

SOCIAL RESEARCH REPORTER

Commentary from our Social Research Analysts

ISSUE 4, 2016

Rivers: The Elephant in the Room

Chances are you live in an area defined by one or more rivers. Most of us do. As sources of freshwater and food, rivers have been natural places for communities to develop. These rivers are also sources of water for agriculture, manufacturing, power generation, transportation, and recreation. Rivers are truly an indispensable resource. Can we count on them to continue to supply us adequately?

The U.S. has more than 250,000 rivers, running about 3.5 million miles,¹ so it may be no surprise to learn there is no single public agency or organization designated to monitor the condition and use of those U.S. rivers. It is more like a rat's nest. Under the Safe Drinking Water Act and the Clean Water Act, the U.S. EPA and the states are jointly responsible for the safety of our drinking water and general water quality, 65 percent of which comes from rivers. The U.S. Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service and the National Park Service all have some responsibility for natural resource management, including scenic rivers and recreational waters. Further, the U.S. Army Corp of Engineers is involved in a wide range of water resource projects and the U.S. Geological Survey collects data and performs studies on water as one of the nation's natural resources. Add to inter-jurisdictional organizations such as ORSANCO (Ohio River Valley Water Sanitation Commission) and UMRBA (Upper Mississippi River Basin Association) where stakeholders from local municipalities and states come together to manage shared water resources, and local water and wastewater treatment districts, and you find an incredible medley of interested parties as well as rules and regulations.

Untamed rivers have been seen as resources waiting for a purpose as well as sources of dangerous flooding. The modern history of rivers is littered with feats of human engineering such as dams, reservoirs, canals, politics, naturally fluctuating weather, and debates over long-term environmental impacts. As investors, it may be worth learning more about river systems as our broader societal health and economic health depend on these vital resources. It is hoped that a quick look at two systems will pique an interest and raise awareness about the relevant challenges.

The Colorado River

The Colorado River Basin covers about 246,000 square miles, reaching into parts of seven western U.S. and two Mexican states. It is not the nation's longest river but running from the western side of the Rocky Mountains through the Grand Canyon and on to the Sea of Cortez, it cuts deep through the history of the American West. Once seen as valueless, the river now supplies water to more than 30 million people, irrigates land producing about 15 percent of our nation's crops and can generate 4,200 megawatts of electrical power.² Much of the development in the southwestern desert areas would not exist were it not for human

controls on the water flows, but for more than a century, western communities have fought over allocation rights for agriculture and fast-growing population centers. The 1922 Colorado River Compact and subsequent agreements are known as the "Law of the River." The Compact first apportioned the water's usage rights between the upper and lower basins using estimates of average annual flow. Since then, scientists have shown that the years upon which the estimates were based were some of the wettest in recorded history, thus overestimating the available water.

For some 15 years, the basin area has experienced a drought. Water held in the huge reservoirs of Lakes Mead and Powell have helped to maintain delivery of water to its many users, but those draws, plus potential over-allocations and climate change effects (e.g. evapotranspiration) mean the reservoir levels are dropping. The decline is visually obvious.



Source: <https://www.doi.gov/water/owdi.cr.drought/en/index.html#Shortage>

The decline in the reservoir elevations creates risks for the power generation facilities and impacts the recreation-based economy of the lakes. At some point, an official "shortage" could be declared triggering mandated allocation reductions in the lower basin. In an effort to avoid that situation, stakeholders from Arizona, California, and Nevada, entered into a 2014 Memorandum of Understanding with the U.S. Bureau of Reclamation, "Pilot Drought Response Actions," to use best efforts to "generate" additional water in Lake Mead via conservation, reduced off-system water storage and other techniques over the next few years.

The decline in water flow created a different challenge downriver. For many recent years, the river failed to meet the Sea and its delta dried up. Despite the drought, in 2014 a bi-national agreement allowed a long-term experiment including a "pulse flow" from the most southerly dam on the river to replicate a former natural flow rhythm in an effort to jumpstart a renewal in the area. Early observations suggest it is working. Agreements like these may indicate the end of conflict and a transition to cooperation amongst Colorado River basin stakeholders.

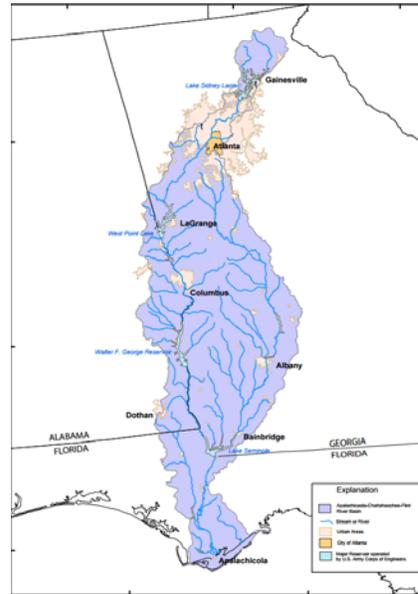
The Apalachicola-Chattahoochee-Flint (ACF) River Basin

Across the country in the southeastern U.S. is a river basin facing a similar situation: the supply of the water flowing through the system is seemingly unable to meet the demand. Competing demands for water have created conflicts between the neighboring states of Georgia, Alabama, and Florida over more than two decades. Debates over water rights and impacts have become pronounced. In 2016, an advocacy group named the ACF the nation's most endangered river system due to the water wars and the "outdated water management."³

The Chattahoochee and Flint Rivers begin in northern Georgia and meet near the Florida border to form the Apalachicola River, which ultimately flows into the Gulf of Mexico. The ACF River Basin reaches into three states and covers 19,800 square miles. Much the same as on other water ways, demands on this river system are varied and broad reaching: public water supply, industry uses, power generation, agriculture and fisheries, and recreation.⁴ The region has seen growth and development, notably in the Atlanta metropolitan area; where 70% of the population relies on the Chattahoochee and Flint for drinking water. Downriver, flows of freshwater and essential nutrients support the economically important Apalachicola Bay and its underwater agriculture of oyster, shrimp, crab and fish.

When the U.S. Army Corp of Engineers (COE) completed the Buford Dam on the Chattahoochee River in 1956, Lake Lanier was formed. One of the main purposes of the lake was to run hydroelectric turbines to supply power to the area. Over the next 30 plus years, the COE repeatedly increased the allowed amount of withdrawal from the lake and the river for population use. In 1990, the "war" began when Alabama challenged Atlanta's withdrawals from Lake Lanier. In the intervening years, the three states have repeatedly clashed in and out of the courts.

Most recently, in 2013, Florida asked the courts to order Georgia to release more water from the Chattahoochee River in an effort to support the destabilized oyster industry in Apalachicola Bay; factors beyond levels of water flow created the collapse, but an increase in flow could help the Bay recover. The request involved decreasing withdrawals for Atlanta. By April 2015, the U.S. Supreme Court had appointed a special master to oversee the case. The special master has repeatedly urged all



involved parties to resolve the dispute outside the courtroom, but in June 2016, attorneys for both states indicated an early November trial would be suitable. In the meantime, the COE has proposed a revised water control policy for the area, but some parties believe the new plan is inadequate and does not appropriately account for the needs of the Apalachicola Bay. Map Source: https://water.usgs.gov/watercensus/file/Fig_1_ACF_map.pdf

Thinking about a river is a bit like the story of the blind men appraising only one part of an elephant and not realizing they were examining the same animal. The part of the river one sees out the window or crosses over on the daily drive is but a part of a complex and ever-changing system. Investors and other stakeholders may be well advised to pay closer attention to the entire elephant.

¹ "American Rivers." *American Rivers*. Multiple pages, n.d. Web. June 2016.

² "U.S. Geological Survey." *USGS.gov*. Multiple pages, n.d. Web. June 2016.

³ "American Rivers." *American Rivers*. Multiple pages, n.d. Web. June 2016.

⁴ "U.S. Geological Survey." *USGS.gov*. Multiple pages, n.d. Web. June 2016.

Additional Resources:

- *America's Most Endangered Rivers 2016*. Rep. American Rivers, Apr. 2016. Web. May 2016.
- Best, Allen. "Why Drought Alone Does Not Explain Lake Mead's Expanding Bathtub Ring." *Mountain Town News*. Allen Best, 15 June 2016. Web. 16 June 2016.
- "Bureau of Reclamation." *Bureau of Reclamation*. Multiple pages, n.d. Web. June 2016.
- Chapman, Dan. "Water Wars Judge Miffed at 'progress': Mediator Scolds Attorney Teams for Florida, Georgia." *The Atlanta Journal-Constitution* 15 Mar. 2016: n. pag. *Factiva*. Web.
- Chapman, Dan. "WATER WARS: Long-running Water Wars Back in Court: Mediator Admonishes Georgia and Florida to Resolve Conflict." *The Atlanta Journal-Constitution* 8 June 2016: n. pag. *Factiva*. Web.
- Chapman, Dan. "Who Holds Advantage in Ga.-Fla. Water War? Special Master to Make Decision If Both Sides Can't Reach Settlement." *The Atlanta Journal-Constitution* 22 Nov. 2015: n. pag. *Factiva*. Web.
- *Colorado River Water Users Association*. Multiple pages, n.d. Web. June 2016.
- Etters, Karl. "Apalachicola Bay Not in Army Corp Revised Plan." *The Tallahassee Democrat* 7 Nov. 2015: n. pag. *Factiva*. Web.
- Menzel, Margie. "Gov. Scott, Georgia Governor to Meet on Water Dispute." *Jacksonville Business Journal Online* 10 June 2015: n. pag. *Factiva*. Web.
- "Raise The River." *Raise The River*. Multiple pages., n.d. Web. 9 June 2016.
- "U.S. Army Corp of Engineers Mobile District." *Mobile District, U.S. Army Corps of Engineers*. N.p., n.d. Web. 10 June 2016. <<http://www.sam.usace.army.mil/>>.
- *U.S. Department of the Interior*. Multiple pages., n.d. Web. June 2016.
- Waterman, Jonathan. "The American Nile." *American Nile: Saving the Colorado*. National Geographic, n.d. Web. 9 June 2016. <<http://www.nationalgeographic.com/americannile/>>.