water, allowing the latter to continue to flow to the cienega. Route the brine stream where it cannot harm the cienega.
- Implement a monitoring system and advanced research program in the cienega, while adaptively managing the quality and quantity of water deliveries by relying on a broader range of potential sources.

What Next?

The development of a solution set that satisfies both water managers and environmental interests is in itself a significant accomplishment. However, this is just the first step in resolving the bypass flow controversy. Education and information outreach, follow-through with federal, state, and local entities, and the public, the development of support from other Colorado River Basin states, initiation of a federal decision-making process, and binational discussions with Mexico will all be necessary.

The importance of immediate federal action cannot be underestimated. If the United States acts quickly to help implement these recommendations, a water use/environmental crisis will be averted when shortage occurs, and it can encourage the efforts of those interested in collaborative solutions to other tough Colorado River issues. The fact that a diverse group of stakeholders sought and found common solutions lends hope for future successful collaborative efforts.

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The full workgroup report and executive summary is available at www.cap-az.com.