

Sharing of Transboundary River Water: Case study on U.S.-Mexico Water Sharing of Colorado and Rio Grande River

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Abstract

The world's 263 international river basins account for nearly one-half of the earth's land surface, generate roughly 60% of global freshwater flow and are home to approximately 40% of the world's population. Sharing of transboundary river water among the shared countries is always a matter of conflict and has many challenges. To share the water of two shared rivers, Colorado and Rio Grande, the United States and Mexico have developed a solid framework, International Boundary and Water Commission (IBWC), through which these two countries have been managing transboundary river water and associated conflicts since the year 1944. Historical records analysis prevails that the U.S. and Mexico have a very limited history of violent transboundary aggressions and enjoy a relationship that is largely positive. This paper investigates the various aspects of diplomacy between U.S. and Mexico during sharing the water of Colorado and Rio Grande river.

1.0 Shared Rivers

The two countries, U.S. and Mexico, share a nearly 2,000-mile border. Multiple rivers cross the border or form the border at various points. The principal shared river are: (i) the Colorado River, which is predominantly in the United States, and crosses the Mexican border on its way to the Gulf of California (Figure 1(a)) and (ii) the Rio Grande, with major tributaries in the United States and Mexico and whose riverbed forms the U.S.-Mexico border in Texas before emptying into the Gulf of Mexico (Figure 1(b)). The Colorado River flows through seven U.S. states (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) and two Mexican states (Baja California Norte and Sonora), before emptying into the Gulf of California. 97% of the Colorado River basin is in the United States. Disputes have erupted over the use of the Colorado River water supplies for most of the past century. Although many of these disputes have related to state allocations on the U.S. side of the border, issues have also arisen over water quality, availability, and conservation between the United States and Mexico. Rio Grande, a 1885 miles long river, flows from south central Colorado in the United States to the Gulf of Mexico. Along the way it forms part of the Mexico–United States border. Since the mid–20th century, heavy water consumption of farms and cities along the river has left only 20% of its natural discharge to flow to the Gulf. Near the river's mouth, the heavily irrigated Rio Grande Valley is an important agricultural region. The Rio Grande is one of 19 Great Waters recognized by America's Great Waters Coalition.

2.0 Water Convention and Treaty

How to share water has long been a complex issue for the U.S.-Mexico border region and in the broader U.S.-Mexico relationship. In the 19th century, numerous questions arose regarding the boundaries between the two countries and water sharing of international rivers. Early agreements, starting in 1848, sought to clarify the location of the border. Later in the century, the two countries entered into the Convention of March 1, 1889, establishing the International Boundary Commission (IBC) to apply border agreements. Starting in 1906, agreements to distribute water binationally began to emerge; a 1906 convention on the sharing of Rio Grande

for irrigation purposes distributed water in the vicinity of El Paso, Texas. In 1944, the two countries entered into a treaty on “Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande” (hereinafter Treaty or 1944 Water Treaty). The Treaty reconfigured the IBC into the International Boundary and Water Commission (IBWC), which provides binational support and facilitates resolution of issues arising during application of U.S.-Mexico treaties on boundary demarcation, water quantity, sanitation, water quality, flood control along the Rio Grande, the Colorado, and the Tijuana rivers. The IBWC is composed of both a U.S. and Mexican section, which is overseen by the State Department and the Mexico Ministry of Foreign Relations. The U.S. headquarters are located in El Paso, Texas and the Mexican section in Ciudad Juarez, Mexico. The head commissioners of each country are referred to as Engineer Commissioners and recommendations for resolving disputes through amendments, known as ‘minutes’, require the approval of each respective government (Martinez, 2013).

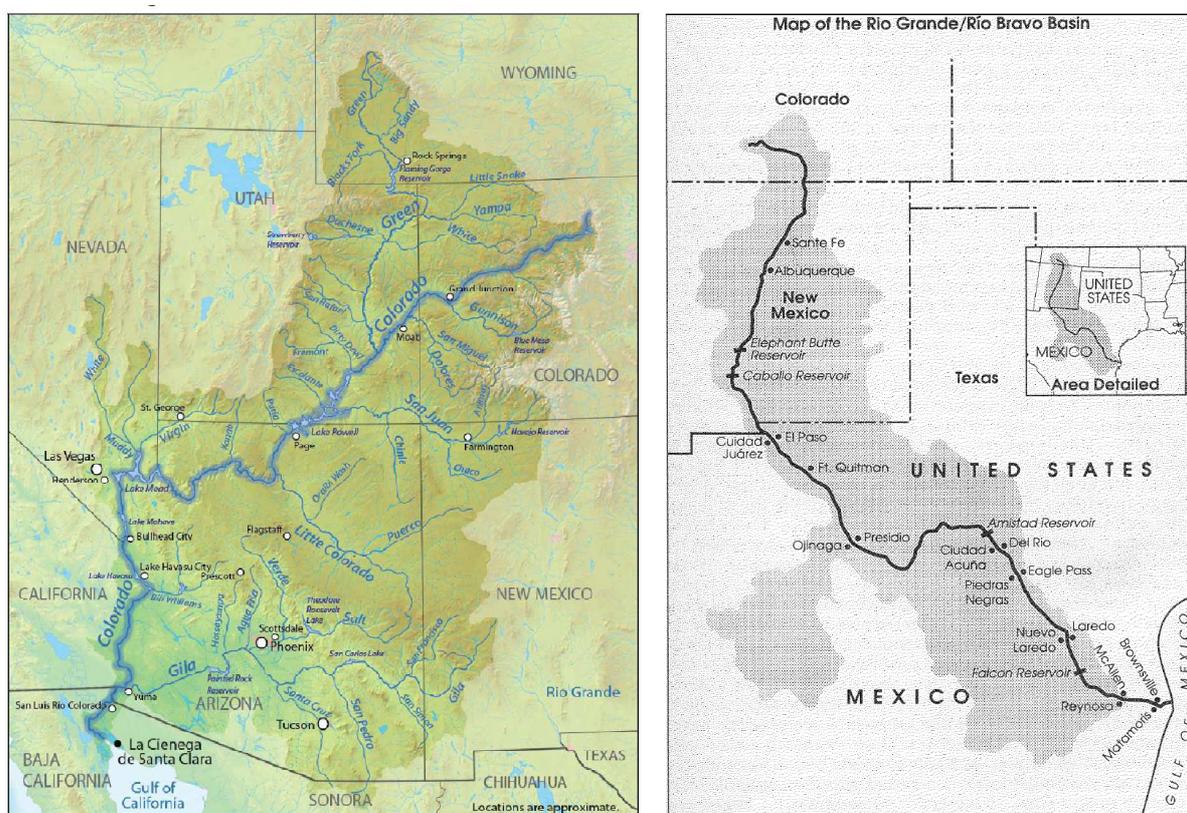


Figure 1: Map of the (a) Colorado River Basin (Source: Carter et al., 2013). (b) Rio Grande Basin (source: CSIS et al. 2003)

A proposed minute is forwarded within three days to the government of each country for approval. If the government of either country fails to announce its approval or disapproval within 30 days, the minute is considered approved. If either government disapproves, the matter is removed from IBWC control and the two governments negotiate the issue. If an agreement is reached between the governments, the IBWC must then take any further actions as may be necessary to carry out such agreement. For the United States, the executive branch has the authority to approve or disapprove of the proposed minutes arising from the Treaty; the President

only has the ability to make such agreements pursuant to a treaty if the agreement is in the purview of the treaty.

The 1944 Water Treaty establishes a hierarchy of uses for the water: (1) domestic and municipal uses; (2) agriculture and stock-raising; (3) electric power; (4) other industrial uses; (5) navigation; (6) fishing and hunting; and (7) any other beneficial uses which may be determined by the Commission. A frequent critique of this hierarchy is that it does not include an obligation to maintain water for ecological purposes.

The basic water distribution arrangements in the 1944 Water Treaty are as follows.

- (a) For the Colorado River basin, the United States is to provide Mexico annually with 1.5 million acre-foot (1850 Million Cubic Meter - MCM) of water.
- (b) The Rio Grande is governed by two separate agreements. Deliveries by the United States to Mexico in the northwestern portion of the basin (near El Paso/Ciudad Juárez) occur under a 1906 Convention, while deliveries by Mexico to United States for the southeastern portion (which is below Fort Quitman, Texas) are laid out in the 1944 Water Treaty. The 1906 Convention requires an annual delivery to Mexico by United States of 60,000 acre-foot (74 MCM), which can be proportionally reduced based on drought conditions. The United States is not required to make up for reduced deliveries. Under the 1944 Water Treaty for the Rio Grande basin below Fort Quitman, Texas, Mexico has rights to two-thirds of the flows of six Mexican Rio Grande tributaries. The one-third delivered to the United States must average at least 350,000 acre-foot (432 MCM) per year, measured in five-year cycles. The United States is entitled to all flows from U.S. tributaries. If Mexico fails to meet its five-year delivery obligations because of “extraordinary drought,” which the Treaty does not define, deficiencies are to be made up from the Mexican tributaries during the next five year cycle.

3.0 Management of Water Sharing

3.1. Colorado River

3.1.1 Salinity

While the United States has consistently delivered Mexico’s minimum allotment of Colorado River water of amount 1.5 million acre-foot (1850 MCM) per year, which represents about 10% of the river’s yearly average flow, disputes did arise about the quality of the water. In the 1960s, salinity in the Colorado River rose dramatically. Mexico was receiving water that was too salty for human, livestock, or agricultural uses. The IBWC helped both countries agree to Minute 218, which took effect in 1965 for a period of five years, requiring the United States to extend a drainage channel to reduce salinity. Five years later, Mexican farmers remained angry about the salinity issue. After the Mexican government threatened to take the water dispute to the International Court of Justice, the United States agreed to Minute 242 in 1973. Per Minute 242, the United States agreed to construct additional channels to control salinity, clean-up of the Mexicali Valley lands damaged by the accumulation of salts and keep salinity levels of delivered water below a certain level. Minute 242 remains in force and the United States continues to comply with its provisions. While the IBWC-backed resolution to this crisis proved to be successful, the agreement took a long time and required external pressure to be reached.

3.1.2 Instream Flows for Environmental Protection

The Colorado River Delta at the terminus of the Colorado River, prior to significant expansion of the basin's water consumption, covered 9,650 square miles in the United States and Mexico. The Mexican side of the delta contains wetlands, woodlands and desert areas that are home to many endangered species; part of Mexico's delta is a designated United Nations Biosphere Reserve. According to environmental interests, insufficient water flowing into the delta has contributed to the degradation of 90% of the delta's wetlands. The issue of instream flows for environmental protection entered bilateral discussions in the IBWC in the late 1990s. In recent years, bilateral discussions in the basin coalesced around improved management of and conservation of both the Colorado River and its delta. Both governments, along with state officials and conservation groups, worked with the IBWC to develop an agreement that would allocate water to Mexico based on whether there was a surplus greater water conservation (i.e., ability to store water) for Mexico. These discussions led to Minute 319 signed on November 20, 2012, and is to be enforced for five years (with the possibility of an extension through 2026 if not supplanted or replaced by another minute). Key elements of the agreement include delivering additional water (i.e., above the 1.5 million acre-foot annual delivery required by the Treaty) by U.S. to Mexico when water levels are high in Lake Mead, implementing jointly funded water efficiency and conservation projects to free up water for the Colorado River Delta and continuing to work together to address salinity concerns per Minute 242.

3.2 Rio Grande

Deliveries by United States to Mexico in the northwestern portion of the Rio Grande basin (near El Paso/Ciudad Juárez) occur under a 1906 Convention. That requires U.S. an annual delivery to Mexico of 60,000 acre-foot (74 MCM) water, which can be proportionally reduced based on drought conditions. From 1939 to 2013, deliveries to Mexico were reduced in 31% of the years, including in 2012 and 2013 (Carter et al., 2013). The United States is not required to repay any reduced deliveries. For example, in 2012, U.S. deliveries to Mexico were curtailed, due to drought, to an estimated 23,214 acre-foot (39% of full allotment). In 2013, U.S. deliveries to Mexico were estimated at 3,665 acre-foot (6% of full allotment). While deliveries for the southeastern portion (which is below Fort Quitman, Texas) are laid out in the 1944 Water Treaty (at least 350,000 acre-foot per year, measured in five-year cycles), Mexico met its delivery obligations until the region's 1994-2003 drought (Neir and Campana, 2007). As of October 2013, which marked the end of the third year of the October 2010 to October 2015 cycle, Mexico's delivery of Rio Grande water to the United States exceeded the 350,000 acre-foot annual target and reduced its debt for the cycle to roughly 288,000 acre-foot (27%) based on a target Rio Grande delivery schedule. The 2011-2013 drought conditions in the basin raised tensions as water constraints intensified. Mexico's deliveries in the second year of the cycle, covering most of 2012, were less than 30% of the target. Since late 2012, the Mexican and U.S. sections of the entity charged with providing binational solutions to issues that arise during application of the treaties have been regularly meeting to discuss Mexico's water debt. Summer precipitation in 2013 provided some relief; this precipitation along with changes in reservoir management resulted in a significant decline in Mexico's water debt by October 2013.

4.0 Diplomatic Responses

The IBWC has resolved most border water disputes since 1944, although its processes may be slow to reach resolution. The IBWC employs a combination of technical expertise and

diplomacy (backed by the State Department and Mexico's Foreign Ministry) to find solutions that are acceptable to stakeholders on both sides of the border. As with past crises, the IBWC has been the primary entity engaged in resolving the current Rio Grande water dispute over how to address drought conditions in that region. The U.S. and Mexican sections of the IBWC have been meeting regularly since late 2012 to discuss Mexico's water deliveries. As of early April 2013, the U.S. section of the IBWC (USIBWC) reported that the Mexican government had initiated some releases from a reservoir on the San Rodrigo River per the USIBWC's (and the Mexican state of Tamaulipas's) 58 repeated requests. Since April 2013, U.S. and Mexican political officials have stepped in to support IBWC efforts to resolve the current water dispute. According to U.S. and Mexican officials, the water dispute has been a frequent topic of conversation between high-level government officials, including during President Obama's trip to Mexico (Carter et al., 2013). Mexican officials indicate they understand that the United States does not want to wait for the end of this five-year delivery period to receive its allotment of Rio Grande water. U.S. Ambassador to Mexico Earl Anthony Wayne has raised the issue with high-level officials in the administration of Mexican president Enrique Peña Nieto. President Peña Nieto reportedly does not want this dispute to become a serious irritant in the bilateral relationship and has instructed his Foreign Ministry to prioritize working with the IBWC, the State Department, Mexico's Water Commission, and authorities from Texas to reach a mediated settlement to the dispute as soon as possible. Between the end of July 2013 and late October 2013, the two sections had eight formal bilateral meetings, including a meeting attended by the U.S. Ambassador to Mexico and the Mexican Foreign Ministry's Under Secretary for North America (Seelke, 2014). Among the outcomes has been an exchange of technical data to assist in options for future water management in the basin. Mexico delivered more than the 350,000 acre-foot (432 MCM) water to United States during the third year of the October 2010 to October 2015 cycle and reduced its water debt. According to the IBWC Commissioner, "This is a consequence to be sure of beneficial summer precipitation but also is a direct result of our negotiations achieving a substantially more cooperative approach by Mexican authorities in reservoir management" (Carter et al., 2013).

5.0 Conclusion

The United States and Mexico have developed a solid framework, IBWC, to manage transboundary river water and associated conflicts over the past one hundred years. Each dispute in this long history of conflicts or disagreements provides the foundation for resolving similar disputes in the future. As demonstrated by the passage of Minutes, cooperation between the United States and Mexico changes and adapts to new issues. The international institutions are based on cooperation by both countries. If they choose not to use or abide by the agreements and decisions, then the viability of peaceful resolution diminishes. But as demonstrated by the 1944 Water Treaty deliveries, the two countries, and even the citizens, are choosing to use the tools available to them to resolve conflicts peacefully. The analysis of historical records prevails that the IBWC has gained a positive reputation for its technical efficiency, procedural conservatism, and diplomatic skill and is largely portrayed as a model for transforming transboundary water conflict into cooperation. The most important thing is that the U.S. and Mexico have a very limited history of violent transboundary aggressions and enjoy a relationship that is largely positive. Despite indications of high water stress along the Rio Grande, the institutionalization of conflict via the IBWC reinforces cooperation rather than division, which instance can be

followed by some other countries including Bangladesh and India for managing the conflict of transboundary river water sharing.

6.0 References

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