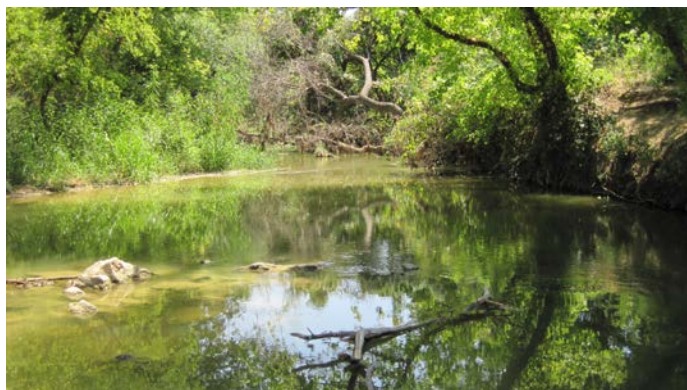




San Antonio Missions National Historical Park, Water Quality



*San Antonio River at San Juan Mission, August 29, 2011.
Image by Joe Meiman.*

Water brought them here

The availability of a constant, reliable water supply greatly affects human cultural geography. In the latter part of the seventeenth century, the Spanish Crown supported Franciscans to build missions to establish a presence in northern Mexico (present-day Texas) and spread the Catholic faith among the native peoples. Water was an essential feature in the location of any mission or presidio and a major factor in establishing Mission San Antonio de Valero, the first mission of five along the San Antonio River, in 1718.

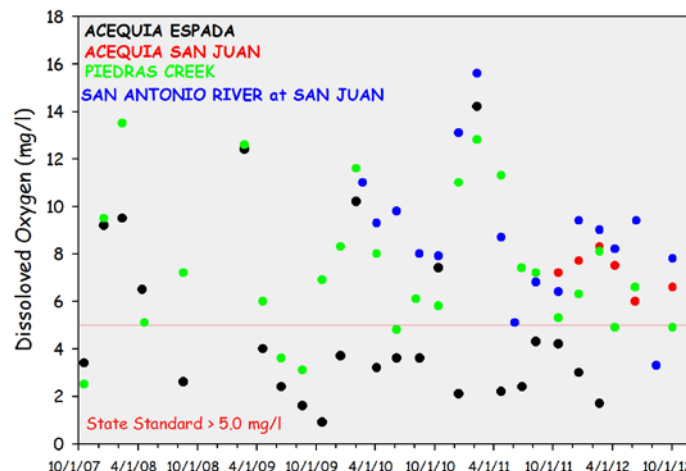
In a semiarid land like south-central Texas, the spring-fed San Antonio River has been a cultural oasis for centuries. The importance of this water is evident throughout the 334 hectares (826 acres) of San Antonio Missions National Historical Park. Indeed, the Missions would not have been built if not for the river as missionaries and native peoples (the Coahuiltecans) irrigated their fields via an intricate system of acequias. Acequias are gravity-driven ditches tapped into the river above low-head dams. Missions also held large grazing areas, also heavily reliant on surface water, including Mission Espada's Rancho de las Cabras, located about 80 kilometers (50 miles) downstream at the confluence of Picoso Creek and the San Antonio River.

Water Quality

Few other parks in the country have as much alteration, modification, or development of its watershed and surrounding area as the San Antonio Missions National Historical Park. The park is bounded by and drained from a metropolitan area with nearly every conceivable land use present: the 2010 U.S. Census reports populations of 1.3 million in San Antonio and 1.7 million in Bexar County. Seventeen permitted industrial dischargers above the Missions unit were identified along with an additional 11 dischargers above the Rancho. This is in addition to urban and highway runoff and countless other non-point sources.

In October 2007, the National Park Service established four permanent long-term water quality stations in the park (Piedras

Creek, San Antonio River at San Juan Capistrano, Acequia Espada and the Acequia de San Juan) through a partnership with the San Antonio River Authority. Park waters have exceeded state water quality standards (chloride, dissolved oxygen, sulfate, and temperature) or nutrient screening levels (ammonia, nitrate and phosphorous) several times. Violations of dissolved oxygen are often associated with low volume summer/drought flows through the acequias and small streams. Elevated sulfate and chloride levels are periodically found in Piedras Creek during low flows. Nutrient exceedances are the result of high volumes of reuse water in the San Antonio River elevating nutrient levels. Without reuse (recycled) water the river would be dry during drought.



Dissolved oxygen at San Antonio Missions National Historical Park. Low dissolved oxygen is common at Acequia Espada and Piedras Creek during periods of low flow.

Each stream is assigned a designated use reflective of how the water is used; contact recreation, high aquatic life, and public water supply for example. The San Antonio River through the Missions unit is classified by the state of Texas as contact recreation with a high diversity of aquatic life.

Water Quality Standards

Water Temperature	< 32.2°C
Dissolved Oxygen	> 5.0 mg/l
pH	Between 6.5 and 9.0 SU
Chloride	<150 mg/l
Sulfate	< 150 mg/l

What Can You Do?

Water quality issues at San Antonio Missions are similar to many watersheds throughout the nation. Threats are both local and regional in scope. Do your part and get involved in watershed activities and planning efforts. Communities are only as strong as the natural resources that support them.

Water quality data are available upon request to the Gulf Coast Network or our website:

<http://science.nature.nps.gov/im/units/guln/index.cfm>